Program of Research

The Program of Applied Research on Climate Action (PARCA) is a Government of Canada research initiative that investigates Canadians' beliefs, attitudes, and behaviours related to climate change and climate policy.

PARCA is a partnership between the Privy Council Office's Impact and Innovation Unit, Environment and Climate Change Canada, and Natural Resources Canada.

To learn more:
Impact.canada.ca/en/behaviouralscience/parca

Key Drivers and Barriers of Pro-Climate Behaviour in Canada: Findings from Three Survey Experiments

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*This work was conducted by many colleagues and collaborators within Impact Canada and across government

Established in 2017, Impact Canada (Impact and Innovation Unit, Privy Council Office) leverages insights and methodologies from behavioural science to inform the design and implementation of priority programs, services, and initiatives.

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Context

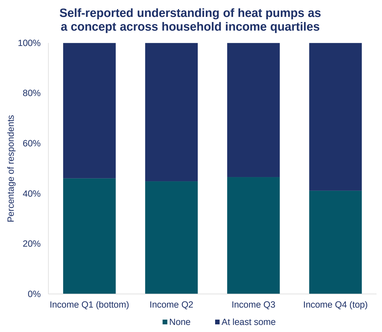
PARCA applies behavioural science insights and methods across three phases of research to understand and address public policy challenges.

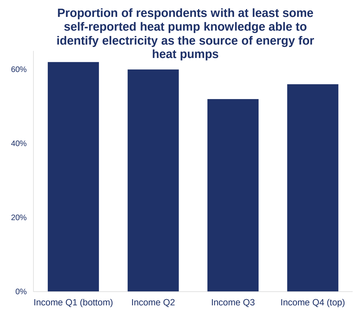
These three studies are among the online surveys and survey-experiments that explore drivers and barriers to increased support and engagement in pro-climate action and policies (Phase 2).

Study 1: Identifying Key Drivers and Barriers of Heat Pump Adoption Among Canadian Homeowners

Background + Methods
Canada's residential sector is responsible for 13% of the nation's greenhouse gas emissions, with home heating accounting for over 60% of this share. Increasing heat pump adoption rates is a promising way to reduce this. To assess drivers and barriers of heat pump adoption we developed a survey and administered it to a representative sample of Canadians (N = 3108). This survey asked about Canadian's knowledge of heat pumps, their energy concern and needs, and it included a survey-experiment that examined how message framing impacts purchase intentions.

Results
Notably, only half of Canadian homeowners say they are familiar with heat pumps, and of those, only 60% correctly identify electricity as their source of energy:





Significant predictors	Estimated impact	What is the model suggesting?
Replacement for environmental reasons	+++	Heat pump adoption **more than twice more likely**
Replacement for cost-saving reasons	++	Heat pump adoption **90% more likely**
Urgent replacement in response to home heating system breakdown	---	Heat pump adoption **54% less likely**
Replacement due to former heating system approaching end-of-life	--	Heat pump adoption **32% less likely**

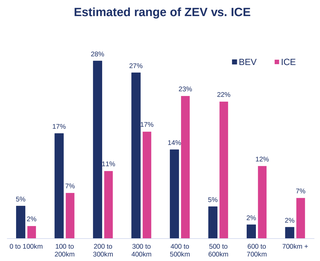
+ Small positive impact / Odds ratio > 1 and < 1.5 | - Small negative impact / Odds ratio ≤ 0.75 and <1
++ Medium positive impact / Odds ratio ≤ 1.5 and > 2.0 | -- Medium negative impact / Odds ratio ≤ 0.5 and <0.75
+++ High positive impact / Odds ratio ≤ 2.0 | --- High negative impact / Odds ratio < 0 and <0.5

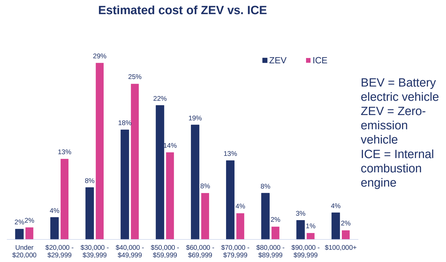
Discussion
Most Canadians are unfamiliar with heat pump technology. Canadians say that environmental concerns shape their decisions about home heating, but our experiment revealed that air quality and health-related arguments are more effective at motivating Canadians to adopt heat pumps. The status quo bias is an important factor, particularly among natural gas users, as over 60% of these individuals prefer to continue with natural gas for their next home heating system. Accordingly, the prevalence of urgent heating system replacements perpetuates the cycle of 'like-for-like' replacements, slowing adoption.

Study 2: Examining the Drivers and Barriers of Electric Vehicle Adoption in Canada

Background + Methods
Transportation represents 22% of Canada's greenhouse gas emissions, 40% of which is produced by passenger vehicles. Increasing the uptake of electric vehicles (EVs) in the private sector will help to reduce these emissions but adoption is slow, with EVs accounting for only 10.5% of all newly registered passenger vehicles. To assess the drivers and barriers of EV adoption, we developed an EV survey and administered it to a nationally representative survey of Canadians (N = 2731) who intended to purchase or lease a new vehicle. This survey asked about EV knowledge and concerns, and it included a survey-experiment which tested six messaging conditions addressing specific adoption barriers.

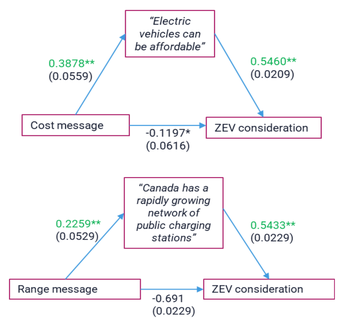
Results
Canadians overestimate the upfront costs of current EVs and underestimate their driving range. Long-term savings are not top-of-mind.





BEV = Battery electric vehicle
ZEV = Zero-emission vehicle
ICE = Internal combustion engine

By addressing misperceptions, messages about **affordability, charging, performance, and norms indirectly** predicted increased EV adoption intent in the survey-experiment.

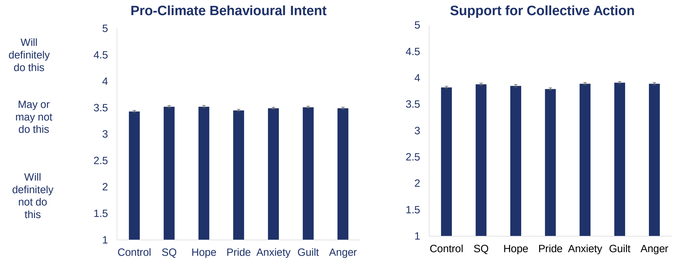


Discussion
Charger availability, range anxiety, underestimation of performance, and overestimation of costs were identified as key barriers to EV adoption. In our experiment, brief exposure to a digital message addressing specific barriers did not significantly shift Canadians' intent to adopt an EV. However, mediation analyses showed that the tested messages were able to shift respondents' beliefs. Thus, higher-touch interventions are likely needed meaningfully sift EV purchase intentions.

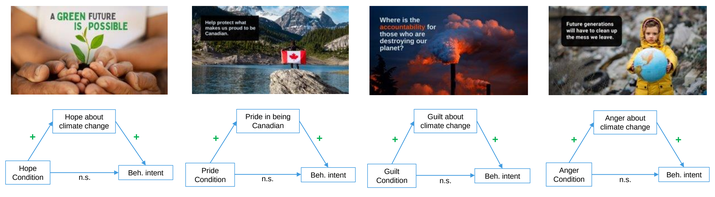
Study 3: Leveraging Emotion in the Development of Communications to Encourage Climate Action

Background + Methods
Emotions about climate change can predict support for collective action. However, emotionally invocative communications may have both positive and negative impacts on an individual's pro-climate behavior. To better understand how emotions can be leveraged for climate communications we surveyed a nationally representative sample of Canadians (N = 3000). This survey asked Canadians about their thoughts, feelings, and behvaiours related to climate change, and it included a survey-experiment which tested six messaging conditions that used photos and text to illicit unique emotional responses.

Results
Message condition did not predict pro-climate behavioural intent or support for collective action, even when controlling for pre-existing climate change emotions.



Seeing **Hope, Pride, Guilt, and Anger messages** increased each of these emotions, which, in turn, predicted intent to engage in pro-climate behaviours.



Discussion
Results suggest that light-touch digital communications alone are unlikely to evoke sufficient emotional change to mobilize behavioural intention and support for collective action. However, the more emotionally engaged in climate change Canadians are (regardless of the specific type of emotion), the more they tend to support climate action. These types of communication may be best suited for raising awareness and directing viewers to other content, rather than directly affecting attitudes and behaviours.