

CLIMATE OF CHANGE SURVEY 2017: RESEARCH NOTE

Building support for carbon pricing among Canadians

Summary

As the Pan Canadian Framework on Clean Growth and Climate Change comes into effect, its success may hinge on the degree to which Canadians support putting a price on carbon pollution, one of its four pillars. National research conducted by EcoAnalytics in October 2017 confirms, however, that attitudes to carbon pricing remain highly polarized with just half of Canadians in support, and a quarter adamantly opposed. One's place of residence, political leaning and degree of sympathy for environmental groups are influential, but from a communications vantage point, the most powerful correlate may be one's perceived timing of climate change's negative consequences. Tests by EcoAnalytics of different messaging strategies demonstrate that while individual attitudes on carbon pricing are difficult to change (or *sticky*) an indirect approach that avoids the "cost-frame" may win over key segments of society. Nuanced analysis reveals a way to strengthen the beliefs of supporters and win over opponents who feel a responsibility to take action, now: repetitive messaging about the negative impacts of climate change being experienced "here and now", coupled with reminders that the great majority of Canadians believe climate change is caused by humans. Further message testing also sheds light on strategies to attenuate the impact of the "cost-frame" on public attitudes toward carbon pricing.

Introduction: Pillars, price signals and politics

In 2016, Canada's first ministers negotiated the Pan Canadian Framework on Clean Growth and Climate Change. First among the four pillars identified, and among dozens of new climate policy measures listed, the agreement includes a "carbon price benchmark" requiring all provinces and territories to put a price on carbon through a tax, cap and trade or hybrid system. Regardless of the approach taken by provinces, the Trudeau government has called for a "price signal" of at least \$10/tonne in 2018, rising by \$10/year to \$50/tonne by 2022. Federal legislation to be tabled early in 2018 is expected to gain parliamentary approval by the spring 2019. Provinces and territories will be evaluated on their proposed approaches in September 2019. Federal rulings and application of a "backstop" for non-complying provinces will be applied retroactively to January 1, 2019 starting at \$20/tonne. As of December 2017, the federal backstop would apply to Saskatchewan, Manitoba, New Brunswick and Nova Scotia, where it is likely to be a controversial policy.

While the Trudeau framework drew applause from policy experts and environmental groups it also garnered its share of criticism—most notably from several provincial premiers and federal Conservatives, who have expressed their opposition to carbon pricing publicly, grabbing media headlines.ⁱ This on-going political debate is reflected in public opinion. Though estimates vary considerably across polls and over time, the Canadian public is far from fully supportive.ⁱⁱ In this context EcoAnalytics posed a set of questions in its Climate of Change Survey (Oct. 2017) to test messages that might persuade Canadians of the potential benefits of putting a price on carbon pollution. These test messages were developed by the environmental organizations that serve as EcoAnalytics Partners.

The analysis and discussion in this research note, prepared by Erick Lachapelle, PhD, Associate Professor of Political Science at l'Université de Montréal, offers key guidance to groups and agencies devoted to serious climate action. After examining the correlates of support for carbon pricing to show where different segments of Canadian society stand on this issue now, it reveals the strengths and weaknesses of different carbon-price messaging and how opponents might be persuaded of the virtues of this key policy option, over time.

Research context: Measuring public opinion on carbon pricing

Measuring public attitudes toward carbon pricing is not straightforward. Carbon pricing can take a range of forms—including carbon taxes, emissions trading, and hybrid measures—which can further vary in terms of how they are applied (whether upstream or downstream) and what is done with revenue collected by government (through taxation or auctioned permits, in the case of cap-and-trade). These differences in design—and especially downstream taxes vs. upstream emissions trading, and earmarked revenues, as opposed to cutting taxes on income, have been shown to significantly influence carbon price support (Lachapelle et al., 2012; Amdur et al., 2014). Policies that hide costs to consumers—like regulations and emissions trading for large emitters—tend to garner more support, but when costs are made explicit, support declines for even the most popular of policies (Rabe & Borick, 2012).ⁱⁱⁱ Other research reminds us to be cautious when interpreting survey research on carbon pricing, since many people are unfamiliar with carbon pricing policies, even when living in a jurisdiction where they are in place. Indeed, only about a third of people living in Quebec were able to correctly answer a question asking if they had a cap-and-trade system in the province, even though such a system has existed there since 2013 (Lachapelle, 2015). Meanwhile, nearly three quarters of British Columbians polled could not mention any climate policy in an open-ended question, despite the province having North America’s first carbon tax since 2008 (Rhodes et al., 2014). Further, many people don’t know what the terms “carbon” or “fossil fuels” mean. Overall, this research suggests researchers need to be careful when attempting to measure and interpret public support for carbon pricing.

Given that Canadians are only vaguely familiar with carbon pricing instruments, at best, and that opinion on this is highly conditioned by policy labels, cost specification and to cues regarding how revenues are spent, one strategy is to ask questions on carbon taxes—a relatively familiar instrument—and to clearly state the fuels to which they are applied. While polling on carbon taxes may underestimate support for other forms of carbon pricing—to the extent that such opinions exist at all—the fact that opponents and the media adopt the carbon *tax* frame suggests this is a good indicator of baseline support. To this end, the Canadian Surveys on Energy and the Environment (now known as EcoAnalytic’s Climate of Change survey) have gauged on three occasions in the last six years Canadians’ level of support

for a policy that would increase the level of taxes paid on “...fuels such as coal, oil and natural gas,” using slightly different versions^{iv} of this question on each occasion. Data are summarized in Table 1.

Table 1. Support for increasing taxes on fossil fuels in Canada: 2011–2017^v

	2011	2014	2017
Strong support	20%	17%	16%
Moderate support	30%	31%	37%
Total support	50%	48%	53%
Moderate opposition	20%	22%	21%
Strong opposition	26%	26%	24%
Total opposition	46%	48%	45%
Not sure/refused	4%	4%	2%
Sample size (n)	1,214	1,401	1,207

Notes: Data from the Canadian Surveys on Energy and the Environment and the Climate of Change survey, 2017.

Question wording in 2017: *Another way to address climate change is to increase taxes on fossil fuels like coal, oil, and natural gas. Would you be very willing, fairly willing, not very willing or not at all willing to pay higher taxes in order to reduce greenhouse gases and address climate change?*

As shown in Table 1, Canadian public opinion toward increasing taxes on fossil fuels has changed marginally little 2011. In each of these polls, the population is about equally split (50/50) between support and opposition, producing a ratio of about 1:1 (i.e. for every person that supports carbon taxes, another opposes). Meanwhile, support tends to be softer (i.e. in the “somewhat support” category) while opposition is skewed toward strong opposition, with polls consistently finding about a quarter of the population that strongly opposes carbon taxes. This high degree of variation within Canadian public opinion may help explain why energy prices or carbon pricing has been a frequently used (though not always successful) political wedge in provincial (e.g. Ontario, BC) and federal elections (2008), and why the issue was barely mentioned by the Trudeau campaign in 2015, despite the administration’s now obvious support for this policy idea.^{vi} That the overall pattern of

support/opposition has changed little since 2011 further suggests a relatively high level of opinion crystallization on this policy, which implies that these opinions are difficult to change. Finally, the fact that these polls regularly find similar levels of support and opposition, despite slight differences in question wording, suggests these survey items are both valid and reliable measures of Canadian support for carbon taxes insofar as they measure the same latent political construct.

Analysis I: Correlates of support for carbon pricing in Canada^{vii}

The division of Canadian opinion regarding higher taxes on carbon-based energy raises questions about the factors shaping patterns of support and opposition. Exactly who supports and opposes carbon taxes in Canada? How is public opinion on this issue geographically distributed and politically structured? Can we identify messaging strategies that might boost perceptions of the immediacy of impacts of climate change and the fairness and effectiveness of carbon pricing to reduce these impacts, in ways that increase public support for this powerful policy tool?

The current debate over the federal carbon pricing backstop tends to paint the issue as a regional one, pitting the interests of fossil-fuel producing provinces against those whose economies are less dependent on the development of such resources. Data from the 2017 Climate of Change survey offer some (though limited) support for this view.

As shown in Table 2, the public's willingness to pay higher taxes on fossil fuels appears to be about 10% greater in British Columbia relative to the national average. Meanwhile, the proportion of residents living in Atlantic Canada and the Prairies willing to pay higher taxes on fossil fuels appears lower than what is found in other provinces (notably BC). Though some provincial samples are relatively small, these findings are consistent with previous research that examines the geographic distribution of climate and energy opinions in Canada (Comeau, et al, 2015; Mildemberger et al., 2016).^{viii}

Table 2: Willingness to pay higher taxes on fossil fuels, by region of residence (weighted percentages)

	Atl. Canada	QC	ON	Prairies	BC	Total
Very willing	10%	16%	18%	15%	20%	16%
Fairly willing	38%	36%	38%	33%	42%	37%
Total willing	48%	52%	56%	48%	62%	53%
Not very willing	15%	22%	20%	19%	17%	21%
Not at all willing	33%	25%	21%	33%	18%	24%
Total unwilling	48%	47%	41%	52%	35%	45%
Not sure/Refused	4%	1%	3%	1%	3%	2%
Sample size (n)	89	293	455	213	157	1,207

Note: $\chi^2 = 26.55$; $df = 16$; $p = 0.1050$

Regression models and additional statistical tests (not shown here) confirm that the greater degree of support for carbon taxes found in BC is statistically different from that found in the Prairies, but not the other regions. This is substantively important, as residents of British Columbia are most willing to pay higher taxes despite having the highest carbon price in Canada and the province is home to significant fossil-fuel extraction, and gas reserves. Despite this difference, including region in regression models adds less than 1% of explained variation in the public's willingness to pay higher taxes on fossil fuels. In other words, the data allow us to say that the early experience in BC with carbon taxes—amounting to the highest carbon price in Canada—has not resulted in a public backlash against this policy. At the same time, there are clearly other—potentially more important—factors at play.

One possibility is that there is an urban-rural component that cross-cuts the regional divide. In fact, past research has found that people living in urban centres often hold opinions on climate and energy that have much more in common with fellow Canadians living in other large urban centres than with citizens of their own province living in rural communities (Mildenberger et al., 2016). Table 3 examines the relationship between willingness to pay higher taxes on fossil fuels, and whether one lives in an urban or rural setting.

Table 3 summarizes the differences in attitudes toward fossil fuel energy taxes across residents living in rural settings as opposed to those living in large urban population centres (or those with greater than 100,000 residents, as defined by Statistics Canada). In effect, this table collapses those living in medium urban (30,000–99,000), small urban (1,000–29,999) and rural settings into a general “rural setting” category, which were not found to be statistically different from each other.^x Coded along these lines, as shown in Table 3, there is substantially greater support (almost 15 percentage points) and substantially less opposition (about 13%) to carbon energy taxation in large urban centres as opposed to more rural settings.

Table 3: Willingness to pay higher taxes on fossil fuels, by urban/rural setting (weighted percentages)

	Rural setting	Large urban centre	Total
Very willing	12%	20%	16%
Fairly willing	34%	40%	37%
Total willing	46%	60%	53%
Not very willing	21%	19%	21%
Not at all willing	30%	19%	24%
Total unwilling	51%	38%	45%
Not sure/Refused	3%	2%	2%
Sample size (n)	483	618	1,207

Note: $\chi^2 = 23.61$; $df = 4$; $p = 0.0002$

This urban-rural divide may be attributable to many factors, including population density, mobility alternatives, the concentration of young educated professionals and universities in urban centres, and the relative dependency of those living in rural settings on motor vehicles for personal transportation. Regression models reveal that adding the urban-rural dimension significantly increases the explanatory power of models, but at 3% of explained variance, there (again) appears to be much more to the carbon pricing controversy than geographic factors alone.

While the regional and urban-rural divides highlighted in Tables 2 and 3 are insightful for understanding how carbon pricing opinions are geographically distributed, they say little about questions of politics and agency. Perhaps more important than geographic context is the role of opportunistic political actors (on both the left and right) that have effectively campaigned against carbon pricing, labelling this policy as fundamentally unfair to working families and people living in rural areas, or those who are dependent on cars more generally. Recently, the leader of the Conservative Party of Canada, Andrew Scheer, used these kinds of arguments—that carbon pricing is costly, ineffective, and an unfair cash grab—to discredit the Trudeau government’s Pan Canadian Framework on Clean Growth and Climate Change. In this context, it is worth examining differences in carbon-price support at the level of political partisanship.

Table 4: Willingness to pay higher taxes on fossil fuels, by federal vote intent (weighted percentages)

	CPC	LPC	NDP	Other	Total
Very willing	7%	21%	29%	15%	16%
Fairly willing	25%	46%	42%	37%	37%
Total willing	32%	67%	71%	52%	53%
Not very willing	23%	17%	18%	21%	21%
Not at all willing	44%	15%	10%	24%	24%
Total unwilling	67%	32%	28%	44%	45%
Not sure/ Refused	2%	1%	1%	4%	2%
<i>Sample size (n)</i>	318	372	121	396	1,207

Note: $\chi^2 = 138.47$; $df = 12$; $p = 0.0000$

As shown in Table 4, there is a moderate relationship between willingness to pay higher taxes on carbon and support for Canada’s three largest federal political parties. In fact, including this variable in multivariate regression analysis (not shown here) increases the explained variance in carbon price support by 10%, a substantial

amount that makes a significant difference in model fit. Specifically, supporters of the Liberal Party of Canada are three times (21%) more likely than those indicating they would vote for a member of the Conservative Party of Canada (7%) to be “very willing” to pay higher taxes on fossil fuels. In turn, supporters of the NDP are four times as likely as CPC supporters to report the same. At the other extreme, supporters of the CPC are about three and four times more likely to be “not at all willing” to pay higher taxes on fossil fuels, respectively, relative to supporters of the Liberal Party of Canada (LPC) and the federal New Democratic Party (NDP).

Combining the “willing” and “unwilling” responses reveals that a majority of LPC and NDP supporters are at least somewhat willing to pay higher taxes on fossil fuels, while a large majority of CPC supporters are not very willing. However, Table 4 also indicates that supporters of the CPC have stronger views, with responses skewed toward an extreme position (i.e. “not at all willing”) while opinions for LPC and NDP supporters are concentrated in the middle category. Thus, while a strong majority of LPC supporters (67%) are at least somewhat willing to pay higher taxes on fossil fuels, only about one in five (21%) is “very willing.”

In short, Table 4 indicates that those with more progressive political values (reflected in support of the centrist LPC and left-leaning NDP) are more likely to support carbon pricing. Opinions for the sizeable percentage of respondents who indicate support for something other than the three largest federal political parties are less clear-cut, with roughly 50% support and 50% opposition.^x Among these groups, support is understandably highest among those saying they would vote for the Green Party of Canada (not shown here due to small sample size, n=70), with 27% of Green Party supporters indicating they are “very willing” and 41% “fairly willing” to pay higher taxes on fossil fuels. Due to their small sample size, these results are not statistically different, but they are consistent with the idea that support is highest among progressives.

Since political values and ideologies are slow to change, messaging about carbon pricing should appeal to left-of-centre themes, like social justice, egalitarianism, and environmental health, to shore up support from this progressive base. For the CPC, these results suggest that it can continue to use carbon pricing as a political wedge to pry away supporters of more progressive parties while mobilizing its own anti-tax base.^{xi}

In terms of political base, environmental groups might be interested to know where their members and sympathizers stand on fossil fuel energy taxation. As shown in Table 5, those who identify as being sympathetic (65%) are about equally as likely as

those reporting to be an active member (61%) to support carbon taxes. More specifically, active members and environmental movement sympathizers are about two and four times as likely as those who report being neutral (36%) or unsympathetic (13%) to the movement, respectively, to support higher taxes on fossil fuels.

Table 5: Willingness to pay higher taxes on fossil fuels, by level of identification with Canada’s environmental movement (weighted percentages)

	Unsympathetic/ Not sure	Neutral	Sympathetic	Active member	Total
Very willing	3%	8%	20%	23%	16%
Fairly willing	10%	28%	45%	38%	37%
Total willing	13%	36%	65%	61%	53%
Not very willing	21%	26%	18%	17%	21%
Not at all willing	58%	38%	15%	19%	24%
Total unwilling	79%	64%	33%	36%	45%
Not sure/ Refused	8%	<1%	2%	3%	2%
Sample size (n)	112	261	612	222	1,207

Note: $\chi^2 = 187.43$; $df = 15$; $p = 0.0000$

At 23%, the proportion of those claiming to be an active member of Canada’s environmental movement and who strongly support increased taxes on fossil fuels is lower than what might otherwise be assumed. This may indicate that this is a relatively sophisticated group who prefer a specific form of carbon pricing, that they have difficulty answering they are willing to pay more taxes for fuel sources they oppose, or that it is difficult to find a segment of the population who are “very willing” to pay higher taxes on coal, oil and natural gas in Canada. Forthcoming segmentation analysis will shed further light on the extent to which Canadians with environmentalist predispositions support increased taxation of fossil fuels.

While Canadian public opinion toward fossil fuel taxation is shaped in large part by political values and social identities, these characteristics change slowly over time. Other cognitive factors—like climate change beliefs—are more malleable, and may exert some influence on levels of policy support. One of several climate beliefs examined in the 2017 Climate of Change survey, that the impacts of climate change are being felt “here and now” offers a potential way of framing climate change in a way that persuades Canadians to support greater action. Indeed, believing that climate change is already harming people living in Canada provides a normative justification for enacting strict and effective (if personally costly) mitigation policy.

The Canadian Surveys on Energy and the Environment (known as EcoAnalytics’ Climate of Change Survey, since 2016) have tracked beliefs on the perceived timing of climate change consequences for the past four years. Since 2014, the belief that climate change is already harming people living in Canada has increased linearly, from just 35% in 2014, to 43% in 2015, to 48% in 2016, reaching 55% in 2017. Though a majority of the Canadian public continues to feel they are not personally at a great deal of risk (data now shown here), a 20% increase in the perceived timing of climate change in a relatively short amount of time suggests that increasingly, extreme weather is being tied to climate change, which is today less of a distant issue—and increasingly something being experienced “here and now.” Whether or not this conceptual framing is related to support for carbon pricing is examined in Table 6.

Table 6 summarizes the relationship between the public’s willingness to pay higher taxes on fossil fuels and the perceived timing of climate change’s negative consequences. Specifically, the timing of consequences item read, “*When do you think climate change will start to harm people living in Canada? In 10 years, in 25 years, in 50 years, in 100 years, never, or do you think climate change is already harming people living in Canada?*”? For simplicity, Table 6 collapses responses of never, 100 years, 50 years and 25 years (as well as the “not sure”) into the “Never/far off” category. The “imminent” category refers to those who believe climate change will begin to harm Canadians in 10 years, while those reporting that climate change is already harming people living in Canada are grouped into a category of their own.

Table 6: Willingness to pay higher taxes on fossil fuels, by perceived timing of climate change consequences (weighted percentages)

	Never/ far off	Imminent	Already happening	Total
Very willing	7%	13%	22%	16%
Fairly willing	23%	39%	42%	37%
Total willing	30%	52%	64%	53%
Not very willing	20%	27%	16%	21%
Not at all willing	45%	19%	18%	24%
Total unwilling	65%	46%	34%	45%
Not sure/ Refused	4%	3%	3%	2%
Sample size (n)	280	248	679	1,207

Note: $\chi^2 = 124.87$; $df = 8$; $p = 0.0000$

As shown in Table 6, there is a relationship between perceptions on the immediacy of the climate change threat, and the public’s willingness to support putting a price on carbon. Most people (64%) who believe climate change is happening “here and now” are willing to pay, while roughly the same proportion (65%) of those who believe the effects of climate change are far off are unwilling to pay higher taxes on fossil fuels to address climate change. The relationship is also linear, with greater willingness to pay as climate change is perceived as more immediate, while opposition to paying higher taxes increases the farther out in time one perceives the negative consequences of climate change to be. Multivariate analyses further confirm this relationship is robust when controlling for a host of other predictors of carbon price support.

As shown in Table 7, there also appears to be a relationship between support for paying higher taxes on fossil fuels and the public’s willingness to hold oil and gas companies financial accountable. Specifically, the accountability question read: “Thinking now about companies that produce and distribute fossil fuels, do you strongly support, somewhat support, somewhat oppose or strongly oppose holding

these companies accountable for a share of the financial costs of climate change”? To simplify the analysis, Table 7 collapses the “strongly” and “somewhat” oppose categories with the “not sure.” Looked at in this way, those who strongly support holding oil and gas companies accountable are about four times more likely to be “very willing” to pay increased taxes on fossil fuels, relative to those who oppose fossil fuel company accountability or those without an opinion. Conversely, those who oppose holding fossil fuel companies to account for their share of climate damages are also much less willing to pay higher taxes on fossil fuels. This suggests that many Canadians do not see it as any one actor’s responsibility to pay; at least for some segments, there is an expectation that different social actors should pay their fair share of the costs associated with climate change. The relationship shown in Table 7 is robust even when controlling for other factors like region, urban/rural setting, partisanship, identification with the environmental movement, and the perceived timing of climate change consequences.

Table 7: Willingness to pay higher taxes on fossil fuels, by willingness to hold oil and gas companies financially accountable (weighted percentages)

	Strongly/ Somewhat oppose/ Not sure	Somewhat support	Strongly support	Total
Very willing	7%	10%	27%	16%
Fairly willing	22%	41%	41%	37%
Total willing	29%	51%	68%	53%
Not very willing	23%	25%	13%	21%
Not at all willing	43%	23%	17%	24%
Total unwilling	66%	48%	30%	45%
Not sure/Refused	5%	1%	2%	2%
Sample size (n)	270	449	488	1,207

Note: $\chi^2 = 157.82$ $df = 10$ $p = 0.0000$

Discussion I: Takeaways from the correlational analysis

The above analysis suggests that framing climate change as “here and now” and around progressive themes speaks to a relatively substantial portion of the public that supports carbon taxes in Canada, while helping to legitimize the concept of carbon pricing more broadly. If climate change is already harming people in Canada, it follows that swift and effective action is warranted. The data here suggest that many Canadians are already there. The challenge now, as cognitive psychologists might argue, is to strengthen the “here and now” frame in the minds of certain segments of Canadian society, with sustained and repetitive messaging. This should further encode the cognitive frame in people’s minds, activating regions of the brain that link climate change to the present (c.f. Lakoff, 2010). Another strategy might emphasize the large and growing number of Canadians who hold this view, as research continues to show that people adopt opinions based on beliefs (meta-beliefs) about what others believe: experts, leaders, fellow citizens, etc. (Wood & Vedlitz, 2004; van der Linden et al., 2015; Mildenerger & Tingley, 2017).

Messaging that frames climate change as impacting Canadians “here-and-now” will reach most Canadians who already believe this, helping to further entrench this existing cognitive schema; and messages that emphasize that most Canadians accept that climate change is impacting us negatively “here and now” should also help persuade a larger proportion of Canadians that this is true. Combined, these messages should also help make climate change more immediate, top of mind, leading to increased support for concrete actions, like carbon pricing.

EcoAnalytics Partners, and other groups keen to strengthen climate action, may also want to communicate that *human-caused* climate change is here and now and that the costs of climate change should be *equitably* shared. Indeed, a record number of Canadians attributed climate change to human causes in 2017, and some literature has found that perceived human responsibility for climate change can play a moderating role, or even act as a “gateway belief,” that enhances policy support (Krosnick et al., 2006; Ding et al., 2001; van der Linden et al., 2015; Comeau, 2017). For its part, the “fair share” framing (now being tested by EcoAnalytics Partner West Coast Environmental Law) is consistent with progressive values of justice and fairness, and speaks directly to those Canadians who feel that the costs of climate

action should be distributed in a way that makes the largest polluters accountable. All of this is not to say that these are foolproof strategies. Indeed, despite a growing number of Canadians who believe climate change is impacting us negatively “here and now,” we’ve seen limited change in support for carbon pricing over the same time (see Table 1). While this may be attributable to a decline in support for carbon pricing among other segments of the population (notably conservatives, data not shown here), it suggests gains in this debate will be hard fought, and made over the medium to longer term. Moreover, the observations here are consistent with those made by Comeau (2015; 2017) in her carbon pricing narrative work.

Analysis II: Experimental analysis of messaging

While the foregoing analysis points to the potential of framing climate change as “here and now” for strengthening public support for climate action, carbon pricing has been framed by opponents as too costly and ineffective, raising the question of whether it is possible to reframe the specific carbon price debate. To this end, an experiment was also included to test alternative messaging strategies that might increase support among Canadians for carbon pricing, or at least attenuate the efficacy of attacks on this policy tool. Again, these alternative messages were proposed by EcoAnalytics Partners. The experimental design is composed of two major tests. First, a pre-test, post-test experimental design measures an individual’s willingness to pay higher prices on fossil fuels before and after being read a message about carbon pricing by the interviewer (the experimental treatment). This will be referred to, below, as the “within subjects” component. A second component tests for differences “across groups” that were randomly assigned to 1 of 8 messages, or experimental treatments. This testing involves a 2 x 4 factorial design in which the first factor examined is “price” and the second is “cue.”

The price factor has two levels—informing respondents that a carbon tax will result in 2 cents per litre (low cost) and 11 cents per litre (high cost) increase in the price of gasoline at the pump. These prices correspond to the equivalent price per litre of gasoline resulting from a 10\$ and 50\$ carbon tax, which is the minimum price

required by the Pan Canadian Framework on Clean Growth and Climate Change in 2018 and 2022, respectively. It is also common to hear about these pump price impacts when the policy is discussed in print and broadcast media. The idea is to test what the effect of these price specifications are on the willingness of the public to pay higher taxes on fossil fuels—in the absence of any further cue or justification for the policy.

The cue factor involves testing a number of potential options for revenue use and messaging around the policy based on four levels, or messages. The first contained no further information regarding the policy (referred to as a “control” cue, below) allowing for a test of the impact of the 2 cents and 11 cents per litre cost specifications without any further messaging. The expected price effect was found in the Climate of Change survey 2016 (Lachapelle et al., 2016). The second level tested a message around the transparent investment of carbon price revenues into solutions designed to further address climate change. Past research has found that investing carbon price revenues into energy efficiency and renewable energy is particularly popular among Canadians, and that earmarking revenue in this way significantly increases levels of public support (Amdur et al., 2014; EcoFiscal Commission, 2016). A third level tests a message asserting that the atmosphere belongs to everyone and outlines another option for the allocation of carbon price revenue in the form of equal per capita dividends for all citizens. This particular option could represent a mechanism to transfer revenue from federally imposed carbon pricing to citizens in provinces or territories not complying with the federal backstop requirements while bypassing provincial governments (and preventing them from taking credit and avoiding blame). The fourth level tests a message concerning relative prices, explaining that although carbon pricing makes the cost of some things more expensive, it also makes things like clean energy and electric vehicles more affordable. This kind of relative price messaging has also been advocated—in various forms—in the academic literature (e.g., see Jagers & Hammar, 2009).

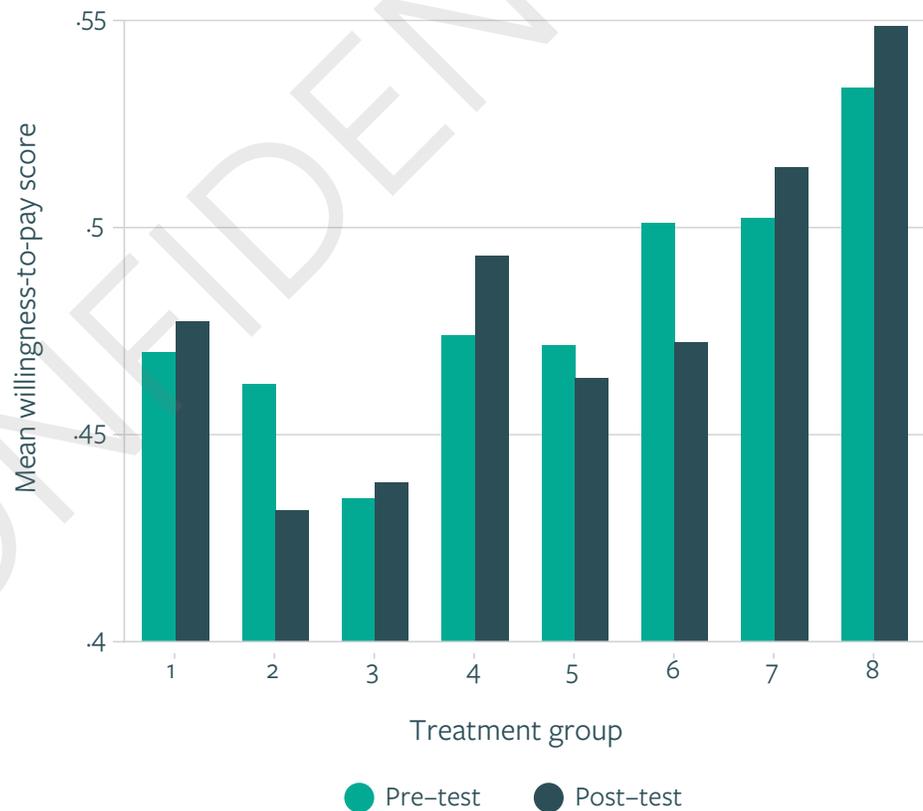
All respondents were first read the following statement: “As you may be aware, the federal government plans to impose a carbon tax in provinces that haven’t already set their own price on carbon, in an effort to address climate change by decreasing Canada’s greenhouse gas emissions.” Following this introductory statement, respondents were randomly assigned to 1 of 8 experimental groups, as outlined in Table 8.

Table 8: Summary of experimental treatments and question wording

		Price	
		2 cents/litre (low)	11 cents/litre (high)
Cue	Control	(1) At \$10 per tonne, this policy will increase the price of fossil fuels, adding about 2 cents per litre at the pump.	(2) At \$50 per tonne, this policy will increase the price of fossil fuels, adding about 11 cents per litre at the pump.
	Invest solutions	(3) At \$10 per tonne, this policy will increase the price of fossil fuels, adding about 2 cents per litre at the pump. <i>For each dollar increase it receives from this policy, the government will invest 1 dollar in solutions to address climate change: such as in clean energy, transit, and energy efficiency.</i>	(4) At \$50 per tonne, this policy will increase the price of fossil fuels, adding about 11 cents per litre at the pump. <i>For each dollar increase it receives from this policy, the government will invest 1 dollar in solutions to address climate change: such as in clean energy, transit, and energy efficiency.</i>
	Equal dividend	(5) At \$10 per tonne, this policy will increase the price of fossil fuels, adding about 2 cents per litre at the pump. <i>The atmosphere belongs to everyone, and a carbon price gives a signal to everybody—business and households—to reduce their carbon pollution. The government plans to equally distribute all of the revenue in the form of equal per capita dividends for every citizen.</i>	(6) At \$50 per tonne, this policy will increase the price of fossil fuels, adding about 11 cents per litre at the pump. <i>The atmosphere belongs to everyone, and a carbon price gives a signal to everybody—business and households—to reduce their carbon pollution. The government plans to equally distribute all of the revenue in the form of equal per capita dividends for every citizen.</i>
	Relative price	(7) At \$10 per tonne, this policy will increase the price of fossil fuels, adding about 2 cents per litre at the pump. <i>Although a carbon price makes polluting more expensive, it also makes things like clean energy and electric vehicles more affordable.</i>	(8) At \$50 per tonne, this policy will increase the price of fossil fuels, adding about 11 cents per litre at the pump. <i>Although a carbon price makes polluting more expensive, it also makes things like clean energy and electric vehicles more affordable.</i>

As stated, these messages were proposed by EcoAnalytics Partners, with input from the research team, to test potential levers of support for carbon pricing. The “Invest solutions” message was expected to enhance perceptions of carbon pricing’s effectiveness by specifying that governments would allocate all revenue from the policy to investments in climate change solutions. The “equal dividend” framing was expected to increase respondents’ perceptions that the policy is fair. The “relative price” framing is expected to enhance both fairness and effectiveness perceptions. To test these expectations, our framing experiment was followed by three questions measuring perceived fairness and effectiveness, and overall support for the policy.

Figure 1: Mean willingness-to-pay scores within subjects (pre-test/post-test)*

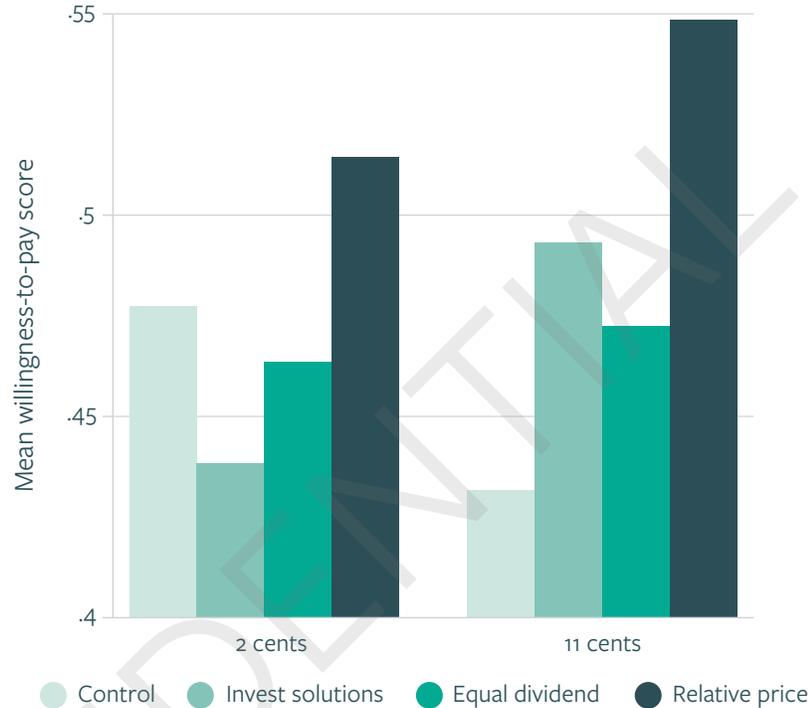


**For simplicity, the four figures in this document zoom in on the differences between groups by truncating the vertical (y) axes of the graphs. As well we have not included the confidence intervals around the mean estimates, allowing a closer look at the differences in pre- and post-test scores (which are modest).*

As a first test of these messages, Figure 1 compares the pre- and post-test scores within individuals (note the average pre-test “willingness to pay” level, or baseline level of support, is found in Tables 1 through 7). This is a powerful test of whether people are adjusting their opinion to the policy in light of the messages provided. The variable being measured—“Mean willingness-to-pay score” is the average “willingness to pay” increased taxes on fossil fuels before and after the test, across each of the 8 experimental groups. The “Mean willingness-to-pay” score is standardized on a 0–1 scale, where 1 represents “very willing” and 0 represents “not willing at all.” The 0.5 level is the support threshold—anything under this score indicates on average, opinions are skewed toward greater opposition, and anything above 0.5 suggests that on average, opinions within this group lean toward support for paying increased taxes on fossil fuels. Note that, to simplify Figure 1, we have included the confidence intervals associated with these mean estimate.

As shown, there are some slight differences in the expected direction across pre- and post-test attitudes toward carbon pricing. For instance, experimental condition 1 shows the average post-test score is higher than the pre-test score when respondents are exposed to the “low cost” frame. This might be expected, as an increase in the price at the pump of 2 cents per litre is modest. Conversely, the post-test score in experimental condition 2 is lower than the mean pre-test score, indicating that when respondents are told the policy will increase the price of gasoline by 11 cents per litre, their willingness to pay higher taxes on fossil fuels decreases. One could perform the same type of analysis for each of the experimental conditions to see how the different messages play out; it should be noted, however that the differences shown in Figure 1 are very modest and are not statistically significant. In other words, attitudes toward paying higher prices on fossil fuels are, at the individual level, impervious to the messages tested, at least within the context of this one survey experiment. However, differences in mean willingness to pay measured post-treatment (Figure 2) appear to be more variable across groups, indicating that some messages may be better suited for persuading Canadians on carbon pricing.

Figure 2: Mean willingness-to-pay (post-test) scores across experimental groups



An alternative way of analyzing the data is to examine differences across experimental treatment groups on the post-test measure only. Here the question becomes “Are there significant differences in mean levels of willingness to pay higher taxes on fossil fuels across experimental groups following their exposure to treatment?” Figure 2 shows that there is some variability in post-test mean tax scores across groups. For instance, the no cue (i.e. control) treatment is associated with a lower mean score at the 11 cents/litre level, relative to the 2 cents/litre condition, indicating a negative effect on willingness to pay. This price effect appears to be attenuated, however, by the “Invest solutions” cue. Indeed, under this cue, the mean willingness to pay is higher at the 11 cents level than at the 2 cents level. While there appears to be no difference in the “Equal dividend” cue across price levels, messaging around “Relative price” looks to increase mean willingness to pay (relative to no cue at all), at the level of 11 cents. More sophisticated tests demonstrate that this is the only significant difference, indicating that framing messages around relative prices may be an effective counter-argument regarding the costs of carbon pricing.

Figure 3: Mean perceived fairness (post-test) scores across experimental groups

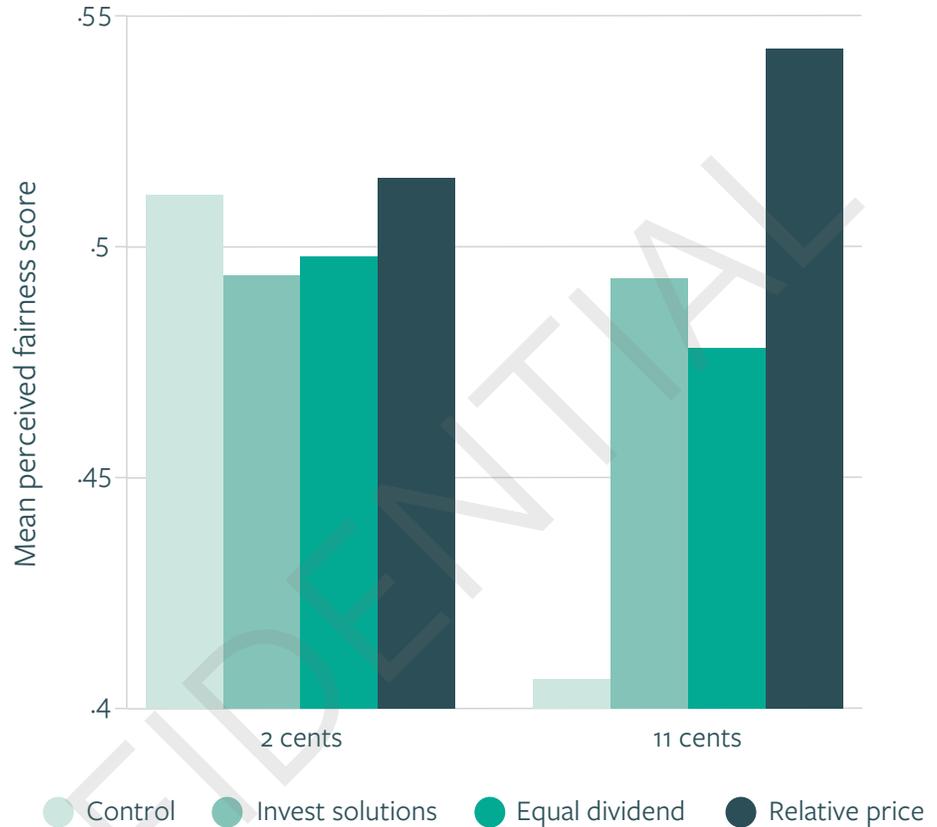
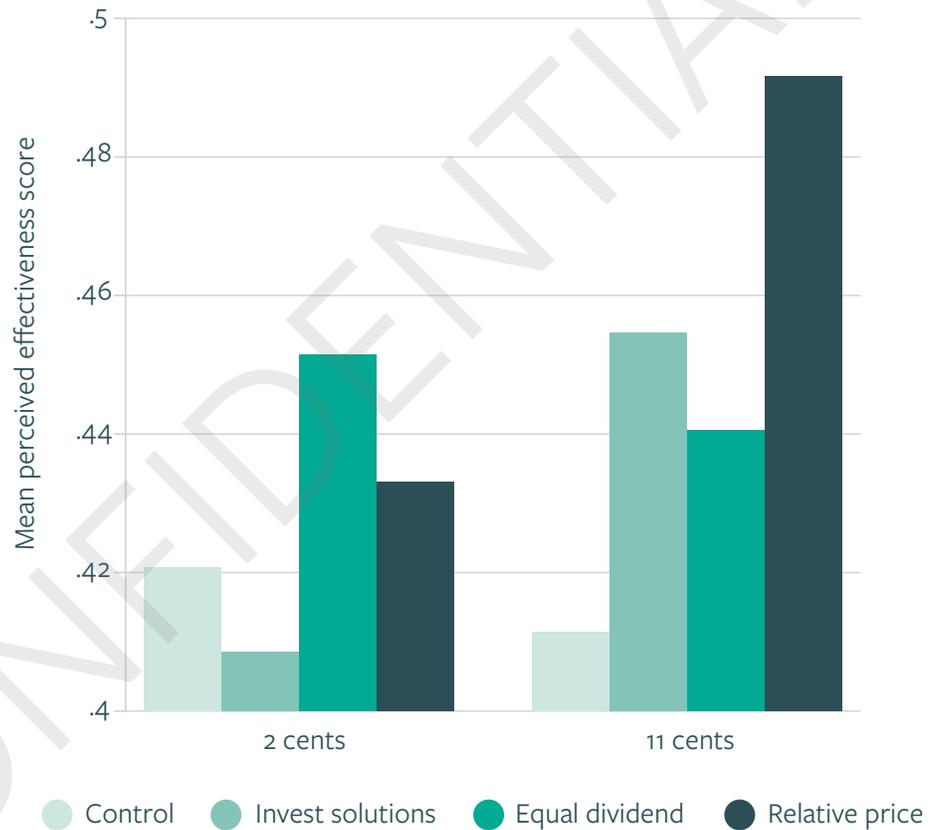


Figure 3 shifts the attention to the potential effects of these messaging strategies on the perceived fairness of carbon pricing policies, which have been found in the literature to be an important determinant of carbon price support (Hammar & Jagers, 2007). The perceived fairness of the policy just described was measured on a 0–10 scale with 0 indicating “very unfair” and 10 “very fair” (standardized as 0–1 here to facilitate comparison with other figures). Comparing across the two panels, it is fairly clear that the higher pump price induces a sense that the policy is less fair. At the same time, the greater variation across the bars in the right panel suggests that some of the messaging strategies tested here may attenuate some of this price effect. This may be important for Partners to know as governments prepare to ratchet up carbon prices in the country. Specifically, the biggest difference again appears to be between experimental groups 2 (high cost, no cue) and 8 (high cost, relative price). More sophisticated statistical analyses (not shown here) confirm this difference is statistically significant. In other words, relative to no messaging at all

(in which case a price level of 11 cents, relative to 2 cents, is seen as distinctly unfair), alluding to the fact that carbon pricing makes the cost of alternatives more affordable (or “levels the playing field”) goes some way in offsetting the “high cost” frame and in enhancing the perceived fairness of carbon pricing.

Figure 4: Mean perceived effectiveness (post-test) scores across experimental groups



A similar, if more modest effect also appears in Figure 4. Here again, the perceived efficacy of the policy was measured on a 0 to 10 scale where 0 represents “very ineffective” and 10 “very effective” (standardized as 0–1 here to facilitate comparison with other figures). As is true for helping with the perceived fairness of the policy, the “Relative price” framing increases the perceived effectiveness of carbon pricing relative to no messaging at all, but only at the “11 cent” (or “High cost”) level. More sophisticated analysis confirms that this difference is statistically significant, ruling out, with some margin of error, the possibility that this results from higher

baseline support among people in this group. Unlike attitudes toward fairness, however, the price level here appears to have a much more limited impact on perceptions of the policy's efficacy. In other words, higher carbon pricing is seen as less fair, but equally as effective (or ineffective, as the case may be). Finding new ways to enhance perceptions of the effectiveness of carbon pricing is thus a particularly important item for future research, as carbon prices are expected to rise over time.

Additional tests (not shown here) were conducted, including repeated measures (analysis of variance, or ANOVA, tests) of the time*group interaction, showing whether or not the mean change in support from pre- to post-test differs across groups); but these changes were insignificant. Similarly, difference-in-difference models (which reveal the difference in willingness to pay before and after treatment) further confirm that individual attitudes about carbon pricing are fairly fixed, or "sticky". To be sure, no single experiment is definitive, and there are important limits to the present analysis. For instance, the pre- and post-test measures occurred relatively close together on the same survey, which may have caused some to express the same opinion on the pre- and post-test measures, so as not to appear incoherent or easily manipulated. This survey experiment was also administered over the telephone, which has some advantages in terms of external validity, but also drawbacks, including the limited comprehension and cognitive capacity of respondents to hold messages in their minds. The tests also included many experimental groups (8), which may limit the statistical power of these tests, making it more difficult to find statistically significant differences. While these limits are important to keep in mind, the pre-post treatment experimental design offers particularly compelling evidence that individual attitudes on carbon pricing are difficult to change with simple messaging. Environmental groups may, therefore, wish to rethink their strategies on carbon pricing by prioritizing messages that speak to their base of supporters while further developing messages to defuse the arguments of their opponents.

Discussion II: Takeaways from experimental analysis

While most policy experts and environmental economists agree that carbon pricing is the most efficient and cost-effective means of reducing greenhouse gas emissions, the politics of direct cost imposition make this approach to climate policy politically difficult. In Canada, opportunistic political actors have used carbon pricing as a political wedge, and have framed the policy as excessively costly, ineffective, and unfair to working Canadians, small businesses, rural communities and drivers. While some polls suggest that a clear majority of Canadians are ready for Trudeau's carbon price, the research summarized here suggests that a plurality of even the greenest Canadians are at best lukewarm about the idea of paying more for fossil fuels like coal, oil and natural gas. These fuels are commonly associated with everyday practices like driving, cooking, and heating homes. In this context of a contentious policy on which public opinion is already formed, this research note has examined the prospects for reframing the carbon price debate in an effort to bring a larger proportion of the public on board. While opinions on carbon taxes are relatively well formed and sticky, our analysis of the fall 2017 Climate of Change Survey results leads us to recommend that environmental agencies and groups use these messaging strategies to persuade more Canadians of the benefits of putting a significant price on carbon pollution.

1. Don't lead with carbon pricing. It's a divisive, heavily politicized issue. Making the debate about carbon pricing, as the Trudeau governments seems to be doing, plays directly into the hands of opponents who can use it effectively as a political wedge.
2. Instead, focus on the end, not the means. Communicate the why, not the how. Build the case for why climate action is necessary by, for instance, a relentless and repetitive campaign that climate change is "here and now" and requires immediate action. This helps justify carbon pricing while reinforcing a view held by a majority of Canadians. The research on this also shows that those who believe the negative impacts of climate change are being experienced "here and now" are also more willing to pay increased taxes on fossil fuels. It may be best, then, to emphasize that the negative consequences of climate change are happening here and now—a tactic that should further justify in the minds of Canadians the need to put a price on carbon.

3. Emphasize that climate change is caused by us.” Call it *human-caused* climate change to make explicit the responsibility we have as a society to correct this problem. The great majority of Canadians, unlike their U.S. counterparts, already believe this. The key then is to continually refer to *human-caused* climate change to build this conceptual frame and make the link to human responsibility explicit.
4. Do not abandon the debate. Too often we try to avoid the “cost frame” as we know it’s a losing battle. But abandoning the discussion altogether does little in terms of advancing the case for carbon pricing. Rather than ignore the costs, people need to feel that their concerns are being heard, and reassured. The same goes for countering arguments on fairness and effectiveness grounds.. Future work funded by The J.W. McConnell Family Foundation will test the ability to inoculate against misinformation and carbon pricing.

To sum up, when the issue of the cost of carbon pricing comes up, remind audiences that we are already experiencing the harm of climate change, here and now: wildfires, floods, droughts, etc. Note that this is impacting our health and economy, particularly in northern and coastal communities, and the cost of not taking action is become increasingly onerous. Then pivot to the *benefits* of carbon pricing (not just polluters paying their fair share). Talk about how carbon pricing benefits consumers by making clean energy, electric vehicles, public transit—in short, alternatives—more affordable. How putting a price on carbon effectively reduces emissions and benefits the Canadian economy by fast-tracking the transition to more efficient and cleaner energy. Emphasize that polluters ought to pay their “fair share” in this transition. Most Canadians are already on board with this. And use the “Relative price” frame to talk about “levelling the playing field” to increase fairness perceptions.

Further reading

Lachapelle, E. 2017. Communicating about Carbon Taxes and Emissions Trading Programs. In

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Endnotes

- i** McCarthy, Shawn and Leblanc, Daniel “Liberal government’s carbon tax plan provokes anger from provinces” *Globe and Mail* 3 October 2016; Tunney, Catharine “Brian Mulroney urges ‘prudence’ on carbon price decision” CBC News, 28 October 2016; Thomson, Nancy “Carbon tax first heated issue of Yukon election campaign” CBC News 27 September 2016; Global News “New Federal Conservative Leader Andrew Scheer opposed to a carbon tax” 27 May 2017.
- ii** Apparently, different polling results reflect differences in question wording. For instance, a 2015 poll conducted by Angus Reid found the public was roughly equally split between support (56%) and opposition (44%) for a carbon tax in April of that year. A follow up poll in 2017 later suggested support had fallen from a high of 56% in April 2015 to 44% in June of 2017 (See Angus Reid “The price ain’t right: Canadians liked carbon tax in theory, but support declines as plan becomes a reality”). Using a different rating scale, a 2016 Abacus poll found more opposition (31%) to a carbon tax than support (25%), though a plurality (44%) indicated they could “accept it,” leading Abacus to claim 65% support for a carbon tax (See Abacus Who’s afraid of a carbon tax?). Several months later, Abacus polled another question mentioning the Prime Minister’s plan to put a price on carbon in which revenues would “go back to the provinces where the taxes are paid” and further specified “the national tax would only apply in provinces where there isn’t already a similar policy in place” and found 35% saying the policy was “good,” another 31% saying it was bad, and a final 34% finding it “acceptable” (See Abacus, Climate, Carbon and Pipelines: A path to Consensus?). Comparing across these polls, estimates of public support for carbon pricing range from 44% (Angus Reid) to 69% (Abacus).
- iii** In a similar way, using the carbon tax label is associated with less public support. For instance a survey experiment conducted as part of the Canadian Survey on Energy and the Environment in 2015 found that simply rephrasing a question from “a carbon tax on fuels such as coal, oil, and natural gas” to “a carbon price on fuels such as coal, oil, and natural gas” resulted in a 15% increase in public support for ostensibly the same policy. While this suggests policy-makers should avoid the tax label when implementing such policy, it also suggests researchers interested in measuring actual level of support for carbon pricing should use the carbon tax label if the goal is to measure baseline support.
- iv** Previous versions of the question read as follows: *Another way to reduce greenhouse gas emissions and address climate change is to put a carbon tax on fuels such as coal, oil and natural gas. Do you strongly support, somewhat support, somewhat oppose or strongly oppose this type of policy?*
- v** The sample sizes (and thus survey margins of error) for these surveys varies from 1214 (2011) to 1401 (2014) and 1207 (2017). All surveys were conducted in the fall of the respective years.
- vi** Of course, the BC NDP’s attempted use of this wedge famously backfired in 2008, when prominent figures in the province’s environmental movement (e.g. David Suzuki) broke with

tradition and defended the Liberal’s policy, publicly chastising the NDP for their “axe the tax” campaign. Nearly a decade later, the BC NDP won the 2017 election with higher levels of carbon pricing as a key plank in its platform, though an effective inter-party consensus on the carbon tax effectively provided the provincial NDP with the space for this kind of positioning, as it faced no similar “axe the tax” campaign.

- [vii](#) This section relies on the use of contingency tables (or crosstabs) to summarize the joint probability of two conditions being held simultaneously (e.g. strongly supporting a carbon tax and living in British Columbia). The relationships shown here are robust to a number of controls included in regression models. Note that columns may not always add to 100 due to rounding.
- [viii](#) See the maps available at umontreal.ca/climat
- [ix](#) Of the 1207 cases, 99 were unable to be geo-coded. These are classified as rural in Table 3.
- [x](#) Due to their smaller sample sizes, and to simplify the data in Table 4, respondents indicating a vote intention other than for the three major political parties (including Green Party supporters, Bloc Québécois supporters, and the undecided) were collapsed into the “other” category.
- [xi](#) Regression analysis (not shown here) further reveals an interesting dimension to the relationship between partisanship and support for carbon pricing. Indeed, the difference between LPC and CPC supporters is conditioned by level of political trust. Specifically, willingness to pay increased taxes on fossil fuels is lower among Conservatives who are most cynical of the government in Ottawa. At all other levels of trust—including those who report trusting the government in Ottawa “some of the time”—the difference between LPC and CPC supporters is insignificant.