

RESEARCH ARTICLE

Support for Active Transport Policy Initiatives Among Canadian Adults: The Canadian National Active Transportation Survey

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Objectives: To examine public support for active transportation (AT) policies and to identify demographic and behavioural predictors of support for each policy approach.

Methods: Canadian adults aged 18 years and older (N = 2,868) provided information on demographic factors (e.g., age, income), place of residence (e.g., region, size of community), and the frequency with which they walked/wheeled or cycled to work or school in a typical week. In addition, they rated their support for AT-related policies (e.g., spending government money on more dedicated bicycle paths, offering tax credits for public transit passes, charging higher rates for parking to subsidize costs for AT infrastructure, or changing the design of neighbourhoods and communities to encourage informal physical activity). Multinomial regressions examined demographics and self-reported AT behaviour as predictors of support for each policy approach, yielding a total of eight models.

Results: Although most policy actions to promote AT were supported by Canadians, the level of support varied by the type of policy actions and by demographics and self-reported AT behaviour. A majority of Canadians supported policy approaches targeting environmental planning and fiscal measures that incentivized AT. A minority of Canadians supported policies aimed at regulation or coercive fiscal measures. The level of support for AT policies was higher among women, those with more education, younger respondents, those residing in central and eastern Canada, and individuals who engaged in AT.

Conclusion: Canadians are supportive of policy actions to facilitate AT. This public support might be important for their future development and implementation.

Keywords: active travel; exercise; walking; cycling; commuting; governance

Introduction

Given its utilitarian nature, promoting active transportation (non-motorized modes, such as walking, or cycling to and from destinations) through policy, systems, and environmental change is acknowledged as “one of the leading evidence-based strategies to increase physical activity regardless of age, income, racial/ethnic background, ability, or disability” (Young et al., 2020, p.167). The Canadian Public Health Association endorses this position while also highlighting the co-benefits of active transportation (AT) in improving health by reducing air pollution and reducing health inequities (Perrotta et al., 2021). Similarly, the United Nations (n.d.) recognizes the importance of AT in making communities more inclusive, resilient, and sustainable in the face of climate change pressures and increased demand for energy.

However, engagement in AT tends to be relatively low in most developed countries (Olsen et al., 2017; Whitfield et al., 2020). In Canada, the 2021 ParticipACTION Report Card on Physical Activity for Adults graded Active Travel as an F. This was based on data demonstrating that only 7% of adults living in Canada used AT in commuting to work (ParticipACTION, 2021), which remained relatively stable during the first wave of the COVID-19 pandemic (Statistics Canada, 2020). While less is known about AT to destinations other than work or school among Canadian adults, the data does imply a strategic intervention focus on adult AT may have significant population health impact. The launch of Canada’s first National Active Transportation Strategy (Infrastructure Canada, 2021) and an associated Active Transportation Fund of \$400 million over five years for building and expanding networks of pathways, bike lanes, trails, and pedestrian bridges is a step in that direction.

Aligned with socioecological frameworks (Götschi, de Nazelle and Brand, 2017; Spence and Lee, 2003), supporting AT requires multi-level intervention addressing policy, environmental, social, and individual factors. An “upstream” focus on policy change is likely to facilitate AT equitably. For instance, Young et al. (2020) recommended three levels of AT policies: the macroscale of mixed and compact land use, the mesoscale of safe pedestrian and bicycle networks, infrastructure (e.g., Complete Streets policies), and the microscale of design interventions such as safety and traffic calming measures. Given the global commitments to sustainable transportation (United Nations, n.d.), governments at all levels have responsibility to establish and coordinate policies that promote and facilitate AT within their respective jurisdictions (Bull et al., 2004).

However, public resistance to policy may deter implementation and adherence, and ultimately result in its withdrawal from consideration (Li, Shryane and Elliot, 2017). Conversely, public support for different policy interventions may be a prerequisite for decision makers in developing and implementing those policies. Public approval will be influenced by the varying level of intrusiveness of any policy interventions (Diepeveen et al., 2013; Yun et al., 2019). The Nuffield Council on Bioethics (2007) proposes “an intervention ladder” as a useful way of conceptualizing levels of intrusiveness, whereby policy categories are positioned from most to least restrictive (i.e., top to bottom) in the following order: eliminate choices, restrict choices, use of disincentives, use of incentives, change the default policy, enable choice, and provide information. Policies nearer the top of the ladder require greater justification regarding their benefits to ensure that interference and financial costs are proportionate. The question is, to what extent do Canadians approve of various policy actions to facilitate AT?

Therefore, the objectives of this study were to examine public support for AT policy options, varying by intrusiveness, among a representative sample of Canadians, and to identify demographic and AT behavioural predictors of support for each policy approach.

Methods

Participants and recruitment

As part of the Canadian National Active Transportation Survey 2021 (Spence et al., 2022), a total of 2,868 Canadian adults aged 18 years and older were recruited from the Leger Opinion (LEO) panel. The panel includes over 400,000 Canadians and is designed to provide representative data of the Canadian population, using probability sampling methods. Recruitment was conducted by telephone through random digit dialing combining landlines and cell phones. Surveys were administered via an email link between November 26, 2021 and December 7, 2021, in English or French. In terms of reliability of the estimates, were this a probability sample, we could expect a margin of error of $\pm 1.83\%$ 19 times out of 20 (95% confidence). This study was reviewed and approved by the Human Research Ethics Board at the University of Alberta (ethics no. Pro00110489).

Measures

Full details regarding the variables collected are reported elsewhere (Spence et al., 2022).

Demographics

The demographic variables employed in this analysis were collapsed as follows: gender (man, woman, other), education (no post-secondary, post-secondary), income (<30,000, >30,000, don't know), location of residence (city, other), and region (West [British Columbia, Alberta, Saskatchewan, Manitoba], Ontario, Quebec, Atlantic [Prince Edward Island, New Brunswick, Newfoundland and Labrador, Nova Scotia]).

Active transportation use

For walking/wheeling and cycling, participants were asked to think about a typical week in the past three months (i.e., August 2021 to October 2021) and to indicate the number of days (i.e., 0 through 7) they engaged in walking/wheeling or cycling to commute to work or school. They were instructed that this could include walking/wheeling or cycling to a train station or bus stop on the way to work or school. Individuals could respond "not applicable" (N/A) to indicate if the question was not relevant to them (e.g., retired, work from home). Based on the responses, applicable participants were then dichotomized into inactive commuters (0 days of walking/wheeling and cycling to work or school each week) and active commuters (>0 days walking/wheeling and cycling to work or school each week).

Support for active transportation-related policies

Participants were asked to rate their support for eight AT-related policy options (e.g., charging higher rates for parking so as to subsidize costs for AT infrastructure; see **Table 2**) on a seven-point Likert scale from "strongly oppose" to "strongly support" (response options: 1 = strongly oppose; 2 = moderately oppose; 3 = somewhat oppose; 4 = neutral; 5 = somewhat support; 6 = moderately support; 7 = strongly support). Items were developed based on previous studies examining support for obesity and physical activity (PA) related policies (Raine et al., 2014; Yun et al., 2018), with some adaptations and additions made to reflect AT. Most of these policies have demonstrated effectiveness in facilitating PA and/or AT (Gelius et al. 2020; Nieuwenhuijsen and Khreis, 2016; Rivers and Plumpton, 2018; Wilkie; Townshead, Thompson and Ling, 2018; Young et al., 2020). For ease of interpretation and analysis, the responses were collapsed into "oppose" (i.e., strongly, moderately, somewhat oppose), "neutral," and "support" (i.e., strongly, moderately, somewhat support). Finally, the policy options were categorized according to the levels of the Nuffield Council on Bioethics (2007) intervention ladder (e.g., restrict choices, use of incentives, enable choice) to describe the extent of intrusiveness.

Data Analysis

First, descriptive statistics (i.e., frequencies and means, as appropriate) were generated for demographic variables and support for each policy approach. Subsequently, multinomial regressions examined demographics and AT behaviours as predictors of support for each policy approach, yielding a total of eight models with adjusted ORs. Though ordinal models are often preferred when categories of a variable are ordered, multinomial regressions may be more appropriate in many cases (Liang et al., 2020; Leadbetter, 2020). Further, the assumptions of ordinal regression are much stricter (e.g., parallel lines); therefore, multinomial regressions provide an alternative means of analysis when these stringent assumptions are not met (Liang et al., 2020). To ensure that findings were representative of the Canadian population, the data were weighted to reflect the age, gender, and regional composition of the country. All analyses were completed in SPSS version 28. Given the large sample size and number of analyses conducted, an alpha level of $p < .01$ was adopted.

Results

As shown in **Table 1**, a little over half of respondents were women (50.8%), most were aged 45 years or older (56.6%), employed or in school (63.7%), had some post-secondary education (82.3%), reported a household income of greater than \$60,000 (55.7%), and resided in a city (65.6%). The proportion of Canadian adults walking/wheeling and cycling for AT, at least once per week, were 37.3% and 13.8%, respectively.

Support for active transportation-related policies

Most Canadians supported policy approaches that enable AT choices and change AT policy related to environmental features as well as fiscal measures that incentivize AT including: implementing transportation policies designed to promote PA through safe routes, cycle facilities, adequate lighting, etc. (69.7%); offering tax credits for public transit passes (64.6%); changing the design of neighbourhoods and communities to encourage informal PA in daily life (62.6%); spending government money on more dedicated bicycle paths in my community to make streets safer for cyclists, cars, and pedestrians (62.3%); and offering tax credits for bicycles and other equipment for active transportation (59%) (see **Table 2**). Well under half of Canadians supported policies aimed at restricting choice or disincentives including: banning all traffic in high use pedestrian areas during peak hours to support active (e.g., walking, cycling) or public transportation (40.3%); charging a tax on all motor vehicles to support investments in infrastructure for AT (29.1%); and charging higher rates for parking so as to subsidize costs for AT infrastructure (e.g., bike lanes, walking paths) (25.3%).

Multinomial regressions examining predictors of support for policy approaches

The full models with all predictors were significant when compared to the null (i.e., constant only) models for each behaviour. Thus, as a group, demographic and AT use variables predicted support for each policy approach (policies to promote PA via safe routes, cycle facilities, lighting, etc.: $\chi^2 = 171.60$, $df = 32$, $p < 0.001$; tax credits for public transit passes: $\chi^2 = 146.43$, $df = 32$, $p < 0.001$; changing community design to encourage informal PA: $\chi^2 = 117.74$, $df = 32$, $p < 0.001$; government spending on bike paths to make streets safer: $\chi^2 = 141.62$, $df = 32$, $p < 0.001$; tax credits for bikes and other equipment for AT: $\chi^2 = 133.83$, $df = 32$, $p < 0.001$); banning traffic in high use pedestrian areas in peak hours: $\chi^2 = 193.56$, $df = 32$, $p < 0.001$; charging a tax on vehicles to support AT infrastructure: $\chi^2 = 215.45$, $df = 32$, $p < 0.001$; increasing parking rates to subsidize AT infrastructure: $\chi^2 = 203.31$, $df = 32$, $p < 0.001$). However, a small amount of the variance was accounted for by the models (Nagelkerke's $R^2 = 0.05 - 0.08$) and overall classification rates ranged from 45% to 70%.

Table 1: Demographics of the sample (N = 2,868).

| Variable | Categories | Frequency | % |
|---------------------------|---|------------------|----------|
| Gender | Woman | 1458 | 50.8 |
| | Man | 1380 | 48.1 |
| | Other | 30 | 1.0 |
| Age (yrs.) | 18–24 years old | 311 | 10.9 |
| | 25–44 years old | 934 | 32.6 |
| | 45–64 years old | 1015 | 35.4 |
| | 65 years or older | 607 | 21.2 |
| Education | No schooling | 1 | 0 |
| | Elementary school | 12 | 0.4 |
| | Some or completed high school | 497 | 17.3 |
| | Some or completed community college or technical school | 903 | 31.5 |
| | Some or completed University | 1456 | 50.8 |
| Household income | Less than \$30,000 | 408 | 14.2 |
| | \$30,000 to \$59,000 | 641 | 22.4 |
| | \$60,000 to \$79,999 | 397 | 13.9 |
| | \$80,000 to \$99,999 | 396 | 13.8 |
| | \$100,000 to \$120,000 | 323 | 11.3 |
| | More than \$120,000 | 479 | 16.7 |
| | Don't Know | 224 | 7.8 |
| Location of residence | City | 1881 | 65.6 |
| | Town | 623 | 21.7 |
| | Village | 139 | 4.9 |
| | Hamlet | 115 | 4.0 |
| | Other | 110 | 3.8 |
| Region | British Columbia | 389 | 13.6 |
| | Alberta | 322 | 11.2 |
| | Saskatchewan | 86 | 3.0 |
| | Manitoba | 101 | 3.5 |
| | Ontario | 1101 | 38.4 |
| | Quebec | 673 | 23.5 |
| | New Brunswick | 63 | 2.2 |
| | Nova Scotia | 78 | 2.7 |
| | Prince Edward Island | 12 | 0.4 |
| Newfoundland and Labrador | 44 | 1.5 | |

Table 2: Support for government investments, spending, and policy in relation to facilitating active transportation.

| Initiative | Oppose (%) | Neutral (%) | Support (%) | Mean (SD) |
|---|-------------------|--------------------|--------------------|------------------|
| Restrict choice | | | | |
| Banning all traffic in high-use pedestrian areas during peak hours to support active (e.g., walking, cycling) or public transportation | 33.8% | 25.9% | 40.3% | 4.10 (1.81) |
| Guide choice through disincentives | | | | |
| Charging a tax on all motor vehicles to support investments in infrastructure for active transportation | 49.7% | 21.3% | 29.1% | 3.38 (1.96) |
| Charging higher rates for parking to subsidize costs for active transportation infrastructure (e.g., bike lanes, walking paths) | 52.8% | 22.0% | 25.3% | 3.25 (1.91) |
| Guide choice through incentives | | | | |
| Offering tax credits for public transit passes | 13.1% | 22.3% | 64.6% | 5.06 (1.66) |
| Offering tax credits for bicycles and other equipment for active transportation | 17.5% | 23.4% | 59.0% | 4.80 (1.73) |
| Guide choices through changing the default policy | | | | |
| Implementing transportation policies designed to promote physical activity through safe routes, cycle facilities, adequate lighting, etc. | 9.1% | 21.3% | 69.7% | 5.31 (1.48) |
| Enable choice | | | | |
| Changing the design of neighbourhoods and communities to encourage informal physical activity in daily life | 13.6% | 23.8% | 62.6% | 4.94 (1.57) |
| Spending government money on more dedicated bicycle paths in my community to make streets safer for cyclists, cars, and pedestrians | 17.8% | 19.9% | 62.3% | 4.93 (1.76) |

Demographics

Table 3 and **Table 4** present the likelihood ratio tests and ORs for the demographic and behavioural predictors of each policy approach. Significant associations existed between gender and support for policies to promote PA via safe routes, cycle facilities, adequate lighting, etc., tax credits for public transit passes, changing the design of neighbourhoods and communities to encourage informal PA, government spending on bike paths in one's community to make streets safer, tax credits for bikes and other equipment for AT, and increasing parking rates to subsidize AT infrastructure. Overall, compared to men, women were less likely to oppose or indicate a neutral stance towards policy approaches (ORs ranging from 0.57 to 0.77).

Region was significantly associated with all policy options: policies to promote PA via safe routes, cycle facilities, lighting, etc., tax credits for public transit passes, changing community design to encourage informal PA, government spending on bike paths to make streets safer, tax credits for bikes and other equipment for AT, banning traffic in high use pedestrian areas in peak hours, charging a tax on vehicles to support AT infrastructure, increasing parking

Table 3: Likelihood ratio tests based on multinomial logistic regression analyses demonstrating overall relationships between demographic and behavioural predictors and support for each policy approach.

| Policy Approach | Gender | Age | Education | Income | Location | Region (province) | Walk to work/school | Cycle to work/school |
|--|---|---|---|---|---|---|---|---|
| Policies to promote PA (e.g., safe routes) | $\chi^2 = 28.96$ df = 4 p < 0.001 | $\chi^2 = 24.26$ df = 6 p < 0.001 | $\chi^2 = 22.84$ df = 2 p < 0.001 | $\chi^2 = 26.81$ df = 4 p < 0.001 | $\chi^2 = 0.11$ df = 2 p = 0.99 | $\chi^2 = 40.54$ df = 6 p < 0.001 | $\chi^2 = 9.33$ df = 4 p = 0.05 | $\chi^2 = 10.53$ df = 4 p = 0.03 |
| Tax credits for transit passes | $\chi^2 = 30.49$ df = 4 p < 0.001 | $\chi^2 = 4.71$ df = 6 p = 0.58 | $\chi^2 = 17.06$ df = 2 p < 0.001 | $\chi^2 = 8.15$ df = 4 p = 0.09 | $\chi^2 = 14.78$ df = 2 p < 0.001 | $\chi^2 = 28.81$ df = 6 p < 0.001 | $\chi^2 = 19.62$ df = 4 p < 0.001 | $\chi^2 = 10.52$ df = 4 p = 0.03 |
| Changing community design | $\chi^2 = 22.0$ df = 4 p < 0.001 | $\chi^2 = 24.36$ df = 6 p < 0.001 | $\chi^2 = 15.50$ df = 2 p < 0.001 | $\chi^2 = 10.85$ df = 4 p = 0.03 | $\chi^2 = 1.64$ df = 2 p = 0.44 | $\chi^2 = 22.02$ df = 6 p = 0.001 | $\chi^2 = 14.39$ df = 4 p = 0.006 | $\chi^2 = 4.13$ df = 4 p = 0.39 |
| Government spending on bike paths | $\chi^2 = 20.12$ df = 4 p < 0.001 | $\chi^2 = 15.89$ df = 6 p = 0.014 | $\chi^2 = 22.42$ df = 2 p < 0.001 | $\chi^2 = 10.94$ df = 4 p = 0.03 | $\chi^2 = 5.02$ df = 2 p = 0.08 | $\chi^2 = 37.38$ df = 6 p < 0.001 | $\chi^2 = 11.92$ df = 4 p = 0.02 | $\chi^2 = 13.67$ df = 4 p = 0.008 |
| Tax credits for equipment for AT | $\chi^2 = 19.13$ df = 4 p < 0.001 | $\chi^2 = 27.91$ df = 6 p < 0.001 | $\chi^2 = 17.21$ df = 2 p < 0.001 | $\chi^2 = 11.01$ df = 4 p = 0.03 | $\chi^2 = 0.05$ df = 2 p = 0.98 | $\chi^2 = 23.72$ df = 6 p < 0.001 | $\chi^2 = 12.04$ df = 4 p = 0.02 | $\chi^2 = 3.81$ df = 4 p = 0.43 |
| Ban traffic in high-use pedestrian areas | $\chi^2 = 5.45$ df = 4 p = 0.24 | $\chi^2 = 18.41$ df = 6 p = 0.005 | $\chi^2 = 20.03$ df = 2 p < 0.001 | $\chi^2 = 18.65$ df = 4 p < 0.001 | $\chi^2 = 2.18$ df = 2 p = 0.34 | $\chi^2 = 54.51$ df = 6 p < 0.001 | $\chi^2 = 22.29$ df = 4 p < 0.001 | $\chi^2 = 19.06$ df = 4 p < 0.001 |
| Tax vehicles to support AT | $\chi^2 = 8.00$ df = 4 p = 0.09 | $\chi^2 = 24.72$ df = 6 p < 0.001 | $\chi^2 = 15.54$ df = 2 p < 0.001 | $\chi^2 = 14.78$ df = 4 p = 0.005 | $\chi^2 = 8.07$ df = 2 p = 0.02 | $\chi^2 = 32.73$ df = 6 p < 0.001 | $\chi^2 = 36.73$ df = 4 p < 0.001 | $\chi^2 = 23.47$ df = 4 p < 0.001 |
| Increase parking rates | $\chi^2 = 20.64$ df = 4 p < 0.001 | $\chi^2 = 21.30$ df = 6 p = 0.002 | $\chi^2 = 8.89$ df = 2 p = 0.012 | $\chi^2 = 13.35$ df = 4 p = 0.01 | $\chi^2 = 6.97$ df = 2 p = 0.03 | $\chi^2 = 33.11$ df = 6 p < 0.001 | $\chi^2 = 36.13$ df = 4 p < 0.001 | $\chi^2 = 15.12$ df = 4 p = 0.004 |

Table 4: Adjusted odds ratios for logistic regression analyses examining differences in support for policy approaches (i.e., “oppose” and “neutral” vs. “support”) based on demographic and behavioural predictors.

| Predictors | OR (99% CI) | Tax credits for transit passes | Changing community design | Government spending on bike paths | Tax credits for equip- ment for AT | Ban traffic in high-use pedestrian areas | Tax vehi- cles to sup- port AT | Increase park- ing rates |
|----------------------------------|-----------------------|--------------------------------------|---------------------------------|---|--|--|--------------------------------------|-----------------------------|
| Oppose^a | | | | | | | | |
| Gender (other) | 1.01 (0.24, 4.24) | 0.51 (0.11, 2.45) | 1.77 (0.57, 5.44) | 0.41 (0.09, 1.91) | 0.75 (0.21, 2.70) | 0.63 (0.21, 1.92) | 0.33 (0.11, 1.05) | 0.63 (0.22, 1.84) |
| Gender (woman) | 0.61 (0.43, 0.87)* | 0.57 (0.42, 0.77)* | 0.71 (0.53, 0.96)* | 0.69 (0.53, 0.90)* | 0.71 (0.54, 0.93)* | 0.91 (0.72, 1.15) | 1.05 (0.83, 1.33) | 1.41 (1.10, 1.79)* |
| Age (18–24 years) | 0.91 (0.47, 1.74) | 0.82 (0.44, 1.51) | 0.80 (0.45, 1.42) | 1.00 (0.60, 1.68) | 0.45 (0.25, 0.79)* | 1.20 (0.76, 1.90) | 0.75 (0.48, 1.17) | 0.86 (0.55, 1.35) |
| Age (25–44 years) | 0.84 (0.52, 1.37) | 1.01 (0.66, 1.56) | 0.77 (0.51, 1.15) | 0.90 (0.62, 1.32) | 0.60 (0.41, 0.87)* | 1.05 (0.75, 1.46) | 0.94 (0.68, 1.31) | 0.95 (0.67, 1.34) |
| Age (45–64 years) | 0.78 (0.48, 1.25) | 1.12 (0.75, 1.69) | 0.78 (0.52, 1.15) | 1.00 (0.70, 1.43) | 0.74 (0.52, 1.05) | 1.02 (0.74, 1.40) | 1.18 (0.85, 1.62) | 1.21 (0.87, 1.69) |
| Education (no post-secondary) | 1.09 (0.67, 1.78) | 1.63 (1.12, 2.38)* | 1.47 (1.01, 2.15)* | 1.39 (0.98, 1.98) | 1.47 (1.04, 2.09)* | 1.10 (0.80, 1.52) | 1.39 (1.00, 1.93) | 1.23 (0.87, 1.73) |
| Income (don't know) | 0.65 (0.29, 1.47) | 0.97 (0.53, 1.76) | 1.29 (0.75, 2.21) | 1.35 (0.83, 2.19) | 0.98 (0.58, 1.68) | 0.95 (0.60, 1.50) | 1.23 (0.77, 1.99) | 1.53 (0.91, 2.57) |
| Income (<30,000) | 0.75 (0.42, 1.34) | 0.92 (0.58, 1.45) | 0.80 (0.51, 1.28) | 0.76 (0.50, 1.16) | 0.90 (0.59, 1.35) | 0.88 (0.62, 1.27) | 0.85 (0.61, 1.20) | 0.92 (0.64, 1.32) |
| Location (city) | 0.97 (0.66, 1.41) | 0.63 (0.46, 0.86)* | 0.89 (0.65, 1.21) | 1.27 (0.95, 1.71) | 1.00 (0.75, 1.33) | 0.87 (0.68, 1.12) | 0.77 (0.59, 0.99)* | 0.76 (0.59, 1.00) |
| Region (Ontario) | 0.50 (0.34, 0.75)* | 0.73 (0.51, 1.03) | 0.72 (0.51, 1.02) | 0.57 (0.42, 0.78)* | 0.81 (0.59, 1.10) | 0.66 (0.50, 0.87)* | 0.73 (0.55, 0.97)* | 0.67 (0.50, 0.90)* |

(Contd.)

| | Policies to promote PA (e.g., safe routes) | Tax credits for transit passes | Changing community design | Government spending on bike paths | Tax credits for equipment for AT | Ban traffic in high-use pedestrian areas | Tax vehicles to support AT | Increase parking rates |
|-------------------------------|--|--------------------------------|---------------------------|-----------------------------------|----------------------------------|--|----------------------------|------------------------|
| Region (Quebec) | 0.44 (0.27, 0.71)* | 0.63 (0.42, 0.94)* | 0.77 (0.52, 1.13) | 0.65 (0.46, 0.93)* | 0.83 (0.58, 1.19) | 0.46 (0.34, 0.64)* | 0.53 (0.39, 0.73)* | 0.57 (0.41, 0.79)* |
| Region (Atlantic) | 0.40 (0.17, 0.92)* | 0.48 (0.25, 0.94)* | 0.46 (0.22, 0.95)* | 0.37 (0.19, 0.70)* | 0.37 (0.19, 0.73)* | 0.38 (0.23, 0.64)* | 0.77 (0.46, 1.27) | 0.59 (0.35, 0.99)* |
| Walking (N/A) | 1.03 (0.63, 1.66) | 1.32 (0.88, 2.01) | 1.10 (0.74, 1.65) | 1.24 (0.86, 1.78) | 1.22 (0.84, 1.76) | 1.34 (0.97, 1.83) | 1.55 (1.14, 2.12)* | 1.68 (1.22, 2.32)* |
| Walking (inactive) | 1.34 (0.79, 2.25) | 1.54 (0.97, 2.44) | 1.54 (0.98, 2.41) | 1.69 (1.12, 2.55)* | 1.36 (0.90, 2.06) | 1.74 (1.23, 2.48)* | 2.04 (1.42, 2.93)* | 2.01 (1.38, 2.94)* |
| Cycling (N/A) | 0.70 (0.40, 1.24) | 0.87 (0.52, 1.46) | 0.94 (0.57, 1.56) | 1.02 (0.64, 1.62) | 1.17 (0.72, 1.88) | 1.65 (1.09, 2.52)* | 1.71 (1.14, 2.55)* | 1.66 (1.10, 2.47)* |
| Cycling (inactive) | 0.69 (0.39, 1.21) | 0.78 (0.46, 1.32) | 0.78 (0.46, 1.31) | 0.78 (0.49, 1.26) | 1.05 (0.64, 1.70) | 1.95 (1.28, 2.97)* | 1.73 (1.16, 2.59)* | 1.76 (1.18, 2.64)* |
| Neutral^a | | | | | | | | |
| Gender (other) | 0.20 (0.03, 1.39) | 0.20 (0.03, 1.36) | 0.33 (0.07, 1.63) | 0.39 (0.09, 1.66) | 0.20 (0.03, 1.37) | 0.34 (0.08, 1.43) | 0.42 (0.11, 1.54) | 0.36 (0.08, 1.59) |
| Gender (woman) | 0.70 (0.55, 0.91)* | 0.93 (0.73, 1.19) | 0.75 (0.59, 0.96)* | 0.77 (0.59, 0.99)* | 1.01 (0.80, 1.29) | 0.96 (0.75, 1.24) | 0.98 (0.74, 1.30) | 1.06 (0.79, 1.41) |
| Age (18–24 years) | 1.56 (0.97, 2.53) | 1.19 (0.75, 1.88) | 2.01 (1.28, 3.15)* | 1.72 (1.07, 2.77)* | 1.36 (0.87, 2.12) | 2.05 (1.28, 3.28)* | 1.64 (0.98, 2.76) | 1.46 (0.85, 2.50) |
| Age (25–44 years) | 1.87 (1.30, 2.70)* | 1.23 (0.80, 1.60) | 1.48 (1.04, 2.11)* | 1.50 (1.03, 2.18)* | 1.02 (0.72, 1.45) | 1.45 (1.01, 2.08)* | 1.44 (0.95, 2.20) | 1.60 (1.04, 2.44)* |
| Age (45–64 years) | 1.42 (1.00, 2.03) | 1.03 (0.74, 1.43) | 1.40 (0.99, 1.96) | 1.61 (0.81, 1.67) | 1.01 (0.72, 1.42) | 1.21 (0.85, 1.72) | 1.48 (0.98, 2.22) | 1.53 (1.01, 2.32)* |
| Education (no post-secondary) | 1.78 (1.31, 2.41)* | 1.48 (1.08, 2.02)* | 1.52 (1.12, 2.07)* | 1.78 (1.29, 2.46)* | 1.57 (1.15, 2.13)* | 1.71 (1.24, 2.35)* | 1.77 (1.21, 2.59)* | 1.56 (1.06, 2.30)* |
| Income (don't know) | 1.91 (1.27, 2.89)* | 1.54 (1.01, 2.34)* | 1.52 (1.00, 2.32) | 1.57 (1.00, 2.45) | 1.59 (1.05, 2.41)* | 1.59 (1.02, 2.48)* | 1.99 (1.19, 3.35)* | 2.06 (1.17, 3.64)* |

(Contd.)

| | Policies to promote PA (e.g., safe routes) | Tax credits for transit passes | Changing community design | Government spending on bike paths | Tax credits for equipment for AT | Ban traffic in high-use pedestrian areas | Tax vehicles to support AT | Increase parking rates |
|--------------------|--|--------------------------------|---------------------------|-----------------------------------|----------------------------------|--|----------------------------|------------------------|
| Income (<30,000) | 1.44 (1.02, 2.03)* | 1.16 (0.82, 1.63) | 1.22 (0.87, 1.71) | 0.98 (0.68, 1.41) | 1.23 (0.87, 1.72) | 1.42 (1.01, 2.02)* | 1.03 (0.69, 1.54) | 1.16 (0.77, 1.75) |
| Location (city) | 0.97 (0.74, 1.27) | 0.84 (0.65, 1.10) | 1.06 (0.82, 1.37) | 1.13 (0.86, 1.50) | 0.98 (0.75, 1.27) | 0.90 (0.68, 1.18) | 0.92 (0.67, 1.25) | 0.89 (0.64, 1.22) |
| Region (Ontario) | 0.92 (0.69, 1.23) | 1.03 (0.78, 1.37) | 0.87 (0.66, 1.15) | 0.90 (0.67, 1.22) | 0.99 (0.75, 1.31) | 0.85 (0.63, 1.14) | 0.92 (0.66, 1.29) | 0.92 (0.65, 1.30) |
| Region (Quebec) | 0.63 (0.44, 0.90)* | 0.65 (0.46, 0.92)* | 0.64 (0.46, 0.90)* | 0.71 (0.49, 1.01) | 0.75 (0.53, 1.06) | 0.58 (0.41, 0.82)* | 0.56 (0.38, 0.83)* | 0.59 (0.39, 0.88)* |
| Region (Atlantic) | 0.82 (0.49, 1.37) | 0.63 (0.37, 1.08) | 0.84 (0.52, 1.38) | 0.62 (0.36, 1.09) | 0.66 (0.39, 1.11) | 0.72 (0.44, 1.20) | 0.93 (0.51, 1.70) | 0.93 (0.51, 1.68) |
| Walking (N/A) | 1.34 (0.96, 1.87) | 1.59 (1.14, 2.12)* | 1.41 (1.02, 1.95)* | 1.10 (0.79, 1.55) | 1.39 (1.01, 1.93)* | 1.37 (0.98, 1.90) | 1.51 (1.04, 2.20)* | 1.47 (1.00, 2.15) |
| Walking (inactive) | 1.42 (0.95, 2.11) | 1.46 (0.98, 2.19) | 1.40 (0.96, 2.04) | 1.28 (0.85, 1.93) | 1.44 (0.98, 2.11) | 1.18 (0.79, 1.78) | 1.27 (0.80, 2.02) | 1.24 (0.78, 1.98) |
| Cycling (N/A) | 1.25 (0.81, 1.94) | 0.88 (0.58, 1.34) | 1.09 (0.72, 1.65) | 1.12 (0.73, 1.72) | 1.19 (0.78, 1.82) | 1.10 (0.72, 1.66) | 0.94 (0.60, 1.47) | 1.30 (0.82, 2.05) |
| Cycling (inactive) | 0.86 (0.55, 1.36) | 0.61 (0.39, 0.95)* | 0.86 (0.56, 1.32) | 0.67 (0.43, 1.06) | 0.92 (0.60, 1.43) | 1.08 (0.70, 1.65) | 0.84 (0.53, 1.33) | 1.27 (0.80, 2.03) |

^aFor the criterion variable, the reference group is support. For predictor variables, the reference groups are as follows: man for gender, > 65 years for age, post-secondary for education, greater than \$30,000 for income, "other" (i.e., town, village, hamlet, other) for location of residence, Western provinces for region, "active" (i.e., commutes by walking > 0 days/week) for walking, "active" (i.e., commutes by cycling > 0 days/week) for cycling.

*p < 0.01.

rates to subsidize AT infrastructure. Compared with Atlantic provinces, Western provinces were less favourable towards all policy initiatives, except for charging a tax on vehicles to support AT infrastructure (ORs ranging from 0.37 to 0.59). Compared with Quebec and/or Ontario, Western provinces indicated less support across initiatives, apart from tax credits for bikes and other equipment to support AT (ORs ranging from 0.44 to 0.73).

Age was significantly associated with policies to promote PA via safe routes, cycle facilities, adequate lighting, etc., changing the design of neighbourhoods and communities to encourage informal PA, tax credits for bikes and other equipment for AT, banning traffic in high use pedestrian areas in peak hours, charging a tax on motor vehicles to support AT, and increased parking rates to subsidize AT. Compared with those 65 years and older, 18 to 24 and 25 to 44-year-olds were less likely to oppose and more likely to indicate a neutral stance towards tax credits for bikes and other equipment for AT, changing the design of neighbourhoods and communities to encourage informal PA, government spending on bike paths in one's community to make streets safer, and banning traffic in high use pedestrian areas in peak hours (ORs ranging from 0.45 to 0.60 for oppose and 1.45 to 2.05 for neutral). Compared to those aged 65 and older, 25 to 44-year-olds were also more likely to indicate a neutral stance for policies to promote PA via safe routes, cycle facilities, adequate lighting, etc. and 25 to 44-year-olds and 45 to 64-year-olds were more likely to indicate neutrality toward increased parking rates to subsidize AT (ORs ranging from 1.46 to 1.87). When compared with 18 to 24-year-olds, 45 to 64-year-olds were more likely to oppose charging a tax on motor vehicles to support AT (OR = 1.58).

Significant associations were found between education and nearly all policies including, policies to promote PA via safe routes, cycle facilities, lighting, etc., tax credits for public transit passes, changing community design to encourage informal PA, government spending on bike paths to make streets safer, tax credits for bikes and other equipment for, banning traffic in high use pedestrian areas in peak hours, charging a tax on vehicles to support AT infrastructure. Individuals with no post-secondary education were more likely to oppose policies compared to those without (ORs ranging from 1.47 to 1.63).

Few significant associations were observed between income and policy support, with likelihood ratio tests demonstrating links with support for policies to promote PA via safe routes, cycle facilities, lighting, etc., banning traffic in high use pedestrian areas in peak hours, and charging a tax on vehicles to support AT infrastructure. Individuals from the lowest income households (<\$30,000) were less likely to support policies to promote PA via safe routes, cycle facilities, adequate lighting, etc. and banning traffic in high use pedestrian areas in peak hours than those from higher income households (ORs ranging from 1.42 to 1.44 for neutral compared with support group).

Location of residence was associated only with support for tax credits for public transit passes. Those living in cities were more favourable towards tax credits for public transit passes and taxing motor vehicles to support AT infrastructure than residents of less populated areas (i.e., towns, villages, hamlets, other) (ORs ranging from 0.63 to 0.77 for oppose group compared with support group).

Active transportation use

Significant associations were demonstrated between walking/wheeling to work or school and support for tax credits for public transit passes, changing the design of neighbourhoods and communities to encourage informal PA, banning traffic in high use pedestrian areas in peak hours to support AT, charging a tax on vehicles to support AT infrastructure, and increasing parking rates to subsidize AT infrastructure. Individuals who do not actively commute by walking to school or work were more likely to oppose government spending on bike paths to

make streets safer, banning traffic in high use pedestrian areas in peak hours to support AT, charging a tax on vehicles to support AT infrastructure, and increasing parking rates to subsidize AT infrastructure when compared with those who actively commute to work or school (ORs ranging from 1.69 to 2.04).

Cycling to work or school was a significant predictor of support for government spending on bike paths to make streets safer, banning traffic in high use pedestrian areas in peak hours to support AT, charging a tax on vehicles to support AT infrastructure, and increasing parking rates to subsidize AT infrastructure. Individuals who do not actively commute by cycling to work or school were more likely to oppose banning traffic in high use pedestrian areas in peak hours to support AT, charging a tax on vehicles to support AT infrastructure, and increasing parking rates to subsidize AT infrastructure (ORs ranging from 1.73 to 1.95).

Discussion

Most policy actions to promote AT were supported by Canadians although the level of support varied by the type of policy actions and by demographics and AT behaviour. The less intrusive policy approaches that targeted the enablement of choice, creation of safe transportation infrastructure, and the use of incentives were the most favoured. Conversely, a minority of Canadians supported policies that facilitate AT using disincentives and restriction of choices. For instance, those respondents who do not actively commute were more likely to oppose the more intrusive policies such as charging taxes on motor vehicles and increasing parking rates to subsidize AT. These findings are consistent with previous research showing that public support for PA policy interventions generally tends to decrease as their level of intrusiveness increases (McGetrick et al., 2019; Molner et al., 2023; Yun et al., 2018). Similarly, decision makers are less likely to endorse obesity prevention policies that are deemed to be more intrusive or restrictive (Raine et al., 2014).

In terms of demographics, level of support for AT policies was higher among women and those with post-secondary education. It was also generally stronger among younger respondents. This may reflect generational differences in attitudes about climate change and the need for action (Liu, Shryane and Elliot, 2022; Smith, Kim and Son, 2017). Speculatively, public support for AT policies may grow with age cohort progression (Hamilton, Hartter and Bell, 2019). Given that AT is identified as an integral part of any solution for addressing climate change (Alessio et al., 2021; Brand, 2021; United Nations, n.d.), one strategy for promotion could include focused social marketing campaigns with an emphasis on climate change benefits targeting younger adults and an emphasis on the health benefits of AT for older adults (Plotnikoff, Wright and Karunamuni, 2004).

Where Canadians lived had some bearing on their support for AT policies. The strongest associations were noted by region, with those in Western Canada being the least supportive and those in central and eastern Canada being more supportive. This may reflect some combination of political orientation and size of communities. For instance, much of western Canada is currently represented by more conservative leaning governments at both provincial and federal levels. Previous research shows that political orientation is associated with support for healthy public policy, with the more conservative orientations being less supportive of such policies (Ashley et al., 2001; McGetrick et al., 2019; Molner et al., 2023; Montez et al., 2022; Yun et al., 2019). As for location of residence, those living in cities were more favourable towards tax credits for public transit passes.

Assessing public support for AT policies may inform municipal, provincial, and national policy and planning efforts (Cradock et al., 2018). Policies can influence behavior by facilitating interventions that are mediated by individuals' perceived capability, opportunity, and motivation (Michie, van Stralen and West, 2011). In the case of AT, environmental and social

planning policies may work via education and environmental restructuring to then influence knowledge (i.e., Capability) and social norms (i.e., Opportunity). Thus, an evaluation of Canada's National Active Transportation Strategy (Infrastructure Canada, 2021) should include tracking of public support for various initiatives to stimulate engagement of AT. The current data could serve as a baseline in that regard. One example would be how older adults perceive AT promotion and whether they are as receptive to the roll out of the national strategy. Furthermore, the multi-sectoral collaboration required to foster AT promotion and delivery of services likely requires diffusion of policies that could be informed by these findings. For instance, separate strategies currently exist in Canada for promoting AT (Infrastructure Canada, 2021), PA (Public Health Agency of Canada (2018), sport (Sport Canada, 2012), and recreation (Canadian Parks and Recreation Association, 2015). The extent to which common objectives and actions can be identified across these frameworks for getting the population moving will likely determine success.

Strengths of this study include it being among the first to examine policy support for AT in a representative sample of Canadian adults. However, it is not without limitations that should be acknowledged. First, self-reports are susceptible to bias. This is even more the case when asking individuals about hypothetical scenarios (Burgess, Spence and Wild, 2010). Thus, respondents may have been overly positive about support for initiatives with which they may have no experience (e.g., redevelopment of neighbourhoods, the provision of bike lanes in their community). Second, data collection occurred during the latter part of the COVID-19 pandemic and some respondents may have still been limited or restricted in their travel choices. Though the overall PA of Canadian adults may not have been impacted by the pandemic (Colley and Watt, 2022), many either chose to or were required to work from home, which could have influenced the type of responses garnered on our survey. Furthermore, there was much public demand for various policy initiatives in Canadian municipalities, such as the construction of temporary bike lanes, to facilitate commuting while adhering to social distancing recommendations (Buckner, 2020; Pike, 2020). Thus, the appetite for policy interventions for AT as reflected in our findings may have been affected by this temporary interruption to daily routines and concerns about avoiding close contact with others. Third, due to the sampling techniques employed, no Canadians from the territories were included in this sample. We recognize this as a limitation because those individuals residing in remote areas of northern Canada may have different perspectives on AT policy initiatives. Finally, though the reliability of survey panels may be questioned, much effort is made to ensure they deliver representative samples and similar types of crowd sourcing have demonstrated good reliability (Peer et al., 2017).

Conclusions

In the most comprehensive survey conducted on the topic to date, most policy actions to promote AT were supported by Canadians although the level of support varied by the type of policy actions and by demographics and self-reported AT behaviour. The challenge remains how to implement efficacious strategies that require a combination of public support and political will (Gelius et al., 2020; Raine et al., 2012), especially those that are considered more intrusive. An emphasis on issues that appeal to younger adults (e.g., climate change mitigation) along with demonstrated government leadership (Craddock et al., 2018) could be an effective approach for fostering further support for AT initiatives.

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Competing Interests

The authors have no competing interests to declare.

Authors Contributions

JCS, GF, CC, & CCB conceptualized and drafted the proposal that funded the project and provided the data reported herein. JCS led the data collection and advised on all aspects of analysis. AM performed the statistical analyses. JCS, GF, and AM wrote the manuscript. All of the authors provided important intellectual content and feedback on the manuscript and gave approval for the version to be published.

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