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Brief Report

# Support for Minimum Legal Sales Age Laws Set to Age 21 Across Australia, Canada, England, and United States: Findings From the 2018 ITC Four Country Smoking and Vaping Survey

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## Abstract

**Introduction:** Although the United States has seen a rapid increase in tobacco minimum legal sales age (MLSA) laws set to age 21, there is wide variation across high-income countries and less is known about policy support outside of the United States. We examined the prevalence of support for tobacco MLSA 21 laws as well as associations by sociodemographic, smoking, and household characteristics among current and former adult smokers.

**Methods:** In this cross-sectional analysis, we used the 2018 International Tobacco Control Four Country Smoking and Vaping Survey to examine support for MLSA 21 laws among 12 904 respondents from Australia, Canada, England, and United States.

**Results:** Support for raising the legal age of purchasing cigarettes/tobacco to 21 ranged from 62.2% in the United States to 70.8% in Canada. Endorsement also varied by age, such that 40.6% of 18–20 years old supported the policy compared with 69.3% of those aged ≥60 years. In the adjusted regression model, there was also higher support among respondents who were female than male, non-white than white, those who did not allow smoking in the household than those that did, and those who had children in the household than those that did not. There were no differences by household income, education, or smoking status.

**Conclusions:** Most current and former smokers, including a sizable minority of those aged ≤20 years, support raising the legal age of purchasing cigarettes/tobacco to 21.

**Implications:** There was strong support for MLSA 21 laws among smokers and former smokers across Australia, Canada, England, and the United States, providing evidence for the increasing public support of the passage of these laws beyond the United States.

## Introduction

The WHO Framework Convention on Tobacco Control, ratified by 181 Parties to date, requires a minimum age to purchase tobacco products of 18 years. However, in 2016, 136 million adolescents globally continued to smoke daily.<sup>1</sup> The aim of minimum legal sales age (MLSA) policies is to prevent the initiation of tobacco use—motivated by the evidence that more than 80% of U.S. adult smokers begin smoking by age 18.<sup>2</sup> A recent study of adolescents in the United States, Canada, and England found that vaping products are commonly purchased by those of legal age.<sup>3</sup> This suggests that raising the MLSA beyond age 18 should reduce access and delay the likelihood of tobacco use initiation among youth.<sup>4</sup> Recently, Nuys et al. presented the case for a dialogue on tobacco MLSA laws of 21 years in Europe, suggesting that if an MLSA of 21 was adopted in the United Kingdom, the policy could diffuse throughout Europe.<sup>5</sup>

There is wide variation in MLSA laws across countries. In Australia, it has been illegal to sell tobacco products to under 18 years old since 1994 when it was raised from age 16. Although the Canadian Tobacco Act in 1997 required a MLSA of 18 to purchase tobacco products, 6 of 10 provinces and 1 of 3 territories have increased the MLSA to 19. Prince Edward Island became the first Canadian province or territory to implement a MLSA of 21 for purchase of tobacco and e-cigarettes on March 1, 2020. In England, the Children and Young Persons (Sale of Tobacco etc.) Order 2007 raised the MLSA from 16 to 18 years. There has been a rapid increase in tobacco MLSA laws to 21 in the United States, where 18 states (of 50 states and DC) and over 480 localities have enacted such a law in recent years.<sup>6</sup>

Despite support for increasing MLSA laws among policy-makers,<sup>7–10</sup> we are not aware of studies about public support outside of the United States, where at least two thirds endorse increasing the MLSA to 21,<sup>11–13</sup> including 13–17 years old who would be covered by the policy.<sup>14</sup> We examined the prevalence of support for increasing tobacco MLSA laws to 21 as well as associations by sociodemographic, smoking, and household characteristics among current and former adult smokers from Australia, Canada, England, and the United States.

## Methods

### Participants

The International Tobacco Control (ITC) Four Country Smoking and Vaping Survey in Australia, Canada, England, and the United States is an expansion of the original ITC Four Country Survey, which conducted longitudinal surveys of representative cohorts of adult smokers from each country.<sup>15</sup> One of the aims of the new online survey was to examine how tobacco control policies influence tobacco use among current (monthly smokers who have smoked at least 100 cigarettes in their lifetime) and former (quit within 2 years) smokers. The Wave 1 sample consisted of smokers and former smokers of the original ITC Four Country Survey (approximately 12%) and commercial survey firms recruited new current smokers, former smokers, and current vapers from country-specific panels (approximately 78%).<sup>15</sup> Wave 1 was conducted from July to November 2016 and respondents were aged  $\geq 18$  years, with some oversampling of 18–24 years old across countries.<sup>15</sup> The current analysis utilized data from Wave 2, which was conducted from February to July 2018.

### Measure of MLSA 21 Support

In Wave 2, 12 904 current and former smokers participated (83 nonsmokers were excluded). Respondents were asked about “...possible laws that could be used to control tobacco products and tobacco companies. Would you support or oppose a law that...Raises the legal age of purchasing cigarettes/tobacco to 21 years and older” (referred to as MLSA 21 law). Responses included strongly support, support, oppose, strongly oppose, refused, and don’t know. In total, 1280 responses were “don’t know” in response to the question and 90 participants refused to answer the question. The primary outcome was dichotomized into support for raising the legal age for purchase of cigarettes/tobacco to  $\geq 21$  years as support (strongly support, support) versus does not support (oppose, strongly oppose, don’t know, refused). [Supplementary Table 1](#) provides all levels of support for a MLSA 21 law stratified by country.

### Respondent Characteristics

Respondents reported a range of sociodemographic characteristics, including their gender and age. Age was broken into categories: those aged  $\leq 20$  years who would be directly affected by the adoption of a MLSA 21 law (18–20 years) and those aged  $\geq 21$  years who would not be personally impacted by this policy (21–29, 30–39, 40–49, 50–59,  $\geq 60$  years). As household income, educational attainment, and ethnicity vary across countries, we used derived variables that are comparable. Respondents reported their current smoking status from six categories and nicotine vaping product (NVP) status from nine categories, which we combined into six categories.<sup>16</sup> Respondents also described their household smoking policy. At Wave 1, all respondents reported whether there were any children  $< 18$  years living in the household. At Wave 2, only respondents who reported a change in status or were from the replenishment sample answered the question; if not, responses from Wave 1 were substituted.

### Analysis

The prevalence of support for a MLSA 21 law was calculated overall, across countries, and by sociodemographic, smoking, and household characteristics. We used logistic regression to calculate unadjusted and adjusted odds ratios for the associations between support for a MLSA 21 law and each characteristic; adjusted models included all covariates: country, gender, age, ethnicity, household income, education, cigarette and NVP status, household smoking policy, and the presence of children in the household. Missing values for household income were coded to be retained in analyses.

We conducted analyses using Stata statistical software version 15.1 (StataCorp, College Station, TX) with cross-sectional survey weights.<sup>15</sup> The Boston College Institutional Review Board reviewed this analysis using secondary data and considered it exempt. The original ITC study also received ethical approval.

## Results

Overall, 66.0% of current and former smokers endorsed raising the legal age of purchasing cigarettes/tobacco to 21, ranging from 62.2% in the United States to 70.8% in Canada, with nearly half of these strongly supportive ([Table 1](#) and [Supplementary Table 1](#) present all levels of support).

Endorsement of MLSA 21 laws also varied by age, with 40.6% of 18–20 years old supporting the policy compared to 61.0% of

**Table 1.** Sociodemographic Characteristics of Support for Tobacco Minimum Legal Sales Age 21 Laws Defined as Support (Strongly Support, Support) Versus Does Not Support (Oppose, Strongly Oppose, Don't Know, Refused)

	N (N = 12 904)	% <sup>a</sup>	% <sup>a</sup> Support MLSA 21	Unadjusted OR (95% CI)	Adjusted OR (95% CI) (N = 12 357)
Country					
Canada	3734	28.8	70.8	1	1
United States	2810	21.8	62.2	0.68 (0.59–0.78)	0.68 (0.58–0.78)
England	4846	37.7	64.9	0.76 (0.67–0.87)	0.87 (0.75–1.00)
Australia	1514	11.8	65.1	0.77 (0.64–0.92)	0.77 (0.64–0.93)
Age (y)					
18–20	861	3.3	40.6	1	1
21–29	2607	17.6	61.0	2.29 (1.74–3.01)	2.33 (1.73–3.13)
30–39	2009	24.1	68.2	3.14 (2.39–4.11)	3.11 (2.31–4.19)
40–49	2109	17.5	67.9	3.09 (2.37–4.02)	3.23 (2.41–4.33)
50–59	2612	20.1	67.5	3.03 (2.34–3.93)	3.53 (2.64–4.71)
≥60	2706	17.4	69.3	3.31 (2.55–4.29)	4.07 (3.03–5.47)
Gender					
Male	6286	55.3	64.7	1	1
Female	6618	44.7	67.7	1.14 (1.03–1.28)	1.18 (1.06–1.33)
Ethnicity					
White	10771	86.3	65.7	1	1
Non-white	1944	13.7	68.4	1.13 (0.96–1.33)	1.31 (1.09–1.55)
Household income					
Low	4074	29.5	64.1	1	1
Moderate	4222	32.8	66.9	1.13 (0.99–1.29)	1.05 (0.91–1.21)
High	3879	31.8	67.7	1.17 (1.02–1.34)	1.04 (0.89–1.21)
No answer	729	5.9	61.7	0.90 (0.72–1.13)	0.84 (0.66–1.09)
Educational attainment					
Low	4006	30.0	65.7	1	1
Moderate	5363	47.3	65.5	0.99 (0.88–1.12)	0.94 (0.83–1.07)
High	3406	22.7	67.9	1.10 (0.95–1.28)	0.94 (0.80–1.10)
Cigarette and NVP status					
Quitter/not NVP user	1205	20.1	70.8	1	1
Quitter/ NVP user	1091	9.9	67.1	0.84 (0.64–1.11)	1.00 (0.75–1.34)
<Daily smoker/not NVP user	656	6.1	63.3	0.71 (0.55–0.92)	0.84 (0.65–1.10)
<Daily smoker/NVP user	1441	5.0	67.0	0.84 (0.65–1.07)	1.11 (0.85–1.45)
Daily smoker/not NVP user	4523	41.1	64.2	0.74 (0.61–0.89)	0.86 (0.71–1.04)
Daily smoker/NVP user	3988	17.9	64.9	0.76 (0.63–0.93)	0.96 (0.78–1.19)
Household smoking policy					
Smoking allowed anywhere	2549	17.6	59.2	1	1
Smoking never allowed	7336	61.9	69.7	1.58 (1.38–1.81)	1.50 (1.29–1.74)
Something in between	2847	20.6	62.0	1.12 (0.96–1.32)	1.09 (0.92–1.28)
Children <18 y in household					
No	9179	71.6	64.4	1	1
Yes	3564	28.4	70.4	1.31 (1.16–1.48)	1.27 (1.10–1.47)

Missing values for ethnicity (189), education (129), household smoking policy (172), children (161). MLSA = minimum legal sales age; NVP = nicotine vaping product.

<sup>a</sup>Weighted percent.

21–29 years old, and increasing to 69.3% of those aged ≥60 years. Endorsement was also highest among females (67.7%), non-whites (68.4%), had quit smoking and did not use NVPs (70.8%), never allowed smoking in the home (69.7%), and had children in the household (70.4%). The associations from unadjusted regression analyses were consistent with those found with the prevalence estimates across sociodemographic, smoking, and household characteristics.

In the adjusted regression model, there was lower endorsement for a MLSA 21 law in the United States (adjusted odds ratio [AOR] 0.68), England (AOR 0.87), and Australia (AOR 0.77) than Canada (Table 1). There was also higher support among respondents aged ≥21 years (AORs 2.33–4.07) than 18–20 years old, female (AOR 1.18) than male, non-white (AOR 1.31) than white, those who did not allow smoking in the household (AOR 1.50) than those who did,

and those who had children in the household (AOR 1.27) than those who did not. There were no differences in support by household income, educational attainment, or cigarette and NVP status.

## Discussion

We found that in 2018, two thirds of current and former smokers supported raising the legal age of purchasing cigarettes/tobacco to age 21. Among those who would be most affected by such a policy—18–20 years old—40.6% supported a MLSA 21 law. This is in contrast with higher levels of endorsement of MLSA 19, 20, or 21 laws among adolescents in the United States, who would also be affected by such policies.<sup>14</sup> Even though the United States is currently the only country with any MLSA 21 laws, and a federal MLSA 21

law was passed in December 2019, the majority of smokers surveyed across all four countries endorsed MLSA laws. Our findings support the proposal by Nuyts et al. that the time may be right for the United Kingdom to adopt a MLSA 21 law and provide momentum for MLSA 21 laws in Europe.<sup>5</sup>

Consistent with prior research, support for the law was higher among females,<sup>12,13</sup> older adults,<sup>11–13</sup> non-whites,<sup>12,13</sup> and having a child <18 years in the household.<sup>11</sup> We also found that respondents with a strict smoke-free household policy were more likely to endorse raising the MLSA, suggesting high agreement among measures to restrict tobacco. Although we did not survey nonsmokers in the present study, evaluations of MLSA 21 laws have found that support among nonsmokers was higher than among smokers.<sup>12,13</sup> This suggests that our results likely underestimate endorsement among nonsmokers from these four high-income countries.

Despite strong support for tobacco MLSA 21 laws from policy-makers<sup>7–10</sup> and public opinion,<sup>11–13,17</sup> including our findings among current and former smokers, there have been a limited number of evaluations of MLSA 21 laws and not all have found them to have an impact. Although the majority of evaluations in Canada,<sup>18</sup> England,<sup>19</sup> and the United States<sup>20–22</sup> have found evidence for a reduction in youth smoking after increasing the MLSA, other studies in the United States<sup>23</sup> and Europe<sup>24</sup> have found no effect. Using modeling to predict the impact of MLSA 21 laws, the Institute of Medicine concluded they would reduce the initiation of tobacco products, have the largest effect among 15–17 year olds (i.e., approximately a 25% reduction in initiation), and approximately a 12% decrease in the prevalence of smoking.<sup>4</sup> Additional evaluations are needed across countries to continue to build the evidence base as well as to identify any unintended consequences.

There are a number of limitations to address. The ITC survey only includes adult current and former smokers and current vapers. It is likely that longer-term former smokers and nonsmokers would exhibit stronger preferences for a policy restricting the sale of tobacco products to those under age 21 years. Due to social desirability bias, it is possible that some agreed because they did not want to be seen as supporting youth smoking rather than believing the policy would be effective. Another limitation of our study is we did not ask respondents about their view of different types of tobacco products such as cigarettes versus NVPs. Currently, regulatory frameworks for NVPs vary by country. In Australia, it is illegal to sell NVPs that contain nicotine although there is some variation across states. Canada does not allow vaping products to be sold to those under 18 years old and a number of provinces have a MLSA of age 19. In England, it is illegal for retailers to sell NVPs or e-liquids to under 18 years old. In the United States, state and local MLSA 21 policies prohibit the sale of all tobacco products, which in the United States includes NVPs. Our estimate of support may be conservative if respondents who did not support the inclusion of NVPs did not endorse the statement or provide an answer to the question. Conversely, other respondents may have interpreted the purchase of tobacco products to include NVPs. During the time frame of the Wave 2 survey, four states in the United States had implemented MLSA 21 laws in addition to hundreds of localities.<sup>6</sup> Although the state of residence is known in the U.S. sample, their local jurisdiction is not, so it was not possible to determine whether respondents lived under a MLSA 21 law. Furthermore, approximately 0.7% of respondents refused to answer the question on support for MLSA 21 laws and a further 9.9% of respondents reported they didn't know. This suggests that there may be ambiguity with current views on

MLSA 21 policies, the wording of the question, or the public may need more information in order to form an opinion on these policies.

In summary, we found strong support for MLSA 21 laws among current and former smokers across Australia, Canada, England, and the United States, including a sizeable minority of those aged ≤20 years. Based on other studies,<sup>12,13</sup> our findings suggest that endorsement of these laws would likely be even higher among nonsmokers in these countries. Public support for tobacco control policies has been shown to facilitate their enactment.<sup>25</sup> Our findings add to the evidence that there is an increasing movement across countries and localities to pass MLSA 21 laws even as evidence is being gathered to evaluate their effectiveness. For example, Tasmania has proposed a bill to ban the sale of tobacco products to under 21 years old and, if passed, would be the first state in Australia to do so. Ultimately, governments will determine whether NVPs are included in MLSA policies as well as enforcement mechanisms to ensure MLSA 21 laws help fulfill the directives of reducing youth tobacco initiation and prevalence.

## Supplementary Material

A Contributorship Form detailing each author's specific involvement with this content, as well as any supplementary data, are available online at <https://academic.oup.com/ntr>.

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## Contributors

All authors have participated sufficiently in the intellectual conception and design of this work, the acquisition and analysis of the data, and the writing and final approval of the manuscript, to take joint public responsibility for it.

## Declaration of Interests

*K.M.C. has received payment as a consultant to Pfizer, Inc., for service on an external advisory panel to assess ways to improve smoking cessation delivery in health care settings. K.M.C. also has served as paid expert witness in litigation filed against the tobacco industry. G.T.F. has served as an expert witness on behalf of governments in litigation involving the tobacco industry. All other authors have no conflicts of interest to declare.*

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