

# Smokers' support for tobacco endgame measures in Canada: findings from the 2016 International Tobacco Control Smoking and Vaping Survey

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## Abstract

**Background:** The Canadian government has committed to an endgame target of less than 5% tobacco use by 2035. The aims of this study were to assess baseline levels of support for potential endgame policies among Canadian smokers, by province/region, demographic characteristics and smoking-related correlates, and to identify predictors of support.

**Methods:** We analyzed data for 3215 adult (age  $\geq 18$  yr) smokers from the Canadian arm of the 2016 International Tobacco Control Four Country Smoking and Vaping Survey. We estimated weighted percentages of support for endgame measures for 6 provinces/regions of the country. We used weighted logistic regression models to identify predictors of support for 14 endgame strategies.

**Results:** Among cigarette endgame policies, support was highest for reducing nicotine content (70.2%), raising the legal age for purchase (69.8%), increasing access to alternative nicotine products (65.8%) and banning marketing (58.5%). Among e-cigarette policies, there was majority support for restricting youth access (86.1%), restricting nicotine content (64.9%), prohibiting use in smoke-free places (63.4%) and banning marketing (54.8%). The level of support for other endgame measures ranged from 28.9% to 45.2%. Support for cigarette and e-cigarette policies was generally higher among smokers with intentions to quit and those from Quebec. Support for e-cigarette policies was generally lower among smokers who also used e-cigarettes daily.

**Interpretation:** There is considerable support among Canadian smokers for endgame policies that go beyond current approaches to tobacco control. Our findings provide a baseline for evaluating future trends in smokers' support for innovative measures to radically reduce smoking rates in Canada.

Tobacco use is the leading cause of premature death in the world, resulting in more than 6 million preventable deaths globally each year.<sup>1,2</sup> In Canada, where cigarettes are the most commonly used tobacco product, the smoking rate among youth and adults (age  $\geq 15$  yr) decreased from 15.0% in 2013 to an all-time low of 13.0% in 2015;<sup>3</sup> however, smoking remains the leading cause of preventable disease and premature death.<sup>3-5</sup> In 2012, the total economic burden of smoking in Canada was estimated at \$16.2 billion, with \$6.5 billion in direct health care costs.<sup>6</sup>

Canada has a long history of leadership in tobacco control. Before ratifying the World Health Organization Framework Convention on Tobacco Control, in 2004, Canada was already the first country to have implemented pictorial health warnings, in 2001. Canada has also implemented leading-edge product regulations, including a ban on all flavourings in cigarettes (except menthol) in 2010 and a ban on menthol in 2017.<sup>7,8</sup> However, achieving further reductions in smoking prevalence

is an increasing challenge. Currently, Canada's smoking prevalence is estimated to decrease only from 13% to 9% by 2036.<sup>9</sup> Over the next 2 decades, smoking rates in Ontario are expected to decrease by less than half, whereas the number of smoking-attributable deaths will increase, even if all 6 key demand-reduction tobacco control measures identified by the World Health Organization are fully implemented.<sup>10</sup> The 6 measures, known as the MPOWER package, consist of effective strategies to Monitor tobacco use and policies, Protect people from tobacco smoke, Offer to help to quit tobacco use, Warn about

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dangers of tobacco, Enforce bans on tobacco advertising, promotion, and sponsorship, and Raise tobacco taxes.

To reduce the devastating toll of tobacco on the health, economy and social welfare of Canada, the government is considering tobacco endgame strategies. The tobacco endgame concept emphasizes the need for innovative policy solutions to end the tobacco epidemic within a specific time.<sup>11–13</sup> Several countries recently set aggressive targets to drive smoking prevalence down toward zero.<sup>14–17</sup> In September 2016, the Canadian Tobacco Endgame Summit convened leading public health and policy experts to discuss an endgame strategy for Canada that would reduce the rate of tobacco use to less than 5% by 2035.<sup>18,19</sup> The Canadian government has adopted the goal of less than 5% by 2035 in its ongoing development of a new federal Tobacco Control Strategy.<sup>20</sup> Although public support does not always lead to policy implementation, there is evidence that public opinion can influence policy change.<sup>21</sup> Canadian research suggests that the government is more responsive in domains where public awareness of and support for policy change are high<sup>22,23</sup> and on issues that are important to Canadians.<sup>24,25</sup> Public support is likely to play a central role in driving government actions to ensure that endgame proposals are adopted as laws.<sup>26,27</sup> Data on public opinions toward endgame ideas in Canada, particularly among smokers, who would be most directly affected by new legislation, are limited. Previous studies conducted in Ontario showed that, in 2000, 56.0% of adults agreed that cigarettes were too dangerous to be sold at all,<sup>28</sup> and, in 1996, 46.9% of adult smokers supported a total ban on tobacco advertising.<sup>29</sup> We carried out an exploratory study to determine baseline estimates of support among a national cohort of Canadian adult smokers for 1) tobacco marketing and sales bans, 2) restrictions on the content of tobacco products, 3) restrictions on access to tobacco products/alternative nicotine products and 4) restrictions on youth access to e-cigarettes and on their content, use in smoke-free places and promotion.

## Methods

### Source of data

We analyzed Canadian data from Wave 1 of the International Tobacco Control Four Country Smoking and Vaping Survey (data collected from July to November 2016).<sup>30–32</sup> This survey is an expansion of a cohort survey designed to evaluate the psychosocial and behavioural impact of tobacco control policies on nationally representative samples of adult smokers (age  $\geq 18$  yr) in Australia, Canada, the United Kingdom and the United States followed roughly yearly from 2002 to 2014.

### Study design and participants

Full details about the study design and sampling frames are described elsewhere<sup>30–32</sup> and are available online.<sup>33</sup> Methodological details (compliant with the Checklist for Reporting Results of Internet E-Surveys<sup>34</sup>) are provided in Appendix 1 (available at [www.cmajopen.ca/content/6/3/E412/suppl/DC1](http://www.cmajopen.ca/content/6/3/E412/suppl/DC1)). In brief, the survey was developed by means of a sys-

tematic approach comprising 2 phases: 1) a series of teleconferences with research investigators and project and survey management teams to draft the survey (Sept. 23, 2015, to Feb. 1, 2016) and 2) operationalization of survey development, during which routing, question wording, response options and all other survey elements were finalized for programming and testing (Feb. 1 to Apr. 29, 2016). Many survey questions are standard measures that have been previously validated and are commonly used.<sup>35–40</sup> Extensive testing of the programmed questionnaire was also conducted before the launch of the fieldwork, in July 2016.

The sample comprised the following cohorts: 1) recontact smokers and quitters who participated in the 2014 survey ( $n = 567$ ), 2) newly recruited current smokers and recent quitters (quit smoking in the previous 2 yr) ( $n = 2336$ ) and 3) newly recruited current e-cigarette users (use at least weekly) ( $n = 830$ ). An a priori power analysis was used to determine the optimal sample size. The sample was designed to be representative of smokers in the Canadian provinces. Based on the criterion most commonly used in self-report tobacco surveillance surveys, including those conducted by Health Canada, current smokers were defined as those who smoked at least 100 cigarettes during their lifetime<sup>41,42</sup> and currently smoked at least monthly. Current e-cigarette users were defined as those who currently used e-cigarettes at least weekly. Grouping categories are shown in Table 1.

Using stratified sampling across 14 regions, the investigators recruited recontact respondents by random-digit dialing (2002–2011 surveys) or from the LegerWeb panel (representative of the Canadian population across age, sex, geographic region and socioeconomic status; <https://legerweb.com/EN-ca/home.asp?>) (2013–2014 survey). Newly recruited respondents for the 2016 survey were recruited from the LegerWeb panel. Sampling weights were computed for all respondents to ensure they were representative of the Canadian population of smokers and e-cigarette users. Respondents were categorized into 1 of 4 user groups (cigarette only smokers, e-cigarette only users, dual users and quitters), and weights were calibrated to target figures from the 2015 Canadian Tobacco, Alcohol and Drugs Survey.<sup>3</sup> Respondents completed surveys in English or French using assisted telephone interviews or on the Web.

### Outcome measures

The primary outcome measures were self-reported responses to 14 questions on support for endgame measures (Appendix 2, available at [www.cmajopen.ca/content/6/3/E412/suppl/DC1](http://www.cmajopen.ca/content/6/3/E412/suppl/DC1)). The questions used in this study are a subset of the complete International Tobacco Control Four Country Smoking and Vaping Survey. Predictors of support included province/region of residence, recruitment source, sex, age, ethnicity, annual household income, education level, smoking status and e-cigarette use status. Owing to small samples in Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick, these provinces were combined into the “Atlantic” region, and Manitoba and Saskatchewan were combined into the “Prairie” region.

**Table 1: Demographic and smoking characteristics of the study sample**

Characteristic	Unweighted no. (%) of respondents <i>n</i> = 3215
<b>Province/region</b>	
Atlantic*	227 (7.1)
Quebec	743 (23.1)
Ontario	1268 (39.4)
Prairie†	224 (7.0)
Alberta	355 (11.0)
British Columbia	398 (12.4)
<b>Recruitment source</b>	
International Tobacco Control Project cohort recruited by random-digit dialing	321 (10.0)
LegerWeb panel	2894 (90.0)
<b>Sex</b>	
Female	1697 (52.8)
Male	1518 (47.2)
<b>Age group, yr</b>	
18–24	760 (23.6)
25–39	829 (25.8)
40–54	895 (27.8)
≥ 55	731 (22.7)
<b>Ethnicity</b>	
White	2572 (80.0)
Other	588 (18.3)
Missing	55 (1.7)
<b>Household income</b>	
Low (< \$30 000)	719 (22.4)
Moderate (\$30 000–\$44 999)	923 (28.7)
High (≥ \$45 000)	1338 (41.6)
No answer	235 (7.3)
<b>Education level</b>	
Low (high school or less)	933 (29.0)
Moderate (technical/trades/college/some university)	1403 (43.6)
High (completed university/postgraduate)	851 (26.5)
Missing	28 (0.9)
<b>Smoking status</b>	
Less than daily smoker	995 (30.9)
Daily smoker	2220 (69.0)
<b>E-cigarette use status</b>	
Never tried	914 (28.4)
Tried but does not currently use	476 (14.8)
Less than weekly user	1093 (34.0)
Weekly user	417 (13.0)
Daily user	315 (9.8)

\*Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick.  
†Manitoba and Saskatchewan.

### Statistical analysis

We estimated the demographic characteristics of the sample using unweighted descriptive statistics. We then estimated weighted percentages of support for endgame measures for 6 provinces/regions of Canada by cross-tabulating province/region with each endgame measure. We estimated standard errors using Taylor series linearization to account for the stratified sampling design. We estimated design-based confidence intervals using the logit method, tested differences in support by demographic characteristics, province/region, smoking status, e-cigarette use status and daily consumption (number of cigarettes per day), and tested intentions to quit smoking using the Wald  $\chi^2$  omnibus test. We used weighted multivariable logistic regression models to examine the demographic and behavioural factors associated with support for each endgame measure. Regression models controlled for smokers' perceptions of societal attitudes toward smoking and belief that smokers are increasingly marginalized. All analyses were conducted with the use of SAS version 9.4 software (SAS Institute).

### Ethics approval

Research ethics approval for the survey was obtained from the University of Waterloo, Waterloo, Ontario.

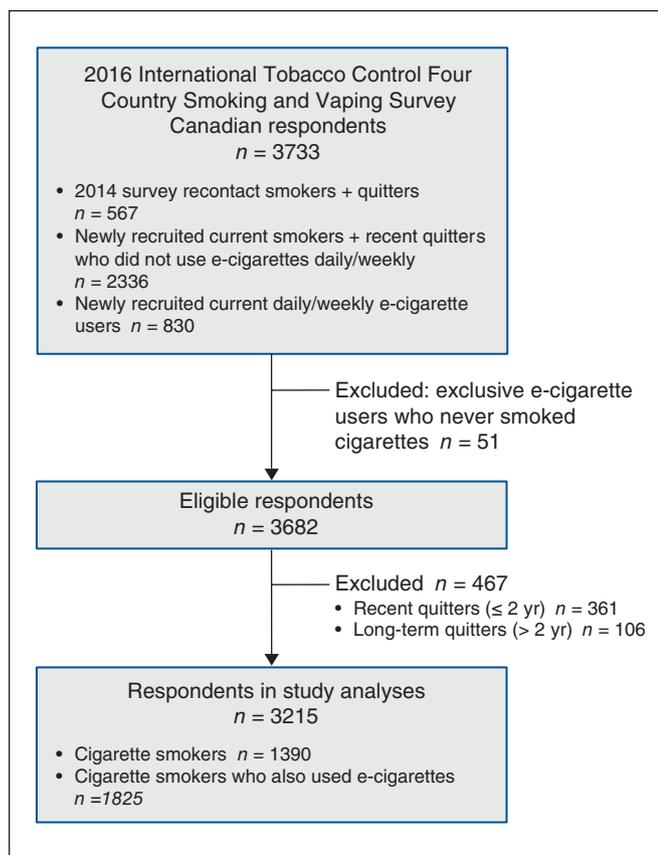
### Results

A total of 3733 respondents completed the survey. The analyses presented here are based on 3215 current smokers (1390 cigarette smokers and 1825 users of both cigarettes and e-cigarettes). Exclusive e-cigarette users (*n* = 51) and those who had quit smoking cigarettes (*n* = 467) were excluded (Figure 1). The survey cooperation rate (91.1%) and response rate (19.1%) were within the typical range for online surveys.<sup>34</sup> Less than 5% of data were missing for each of the 14 outcome measures. Table 1 presents the unweighted demographic and smoking characteristics of the sample. Overall, the majority of respondents were from Ontario and Quebec, white, from high-income households and daily smokers.

### Overall policy support

Over half of the respondents supported 8 of the 14 endgame measures. Among cigarette endgame policies, support was highest for measures to reduce nicotine content (70.2%), raise the legal age for purchase (69.8%) and require retailers to sell alternative nicotine products (65.8%). There was moderate support for a marketing ban (58.5%), restrictions on places for purchase (45.2%), total ban within 10 years (43.6%) and ban on additives/flavourings (42.5%). Support was lowest for a menthol ban (29.6%) and plain packaging (28.9%) (Appendix 3, available at [www.cmajopen.ca/content/6/3/E412/suppl/DC1](http://www.cmajopen.ca/content/6/3/E412/suppl/DC1)).

Among e-cigarette endgame policies, support was highest for policies to require the same minimum age for buying e-cigarettes as for cigarettes (86.1%). There was majority support to restrict nicotine content (64.9%), ban use in



**Figure 1:** Flow diagram showing selection of smokers from the Canadian arm of the 2016 International Tobacco Control Four Country Smoking and Vaping Survey for inclusion in the study.

smoke-free places (63.4%) and ban promotion (54.8%). Support was lowest for a ban on fruit/candy flavours (39.8%) (Appendix 3).

### Factors associated with support for endgame measures

Table 2, Table 3, Table 4 and Table 5 present the results of the weighted multiple logistic regression models of predictors for each of the 14 endgame policies as adjusted odds ratios with 95% confidence intervals, controlling for demographic covariates, province/region, smoking status, e-cigarette use status, daily cigarette consumption, plans to quit smoking, perceptions of societal attitudes towards smoking, and beliefs that smokers are increasingly marginalized. Differences in the sample size between models are due to the fact that only respondents with complete data for all covariates and outcome measures were included. Overall, intentions to quit smoking, e-cigarette use and province/region were significant predictors of support.

Smokers with plans to quit in the next 6 months were more likely to support all 14 endgame policies than those who did not plan to quit in the next 6 months. Smoking status was a significant predictor of support for 12 endgame policies. Daily smokers were less likely than those who did not smoke daily to support the following cigarette policies: marketing ban, total

ban in 10 years, plain packaging, reducing nicotine content, additive/flavouring ban, menthol ban, raising the legal age for purchase and restrictions on places for purchase. Daily smokers were also less likely to support e-cigarette/e-liquid policies to restrict nicotine content, and a ban on use in smoke-free places, product promotion and fruit/candy flavours.

There were significant differences in support for 10 endgame policies by province/region. For cigarette policies, support was generally higher among smokers in Quebec than among smokers in the other provinces/regions. Smokers in most provinces/regions were less likely than those in Quebec to support a marketing ban, plain packaging and reducing nicotine content. Compared to smokers in Quebec, smokers in Alberta and Ontario were less likely to support a total tobacco ban in 10 years and banning menthol; those in Alberta were less likely to support banning additives/flavourings; and those in the Prairie region and Alberta were less likely to support requiring retailers to sell alternative nicotine products. Among e-cigarette policies, compared to smokers in Quebec, smokers in Ontario, the Prairie region and Alberta were less likely to support restricting nicotine content; those in Alberta were less likely to support a ban on use in smoke-free places; and those in all regions/provinces except British Columbia were less likely to support a ban on product promotion.

Sex, ethnicity, e-cigarette use status, age, education, income and daily consumption were not significantly associated with support for most of the endgame policies.

### Interpretation

This study provides policy-makers with clear evidence of support for many novel endgame strategies from current smokers, who would be most affected by the majority of these proposals. There was particularly strong support for measures to restrict youth access and to regulate nicotine content in cigarettes and e-cigarettes/e-liquid (64.9%–86.1%), followed by marketing bans for cigarettes (58.5%) and e-cigarettes (54.8%), and additive/flavouring bans for cigarettes/tobacco (42.5%) and e-cigarettes (39.8%). There was even considerable support (43.6%) for the most radical policy, to completely ban the sale of cigarettes/tobacco within 10 years if cessation support is provided, which is consistent with findings from other countries.<sup>35,36,43</sup>

Support was low for banning menthol, especially in contrast to support for reducing nicotine content in cigarettes (29.6% v. 70.2%). This pattern is consistent with previous studies<sup>37,44</sup> and may be due to smokers' misperceptions that menthol cigarettes are less harmful than regular cigarettes.<sup>45,46</sup> Support for plain packaging (28.9%) was also lower than that for other measures. However, it was similar to that observed among smokers before plain packaging was implemented in Australia, where support rose from 28.2% to about 50% after implementation.<sup>39</sup> At the time of this study, a national menthol ban in Canada was not yet in force, and plain packaging was under formal consideration. Previous research showing postimplementation increases in policy support<sup>47-49</sup> suggests that smokers' support for banning menthol and plain packaging

**Table 2: Factors associated with support for tobacco marketing and sales bans**

Factor	Ban on promotional marketing of cigarettes/tobacco* n = 3009		Total ban on cigarettes/tobacco within 10 yr if government provides cessation assistance* n = 3013		Require sale of cigarettes in plain packages* n = 3018	
	% support	OR (95% CI)	% support	OR (95% CI)	% support	OR (95% CI)
<b>Sex</b>						
Female	56.0	1.00	42.2	1.00	28.5	1.00
Male	60.1	1.14 (0.95–1.36)	44.6	1.08 (0.91–1.29)	29.1	1.01 (0.83–1.22)
<b>Age group, yr</b>						
18–24	62.9	1.00	44.0	1.00	38.8	1.00
25–39	60.7	0.84 (0.64–1.11)	47.6	1.28 (0.98–1.67)	31.2	0.78 (0.59–1.02)
40–54	57.0	0.78 (0.59–1.03)	42.2	1.09 (0.83–1.44)	28.9	0.75 (0.57–1.00)
≥ 55	55.7	0.82 (0.61–1.11)	40.8	1.15 (0.86–1.54)	21.7	0.56 (0.40–0.77)
<b>Ethnicity</b>						
White	58.0	1.00	42.3	1.00	27.9	1.00
Other	61.1	1.01 (0.78–1.32)	50.6	1.39 (1.07–1.79)	34.2	1.23 (0.94–1.60)
<b>Household income</b>						
Low	52.5	1.00	41.9	1.00	29.4	1.00
Moderate	58.5	1.13 (0.87–1.46)	45.0	1.06 (0.82–1.37)	29.0	1.03 (0.78–1.37)
High	62.7	1.22 (0.95–1.57)	44.5	1.07 (0.84–1.38)	30.0	1.04 (0.79–1.38)
No answer	45.9	0.77 (0.53–1.12)	36.2	0.82 (0.56–1.21)	18.4	0.61 (0.39–0.96)
<b>Education level</b>						
Low	50.0	1.00	41.5	1.00	27.5	1.00
Moderate	57.3	1.16 (0.93–1.44)	43.7	1.00 (0.81–1.24)	27.4	0.95 (0.74–1.21)
High	69.0	1.73 (1.32–2.27)	45.6	1.02 (0.78–1.32)	32.9	1.12 (0.85–1.48)
<b>Province/region</b>						
Quebec	69.4	1.00	50.1	1.00	37.8	1.00
Atlantic	58.6	0.65 (0.44–0.95)	43.2	0.73 (0.50–1.06)	29.2	0.71 (0.47–1.09)
Ontario	53.8	0.49 (0.38–0.62)	43.7	0.73 (0.58–0.92)	26.9	0.60 (0.47–0.77)
Prairie	58.0	0.63 (0.43–0.91)	43.2	0.79 (0.54–1.17)	20.2	0.43 (0.28–0.68)
Alberta	47.9	0.37 (0.26–0.51)	30.8	0.41 (0.29–0.58)	21.0	0.44 (0.31–0.63)
British Columbia	60.9	0.66 (0.48–0.91)	44.6	0.78 (0.57–1.05)	30.3	0.70 (0.50–0.96)
<b>Smoking status</b>						
Less than daily smoker	70.2	1.00	50.5	1.00	37.1	1.00
Daily smoker	53.9	0.57 (0.45–0.74)	40.9	0.58 (0.46–0.74)	25.7	0.62 (0.48–0.80)
<b>E-cigarette use status</b>						
Never tried	59.7	1.00	44.1	1.00	26.5	1.00
Tried but does not currently use	54.3	0.80 (0.61–1.05)	38.0	0.79 (0.60–1.04)	23.6	0.86 (0.63–1.17)
Less than weekly user	59.1	0.85 (0.68–1.07)	43.2	0.89 (0.71–1.12)	31.2	1.06 (0.83–1.37)
Weekly user	59.5	0.89 (0.65–1.22)	53.8	1.38 (1.03–1.86)	38.7	1.54 (1.12–2.11)
Daily user	59.3	0.83 (0.57–1.20)	54.8	1.39 (0.99–1.95)	41.9	1.63 (1.15–2.32)
<b>No. of cigarettes per day</b>						
≤ 10	64.9	1.00	45.7	1.00	32.4	1.00
11–20	52.4	0.78 (0.61–0.98)	40.5	1.03 (0.81–1.31)	24.6	0.96 (0.73–1.25)
21–30	46.9	0.64 (0.47–0.88)	42.9	1.17 (0.85–1.61)	24.4	0.98 (0.68–1.41)
> 30	49.8	0.85 (0.44–1.64)	40.2	1.12 (0.58–2.18)	28.7	1.17 (0.57–2.39)
<b>Plans to quit in next 6 mo</b>						
No	50.0	1.00	30.5	1.00	25.1	1.00
Yes	61.6	1.92 (1.56–2.36)	48.4	2.40 (1.94–2.96)	30.3	1.34 (1.07–1.69)

Note: CI = confidence interval, OR = odds ratio.

\*Logistic regression models controlled for sex, age group, ethnicity, household income, education level, province/region, smoking status, e-cigarette use status, number of cigarettes smoked per day, plans to quit in next 6 months, perception of societal attitudes toward smoking and belief that smokers are increasingly marginalized.

**Table 3: Factors associated with support for restrictions on contents of tobacco products**

Factor	Reduce nicotine in cigarettes/ tobacco to make them less addictive* n = 3018		Ban all additives and flavourings in cigarettes/ tobacco* n = 3005		Ban menthol in cigarettes/tobacco* n = 3000	
	% support	OR (95% CI)	% support	OR (95% CI)	% support	OR (95% CI)
<b>Sex</b>						
Female	72.3	1.00	39.6	1.00	23.7	1.00
Male	68.8	0.81 (0.67–0.97)	44.4	1.18 (0.99–1.40)	33.5	1.62 (1.34–1.96)
<b>Age group, yr</b>						
18–24	71.9	1.00	36.7	1.00	32.0	1.00
25–39	70.6	0.99 (0.74–1.32)	38.4	1.18 (0.90–1.55)	28.8	0.94 (0.70–1.25)
40–54	69.3	1.01 (0.75–1.36)	44.8	1.75 (1.32–2.30)	30.6	1.17 (0.87–1.57)
≥ 55	69.9	1.18 (0.86–1.62)	46.9	2.05 (1.53–2.75)	28.2	1.17 (0.85–1.62)
<b>Ethnicity</b>						
White	70.0	1.00	42.0	1.00	28.5	1.00
Other	71.4	1.11 (0.84–1.48)	45.2	1.14 (0.88–1.46)	35.7	1.28 (0.98–1.68)
<b>Household income</b>						
Low	66.2	1.00	40.9	1.00	29.6	1.00
Moderate	71.1	1.19 (0.91–1.56)	45.2	1.07 (0.83–1.38)	32.1	1.08 (0.82–1.41)
High	72.2	1.28 (0.98–1.67)	42.4	0.94 (0.73–1.20)	29.4	0.92 (0.71–1.21)
No answer	63.5	0.85 (0.57–1.27)	35.4	0.78 (0.53–1.15)	19.0	0.64 (0.41–1.01)
<b>Education level</b>						
Low	67.6	1.00	43.2	1.00	28.3	1.00
Moderate	70.0	0.99 (0.78–1.24)	39.9	0.77 (0.62–0.95)	29.1	0.95 (0.75–1.20)
High	73.0	1.06 (0.79–1.41)	46.3	0.96 (0.74–1.24)	31.9	0.99 (0.75–1.31)
<b>Province/region</b>						
Quebec	76.9	1.00	44.3	1.00	35.4	1.00
Atlantic	72.8	0.81 (0.54–1.23)	41.6	0.89 (0.62–1.29)	27.6	0.69 (0.46–1.03)
Ontario	69.6	0.67 (0.52–0.86)	43.9	0.96 (0.77–1.21)	29.6	0.76 (0.59–0.97)
Prairie	64.1	0.53 (0.36–0.79)	48.5	1.31 (0.90–1.89)	24.7	0.66 (0.43–1.01)
Alberta	62.3	0.46 (0.32–0.65)	32.0	0.57 (0.41–0.80)	21.1	0.48 (0.33–0.70)
British Columbia	68.6	0.61 (0.43–0.85)	43.1	0.94 (0.69–1.28)	32.1	0.88 (0.63–1.21)
<b>Smoking status</b>						
Less than daily smoker	75.1	1.00	46.9	1.00	36.4	1.00
Daily smoker	68.3	0.73 (0.56–0.96)	40.8	0.76 (0.60–0.97)	27.0	0.66 (0.51–0.86)
<b>E-cigarette use status</b>						
Never tried	70.1	1.00	45.9	1.00	31.1	1.00
Tried but does not currently use	66.5	0.87 (0.66–1.15)	38.5	0.81 (0.62–1.05)	20.9	0.61 (0.45–0.83)
Less than weekly user	71.8	1.10 (0.86–1.41)	40.5	0.89 (0.71–1.12)	30.3	0.92 (0.72–1.18)
Weekly user	72.1	1.08 (0.78–1.49)	42.6	0.94 (0.70–1.28)	37.3	1.27 (0.93–1.75)
Daily user	71.6	1.01 (0.70–1.45)	46.5	1.05 (0.76–1.47)	39.7	1.31 (0.91–1.87)
<b>No. of cigarettes per day</b>						
≤ 10	73.0	1.00	45.7	1.00	33.3	1.00
11–20	69.2	0.93 (0.72–1.19)	38.8	0.72 (0.57–0.91)	25.4	0.79 (0.60–1.03)
21–30	61.4	0.65 (0.47–0.91)	39.0	0.68 (0.49–0.94)	24.2	0.70 (0.49–1.00)
> 30	62.1	0.71 (0.37–1.36)	37.5	0.61 (0.33–1.16)	27.2	0.74 (0.37–1.50)
<b>Plans to quit in next 6 mo</b>						
No	62.0	1.00	34.8	1.00	21.4	1.00
Yes	73.2	1.76 (1.42–2.18)	45.3	1.82 (1.48–2.24)	32.6	2.01 (1.58–2.55)

Note: CI = confidence interval, OR = odds ratio.

\*Logistic regression models controlled for sex, age group, ethnicity, household income, education level, province/region, smoking status, e-cigarette use status, number of cigarettes smoked per day, plans to quit in next 6 months, perception of societal attitudes toward smoking and belief that smokers are increasingly marginalized.

**Table 4: Factors associated with support for restrictions on access to tobacco products/alternative nicotine products**

Factor	Raise legal age for cigarette purchase to ≥ 21 yr* n = 3017		Restrict places where cigarettes/tobacco can be purchased* n = 3015		Require retail locations to sell alternative nicotine products such as e-cigarettes* n = 3018	
	% support	OR (95% CI)	% support	OR (95% CI)	% support	OR (95% CI)
<b>Sex</b>						
Female	71.1	1.00	45.1	1.00	69.5	1.00
Male	68.9	0.83 (0.69–1.01)	45.2	0.95 (0.80–1.13)	63.4	0.71 (0.59–0.85)
<b>Age group, yr</b>						
18–24	58.4	1.00	47.0	1.00	70.9	1.00
25–39	72.8	2.00 (1.52–2.65)	50.2	1.25 (0.96–1.64)	68.9	0.96 (0.71–1.28)
40–54	74.3	2.43 (1.82–3.24)	46.0	1.32 (1.00–1.73)	66.4	0.88 (0.66–1.17)
≥ 55	66.6	1.84 (1.36–2.50)	38.1	1.17 (0.87–1.58)	59.6	0.69 (0.51–0.94)
<b>Ethnicity</b>						
White	69.2	1.00	44.1	1.00	64.8	1.00
Other	72.6	1.22 (0.91–1.62)	51.1	1.06 (0.81–1.39)	71.3	1.42 (1.07–1.90)
<b>Household income</b>						
Low	64.2	1.00	39.0	1.00	62.3	1.00
Moderate	72.6	1.29 (0.98–1.68)	44.5	1.15 (0.88–1.49)	69.5	1.48 (1.13–1.94)
High	71.0	1.07 (0.83–1.38)	49.6	1.20 (0.93–1.54)	66.7	1.35 (1.04–1.76)
No answer	65.6	0.90 (0.61–1.34)	35.6	0.81 (0.54–1.21)	53.6	0.69 (0.47–1.01)
<b>Education level</b>						
Low	65.6	1.00	37.9	1.00	65.6	1.00
Moderate	69.7	1.02 (0.82–1.28)	43.8	1.03 (0.83–1.28)	65.0	0.93 (0.74–1.16)
High	74.1	1.22 (0.93–1.62)	55.0	1.43 (1.10–1.85)	67.4	1.04 (0.74–1.37)
<b>Province/region</b>						
Quebec	69.0	1.00	44.8	1.00	69.3	1.00
Atlantic	75.1	1.31 (0.88–1.96)	50.1	1.34 (0.92–1.95)	71.6	1.13 (0.77–1.66)
Ontario	70.0	1.00 (0.78–1.28)	43.5	0.90 (0.71–1.14)	66.3	0.87 (0.68–1.11)
Prairie	70.5	1.09 (0.72–1.65)	51.5	1.39 (0.94–2.05)	57.9	0.60 (0.41–0.88)
Alberta	66.9	0.83 (0.58–1.17)	40.4	0.74 (0.53–1.04)	59.9	0.65 (0.46–0.91)
British Columbia	69.2	0.88 (0.63–1.22)	48.4	1.04 (0.76–1.43)	65.0	0.73 (0.52–1.01)
<b>Smoking status</b>						
Less than daily smoker	73.2	1.00	62.6	1.00	63.8	1.00
Daily smoker	68.4	0.75 (0.58–0.97)	38.4	0.44 (0.34–0.56)	66.6	1.05 (0.82–1.35)
<b>E-cigarette use status</b>						
Never tried	70.2	1.00	43.8	1.00	58.5	1.00
Tried but does not currently use	65.6	0.87 (0.66–1.15)	38.5	0.90 (0.69–1.18)	65.5	1.32 (1.01–1.73)
Less than weekly user	71.4	1.15 (0.90–1.47)	48.9	1.16 (0.92–1.47)	71.2	1.70 (1.35–2.15)
Weekly user	71.4	1.15 (0.83–1.59)	49.8	1.31 (0.97–1.76)	76.6	2.20 (1.58–3.08)
Daily user	69.5	1.03 (0.71–1.50)	50.3	1.32 (0.91–1.93)	74.6	1.90 (1.29–2.78)
<b>No. of cigarettes per day</b>						
≤ 10	71.4	1.00	54.1	1.00	64.6	1.00
11–20	70.1	1.00 (0.78–1.29)	38.7	0.79 (0.62–1.00)	66.6	1.23 (0.96–1.57)
21–30	62.0	0.71 (0.50–0.99)	24.9	0.43 (0.30–0.60)	67.4	1.32 (0.95–1.85)
> 30	64.1	0.85 (0.45–1.61)	28.3	0.57 (0.28–1.14)	76.6	2.22 (1.05–4.66)
<b>Plans to quit in next 6 mo</b>						
No	61.8	1.00	37.3	1.00	58.8	1.00
Yes	72.7	1.72 (1.39–2.13)	48.1	1.95 (1.57–2.43)	68.4	1.36 (1.10–1.67)

Note: CI = confidence interval, OR = odds ratio.

\*Logistic regression models controlled for sex, age group, ethnicity, household income, education level, province/region, smoking status, e-cigarette use status, number of cigarettes smoked per day, plans to quit in next 6 months, perception of societal attitudes toward smoking and belief that smokers are increasingly marginalized.

**Table 5 (part 1 of 2): Factors associated with support for e-cigarette policies**

Factor	Require same minimum age for buying e-cigarettes as for cigarettes* n = 2996		Restrict nicotine in e-cigarettes/e-liquid* n = 2986		Ban e-cigarette use in smoke-free places* n = 2997		Ban e-cigarette/e-liquid promotion* n = 2999		Ban fruit- and candy-flavoured e-cigarettes* n = 2996	
	% support	OR (95% CI)	% support	OR (95% CI)	% support	OR (95% CI)	% support	OR (95% CI)	% support	OR (95% CI)
<b>Sex</b>										
Female	86.7	1.00	65.9	1.00	64.2	1.00	53.5	1.00	36.9	1.00
Male	85.6	0.87 (0.68–1.12)	64.2	0.87 (0.72–1.04)	62.8	0.92 (0.77–1.10)	55.7	1.05 (0.88–1.26)	41.8	1.13 (0.94–1.35)
<b>Age group, yr</b>										
18–24	83.2	1.00	64.0	1.00	59.9	1.00	51.7	1.00	27.8	1.00
25–39	83.0	1.00 (0.70–1.43)	67.1	1.14 (0.86–1.51)	66.4	1.20 (0.91–1.59)	52.7	0.89 (0.68–1.16)	34.0	1.15 (0.86–1.54)
40–54	88.8	1.70 (1.16–2.50)	66.2	1.23 (0.93–1.64)	64.0	1.13 (0.86–1.50)	56.6	1.13 (0.86–1.48)	43.5	1.75 (1.31–2.34)
≥ 55	87.4	1.49 (1.00–2.22)	61.4	1.07 (0.79–1.45)	61.1	1.08 (0.80–1.45)	56.4	1.21 (0.90–1.63)	47.1	2.08 (1.52–2.83)
<b>Ethnicity</b>										
White	86.0	1.00	64.3	1.00	63.2	1.00	55.7	1.00	40.2	1.00
Other	86.4	1.26 (0.87–1.80)	67.9	1.17 (0.89–1.54)	64.3	0.98 (0.75–1.28)	49.8	0.74 (0.57–0.95)	37.5	1.01 (0.77–1.32)
<b>Household income</b>										
Low	82.9	1.00	57.0	1.00	55.0	1.00	45.9	1.00	35.8	1.00
Moderate	86.8	1.16 (0.81–1.66)	69.1	1.55 (1.19–2.01)	62.3	1.24 (0.96–1.60)	57.0	1.44 (1.11–1.85)	42.1	1.10 (0.84–1.44)
High	87.2	1.18 (0.84–1.66)	67.2	1.28 (0.99–1.64)	67.5	1.45 (1.13–1.86)	59.1	1.44 (1.12–1.84)	41.9	1.01 (0.78–1.31)
No answer	85.1	0.98 (0.58–1.68)	53.5	0.77 (0.52–1.15)	64.8	1.45 (0.98–2.15)	42.3	0.82 (0.56–1.19)	26.7	0.57 (0.37–0.87)
<b>Education level</b>										
Low	85.1	1.00	60.9	1.00	60.5	1.00	48.8	1.00	35.9	1.00
Moderate	86.4	0.90 (0.66–1.22)	64.2	0.96 (0.78–1.20)	62.5	0.94 (0.75–1.17)	53.5	1.08 (0.87–1.34)	38.7	1.04 (0.83–1.30)
High	86.6	0.84 (0.58–1.22)	70.1	1.14 (0.87–1.49)	67.8	1.02 (0.78–1.35)	63.3	1.53 (1.17–2.00)	45.7	1.42 (1.09–1.85)
<b>Province/region</b>										
Quebec	88.7	1.00	70.9	1.00	65.2	1.00	64.4	1.00	41.8	1.00
Atlantic	86.1	0.78 (0.47–1.29)	66.7	0.85 (0.58–1.26)	65.0	0.94 (0.64–1.39)	54.2	0.61 (0.42–0.90)	45.0	1.07 (0.72–1.59)
Ontario	84.4	0.64 (0.46–0.89)	62.5	0.67 (0.53–0.86)	62.2	0.79 (0.62–1.00)	50.9	0.54 (0.43–0.68)	39.9	0.90 (0.71–1.13)
Prairie	88.2	0.93 (0.52–1.65)	60.9	0.65 (0.44–0.96)	63.5	0.88 (0.60–1.29)	50.7	0.56 (0.39–0.81)	36.9	0.88 (0.59–1.31)
Alberta	83.3	0.55 (0.35–0.88)	59.8	0.57 (0.41–0.80)	57.2	0.62 (0.44–0.86)	45.7	0.42 (0.30–0.58)	32.8	0.66 (0.47–0.93)
British Columbia	86.9	0.72 (0.46–1.14)	65.9	0.72 (0.52–1.00)	69.3	1.14 (0.82–1.59)	59.6	0.79 (0.57–1.08)	41.7	0.99 (0.72–1.36)
<b>Smoking status</b>										
Less than daily smoker	87.1	1.00	75.0	1.00	72.9	1.00	63.1	1.00	42.7	1.00
Daily smoker	85.7	0.90 (0.63–1.28)	61.0	0.53 (0.41–0.68)	59.7	0.67 (0.51–0.86)	51.7	0.69 (0.54–0.88)	38.7	0.71 (0.55–0.91)

**Table 5 (part 2 of 2): Factors associated with support for e-cigarette policies**

Factor	Require same minimum age for buying e-cigarettes as for cigarettes* n = 2996		Restrict nicotine in e-cigarettes/e-liquid* n = 2986		Ban e-cigarette use in smoke-free places* n = 2997		Ban e-cigarette/e-liquid promotion* n = 2999		Ban fruit- and candy-flavoured e-cigarettes* n = 2996	
	% support	OR (95% CI)	% support	OR (95% CI)	% support	OR (95% CI)	% support	OR (95% CI)	% support	OR (95% CI)
<b>E-cigarette use status</b>										
Never tried	87.1	1.00	66.0	1.00	72.0	1.00	61.8	1.00	49.6	1.00
Tried but does not currently use	85.8	0.89 (0.61–1.29)	65.3	1.02 (0.77–1.34)	57.1	0.52 (0.40–0.69)	49.8	0.64 (0.49–0.84)	38.4	0.68 (0.52–0.88)
Less than weekly user	86.0	1.04 (0.75–1.44)	64.1	0.86 (0.68–1.10)	62.1	0.58 (0.45–0.74)	51.8	0.66 (0.52–0.83)	33.5	0.56 (0.44–0.70)
Weekly user	79.7	0.64 (0.43–0.94)	66.1	0.96 (0.70–1.30)	48.7	0.35 (0.26–0.47)	48.0	0.56 (0.41–0.75)	25.7	0.36 (0.26–0.50)
Daily user	86.9	1.04 (0.64–1.70)	57.3	0.61 (0.43–0.87)	4.50	0.29 (0.21–0.42)	49.3	0.54 (0.37–0.77)	30.5	0.42 (0.29–0.62)
<b>No. of cigarettes per day</b>										
≤ 10	87.0	1.00	69.8	1.00	69.1	1.00	59.4	1.00	40.5	1.00
11–20	86.5	0.87 (0.61–1.23)	61.9	0.88 (0.69–1.12)	59.3	0.73 (0.58–0.93)	52.8	0.85 (0.67–1.08)	39.2	0.92 (0.72–1.18)
21–30	81.8	0.61 (0.39–0.93)	51.5	0.59 (0.43–0.81)	49.9	0.54 (0.39–0.74)	40.3	0.50 (0.36–0.70)	36.7	0.80 (0.57–1.12)
> 30	79.6	0.49 (0.22–1.08)	56.2	0.80 (0.42–1.52)	54.2	0.73 (0.38–1.41)	50.8	0.85 (0.45–1.62)	50.1	1.58 (0.86–2.90)
<b>Plans to quit in next 6 mo</b>										
No	83.6	1.00	57.0	1.00	58.7	1.00	48.6	1.00	30.3	1.00
Yes	87.0	1.40 (1.05–1.86)	67.7	1.77 (1.44–2.19)	65.1	1.57 (1.27–1.94)	57.1	1.63 (1.33–2.01)	43.3	2.12 (1.70–2.64)

Note: CI = confidence interval, OR = odds ratio.

\*Logistic regression models controlled for sex, age group, ethnicity, household income, education level, province/region, smoking status, e-cigarette use status, number of cigarettes smoked per day, plans to quit in next 6 months, perception of societal attitudes toward smoking and belief that smokers are increasingly marginalized.

should increase after these policies are implemented in Canada. It is unclear why support for many endgame measures was consistently highest in Quebec. Future studies on reasons for these provincial differences are warranted.

Smokers with plans to quit in the next 6 months were more likely to support all 14 endgame policies than those who did not plan to quit within this time frame. Together with the finding that close to half (44%) of smokers would support a total ban on the sale of cigarettes within 10 years if the government provided cessation assistance, the results show that many Canadian smokers have a strong desire to quit and want services to help them quit. These results are consistent with those of other studies showing that a high proportion of Canadian smokers regret having started smoking<sup>50</sup> and that most are interested in quitting and plan to quit.<sup>51,52</sup> Endgame proposals that include enhanced resources for cessation will likely lead to greater support.

**Limitations**

This study has several limitations. First, the survey results are not representative of the Aboriginal population of Canada: Aboriginal Canadians represented less than 5% of the total

sample. National census data indicate that about 4.2% of the Canadian population (around 1.4 million people) identifies as First Nations, Métis or Inuit.<sup>53</sup> It is estimated that 40% of First Nations and Métis adults (age ≥ 18 yr) smoke more than twice the rate among the general Canadian population.<sup>54</sup> Future studies are needed to assess support for endgame measures among Aboriginal groups. Second, our sample consisted only of smokers, even though nonsmokers constitute more than 85% of the Canadian population.<sup>3</sup> Based on previous studies,<sup>55–57</sup> it is likely that nonsmokers’ support for endgame policies is even greater than the levels reported by smokers in the current study. Finally, we did not assess smokers’ support for other key endgame proposals, such as tobacco retailer licensing systems, tobacco price caps, forced tobacco supply reduction and encouraging smokers to switch to or use e-cigarettes to quit.<sup>26,58–62</sup>

**Conclusion**

Our findings show that a majority of Canadian smokers support diverse tobacco endgame measures. Our baseline estimates suggest that innovative endgame strategies that go beyond current measures are likely to be well received by

Canadians, including smokers, who stand to be most affected by new policies. As endgame policies are implemented in Canada, it will be important to study their impact on tobacco use, particularly among vulnerable populations such as Indigenous peoples and groups with low socioeconomic status.

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