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Original quantitative research

Physical activity levels among Canadians using a health equity lens

Justin J. Lang, PhD (1,2,3,4); Sarah E. Turner, PhD (1,5); Natalie Doan, PhD (1,6); Iryna Demchenko, MSc (1,4,7); Stephanie A. Prince, PhD (1,2); Karen C. Roberts, MSc (1); Marisol T. Betancourt, MSc (1); Rachel Colley, PhD (8); Rabina Jahan, MPH (9); Ashley Amson, PhD (10,11); Jean-Philippe Chaput, PhD (2,4,12)

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Abstract

Introduction: This study examined physical activity (PA) levels among youth (12–17 years) and adults (18 years and older) living in Canada by subgroups including gender, sexual orientation, population groups, education, and income.

Methods: Data from the 2021 Canadian Community Health Survey (N = 44 239), a large national, cross-sectional survey, was used to examine self-reported daily PA time spent in active transportation, recreation, school/camp, occupational/household, and adherence to PA recommendations (≥ 60 minutes/day and ≥ 150 minutes/week of moderate-to-vigorous intensity PA for youth and adults, respectively) by population subgroups. Significant differences within subgroups were assessed with chi-square and Tukey-Kramer analyses.

Results: Among youth, boys were more likely to meet the PA recommendation than girls (54.9% vs. 36.5%). Boys engaged in more recreational (36.0 vs. 24.0 min/day) and school/camp (24.0 vs. 15.9 min/day) PA than girls. Youth from households in the highest income quintile reported more recreational PA compared to those in the lowest income quintile (35.8 vs. 22.1 min/day). Among adults, there was a significant gender difference in PA recommendation adherence (women: 51.7% vs. men: 57.4%). Men engaged in more recreational (18.0 vs. 15.1 min/day) and occupational/household (26.4 vs. 15.4 min/day) PA than women. Recreational PA was significantly higher in households with the highest income (22.8 min/day) and education (17.4 min/day) compared to lowest income (10.4 min/day) and education (6.9 min/day), respectively. Few subgroup differences were observed for active transportation.

Conclusion: PA inequalities persist in Canada. Future research should explore why these inequalities exist to help inform interventions.

Keywords: *physical activity, adult, youth, health equity, gender, socioeconomic position, Canada*

Highlights

- Physical inactivity is an important modifiable risk factor for chronic disease. Identifying inequalities in participation can help guide equitable policies and interventions.
- We found significant inequalities in physical activity among youth and adults living in Canada.
- The largest inequalities were seen across income and education groups, with the more advantaged groups reporting significantly more physical activity across domains when compared to less advantaged groups.
- Active transportation did not differ significantly across population subgroups, suggesting an opportunity to equitably improve population physical activity levels.

Author references:

1. Centre for Surveillance and Applied Research, Public Health Agency of Canada, Ottawa, Ontario, Canada
2. School of Epidemiology and Public Health, Faculty of Medicine, University of Ottawa, Ottawa, Ontario, Canada
3. Alliance for Research in Exercise, Nutrition and Activity (ARENA), University of South Australia, Adelaide, South Australia, Australia
4. Healthy Active Living and Obesity Research Group, Children's Hospital of Eastern Ontario Research Institute, Ottawa, Ontario, Canada
5. Department of Community Health Sciences, University of Manitoba, Winnipeg, Manitoba, Canada
6. School of Public Health Sciences, Faculty of Health, University of Waterloo, Ontario, Canada
7. Department of Health Sciences, Carleton University, Ottawa, Ontario, Canada
8. Health Analysis Division, Statistics Canada, Ottawa, Ontario, Canada
9. Health Equity Policy Directorate, Public Health Agency of Canada, Ottawa, Ontario, Canada
10. Policy and Planning, Canadian Heritage - Sport Canada, Ottawa, Ontario, Canada
11. Interdisciplinary School of Health Sciences, University of Ottawa, Ottawa, Ontario, Canada
12. Department of Pediatrics, Faculty of Medicine, University of Ottawa, Ottawa, Ontario, Canada

Correspondence: Justin J. Lang, Centre for Surveillance and Applied Research, Public Health Agency of Canada, 785 Carling Ave, Ottawa, ON K1A 0K9; Tel. 613 293-9008; Email: justin.lang@phac-aspc.gc.ca

Introduction

Physical activity (PA) is strongly associated with health and well-being.[1,2] It is recommended that youth participate in at least 60 minutes of moderate-to-vigorous intensity PA (MVPA) per day to gain optimal health benefits.[3] For adults, the recommendation is at least 150 minutes of MVPA per week.[4] Although PA is important to maintain or improve health, less than half of Canadian youth (43.9%) and adults (49.2%) meet PA recommendations.[5] PA occurs in a variety of contexts (e.g. transportation, recreation, school/camp, occupational/household), described as domains, which provide additional information about adherence not always apparent when looking at recommendation adherence alone. A detailed analysis of PA levels by domain, both within and between population subgroups, could better inform future interventions and policy development.

Not all population subgroups achieve the same levels of PA, due in part to the many social, economic and environmental factors that are recognized as key drivers of health outcomes, making it an important behavioural target in improving health equity. The first step in applying a health equity lens—a strategic and intentional approach to examining disparities in the achievement of an outcome across underserved and historically marginalized communities and population subgroups—is critical to generating the necessary evidence to address equity issues.[6,7] This paper seeks to help identify certain population subgroups that are not achieving adequate PA for health.[8]

Among youth, several studies have explored disparities in sports participation.[9] For instance, some American studies have found lower parent- or self-reported participation rates among youth from lower socioeconomic households and "minority" groups.[10–13] Canadian data show that gender-diverse and sexual minority youth report less sports participation, with sexual minority youth engaging in significantly lower total PA than their heterosexual peers.[14]

Among adults, several studies have examined PA equity/equality and diversity across population subgroups. In Sweden and Chile, male adults reported higher levels of PA compared to females, while in Germany, no sex differences were observed in self-reported PA.[15-17] Additionally, a large European study reported that higher education was negatively associated with meeting the PA recommendation among men but not women.[18] However, in Australia, no significant PA differences were observed between education groups.[19] In contrast, a Canadian study using accelerometer data showed that adults with the highest education and income levels were more likely to meet the PA recommendation than those with the lowest levels.[20]

It is evident that globally, inequalities in PA exist across socio-demographic groups.[9–18] Examining PA levels through a health equity lens is essential for providing the evidence necessary to promote fairness, social justice and inclusivity in health promotion efforts to ensure equal opportunity to lead active and healthy lives. The Canadian Health Inequalities Data Tool provides interactive breakdowns and measures of inequalities for self-reported PA across factors, such as education, income, immigration status, living arrangement, and language spoken at home.[21] However, the tool only reports on a single PA measure, i.e. meeting the PA recommendations, leaving room to expand by looking at health equity across domains of PA (e.g. school, work, leisure, active transportation). The Physical Activity, Sedentary Behaviour and Sleep (PASS) Indicators describe PA and 24-hour movement behaviours across a variety of population subgroups using different data sources,[22] but do not explore differences by less studied subgroups such as sexual orientation, language, and living arrangements. We aimed to examine adherence to the PA recommendation, reporting no PA, as well as domain-specific PA across population subgroups such as gender, population group (i.e. race/ethnicity/visible minorities), Indigenous identity, immigration status, language spoken at home, household income, highest household education, rural/urban geography, living arrangement, sexual orientation (adults only), age group (adults only), living with chronic condition(s) (adults only), and employment status (adults only) for both youth aged 12 to 17 years and adults aged 18 years and older in Canada.

Methods

Data source

We used national self-reported data from the 2021 Canadian Community Health Survey (CCHS), an ongoing cross-sectional survey that focusses on health status, health care utilization, and health determinants.[23] The CCHS sampling frame included individuals aged 12 years and older. Excluded individuals were those living on First Nation Reserves, on Crown Land, in institutions, full-time members of the Canadian Armed Forces, youth aged 12-17 years living in foster homes, or persons living in the Quebec health regions of Nunavik and Terres-Cris-de-la-Baie-James, which accounted for less than 3% of the Canadian population. Due to these exclusions, the Indigenous identifying subpopulation had a low sample size and was not representative.

The 2021 cycle took place between January 4, 2021, and January 31, 2022, and was conducted over the phone using computer assisted interviews by trained Statistics Canada staff. The CCHS total response rate was 24.1% (adults = 23.8%, youth = 28.4%).[23]

Participants living in the three territories were excluded from this analysis because multiple cycles (i.e. 2021 and 2022) are needed to generate a large enough sample size to include territorial data. Participants who reported a daily average of more than 600 minutes of PA (10 hours) in any of the individual PA domains were considered outliers and their responses were also excluded ($n_{adolescents} = 12$; $n_{adults} = 87$). In total, 49 678 individuals provided responses; however, only 44 239 agreed to share their responses with partners such as the Public Health Agency of Canada (89.1% share rate). Of the 44 239 participants, 40 956 were adults (aged 18 years and older) and 3283 were youth (aged 12 to 17 years). This study used listwise deletion to maximize sample size across the different subgroups and PA measures.

Informed consent was obtained prior to the interview. Parent or guardian verbal permission was required to interview youth aged 12 to 14 years. The CCHS was approved by the Statistics Canada Office of Privacy Management and Information Coordination and the Data Ethics Secretariat. The CCHS can be used for research without additional research ethics board review (article 2.2 of the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans).[24]

Physical activity measures

We reported the amount of PA across four domains: active transportation, recreational PA, school or camp PA and occupational/household PA, described in detail below. Among youth, PA questions asked for daily amounts over each of the previous 7 days, whereas for adults, questions asked for a total amount for the previous 7 days. For youth, the daily amounts were summed and divided by 7 to generate a daily average except for school or camp PA where daily minutes were summed and divided by 5 (it was assumed that there was no school or camp on Saturday and Sunday). For adults, the total weekly amount was divided by 7 to generate a daily PA average for each domain. For all PA except active transportation, respondents were asked to consider activities that made them sweat at least a little and breathe harder to identify those of at least moderate intensity when reporting duration. For adults, participants were instructed to only report activities that lasted a minimum of 10 continuous minutes.

Active transportation

Youth participants were asked, "In the last 7 days, did you use active ways like walking or cycling to get to places such as school, the bus stop, work, the shopping centre, or to visit friends?" Adult participants were asked, "In the last 7 days, did you use active ways like walking or cycling to get to places such as work, school, the bus stop, the shopping centre or to visit friends?" Time spent in active transportation was reported as an average across all participants (i.e. values are low due to a high number of participants reporting 0 min of active transportation).

Recreational PA

Youth participants were asked, "In the last 7 days, did you do physical activities in your leisure time including exercising, playing an organized or non-organized sports or playing with your friends?" Adult participants were asked, "In the last 7 days, did you do sports, fitness or recreational physical activities, organized or non-organized, that lasted a minimum of 10 continuous minutes?"

School or camp PA

Youth participants were asked: "In the last 7 days, did you do sports, fitness or recreational physical activities while at school or day camp?"

Occupational or household PA

Youth participants were asked: "In the last 7 days, did you do any other physical activities that you have not already reported, for example, while you were doing paid or unpaid work or helping your family with chores?" Adult participants were asked: "In the past 7 days, did you do any other physical activities while at work, in or around your home or while volunteering?"

PA recommendation adherence

Adherence to the PA recommendation was derived by summing the total number of minutes participants engaged in active transportation and moderate-to-vigorous intensity recreation, school or camp (for youth only), and occupation or household PA. Adherence was defined as a daily average of ≥60 minutes for youth and ≥150 minutes per week for adults, with bouts of a minimum of 10 minutes.[3,4]

No MVPA reported

Adult participants who reported zero moderate-to-vigorous intensity PA (MVPA) minutes were classified as having 'no PA reported'. This was uncommon in youth and, as a result, it was not explored in this group.

Measure of population subgroups

The PA data were stratified by nine population subgroup variables measured using similar questions among youth and adults. We selected subgroups for analysis based on their concordance with many of the subgroups identified in the Wheel of Privilege and Power.[25] Participants were asked about their gender (man, woman, gender diverse). Population group was measured using subgroups defined by Statistics Canada,[26] with some groupings collapsed to allow for reportable estimates: White, Black, East Asian (Chinese, Japanese, and Korean), Southeast Asian (including Filipino), South Asian, West Asian and Arab, Latin American, and another visible minority (including multiple visible minorities). Indigenous identity included First Nations, Métis, and Inuk (Inuit) living off reserves or other Indigenous settlements. Immigration status was determined by asking participants if they are or have ever been a landed immigrant or non-permanent resident, with a follow-up question about the number of years since immigration (e.g. non-immigrant [Canadian-born], 5 years or less, 6 to 10 years, and greater than 10 years). Participants were asked about the language most often spoken at home and the data were categorized as: English only, French only, English and French, English and/or French and other language, or other language only. Pre-tax household income for the year was adjusted to the low-income cut-off relative to the household and community size, with groups divided by quintile (e.g. five groups with the highest quintile representing the highest income group). Highest level of household education was measured using these three categories: less than high school, high school with no post-secondary, and post-secondary certificate, diploma or university degree. Urban/rural geography included four categories: living in a rural area (less than 1000), small population centre (1000 to 29 999), medium population centre (30 000 to 99 999), or large urban population centre (≥ 100 000).

There were differences in the response options for the living arrangement variable between youth and adults. Among youth, living arrangement included the following categories: lives with two parents, or lives with a single parent (could include birth, step or adoptive parent). Among adults, living arrangement included the following categories: unattached living alone, living with spouse/partner with no children, parent living with spouse/partner and children, or single parent living with children.

We also included the following four population subgroup variables for adults only. Sexual orientation was classified using the following response options: heterosexual, gay or lesbian, and bisexual or pansexual. Age was measured using the following categories: 18–34, 35–49, 50–64, 65–79, and 80 years and older. Participants were asked to self-report if they had any of the following long-term/chronic health conditions diagnosed by a health professional: diabetes, arthritis, heart disease, anxiety (e.g. phobia, obsessive-compulsive disorder) or depressive (e.g. depression, bipolar, mania, dysthymia) disorders, cancer, Alzheimer's, or the effects of a stroke. A subgroup variable was created to indicate the presence of one of the listed chronic conditions, two or more listed chronic conditions (multimorbidity), or no chronic conditions.[27] Finally, participants aged 18 to 75 years were asked to report on employment status by indicating, in the previous week, if they worked, were absent from a job, or if they were

unemployed. Participants who reported being employed were stratified into part-time or full-time work schedule.

Statistical analysis

For all analyses, we included the sample and bootstrap weights provided by Statistics Canada to account for the complex survey design. We calculated the prevalence and 95% confidence intervals (CI) of each population subgroup variable for categorial PA measures (e.g. meeting PA recommendation and no PA reported) and means and 95% CI for continuous PA measures (e.g. minutes per day of active transportation, recreation PA, school or camp PA, and occupational or household PA). Group differences for categorical PA measures were assessed using chi-square analyses. Group differences for continuous PA measures were assessed using post-hoc Tukey-Kramer tests, adjusted for multiple comparisons, to determine significant differences within group means for continuous PA variables. For this post-hoc test we used an alpha of $p \leq 0.001$ to identify highly significant between-group differences. Following Statistics Canada release guidelines, we suppressed estimates with high coefficients of variation (i.e. > 35%).[23] All statistical analyses were conducted using SAS Enterprise Guide 7.1 (SAS Institute Inc., Cary, NC, USA).

Results

Youth physical activity

Table 1 provides an overview of the differences in PA across population subgroups for youth. The percentage of girls (36.5%) meeting the PA recommendation was nearly 20 percentage points lower than that of boys (54.9%). Girls had significantly lower average daily minutes of recreation (24.0 vs. 36.0 minutes/day) and school or camp (15.9 vs. 24.0 minutes/day) PA compared to boys. There were no significant within group gender differences in active transportation or occupational or household PA. Participants who identified as South Asian reported the least amount of time spent in active transportation (12.1 minutes/day), and those who identified as Southeast Asian reported the lowest amount of school or camp PA (10.7 minutes/day). There were significant differences in meeting PA recommendations and school or camp PA within the Indigenous identity population subgroup. Compared to non-immigrants (i.e. Canadian-born), youth who had immigrated to Canada within the last 5 years reported significantly lower recreation PA (12.1 vs. 31.7 minutes/day). Youth in the lowest household income quintile reported significantly lower recreation PA compared to those in the highest income quintile (22.1 vs. 35.8 minutes/day). There were no significant differences by the language spoken most often at home, household education, rural/urban geography, and living arrangement.

Adult physical activity

Table 2 provides an overview of the differences in PA across population subgroups for adults. Women (51.7%) had a significantly lower percentage of meeting the PA recommendation compared to men (57.4%). Women (23.7%) also had a significantly higher percentage reporting no PA compared to men (21.1%). These gender differences in adherence were driven by significant differences in recreation PA (15.1 vs. 18.0 minutes/day) and occupation or household PA (15.4 vs. 26.4 minutes/day). Similar to youth, there were no significant gender differences in active transportation among adults. Among population groups, those who reported being East (11.7 minutes/day), South (11.8 minutes/day), and West Asian (10.7 minutes/day) had the lowest occupational or household PA levels. There were no significant within group differences in the Indigenous identity subgroup. Compared to non-immigrants, immigrants who had lived in Canada for more than 10 years reported significantly lower recreation PA (13.6 vs. 17.6 minutes/day) and occupation or household PA (15.5 vs. 23.3 minutes/day). Adults who spoke another language only (12.2 minutes/day) or French only (17.6 minutes/day) most often at home had significantly lower occupation or household PA compared to those who spoke English only (23.7 minutes/day). There was a significant household income and education gradient whereby higher levels were associated with greater recreation PA. Those in the highest household income (22.8 minutes/day) and education (17.4 minutes/day) subgroups reported more than double the amount of recreation PA compared to the lowest household income (10.4 minutes/day) and education (6.9 minutes/day) subgroups. Adults living in rural areas reported significantly more occupation/household PA compared to those in large urban population centres (29.9 vs. 17.5 minutes/day). There was also a significant age gradient where those aged 65–79 and 80 years and older reported significantly less PA compared to younger individuals across most PA domains. Adults with multimorbidity also reported significantly lower PA levels across all domains when compared to participants with no or one chronic condition. Lastly, adults who were unemployed reported significantly less occupation or household PA compared to their employed counterparts (13.2 vs. 27.8 minutes/day).

Discussion

Using a large national sample of individuals living in Canada, we sought to explore differences in self-reported PA across population subgroups using a health equity lens among youth and adults. Our results identified inequalities in PA across several subgroups. A substantially lower percentage of girls and women were meeting PA recommendations, and girls and women reported fewer minutes of PA across most domains compared to boys and men. The percentage of girls meeting the PA recommendation was nearly 20 percentage points lower than in boys, with narrowing but significant differences persisting into adulthood. Among youth and adults, we found an income and education gradient where more advantaged subgroups reported significantly more recreation PA than their less advantaged counterparts. Active transportation did not differ across population subgroups for youth and adults.

When comparing our results with data using objective measures (i.e. accelerometers), we found a few inconsistencies. Colley et al.[20] found that adults without a spouse or children had the highest percentage of meeting the PA recommendations. In contrast, our results indicate that unattached/single adults had the lowest percentage of meeting the PA recommendations when compared with all other living arrangements. This divergence of results could be due to a self-report bias, although it is difficult to fully understand why these differences occurred. However, there were several consistencies between our findings versus the PASS Indicators[5] and Colley et al.[20] device measured results among adults, including a decreasing gradient in meeting recommendations with age, higher percentage of meeting PA recommendations among males compared to females, and an increasing gradient in meeting PA recommendations with higher education levels. In addition, our results for youth are consistent with the PASS

TABLE 1
Differences in physical activity by population subgroups among youth aged 12 to 17 years in Canada

	Unweighted sample size (row) range across all PA variables	Meeting PA recommendation (≥60 min/day) % (95%CI)	Active transportation (min/day) mean (95%CI)	Recreation PA (min/day) mean (95%CI)	School/camp PA (min/day) mean (95%CI)	Occupation/ household PA (min/day) mean (95%CI)
Unweighted sample size (column) (n)		3043	3160	3189	3234	3237
Gender						
Boys	1573–1674	54.9 (51.1–58.7)	25.3 (22.0–28.7)[a]	36.0 (32.6–39.4)[a]	24.0 (21.1–26.9)[a]	8.5 (6.6–10.4)[a]
Girls	1441–1539	36.5 (32.8–40.2)	20.9 (17.2–24.7)[a]	24.0 (20.5–27.5)[b]	15.9 (14.1–17.7)[b]	7.0 (5.3–8.7)[a]
Gender diverse	[c]	[F]	[F]	[F]	[F]	[F]
p-value		< 0.0001				
Population group						
White	2118–2259	49.3 (45.9–52.6)	22.5 (20.2–24.7)[a]	31.6 (29.0–34.2)[a]	21.7 (19.3–24.1)[a]	8.2 (6.6–9.7)[a]
Black	119–124	33.3 (21.2–45.5)[E]	13.0 (7.9–18.1)[a,b,E]	24.8 (10.5–39.1)[a,E]	18.4 (10.4–26.4)[a,b,E]	[F]
East Asian (Chinese, Japanese, Korean)	118–124	42.4 (29.7–55.0) [E]	[F]	35.5 (14.1–56.9)[a,E]	26.5 (14.1–56.9)[a,b,E]	[F]
Southeast Asian (including Filipino)	123–127	45.9 (33.0–58.7)	29.8 (18.3–41.2)[a,b,E]	27.5 (17.4–37.6)[a,E]	10.7 (6.5–14.8)[b,E]	[F]
South Asian	128–133	34.6 (23.8–45.3)[E]	12.1 (8.1–16.2)[b,E]	27.6 (18.9–36.3)[a,E]	21.2 (14.7–27.8)[a,b,E]	4.7 (2.0–7.3)[a,E]
West Asian and Arab	101–110	29.9 (19.4–40.4) [E]	17.9 (10.4–25.4)[a,b,E]	23.4 (16.4–30.5)[a,E]	14.6 (7.5–21.6)[a,b,E]	[F]
Latin American	39–41	83.5 (69.3–97.8)	67.9 (34.4–101.3)[a,b,E]	46.4 (17.7–75.1)[a,E]	[F]	[F]
Another visible minority (including multiple visible minorities)	28–31	[F]	15.8 (8.1–23.5)[E]	[F]	[F]	[F]
p-value		< 0.0001				
Indigenous identity						
First Nations	122–134	32.7 (20.8–44.6)[E]	18.4 (10.1–26.7)[a,E]	19.9 (11.0–28.8)[a,E]	7.6 (4.0–11.2)[a,E]	[F]
Métis	106–117	63.8 (49.8–77.8)	38.5 (24.9–52.1)[a,E]	26.0 (17.1–34.9)[a,E]	23.5 (15.7–31.3)[b,E]	[F]
Inuk (Inuit)	[d]	[F]	[F]	[F]	[F]	[F]
p-value		0.0003				
Immigration						
Non-immigrant (Canadian-born)	2678–2853	48.4 (45.5–51.4)	24.1 (21.3–26.9)[a]	31.7 (29.0–34.5)[a]	20.6 (18.7–22.5)[a]	8.4 (6.9–9.9)[a]
5 years or less since immigration	116–120	23.2 (12.7–33.6)[E]	14.4 (9.1–19.7)[a,E]	12.1 (7.9–16.3)[b,E]	13.7 (8.2–19.3)[a,E]	4.4 (1.5–7.3)[a,b,E]
6 to 10 years since immigration	98–104	40.4 (27.9–52.9)[E]	20.4 (12.0–28.8)[a,E]	29.0 (20.5–37.6)[a,b,E]	20.5 (11.9–29.1)[a,E]	2.7 (0.9–4.4)[b,E]
More than 10 years since immigration	88–94	33.3 (20.3–46.3)[E]	18.3 (10.6–26.0)[a,E]	24.8 (12.4–37.1)[a,b,E]	19.1 (9.6–28.6)[a,E]	[F]
p-value		0.0003				

Continued on the next page

TABLE 1 (continued)
Differences in physical activity by population subgroups among youth aged 12 to 17 years in Canada

	Unweighted sample size (row) range across all PA variables	Meeting PA recommendation (≥60 min/day) % (95%CI)	Active transportation (min/day) mean (95%CI)	Recreation PA (min/day) mean (95%CI)	School/camp PA (min/day) mean (95%CI)	Occupation/ household PA (min/day) mean (95%CI)
Language spoken most often at home						
English only	1924–2039	47.8 (44.2–51.3)	22.2 (19.9–24.5)[a]	31.3 (28.4–34.1)[a]	21.4 (19.1–23.7)[a]	8.2 (6.6–9.8)[a]
French only	552–614	45.4 (39.4–51.4)	22.3 (17.2–27.3)[a]	27.6 (23.0–32.3)[a]	20.3 (15.1–25.5)[a]	6.0 (3.1–9.0)[a,E]
English and French	107–114	54.5 (41.0–68.0)	23.1 (15.7–30.5)[a,E]	31.7 (22.9–40.6)[a]	20.7 (12.0–29.4)[a,E]	7.9 (3.6–12.3)[a,E]
English and/or French, and other language	271–282	40.7 (32.5–48.9)	23.2 (15.4–31.0)[a,E]	27.6 (20.4–34.8)[a]	15.6 (12.1–19.1)[a]	7.8 (3.4–12.3)[a,E]
Other language only	184–194	41.2 (30.5–51.9)	33.2 (13.3–53.0)[a,,E]	31.4 (16.6–46.3)[a,E]	15.8 (9.2–22.4)[a,E]	7.9 (3.5–12.2)[a,E]
p-value		0.3041				
Household income						
Quintile 1 (lowest)	654–686	37.7 (32.4–43.0)	23.6 (18.7–28.4)[a]	22.1 (18.2–26.0)[a]	16.0 (12.7–19.2)[a]	8.3 (5.5–11.2)[a,E]
Quintile 2	607–654	46.7 (40.6–52.8)	25.2 (19.9–30.4)[a]	31.8 (25.7–37.9)[a,b]	17.4 (14.4–20.4)[a]	8.2 (5.1–11.3)[a,E]
Quintile 3	633–678	42.8 (36.5–49.0)	22.6 (14.6–30.6)[a,E]	33.6 (27.1–40.1)[a,b]	17.5 (14.2–20.7)[a]	5.7 (4.1–7.3)[a]
Quintile 4	567–602	52.2 (46.0–58.5)	21.9 (17.8–26.0)[a]	30.8 (26.0–35.6)[a,b]	22.3 (18.5–26.0)[a]	8.8 (5.4–12.2)[a,E]
Quintile 5 (highest)	480–509	53.1 (46.3–59.8)	23.2 (18.9–27.5)[a]	35.8 (30.3–41.4)[b]	30.3 (23.2–37.3)[a]	7.4 (3.8–10.9)[a,E]
p-value		0.0045				
Highest household education						
Less than secondary school graduation	104–115	40.6 (25.8–55.4)	29.9 (15.0–44.8)[a,E]	20.4 (7.7–33.0)[a,E]	15.9 (5.1–26.7)[a,E]	9.3 (2.9–15.6)[a,E]
Secondary school graduation, no post-secondary education	313–338	50.4 (42.5–58.3)	27.0 (19.6–34.4)[a]	32.8 (22.1–43.5)[a,E]	17.2 (13.5–21.0)[a]	10.4 (7.0–13.8)[a,E]
Post-secondary certificate diploma or university degree	2564–2714	46.0 (42.9–49.1)	21.6 (19.5–23.7)[a]	30.0 (27.7–32.2)[a]	20.5 (18.5–22.4)[a]	7.4 (6.0–8.9)[a]
p-value		0.4885				
Rural/urban geography						
Rural area (less than 1000)	883–934	53.0 (48.5–57.5)	21.3 (17.8–24.8)[a]	34.2 (29.9–38.6)[a]	23.5 (20.5–26.4)[a]	12.7 (9.3–16.2)[a]
Small population centre (1000 to 29 999)	624–673	49.1 (43.5–54.6)	23.0 (18.7–27.2)[a]	30.1 (26.1–34.2)[a]	20.7 (15.1–26.4)[a]	9.7 (6.6–12.8)[a,E]
Medium population centre (30 000 to 99 999)	356–386	43.3 (36.2–50.3)	18.9 (14.6–23.1)[a]	28.2 (22.9–33.5)[a]	17.5 (13.3–21.6)[a]	7.6 (4.4–10.8)[a,E]
Large urban population centre (≥100 000)	1180–1245	43.7 (39.7–47.7)	24.4 (20.6–28.2)[a]	29.4 (25.7–33.1)[a]	19.1 (16.7–21.4)[a]	5.9 (4.2–7.5)[a]
p-value		0.02				

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TABLE 1 (continued)
Differences in physical activity by population subgroups among youth aged 12 to 17 years in Canada

	Unweighted sample size (row) range across all PA variables	Meeting PA recommendation (≥60 min/day) % (95%CI)	Active transportation (min/day) mean (95%CI)	Recreation PA (min/day) mean (95%CI)	School/camp PA (min/day) mean (95%CI)	Occupation/ household PA (min/day) mean (95%CI)
Living arrangement						
Lives with two parents	2155–2284	47.8 (44.5–51.1)	22.2 (19.8–24.6)[a]	31.3 (28.7–33.9)[a]	20.9 (18.8–23.0)[a]	8.2 (6.6–9.9)[a]
Lives with a single parent	566–613	42.7 (37.0–48.5)	23.5 (18.8–28.2)[a]	25.6 (20.5–30.7)[a]	17.2 (13.7–20.7)[a]	6.8 (4.4–9.3)[a,E]
p-value		0.1561				

Source: Canadian Community Health Survey, 2021.

Abbreviations: CI, confidence interval; CV, coefficient of variation; MVPA, moderate-to-vigorous intensity physical activity; PA, physical activity.

Notes: *p*-values were calculated using chi-square tests. Means with different superscripts ([a] or [b]) indicate that the means were statistically significantly different at $p \leq 0.001$ based on Tukey-Kramer post-hoc comparisons (i.e. the same superscript letter indicates that the means were not statistically different from each other).

[c] 25 individuals who reported gender diverse were excluded from the analysis.

[d] 12 individuals who identified as Inuit were excluded from the analysis.

[E] There is high sampling variability associated with these estimates (i.e. $15 < CV \leq 35$).

[F] These estimates do not meet Statistics Canada's quality standards and therefore cannot be reported (i.e. $CV > 35$).

TABLE 2
Differences in physical activity by population subgroups among adults aged 18 years and older in Canada

	Unweighted sample size (row) range across all PA variables	Meeting PA recommendation (≥150 min/week) % (95%CI)	No MVPA reported % (95%CI)	Active transportation (min/day) mean (95%CI)	Recreation PA (min/day) mean (95%CI)	Occupation/ household PA (min/day) mean (95%CI)
Unweighted sample size (column) (n)		40 430	40 430	40 747	40 790	40 611
Gender						
Men	18 084–18 248	57.4 (56.1–58.6)	21.1 (20.0–22.1)	14.2 (13.1–15.2)[a]	18.0 (17.1–18.8)[a]	26.4 (24.8–28.0)[a]
Women	22 283–22 476	51.7 (50.5–52.9)	23.7 (22.8–24.7)	12.4 (11.6–13.2)[a]	15.1 (14.1–16.1)[b]	15.4 (14.2–16.5)[b]
Gender diverse	47	[F]	[F]	[F]	10.6 (4.1–17.1)[a,b,E]	[F]
p-value		< 0.0001	0.0012			
Population group						
White	34 413–34 859	57.0 (56.1–57.8)	21.5 (20.8–22.2)	13.3 (12.6–14.0)[a]	17.4 (16.7–18.0)[a]	22.6 (21.5–23.7)[a]
Black	624–634	46.4 (40.0–52.7)	23.1 (17.8–28.4)	12.1 (9.1–15.2)[a]	11.6 (9.0–14.2)[a]	16.7 (11.2–22.2)[a,b,E]
East Asian (Chinese, Japanese, Korean)	1067–1077	44.3 (39.6–48.9)	24.3 (20.3–28.2)	10.1 (8.0–12.1)[a]	16.8 (10.3–23.3)[a,E]	11.7 (8.1–15.2)[b,E]
Southeast Asian (including Filipino)	711–722	50.3 (44.3–56.3)	26.3 (21.0–31.7)	13.4 (10.0–16.9)[a]	12.0 (9.0–14.9)[a]	22.4 (14.5–30.4)[a,b,E]
South Asian	840–847	44.4 (39.2–49.6)	28.1 (23.5–32.7)	12.1 (8.9–15.3)[a]	13.0 (10.8–15.2)[a]	11.8 (7.7–16.0)[b,E]
West Asian and Arab	341–345	44.0 (35.9–52.1)	23.8 (17.5–30.1)	13.9 (9.6–18.2)[a,E]	11.1 (8.2–14.0)[a]	10.7 (5.1–16.3)[b,E]
Latin American	253–255	54.9 (45.5–64.4)	19.3 (12.6–26.0)[E]	20.8 (9.5–32.1)[a,E]	17.6 (11.7–23.4)[a,E]	14.9 (6.2–23.7)[a,b,E]
Another visible minority (including multiple visible minorities)	159–160	48.3 (35.3–61.3)	28.2 (16.6–39.7)[E]	10.9 (5.8–16.0)[a,E]	12.4 (8.3–16.5)[a,E]	14.0 (7.4–20.7) [a,b,E]
p-value		< 0.0001	0.0209			
Indigenous identity						
First Nations	775–782	53.1 (46.6–59.6)	24.9 (19.8–29.9)	12.6 (9.4–15.8)[a]	18.8 (13.1–24.5)[a,E]	21.6 (14.9–28.3)[a,E]
Métis	859–870	67.4 (61.9–72.9)	16.0 (12.2–19.8)	24.5 (9.3–39.6)[a,E]	17.9 (13.8–22.0)[a]	39.2 (28.9–49.6)[a]
Inuk (Inuit)	46–47	66.5 (45.6–87.5)[E]	[F]	15.0 (5.3–24.8)[a,E]	15.1 (5.4–24.8)[a,E]	[F]
p-value		0.0004	0.0018			
Immigration						
Non-immigrant (Canadian-born)	33 743–34 040	57.3 (56.3–58.2)	20.8 (20.1–21.5)	13.4 (12.6–14.2)[a]	17.6 (17.0–18.3)[a]	23.3 (22.1–24.4)[a]
5 years or less since immigration	732–738	46.0 (40.1–51.9)	20.0 (15.6–24.4)	12.7 (10.3–15.1)[a]	13.0 (9.8–16.2)[a,b]	14.7 (9.5–20.0)[a,b,E]
6 to 10 years since immigration	703–706	46.5 (40.7–52.3)	22.3 (17.6–27.1)	12.3 (9.2–15.3)[a]	17.5 (8.1–26.9)[a,b,E]	13.2 (8.6–17.9)[b,E]
More than 10 years since immigration	4561–4601	49.1 (46.8–51.4)	27.7 (25.5–29.8)	12.7 (11.1–14.3)[a]	13.6 (12.3–14.8)[b]	15.5 (13.3–17.6)[b]
p-value		< 0.0001	< 0.0001			

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TABLE 2 (continued)
Differences in physical activity by population subgroups among adults aged 18 years and older in Canada

	Unweighted sample size (row) range across all PA variables	Meeting PA recommendation (≥150 min/week) % (95%CI)	No MVPA reported % (95%CI)	Active transportation (min/day) mean (95%CI)	Recreation PA (min/day) mean (95%CI)	Occupation/ household PA (min/day) mean (95%CI)
Language most spoken at home						
English only	29 738–30 002	57.6 (56.6–58.7)	20.7 (19.9–21.5)	13.6 (12.8–14.4)[a]	17.5 (16.8–18.2)[a]	23.7 (22.4–25.0)[a]
French only	5873–5931	53.0 (51.1–54.8)	22.7 (21.2–24.2)	13.6 (11.8–15.4)[a]	15.7 (14.5–16.8)[a]	17.6 (15.5–19.7)[b]
English and French	1020–1030	59.6 (54.7–64.4)	17.0 (13.7–20.3)	12.7 (10.2–15.3)[a]	18.1 (15.5–20.7)[a]	16.9 (12.3–21.5)[a,b]
English and/or French, and other language	1988–1999	47.8 (44.3–51.3)	27.5 (24.2–30.8)	10.9 (8.8–12.9)[a]	14.4 (12.6–16.2)[a]	19.0 (15.0–23.0)[a,b]
Other language only	1675–1690	44.4 (40.8–47.9)	27.4 (24.3–30.4)	13.3 (10.8–15.8)[a]	13.8 (9.8–17.8)[a]	12.2 (9.4–14.9)[b]
p-value		< 0.0001	< 0.0001			
Household income						
Quintile 1 (lowest)	8990–9089	43.3 (41.4–45.2)	31.4 (29.7–33.1)	13.3 (12.0–14.5)[a]	10.4 (9.4–11.3)[a]	16.5 (14.5–18.5)[a]
Quintile 2	8475–8556	50.8 (48.7–52.8)	24.2 (22.5–25.8)	14.9 (12.8–16.9)[a]	13.9 (12.6–15.1)[b]	23.5 (20.7–26.4)[b]
Quintile 3	8120–8183	55.7 (53.7–57.6)	22.3 (20.6–23.9)	12.8 (11.5–14.0)[a]	16.5 (15.2–17.7)[b,c]	23.0 (20.6–25.4)[b]
Quintile 4	7384–7445	59.0 (56.9–61.0)	18.4 (16.8–20.0)	12.3 (10.9–13.8)[a]	19.0 (17.8–20.2)[c,d]	19.3 (17.4–21.3)[a,b]
Quintile 5 (highest)	7461–7521	63.8 (62.0–65.6)	15.7 (14.3–17.1)	13.1 (11.9–14.3)[a]	22.8 (20.7–24.9)[d]	22.0 (19.9–24.0)[a,b]
p-value		< 0.0001	< 0.0001			
Highest household education						
Less than secondary school graduation	3124–3169	32.2 (29.2–35.2)	45.5 (43.4–49.7)	11.2 (8.5–13.9)[a]	6.9 (5.3–8.6)[a]	14.8 (11.3–18.3)[a]
Secondary school graduation, no post-secondary education	6290–6362	46.1 (43.8–48.4)	31.0 (28.9–33.2)	12.1 (10.4–13.8)[a]	12.4 (11.0–13.9)[b]	21.3 (18.9–23.7)[a]
Post-secondary certificate diploma or university degree	30 486–30 707	56.9 (55.9–57.9)	19.8 (19.1–20.6)	13.4 (12.7–14.1)[a]	17.4 (16.8–18.0)[c]	21.0 (19.9–22.1)[a]
p-value		< 0.0001	< 0.0001			
Rural/urban geography						
Rural area (less than 1000)	11 576–11 702	56.4 (54.9–57.9)	23.1 (21.9–24.3)	11.6 (10.3–12.9)[a]	17.6 (16.3–18.8)[a]	29.9 (27.8–32.0)[a]
Small population centre (1000–29 999)	8513–8596	53.9 (52.1–55.8)	23.7 (21.1–25.2)	11.7 (10.6–12.7)[a]	16.6 (15.3–17.9)[a]	23.0 (20.5–25.5)[b]
Medium population centre (30 000–99 999)	4982–5020	52.7 (50.5–55.0)	23.0 (21.0–24.9)	11.9 (10.1–13.7)[a]	17.5 (15.9–19.0)[a]	23.3 (20.2–26.3)[a,b]
Large urban population centre (≥ 100 000)	15 359–15 476	54.3 (53.1–55.6)	21.8 (20.8–22.9)	14.3 (13.3–15.2)[a]	16.0 (15.1–17.0)[a]	17.5 (16.2–18.9)[b]
p-value		0.0604	0.1432			
Living arrangement						
Unattached/ Single	13 871–14 028	51.0 (49.4–52.6)	26.2 (24.9–27.5)	14.9 (13.6–16.1)[a]	14.3 (13.3–15.4)[a]	18.3 (16.4–20.2)[a]
Living with spouse/partner with no children	13 919–14 042	53.5 (52.1–54.9)	24.8 (23.6–26.0)	11.8 (11.1–12.6)[b]	16.7 (15.8–17.5)[a]	19.9 (18.3–21.5)[a]

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TABLE 2 (continued)
Differences in physical activity by population subgroups among adults aged 18 years and older in Canada

	Unweighted sample size (row) range across all PA variables	Meeting PA recommendation (≥150 min/week) % (95%CI)	No MVPA reported % (95%CI)	Active transportation (min/day) mean (95%CI)	Recreation PA (min/day) mean (95%CI)	Occupation/ household PA (min/day) mean (95%CI)
Parent living with spouse/partner and children	7090–7134	57.5 (55.7–59.4)	18.3 (16.9–19.7)	13.0 (11.7–14.4)[a,b]	16.4 (15.4–17.3)[a]	23.1 (21.0–25.3)[a]
Single parent living with children	1883–1901	51.7 (48.0–55.4)	27.7 (24.2–31.1)	10.8 (8.7–13.0)[a,b]	14.0 (12.3–15.6)[a]	21.2 (16.9–25.6)[a]
p-value		< 0.0001	< 0.0001			
Sexual orientation						
Heterosexual	37 362–37 679	55.2 (54.4–56.1)	21.7 (21.0–22.5)	13.3 (12.6–14.0)[a]	16.6 (16.1–17.2)[a]	21.4 (20.4–22.4)[a]
Gay or lesbian	564–566	61.2 (54.6–67.9)	16.9 (11.9–21.9)[E]	19.4 (13.8–25.1)[a]	17.9 (14.4–21.4)[a]	17.0 (11.4–22.6)[a,E]
Bisexual or pansexual	639–645	65.1 (58.7–71.5)	9.1 (5.4–12.8)[E]	16.5 (13.2–19.8)[a]	25.7 (11.9–39.4)[a,E]	20.7 (14.5–27.0)[a,E]
p-value		0.0029	< 0.0001			
Age groups						
18–34 years	6042–6081	59.6 (57.8–61.5)	15.6 (14.1–17.0)	14.1 (12.7–15.6)[a]	20.1 (18.3–21.9)[a]	22.0 (20.0–24.1)[a]
35–49 years	7829–7880	58.4 (56.6–60.2)	16.6 (15.3–17.9)	13.3 (11.9–14.8)[a]	16.9 (15.9–17.9)[a]	26.4 (23.9–28.8)[a]
50–64 years	10 140–10 233	57.0 (55.2–58.7)	22.9 (21.4–24.4)	14.6 (13.2–15.9)[a]	16.2 (15.1–17.2)[a,b]	21.0 (19.1–23.0)[a]
65–79 years	12 896–13 025	45.6 (44.1–47.0)	31.8 (30.5–33.2)	11.6 (10.8–12.3)[a]	13.7 (12.7–14.6)[b]	14.8 (13.4–16.1)[b]
80 years and older	3523–3571	24.4 (21.1–26.8)	54.3 (51.4–57.2)	7.2 (5.8–8.6)[b]	5.6 (4.7–6.5)[c]	7.3 (5.0–9.6)[c,E]
p-value		< 0.0001	< 0.0001			
Living with chronic condition(s)[d]						
No chronic conditions	20 520–20 666	58.1 (57.0–59.2)	18.4 (17.4–19.3)	14.3 (13.3–15.2)[a]	18.5 (17.6–19.4)[a]	21.1 (19.9–22.4)[a]
One chronic condition	13 247–13 389	52.7 (51.1–54.2)	24.7 (23.4–26.0)	12.6 (11.6–13.7)[a]	14.7 (13.8–15.6)[b]	21.9 (19.9–24.0)[b]
Multimorbidity	6655–6727	38.5 (36.3–40.7)	39.5 (37.3–41.7)	9.1 (7.9–10.3)[b]	9.7 (8.5–10.8)[c]	16.5 (14.1–18.9)[c]
p-value		< 0.0001	< 0.0001			
Employment status (aged 18 to 75 years)						
Employed full-time	16 147–16 301	60.5 (59.2–61.8)	17.0 (16.1–18.0)	14.0 (12.9–15.1)[a]	17.9 (16.9–18.9)[a]	27.8 (26.1–29.5)[a]
Employed part-time	3020–3056	57.0 (53.8–60.2)	16.2 (13.7–18.6)	15.2 (12.8–17.6)[a]	17.5 (15.6–19.4)[a]	19.4 (15.5–23.3)[a,b]
Unemployed	14 898–15 028	50.1 (48.5–51.6)	26.1 (24.8–27.4)	12.9 (12.0–13.8)[a]	15.9 (14.9–16.8)[a]	13.2 (12.1–14.2)[b]
p-value		< 0.0001	< 0.0001			

Source: Canadian Community Health Survey 2021.

Abbreviations: CI, confidence interval; CV, coefficient of variation; MVPA, moderate-to-vigorous intensity physical activity; PA, physical activity.

Notes: *p*-values were calculated using chi-square tests. Means with different superscripts ([a] or [b] or [c]) indicate that the means were statistically significantly different at $p \leq 0.001$ based on Tukey-Kramer post-hoc comparisons (i.e. the same superscript letter indicates that the means were not statistically different from each other).

[d] Chronic conditions included diabetes, arthritis, heart disease, anxiety (e.g. phobia, obsessive-compulsive disorder) or depressive (e.g. depression, bipolar, mania, dysthymia) disorders, cancer, Alzheimer's, or the effects of a stroke.

[E] There is high sampling variability associated with these estimates (i.e. $15 < CV \leq 35$).

[F] These estimates do not meet Statistics Canada's quality standards and therefore cannot be reported (i.e. $CV > 35$).

Indicators' device measured results that show higher percentage of meeting PA recommendations among males compared to females aged 5-17 years.

Large sex and gender inequalities in PA remain a concern in Canada, which are congruent with other research.[28,29] Our results demonstrated a larger significant gender gap in meeting PA recommendations among youth, with the gap narrowing but remaining significantly different between men and women in adulthood. Our data suggest that the narrowed gender gap in PA could be driven by a large change in recreational PA among adults when compared to youth, something that should be investigated further. Some studies have identified higher income inequality within a country being associated with a larger gender gap in PA,[30] suggesting that there are potential structural issues and unequal access to PA that could explain these inequalities. Policies and interventions to address gender inequalities remain an important area of future research.

We found inequalities in household income and household education categories for recreation PA among both youth and adults; however, these findings differed from previous research. For instance, in Chile[16] and Germany[17] those in the lowest income and education categories reported the most PA compared to those in the highest categories. This was inverse to our findings; however, in the German study[17] PA was measured using the Global Physical Activity Questionnaire which measured occupational PA differently than our PA questionnaire. Thus, differences in the PA measurement tools may explain these divergent findings.

Our study highlights a few unexpected results that contrast with previous findings. For instance, although we observed small significant differences in meeting PA recommendations and no MVPA across sexual orientation categories for adults, there were no significant differences across PA domains. These results do not align with other national estimates that indicate higher PA levels among lesbian or gay groups.[31] Our divergent findings might represent a lack of sample size to identify differences, or it could indicate that there are other intersecting factors involved. For instance, one study identified that among the gay or lesbian group, both gender and income were important for identifying individuals with a higher likelihood of being physically active.[32] It is possible that taking an intersectional approach to PA would help better identify subgroups within the gay or lesbian group (e.g. by ethnicity, education, income, gender, health status) that report lower levels of PA. Although we did not apply an intersectional approach, we provide a broad overview of factors that may help inform intervention targets and guide future intersectional research in this area.

There was a lack of significant differences in self-reported active transportation within most population subgroups. Although an important aspect of health equity research is to find inequalities to help guide targeted interventions and policy, we believe that the absence of inequalities in active transportation, in itself, is an important finding. This may suggest that efforts to promote active transportation through policies, improved and accessible built environments, and interventions might be an equitable approach to increasing population PA. Active transportation has shown to be an important domain for increasing the likelihood of adherence to the physical activity recommendations.[33] In Canada, substantial work is underway to promote active transportation, including standardized nomenclature around comfort and safety,[34] inventories of available infrastructure,[35] evaluations of the impacts of new infrastructure,[36,37] and investments in infrastructure through the National Active Transportation Strategy.[38] Continued research efforts in this area are important as they may have implications for supporting equitable increases in population PA.

Strengths and limitations

There are several strengths to this research, including the large national sample, data for several domains of PA, and investigation of differences across a wide range of population groups in a sample of both youth and adults. Despite these strengths, there were several weaknesses that should be considered. First, the sample size for several under-represented subgroups (e.g. gender diverse, Indigenous identity) was small, making it impossible to identify potential differences. Statistics Canada's Disaggregated Data Action Plan was developed to address some of these data limitations.[39] Second, although we were able to examine differences across many population subgroups, there were some important subgroups missing from our analysis, such as participants living with cognitive, behavioural or physical functional difficulties. Third, the 2021 CCHS adult PA questions asked to report PA accrued in bouts of 10 minutes or more; this is no longer part of the new PA recommendation which recognizes the benefit of every minute of PA.[4] Previous research in Canada suggests that, although the removal of the 10-minute bout requirement would increase the number of individuals meeting the recommendation, there are no differences in the demographic, behaviour or health profiles of those captured by the new recommendation.[40] Fourth, there is a potential for self-report bias and for this bias to vary between population groups. For instance, a systematic review that compared self-report to device measured PA found a greater bias in women compared to men.[41] Fifth, the data were collected during the COVID-19 pandemic, which may have contributed to the low response rates. Canadian research has shown that PA levels of youth and men aged 18-64 years dropped during the pandemic compared to before the pandemic, particularly among girls.[42,43] Among youth there was also a substantial drop in transportation and recreation PA, whereas recreation PA increased in adults.[42] Given the potential effects of the pandemic on PA, future work would need to assess whether the differences observed in this study remain consistent or if there is a further widening or narrowing of inequalities in PA. Lastly, our analysis explored individual subgroups independent of other factors. People do not exist in a single stratum and future work would need to further explore intersections among the population. There have been large advancements in intersectional health research using decision tree, cluster analyses, and person-centred techniques to identify combinations of population subgroup characteristics.[13,20] Use of these methods may be a valuable means to further explore heterogeneity and inequalities in PA based on these intersections.

Conclusion

Significant inequalities in PA exist in Canada. The largest inequalities in PA were observed by sex and gender, household income, and highest household education. There is a need to explore ways to improve equality in recreation PA, as this was the domain with the most significant differences across population subgroups.

Active transportation had few differences across subgroups, representing a potential avenue for equitable intervention to increase population PA levels. Future research should explore why these inequalities exist to help inform interventions.

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Conflicts of interest

Justin J. Lang is the journal's Associate Editor-in-Chief and also one of the Associate Scientific Editors, but has recused himself from the review process for this article.

The authors have declared no conflicts of interest.

Authors' contributions and statement

JJL: Conceptualization, data curation, formal analysis, investigation, methodology, validation, writing – original draft.

SET: Formal analysis, methodology, validation, writing – review and editing.

ND: Investigation, writing – review and editing.

ID: Investigation, writing – review and editing.

SAP: Investigation, writing – review and editing.

KCR: Investigation, writing – review and editing.

MTB: Investigation, writing – review and editing.

RCC: Investigation, writing – review and editing.

RJ: Investigation, writing – review and editing.

AA: Investigation, writing – review and editing.

JPC: Conceptualization, investigation, writing – review and editing.

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References

1. Poitras VJ, Gray CE, Borghese MM, Carson V, Chaput JP, Janssen I, et al. Systematic review of the relationships between objectively measured physical activity and health indicators in school-aged children and youth. Appl Physiol Nutr Metab. 2016;41(6 Suppl 3):S197-239. https://doi.org/10.1139/apnm-2015-0663

2. Warburton DE, Charlesworth S, Ivey A, Nettlefold L, Bredin SS. A systematic review of the evidence for Canada's physical activity guidelines for adults. Int J Behav Nutr Phys Act. 2010;7:39. https://doi.org/10.1186/1479-5868-7-39

3. Tremblay MS, Carson V, Chaput JP, Connor Gorber S, Dinh T, Dugagan M, et al. Canadian 24-Hour Movement Guidelines for children and youth: an integration of physical activity, sedentary behaviour, and sleep. Appl Physiol Nutr Metab. 2016;41(6 Suppl 3):S311-27. https://doi.org/10.1139/apnm-2016-0151

4. Ross R, Chaput JP, Giangregorio LM, Janssen I, Saunders TJ, Kho ME, et al. Canadian 24-Hour Movement Guidelines for adults aged 18-64 years and adults aged 65 years or older: an integration of physical activity, sedentary behaviour, and sleep. Appl Physiol Nutr Metab. 2020;45(10 Suppl 2):S57-102. https://doi.org/10.1139/apnm-2020-0467

5. Public Health Agency of Canada. Physical activity, sedentary behaviour and sleep (PASS) indicators, 2023 Edition. Public Health Infobase. Ottawa (ON): Public Health Agency of Canada; 2023. Available from: https://health-infobase.canada.ca/pass/

6. Douglas MD, Josiah Willock R, Respress E, Rollins L, Tabor D, Heiman HJ, et al. Applying a health equity lens to evaluate and inform policy. Ethn Dis. 2019;29(Suppl 2):329-42.

7. National Collaborating Centre for Determinants of Health. Let's talk: public health roles for improving health equity. Antigonish (NS): National Collaborating Centre for Determinants of Health; 2013. Available from: https://nccdh.ca/images/uploads/PHR_EN_Final.pdf

8. Hawes AM, Smith GS, McGinty E, Bell C, Bower K, LaVeist TA, et al. Disentangling race, poverty, and place in disparities in physical activity. Int J Environ Res Public Health. 2019;16(7):1193. https://doi.org/10.3390/ijerph16071193

9. Arora K, Wolbring G. Kinesiology, physical activity, physical education, and sports through an equity/equality, diversity, and inclusion (EDI) lens: a scoping review. Sports. 2022;10(4):55. https://doi.org/10.3390/sports10040055

10. Kuhn AW, Grusky AZ, Cash CR, Churchwell AL, Diamond AB. Disparities and inequities in youth sports. Curr Sports Med Rep. 2021;20(9):494-8. https://doi.org/10.1249/JSR.0000000000000881

11. Hyde ET, Omura JD, Fulton JE, Lee SM, Piercy KL, Carlson SA. Disparities in youth sports participation in the U.S., 2017-2018. Am J Prev Med. 2020;59(5):e207-10. https://doi.org/10.1016/j.amepre.2020.05.011

12. Tandon PS, Kroshus E, Olsen K, Garrett K, Qu P, McCleery J. Socioeconomic inequities in youth participation in physical activity and sports. Int J Environ Res Public Health. 2021;18(13):6946. https://doi.org/10.3390/ijerph18136946

13. Kaja SM, Lawrence SE, Simon KA, Wright MN, Eisenberg ME. Who plays and who doesn't? An intersectional examination of disparities in adolescent sport and physical activity lesson participation. J Adolesc Health. 2024;75(5):827-35. https://doi.org/10.1016/j.jadohealth.2024.06.025

14. Wang C, Butler G, Szczepanowski MRJ, Betancourt MT, Roberts KC. Physical activity, organized sport participation and active transportation to school among Canadian youth by gender identity and sexual attraction. Health Promot Chronic Dis Prev Can. 2024;44(2):47-55. https://doi.org/10.24095/hpcdp.44.2.02

15. Bergman P, Grjibovski AM, Hagströmer M, Bauman A, Sjöström M. Adherence to physical activity recommendations and the influence of socio-demographic correlates – a population-based cross-sectional study. BMC Public Health. 2008;8:367. https://doi.org/10.1186/1471-2458-8-367

16. Celis-Morales C, Salas C, Alduhishy A, Sanzana R, Martínez MA, Leiva A, et al. Socio-demographic patterns of physical activity and sedentary behaviour in Chile: results from the National Health Survey 2009-2010. J Public Health (Oxf). 2016;38(2):e98-105. https://doi.org/10.1093/pubmed/fdv079

17. Wallmann-Sperlich B, Froboese I. Physical activity during work, transport and leisure in Germany-prevalence and socio-demographic correlates. PLoS One. 2014;9(11):e112333. https://doi.org/10.1371/journal.pone.0112333

18. Marques A, Martins J, Peralta M, Catunda R, Nunes LS. European adults' physical activity socio-demographic correlates: a cross-sectional study from the European Social Survey. PeerJ. 2016;4:e2066. https://doi.org/10.7717/peerj.2066

19. Eime RM, Harvey JT, Charity MJ, Nelson R. Demographic characteristics and type/frequency of physical activity participation in a large sample of 21,603 Australian people. BMC Public Health. 2018;18(1):692. https://doi.org/10.1186/s12889-018-5608-1

20. Colley RC, Guerrero M, Bushnik T. Intersecting risk factors for physical inactivity among Canadian adults. Health Rep. 2023;34(11):12-24. https://doi.org/10.25318/82-003-x202301100002-eng

21. Pan-Canadian Health Inequalities Data Tool. A joint initiative of the Public Health Agency of Canada, the Pan-Canadian Public Health Network, Statistics Canada and the Canadian Institute for Health Information [Internet]. Ottawa (ON): Government of Canada [updated 2024 June 6; cited 2024 Oct 29]. Available from: https://health-infobase.canada.ca/health-inequalities/Indicat

22. Centre for Surveillance and Applied Research, Public Health Agency of Canada. Physical activity, sedentary behaviour and sleep (PASS) indicators [Internet]. Ottawa (ON): Public Health Agency of Canada; [updated 2023 Mar 27; cited 2023 Nov 14]. Available from: https://health-infobase.canada.ca/pass/

23. Statistics Canada. Canadian Community Health Survey – Annual Component (CCHS) [Internet]. Ottawa (ON): Statistics Canada [updated 2021 Jul 8; cited 2024 Feb 8]. Available from: https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=1314175

24. Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada. Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans – TCPS 2 2022 [Internet]. Ottawa (ON): Secretariat on Responsible Conduct of Research; 2022 [updated 2023 Jan 11; cited 2024 Oct 17]. Available from: https://ethics.gc.ca/eng/policy-politique_tcps2-eptc2_2022.html

25. Government of Canada. Wheel of privilege and power [Internet]. Ottawa (ON): Government of Canada; [cited 2024 Nov 15]. Available from: https://www.canada.ca/content/dam/ircc/documents/pdf/english/corporate/anti-racism/wheel-privilege-power.pdf

26. Statistics Canada. Canada at a Glance, 2022. Racialized groups [Internet]. Ottawa (ON): Statistics Canada; 2022 [updated 2022 Nov 23; cited 2024 Nov 15]. Available from: https://www150.statcan.gc.ca/n1/pub/12-581-x/2022001/sec3-eng.htm

27. Roberts KC, Rao DP, Bennett TL, Loukine L, Jayaraman GC. Prevalence and patterns of chronic disease multimorbidity and associated determinants in Canada. Health Promot Chronic Dis Prev Can. 2015;35(6):87-94. https://doi.org/10.24095/hpcdp.35.6.01

28. Guthold R, Stevens GA, Riley LM, Bull FC. Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1·9 million participants. Lancet Glob Health. 2018;6(10):e1077-86. https://doi.org/10.1016/S2214-109X(18)30357-7

29. Ricardo LIC, Wendt A, Costa CDS, Mielke GI, Brazo-Sayavera J, Khan A, Kolbe-Alexander TL, Crochemore-Silva I. Gender inequalities in physical activity among adolescents from 64 Global South countries. J Sport Health Sci. 2022;11(4):509-20. https://doi.org/10.1016/j.jshs.2022.01.007

30. Brazo-Sayavera J, Aubert S, Barnes JD, González SA, Tremblay MS. Gender differences in physical activity and sedentary behavior: results from over 200,000 Latin-American children and adolescents. PLoS One. 2021;16(8):e0255353. https://doi.org/10.1371/journal.pone.0255353

31. Public Health Agency of Canada, Pan-Canadian Public Health Network, Statistics Canada, Canadian Institute for Health Information. Pan-Canadian Health Inequalities Data Tool [Internet]. Ottawa (ON): Government of Canada; [updated 2024 Jun 06; cited 2024 Nov 15]. Available from: https://health-infobase.canada.ca/health-inequalities/Indicat

32. Abichahine H, Veenstra G. Intercategorical intersectionality and leisure-based physical activity in Canada. Health Promot Int. 2017;32(4):691-701. https://doi.org/10.1093/heapro/daw009

33. Prince SA, Butler GP. The contribution of active transportation to population physical activity levels. Health Promot Chronic Dis Prev Can. 2025;45(5):249-55. https://doi.org/10.24095/hpcdp.45.5.03

34. Winters M, Beairsto J, Ferster C, Labaree K, Manaugh K, Nelson T. The Canadian bikeway comfort and safety metrics (Can-BICS): national measures of the bicycling environment for use in research and policy. Health Rep. 2022;33(10):3-13. https://www.doi.org/10.25318/82-003-x202201000001-eng

35. Ferster C, Nelson T, Manaugh K, Beairsto J, Laberee K, Winters M. Developing a national dataset of bicycle infrastructure for Canada using open data sources. Environment and Planning B: Urban Analytics and City Science. 2023;50(9):2543-59. https://doi.org/10.1177/23998083231159905

36. Boisjoly G, Lachapella U, El-Geneidy A. Bicycle network performance: assessing the directness of bicycle facilities through connectivity measures, a Montreal, Canada case study. Int J Sustain Transport. 2020;14(8):620-34. https://doi.org/10.1080/15568318.2019.1595791

37. Prince SA, Thomas T, Apparicio P, Rodrigue L, Jobson C, Walker KL, et al. Cycling infrastructure as a determinant of cycling for recreation and transportation in Montréal, Canada: a natural experiment using the longitudinal national population health survey. Int J Behav Nutr Phys Act. 2025; 22(1):71. https://doi.org/10.1186/s12966-025-01767-y

38. Infrastructure Canada. National Active Transportation Strategy 2021-2026 [Internet]. Ottawa (ON); Infrastructure Canada; 2021 [updated 2024 Jul 17; cited 2024 Nov 26]. Available from: https://housing-infrastructure.canada.ca/trans/nats-strat-snta-eng.html

39. Statistics Canada. Disaggregated data action plan [Internet]. Ottawa (ON); Statistics Canada [updated 2024 Nov 27; cited 2024 Nov 26]. Available from: https://www.statcan.gc.ca/en/trust/modernization/disaggregated-data

40. Prince SA, Roberts KC, Lang JJ, Butler GP, Colley RC. The influence of removing the 10-minute bout requirement on the demographic, behaviour and health profiles of Canadian adults who meet the physical activity recommendations. Health Rep. 2022;33(8): 3-18. https://www.doi.org/10.25318/82-003-x202200800001-eng

41. Prince SA, Adamo KB, Hamel ME, Hardt J, Connor Gorber S, Tremblay M. A comparison of direct versus self-report measures for assessing physical activity in adults: a systematic review. Int J Behav Nutr Phys Act. 2008;5:56. https://doi.org/10.1186/1479-5868-5-56

42. Colley RC, Watt JE. The unequal impact of the COVID-19 pandemic on the physical activity habits of Canadians. Health Rep. 2022;33(5): 22-33. https://www.doi.org/10.25318/82-003-x202200500003-eng

43. Colley RC, Saunders TJ. The ongoing impact of the COVID-19 pandemic on physical activity and screen time among Canadian adults. Health Rep. 2023;34(10):13-23. https://www.doi.org/10.25318/82-003-x202301000002-eng

https://doi.org/10.24095/hpcdp.46.2.02

At-a-glance

Child maltreatment in Canada: prevalence and gender differences among youth

Britt McKinnon, PhD (1); Harriet L. MacMillan, MD (2); Ashley Vandermorris, MD (3,4); Katholiki Georgiades, PhD (2,5); Emma Nolan, PhD (6); Christina Catley, PhD (7); Isabelle Lévesque, PhD (7); Lil Tonmyr, PhD (1)

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Abstract

This study presents the first Canadian self-reported estimates of child maltreatment (CM) from youth using data from 5256 participants aged 15 to 17 years in the 2023 Canadian Health Survey on Children and Youth. CM prevalence was high, particularly for emotional abuse (44.9%) and exposure to caregiver emotional intimate partner violence (39.4%). Females reported higher prevalence of sexual abuse (8.1% vs. 1.5%) and emotional abuse (52.2% vs. 35.4%) than males. Youth identifying as nonbinary or with a gender different from their sex assigned at birth reported the highest prevalence across all CM types, including 22.4% for sexual abuse and 83.7% for emotional abuse. These finding underscore the need for targeted research and policies that address structural determinants of gender-based disparities.

Keywords: *child maltreatment, family violence, youth, surveillance, epidemiology, surveys, Canada*

Highlights

- This study uses data from the 2023 Canadian Health Survey on Children and Youth to quantify child maltreatment among youth aged 15 to 17 years in Canada.
- Nearly half of youth reported emotional abuse; over one-third were exposed to emotional intimate partner violence among caregivers.
- Cisgender females reported higher prevalence of sexual abuse and emotional abuse than cisgender males.
- Gender-diverse youth experienced the highest prevalence across all maltreatment types.

Introduction

Child maltreatment (CM), including neglect, exposure to intimate partner violence (IPV) involving parents/caregivers, and physical, sexual, and emotional abuse during childhood, can have immediate and lasting impacts. In the short term, CM may lead to physical injury, emotional and behavioural difficulties, and academic challenges.[1,2] Over time, it increases the risk of mental health disorders, substance use, chronic illness, and poorer socioeconomic outcomes.[3,4] These harms result in significant societal and economic costs.[5]

In Canada, CM prevalence estimates often rely on retrospective adult reports, which are prone to recall bias and may not reflect recent trends.[6,7] Although youth self-reports share limitations of retrospective, cross-sectional studies, they offer a meaningful improvement by providing more direct and timely insights into CM experiences.[8] This study presents national CM estimates based on youth self-reports, stratified by gender, including gender-diverse youth, to offer a more current and comprehensive picture. Disaggregating by gender diversity reveals disparities missed in binary analyses and highlights the unique experiences of gender-diverse youth.

Methods

We analyzed data from the cross-sectional component of the 2023 Canadian Health Survey on Children and Youth (CHSCY), which sampled children and youth aged 1 to 17 years as of January 31, 2023.[9] The sample was drawn from the Canadian Child Benefit file, which covers 98% of this age group living in the provinces; the survey excluded those in the territories, on First Nations reserves and other Indigenous settlements within the provinces, in foster care, or in institutional

Author references:

1. Family Violence Epidemiology Section, Centre for Surveillance and Applied Research, Health Promotion and Chronic Disease Prevention Branch, Public Health Agency of Canada, Ottawa, Ontario, Canada
2. Department of Psychiatry & Behavioural Neurosciences, Department of Pediatrics, McMaster University, Hamilton, Ontario, Canada
3. Division of Adolescent Medicine, Hospital for Sick Children, Toronto, Ontario, Canada
4. Department of Paediatrics, University of Toronto, Toronto, Ontario, Canada
5. Offord Centre for Child Studies, McMaster University, Hamilton, Ontario, Canada
6. Queen's University Belfast, Department of Psychology, Belfast, Northern Ireland
7. Centre for Population Health Data, Social, Health and Labour Statistics Field, Statistics Canada, Ottawa, Ontario, Canada

Correspondence: Lil Tonmyr, Family Violence Epidemiology Section, Centre for Surveillance and Applied Research, Health Promotion and Chronic Disease Prevention Branch, Public Health Agency of Canada, 785 Carling Ave, Ottawa, ON K1A 0K9; Tel: 613-240-6334; Email: lil.tonmyr@phac-aspc.gc.ca

settings. The response rate for youth aged 12 to 17 years was 38.1%.

This descriptive study focussed on 5256 youth aged 15 to 17 years who completed the survey by electronic questionnaire or computer-assisted telephone interview and agreed to share their data with federal, provincial, and territorial health authorities.[9] This was the only age group to self-report on CM. Youth were asked about five CM types: physical abuse (3 items), sexual abuse (2 items), emotional abuse (1 item), neglect (1 item), and exposure to IPV (2 items, assessed separately as exposure to physical or emotional IPV), based on validated measures of CM (Table 1). Response options ranged from "never" to "more than 10 times," and were dichotomized as any experience versus never. Reference persons ("any adult" for physical/sexual abuse; "parent/guardian" for the others) reflect standard measures and distinguish caregiver maltreatment from other abuse.

Sex at birth and current gender were assessed as separate questions, consistent with recommended two-step approaches to measuring gender identity in surveys.[12] Free-text gender responses were recoded by Statistics Canada as male, female, or non-binary. While the two-step approach improves inclusivity, recoding of free-text responses may introduce misclassification. Gender is reported using the categories "male", "female," and "gender-diverse." We acknowledge that "male" and "female" are typically sex categories;[13] however, given how the survey data were collected, in this context they reflect self-identified gender. Youth whose current gender differed from their sex assigned at birth, or who were coded as non-binary, were grouped as "gender-diverse," while "male" and "female" refer to cisgender youth.

Prevalence ratios (PR) were computed by dividing survey-weighted proportions, and 95% confidence intervals (CI) were derived using 1000 bootstrap replicate weights. Males were the reference group due to consistently lower CM prevalence.[14] We present crude PRs because our objective was descriptive and age-standardization produced virtually identical estimates.

Missing data on CM items ranged from 4.1% to 5.3% and were addressed using complete case analysis. All analyses were conducted in Stata, version 17 (StataCorp LLC., College Station, TX, USA).

Results

Among youth aged 15 to 17 years, 49.3% identified as female, 46.8% as male, and 3.9% as gender-diverse. CM prevalence was high, with emotional abuse (44.9%; 95% CI: 42.9– 46.9) and exposure to emotional IPV (39.4%; 95% CI: 37.4–41.4) most common. Physical abuse (22.3%; 95% CI: 20.6–24.0) was also frequently reported, while sexual abuse (5.3%; 95% CI: 4.5–6.1), physical neglect (5.2%; 95% CI: 4.5–6.0), and exposure to physical IPV (7.6%; 6.5–8.7) were less common. Prevalence varied by gender identity (Table 2), and estimates for gender-diverse youth had wider confidence intervals due to small numbers.

Gender-diverse youth reported the highest prevalence across all types of CM. Sexual abuse was reported by 22.4% of gender-diverse youth (95% CI: 14.6–30.1), compared to 8.1% of females and 1.5% of males. Gender-diverse youth were 14.5 times more likely than males (PR = 14.5, 95% CI: 8.7–24.1) and females over five times more likely than males (PR = 5.2, 95% CI: 3.5–7.9) to report sexual abuse.

Emotional abuse was reported by 83.7% of gender-diverse youth, 52.2% of females,

TABLE 1
Child maltreatment questions for youth aged 15 to 17 years, Canadian Health Survey on Children and Youth, Canada, 2023

Type of child maltreatment	Survey questions (Response options: never, 1 or 2 times, 3-5 times, 6-10 times, more than 10 times)
	The next few questions are about things that may have happened to you at any time while growing up and might be hard for you to answer. Your responses are important whether or not you have had any of these experiences. Remember that all information provided is strictly confidential.
Physical abuse[a]	How many times did an adult slap you on the face, head or ears or hit or spank you with something hard to hurt you?
	How many times did an adult push, grab, shove or throw something at you to hurt you?
	How many times did an adult kick, bite, punch, choke, burn you, or physically attack you in some way?
Sexual abuse[a]	How many times did an adult force you or attempt to force you into any unwanted sexual activity, by threatening you, holding you down or hurting you in some way?
	How many times did an adult touch you against your will in any sexual way, such as anything from unwanted touching or grabbing, to kissing or fondling?
Exposure to physical IPV[a]	How many times did you see or hear any one of your parents, step-parents or guardians hit each other or another adult in your home?
Exposure to emotional IPV[b]	How many times did you see or hear any of your parents or caregivers say hurtful or mean things to each other or to another adult in your home?
Emotional abuse[b]	How many times did any one of your parents, step-parents or guardians say things that really hurt your feelings or made you feel like you were not wanted or loved?
Physical neglect[b]	How many times did your parents, step-parents or guardians not take care of your basic needs, such as keeping you clean or providing food or clothing?

Source: Canadian Health Survey on Children and Youth, 2023.[9]

Abbreviation: IPV, intimate partner violence.

[a] Adapted from the Childhood Experiences of Violence Questionnaire Short Form.[10]

[b] Adapted from the US National Longitudinal Study of Adolescent to Adult Health.[11]

TABLE 2
Prevalence estimates and ratios for child maltreatment by gender, based on self-reports from youth aged 15 to 17 years, Canadian Health Survey on Children and Youth, Canada, 2023

Type of child maltreatment	Gender	Prevalence (95% CI)	Prevalence ratio (95% CI)
Physical abuse	Cis-male	20.3 (17.8–22.7)	1.0 (ref)
	Cis-female	23.3 (20.9–25.7)	1.15 (0.98–1.35)
	Gender diverse	37.5 (28.3–46.6)	1.85 (1.41–2.43)
Sexual abuse	Cis-male	1.5 (1.0–2.1)	1.0 (ref)
	Cis-female	8.1 (6.7–9.5)	5.24 (3.47–7.89)
	Gender diverse	22.4 (14.6–30.1)	14.49 (8.72–24.07)
Exposure to physical IPV	Cis-male	6.6 (5.1–8.1)	1.0 (ref)
	Cis-female	8.2 (6.6–9.7)	1.24 (0.92–1.66)
	Gender diverse	14.9 (8.4–21.4)	2.26 (1.38–3.69)
Physical neglect	Cis-male	3.9 (3.0–4.7)	1.0 (ref)
	Cis-female	5.8 (4.5–7.0)	1.49 (1.09–2.02)
	Gender diverse	17.9 (10.6–25.2)	4.60 (2.89–7.31)
Emotional abuse	Cis-male	35.4 (32.6–38.3)	1.0 (ref)
	Cis-female	52.2 (49.4–55.1)	1.47 (1.34–1.62)
	Gender diverse	83.7 (78.3–89.1)	2.36 (2.13–2.62)
Exposure to emotional IPV	Cis-male	33.5 (30.7–36.3)	1.0 (ref)
	Cis-female	44.1 (41.4–46.8)	1.32 (1.19–1.46)
	Gender diverse	60.7 (50.5–71.0)	1.82 (1.50–2.19)

Source: Canadian Health Survey on Children and Youth, 2023.[9]

Abbreviations: CI, confidence interval; IPV, intimate partner violence.

Notes: Gender diverse includes youth who identify as nonbinary or whose gender differs from their sex assigned at birth (e.g. transgender). All child maltreatment questions are available in Table 1.

and 35.4% of males. Compared to males, emotional abuse was more than twice as prevalent among gender-diverse youth (PR = 2.4, 95% CI: 2.1–2.6) and was also more common among females (PR = 1.5, 95% CI: 1.3–1.6). Exposure to emotional IPV followed a similar pattern, with 60.7% of gender-diverse youth reporting this experience, compared to 44.1% of females and 33.5% of males (PR for gender diverse vs. male = 1.8, 95% CI: 1.5–2.2; PR for female vs. male = 1.3, 95% CI: 1.2–1.5).

Physical neglect was reported by 17.9% of gender-diverse youth, compared to 5.8% of females and 3.9% of males. Gender-diverse youth were 4.6 times more likely than males to report physical neglect (PR = 4.6, 95% CI: 2.9–7.3). Physical abuse was reported by 37.5% of gender-diverse youth, 23.3% of females, and 20.3% of males (PR for gender diverse vs. male = 1.8, 95% CI: 1.4–2.4; PR for female vs. male = 1.2, 95% CI: 1.0–1.4). Exposure to physical IPV showed a similar but smaller gradient: 14.9% of gender-diverse youth, 8.2% of females, and 6.6% of males (PR for gender diverse vs. male = 2.3, 95% CI: 1.4–3.7; PR for female vs. male = 1.2, 95% CI: 0.9–1.7).

Discussion

Findings show a high prevalence of CM among Canadian youth aged 15 to 17 years, with notable gender differences. Gender-diverse youth reported the highest prevalence across all types, while females reported more sexual and emotional abuse than males.

Compared to CHSCY results, the 2023 Youth Risk Behavior Survey (YRBS), a US national survey of students (under age 18), showed a higher prevalence of physical abuse (31.8% vs. 22.3%), sexual abuse (7.1% vs. 5.3%), emotional abuse (61.5% vs. 44.9%), physical neglect (9.3% vs. 5.2%), and exposure to physical IPV (18.6% vs. 7.6%).[15] Despite these differences, gender patterns were similar across surveys: females reported higher CM prevalence than males, with the largest gender gap in sexual abuse (USA: 11.8% vs. 2.7%; Canada: 8.1% vs. 1.5%).[15] One exception was physical neglect, which was higher among US males, a pattern not observed in Canada.

While the YRBS study did not report CM prevalence for gender-diverse students, our secondary analysis of the dataset[16] (ages 15 to 17 years, using Swedo et al.[15] measures) showed transgender and gender-questioning youth reported significantly higher CM prevalence than cisgender peers (see Table 3). Gender-diverse youth in the USA and Canada reported similar prevalence of sexual abuse (21.0% vs. 22.4%) and emotional abuse (89.1% vs. 83.7%), though physical abuse was higher in the USA (54.2% vs. 37.5%).

Differences in CM prevalence between the USA and Canada may reflect both real variation in youths' experiences (e.g., social and economic conditions, prevention/reporting systems, cultural norms around disclosure) and methodological differences (sampling approaches and survey design).[17] While the CHSCY and YRBS use broadly similar CM measures, the CHSCY includes additional questions that

TABLE 3
Prevalence estimates for child maltreatment, based on self-reports from youth aged 15 to 17 years, National Youth Risk Behaviour Survey, United States, 2023

Type of child maltreatment	Gender	Prevalence (95% CI)
Physical abuse	Cis-male	29.1 (26.1–32.1)
	Cis-female	32.4 (29.8–35.0)
	Gender diverse	54.2 (49.3–59.1)
Sexual abuse	Cis-male	2.3 (1.4–3.2)
	Cis-female	10.7 (9.2–12.3)
	Gender diverse	21.0 (15.7–26.3)
Exposure to physical IPV	Cis-male	14.2 (12.1–16.3)
	Cis-female	22.8 (20.3–25.3)
	Gender diverse	30.1 (23.8–36.4)
Physical neglect	Cis-male	9.7 (7.6–11.7)
	Cis-female	8.6 (6.3–10.9)
	Gender diverse	8.4 (4.5–12.3)
Emotional abuse	Cis-male	53.2 (50.3–56.2)
	Cis-female	67.2 (64.1–70.4)
	Gender diverse	89.1 (85.0–93.3)

Source: National Youth Risk Behavior Survey 2023.

Abbreviations: CI, confidence interval; IPV, intimate partner violence.

Notes: Gender diverse includes youth who identify as transgender or gender-questioning. Child maltreatment measures as reported in Swedo et al.[15] Data were analyzed by the authors using the publicly available dataset.[16]

distinguish between different experiences of sexual and physical abuse, whereas the YRBS groups multiple experiences into single items.[15]

Nationally representative estimates of CM among gender-diverse youth are scarce, particularly outside the USA, and the Australian Child Maltreatment Study is one of the few available examples.[18] While its findings similarly indicate elevated prevalence among gender-minority youth, differences in age range (16 to 24 years) and measurement approach limit side-by-side comparison with the CHSCY.[18] This underscores the need for additional population-based research, as well as work on protective factors, intervention strategies, and policies tailored to gender-diverse youth.[19,20]

Strengths and limitations

A strength of this study is its large national sample and use of validated CM measures. Using youth self-reports captures more recent maltreatment experiences compared to retrospective adult reports. However, despite these strengths, underreporting remains a concern, particularly for experiences like sexual abuse, due to stigma or fear of disclosure.[21] Although adolescent reports reduce long-term recall problems, self-reports can still be influenced by current mental health (e.g. depressive symptoms), but available evidence suggests such effects are generally modest.[22] Despite weighting to reflect the national population, the CHSCY's low response rate may still introduce nonresponse bias if CM is related to survey participation; some studies indicate health surveys may overrepresent participants with mental health challenges and underrepresent harder-to-reach groups, though findings are mixed and weighting cannot fully correct this.[23,24] Finally, the exclusion of certain populations, such as youth in foster care and Indigenous communities, likely contributes to underestimation of national CM prevalence.[25] Small numbers precluded separate estimates for transgender and nonbinary youth, as well as the examination of intersections of gender identity with sexual identity (e.g. lesbian, gay, bisexual).

Conclusion

Our national, youth-reported estimates showed that nearly half of Canadian 15- to 17-year-olds experienced emotional abuse, and that gender-diverse youth experienced disproportionately high maltreatment across all types. To address these disparities, strengthening public health surveillance to explicitly capture gender identity would help build the evidence base needed to inform interventions for 2SLGBTQ+ youth.[26] Surveillance efforts should also consider supplementing household sampling frames to include populations currently excluded (e.g. youth in foster care, many Indigenous communities). Future research should examine intersections of gender and sexual identities and differentiate within gender-diverse groups to better capture heterogeneity in experiences and needs. By integrating these data-driven, equity-focussed strategies, Canada can better address the lifelong mental and physical health costs associated with child maltreatment.

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Conflicts of interest

The authors have no conflicts of interest to declare.

Authors' contributions and statement

Conceptualization: LT, HM, BM; data collection and validation: IL, CC; data analysis: BM; methodology: LT, HM, BM, KG; writing—original draft: BM; writing—review and editing: LT, HM, KG, EN, AV, IL, CC, BM.

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References

1. Zhang H, Wang Z, Tang X, Wang W. The association between child maltreatment and academic achievement: a systematic review and meta-analysis. Child Abuse Negl. 2025;159(107159). https://doi.org/10.1016/j.chiabu.2024.107159

2. Kaiser SV, Kornblith AE, Richardson T, Pantell MS, Fleegler EW, Fritz CQ, et al. Emergency visits and hospitalizations for child abuse during the COVID-19 pandemic. Pediatrics. 2021; 147(4). https://doi.org/10.1542/peds.2020-038489

3. Baldwin JR, Wang B, Karwatowska L, Schoeler T, Tsaligopoulou A, Munafo MR, et al. Childhood maltreatment and mental health problems: a systematic review and meta-analysis of quasi-experimental studies. Am J Psychiatry. 2023;180(2):117-126. https://doi.org/10.1176/appi.ajp.20220174

4. Strathearn L, Giannotti M, Mills R, Kisely S, Najman J, Abajobir A. Long-term cognitive, psychological, and health outcomes associated with child abuse and neglect. pediatrics. 2020;146(4). https://doi.org/10.1542/peds.2020-0438

5. Le DQ, Le LK, Le PH, Yap MBH, Mihalopoulos C. Cost effectiveness of interventions to prevent the occurrence and the associated economic impacts of child maltreatment: a systematic review. Child Abuse Negl. 2024:106863. https://doi.org/10.1016/j.chiabu.2024.106863

6. Afifi TO, MacMillan HL, Boyle M, Taillieu T, Cheung K, Sareen J. Child abuse and mental disorders in Canada. CMAJ. 2014;186(9):E324-332. https://doi.org/10.1503/cmaj.131792

7. Hovdestad W, Shields M, Shaw M, Tonmyr L. Childhood maltreatment as a risk factor for cancer: findings from a population-based survey of Canadian adults. BMC Cancer. 2020; 20(70). https://doi.org/10.1186/s12885-019-6481-8

8. Campeau A, Tanaka M, McTavish JR, MacMillan H, McKee C, Hovdestad WE, et al. Asking youth and adults about child maltreatment: a review of government surveys. BMJ Open. 2022; 12(11):e063905. https://doi.org/10.1136/bmjopen-2022-063905

9. Statistics Canada. Canadian Health Survey on Children and Youth (CHSCY). 2023 [cited 2024 Dec 19]. Available from: https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=1504253

10. Walsh CA, MacMillan HL, Trocmé N, Jamieson E, Boyle MH. Measurement of victimization in adolescence: development and validation of the Childhood Experiences of Violence Questionnaire. Child Abuse Negl. 2008;32(11):1037-57. https://doi.org/10.1016/j.chiabu.2008.05.003

11. Harris KM, Halpern CT, Whitsel EA, Hussey JM, Killeya-Jones LA, Tabor J, et al. Cohort profile: the National Longitudinal Study of Adolescent to Adult Health (Add Health). Int J Epidemiol. 2019;48(5):1415-1415k. https://doi.org/10.1093/ije/dyz115

12. Hanes DW, Clouston SAP. Ask again: including gender identity in longitudinal studies of aging. Gerontologist. 2021;61(5):640-9. https://doi.org/10.1093/geront/gnaa107

13. Canadian Institutes of Health Research. What is gender? What is sex? 2023 [cited 2025 Aug 11]. Available from: https://cihr-irsc.gc.ca/e/48642.html

14. Keppel K, Pamuk E, Lynch J, Carter-Pokras O, Insun K, Mays V, et al. Methodological issues in measuring health disparities. Vital Health Stat. 2005;2(141):1-16. Available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_141.pdf

15. Swedo E, Pampati S, Anderson K, Thorne E, McKinnon I, Brener ND, et al. Adverse childhood experiences and health conditions and risk behaviors among high school students — youth risk behavior survey, United States, 2023. MMWR Suppl. 2024; 73(Suppl-4):39-49. http://dx.doi.org/10.15585/mmwr.su7304a5

16. US Centers for Disease Control and Prevention (CDC). Youth risk behavior surveillance system (YRBSS) data and documentation: national datasets and documentation by year. 2024 [cited 2025 Feb 13]. Available from: https://www.cdc.gov/yrbs/data/index.html

17. Mathews B, Pacella R, Dunne MP, Simunovic M, Marston C. Improving measurement of child abuse and neglect: A systematic review and analysis of national prevalence studies. PLoS One. 2020;15(1):e0227884. https://doi.org/10.1371/journal.pone.0227884

18. Higgins DJ, Lawrence D, Haslam DM, Mathews B, Malacova E, Erskine HE, et al. Prevalence of Diverse Genders and Sexualities in Australia and Associations With Five Forms of Child Maltreatment and Multi-type Maltreatment. Child Maltreat. 2025; 30(1):21-41. https://doi.org/10.1177/10775595231226331

19. Capaldi M, Schatz J, Kavenagh M. Child sexual abuse/exploitation and LGBTQI+ children: context, links, vulnerabilities, gaps, challenges and priorities. Child Protection and Practice. 2024;1. https://doi.org/10.1016/j.chipro.2024.100001

20. Kennedy KS, Johns MM, Schnarrs PW, Russell ST. Cisheterosexism as childhood adversity: implications for sexual and gender minority health. American Journal of Preventive Medicine. 2025;68(4):824-7. https://doi.org/10.1016/j.amepre.2024.12.015

21. Steiger DM, Brick M, Sedlak A, Finkelhor D, Turner H, Hamby S. Methodological research to support the national survey of children's exposure to violence. Bureau of Justice Statistics (BJS) and Office of Juvenile Justice and Delinquency Prevention (OJJDP); 2024. Available from: https://www.ojp.gov/pdffiles1/bjs/grants/306384.pdf

22. Frampton NMA, Poole JC, Dobson KS, Pusch D. The effects of adult depression on the recollection of adverse childhood experiences. Child Abuse Negl. 2018;86:45-54. https://doi.org/10.1016/j.chiabu.2018.09.006

23. Glass DC, Kelsall HL, Slegers C, Forbes AB, Loff B, Zion D, et al. A telephone survey of factors affecting willingness to participate in health research surveys. BMC Public Health. 2015;15:1017. https://doi.org/10.1186/s12889-015-2350-9

24. Krieger N, LeBlanc M, Waterman PD, Reisner SL, Testa C, Chen JT. Decreasing Survey Response Rates in the Time of COVID-19: Implications for analyses of population health and health inequities. Am J Public Health. 2023;113(6):667-670. https://doi.org/10.2105/AJPH.2023.307267

25. Fallon B, Lefebvre R, Trocmé N, Richard K, Hélie S, Montgomery M, et al. Denouncing the continued over-representation of First Nations children in Canadian child welfare: findings from the First Nations/Canadian Incidence Study of Reported Child Abuse and Neglect-2019. Ottawa (ON): Assembly of First Nations; 2021. Available from: https://cwrp.ca/sites/default/files/publications/FNCIS-2019%20-%20Denouncing%20the%20Continued%20Overrepresentation%20of%20First%20Nations%20Children%20in%20Canadian%20Child%20Welfare%20-%20Final_1%20%282%29.pdf

26. Vandermorris A, Metzger DL. An affirming approach to caring for transgender and gender-diverse youth. Paediatr Child Health. 2023;28(7):437-448. https://doi.org/10.1093/pch/pxad045

https://doi.org/10.24095/hpcdp.46.2.03

At-a-glance

Prosocial behaviour and happiness among children aged 6 to 11 years in Canada

Colin A. Capaldi, PhD (1); Danielle Lemaire, MSc (1); Katrina R. Abela, MA (1,2); Laura L. Ooi, PhD (1); Melanie Varin, MSc (1)

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Abstract

A gap in Canadian public health surveillance is the monitoring of childhood positive mental health (PMH). We used available data from the first six cycles of the Canadian Health Measures Survey to examine how two potential PMH indicators are distributed across time and populations of children aged 6 to 11 years. The prevalence of normative parent-rated prosocial behaviour and perceived happiness was high and relatively stable across time. Normative parent-rated prosocial behaviour was more common among females (vs. males) and 8- to 9-year-olds (vs. 6- to 7-year-olds), while perceived happiness was higher among 6- to 7-year-olds (vs. 10- to 11-year-olds).

Keywords: *altruism, happiness, child, sociodemographic factors, trends, public health surveillance*

Highlights

- The vast majority of children had normative levels of prosocial behaviour (i.e. scoring 8+ on the prosocial subscale of the parent-rated Strengths and Difficulties Questionnaire)—89.6% in 2007–2009 to 90.2% in 2014–2015.
- Around nine in ten children were described as being usually "happy and interested in life"—92.0% in 2007–2009 to 91.1% in 2018–2019.
- The prevalence of normative parent-rated prosocial behaviour was higher among females (93.8%) than males (83.3%) and children aged 8 to 9 (89.8%) than 6 to 7 (85.6%) years.
- The prevalence of perceived happiness was higher among children aged 6 to 7 (94.3%) than 10 to 11 (88.9%) years.

Introduction

The Public Health Agency of Canada monitors positive mental health (PMH) outcomes and their determinants, guided by the Positive Mental Health Surveillance Indicator Framework (PMHSIF).[1] The importance of taking life course stages into account (i.e. childhood [0 to 11 years], youth [12 to 17 years], adulthood [18+ years]) was identified during the initial PMHSIF development.[2] Adult and youth versions of the PMHSIF have been released and updated multiple times,[1] but a child version remains in development. To begin to fill that gap, a scoping review was conducted to understand how PMH is conceptualized in childhood, with hedonic/emotional well-being, psychological well-being, social well-being and social emotional learning/positive development emerging as key aspects of child PMH.[3]

The next step for surveillance is to identify and examine potential indicators of child PMH. The Canadian Health Measures Survey (CHMS) has frequently measured two PMH outcomes among children: prosocial behaviour and happiness. Prosocial behaviours are voluntary actions meant to benefit others—including helping, sharing and comforting[4]—and can be considered part of social emotional learning/positive development (i.e. social awareness, relationship skills, social competence).[5, 6] Happiness definitions have varied across time and cultures,[7] but it is commonly conceptualized by researchers as a core element of hedonic/emotional well-being (with pleasure, enjoyment or life satisfaction).[8]

Despite these outcomes being included in the earliest CHMS cycles,[9, 10] understanding of their epidemiology among Canadian children is limited. To gain insight into what indicators based on these measures would tell us about child PMH if they were used for surveillance, our objectives were to investigate whether levels of happiness and prosocial behaviour among Canadian children (1) vary over time, (2) differ between sociodemographic groups, and (3) are associated with each other.

Methods

Data

The CHMS is a repeated cross-sectional survey by Statistics Canada that collects representative data on the health of people in Canada through questionnaires and direct health measures. We used shared

Author references:

1. Centre for Surveillance and Applied Research, Public Health Agency of Canada, Ottawa, Ontario, Canada
2. Offord Centre for Child Studies, McMaster University, Hamilton, Ontario, Canada

Correspondence: Colin A. Capaldi, Centre for Surveillance and Applied Research, Public Health Agency of Canada, 785 Carling Avenue, Ottawa, ON K1A 0K9; Tel: 343-992-9759; Email: colin.capaldi@phac-aspc.gc.ca

data from the household questionnaires of the first six cycles,[9-14] which were administered via personal interview in the respondent's home from 2007–2019 (cycle dates are reported in Table 1). The target population was 3 to 79 years of age in cycles 2–6, and 6 to 79 years in cycle 1. Full-time Canadian Forces members, and those living in institutions, on reserves or other Indigenous settlements, and in specific remote regions were not part of the target population, nor were those living in the territories from cycle 3 onward. A multistage sampling strategy is used for the CHMS, where collection sites are selected from regions, followed by a random sample of dwellings and then sampling individuals within households. We restricted our analyses to 6- to 11-year-olds (*N*s = 1081, 1076, 1024, 1032, 1040 and 1011 for cycles 1–6, respectively).

Measures

Prosocial behaviour was measured in cycles 1–4 (2007–2015) using five items from the prosocial behaviour subscale of the Strengths and Difficulties Questionnaire (SDQ).[15] The SDQ has been validated for Canadian children and youth, with evidence provided for its factorial validity, internal consistency, and measurement invariance across sex, age, and language.[16] Parents/guardians (hereafter referred to as "parents") were asked whether each statement (e.g. "is helpful if someone is hurt, upset or feeling ill") was "not true" (scored 0), "somewhat true" (scored 1), or "certainly true" (scored 2) of their child's behaviour over the last six months. Responses were summed, with total scores ranging from 0–10. Based on Canadian-specific cut-offs,[17] we categorized children with total scores of 8–10 as having normative levels of parent-rated prosocial behaviour (previously labeled "normal") and those with scores of 0–7 as having nonnormative levels (previously labeled "borderline" [7] and "clinical" [0–6]).

Happiness was measured in cycles 1, 2, 5 and 6 (2007–2011, 2016–2019) using the single-item emotion attribute measure from the Health Utilities Index Mark 3 (HUI3).[18] Parents were asked (with input from their child if needed) whether they would describe their child as being usually "happy and interested in life," "somewhat happy," "somewhat unhappy," "unhappy with little interest in life," or "so unhappy that life is not worthwhile." Consistent with the coding used for the youth and adult self-rated version of this measure in the PMHSIF,[1] we categorized "happy and interested in life" as high perceived happiness.

Analysis

We conducted analyses using SAS Enterprise Guide Version 7.1. We used sampling and bootstrap weights from Statistics Canada to account for the sampling design. We combined cycles that measured the PMH outcome(s) of interest and combined weight files in line with Statistics Canada recommendations.[19, 20] Also aligned with their recommendations,[20] we specified degrees of freedom in our analyses based on the total number of data collection sites sampled minus the number of regions for each cycle. To examine potential differences over time, we obtained overall and sex-stratified weighted percentages with 95% confidence intervals (CIs) for normative parent-rated prosocial behaviour and high perceived happiness at each relevant cycle. We also conducted unadjusted logistic regression analyses to determine whether there were any significant differences compared to 2007–2009 (i.e. cycle 1). To investigate potential sociodemographic differences (specific variables and breakdowns are reported in Table 2), we obtained weighted percentages with 95% CIs for normative parent-rated prosocial behaviour and high perceived happiness for each group and conducted unadjusted logistic regression analyses. Similar analyses were conducted to examine how prosocial behaviour and happiness were associated. We used pairwise deletion to deal with missing data (sample sizes are reported in the notes for Tables 1 and 2).

Results

The vast majority of children had normative levels of parent-rated prosocial behaviour at each time point, ranging 86.0%–90.2% overall, 93.4%–94.6% for females and 77.9%–87.0% for males. Similarly, high perceived happiness was reported for most children, ranging 91.1%–92.2% overall, 89.4%–94.9% for females and 88.7%–93.0% for males. The prevalence of normative parent-rated prosocial behaviour and high perceived happiness in later years did not significantly differ from those observed in 2007–2009 (Table 1).

Sociodemographic comparisons are reported in Table 2. Males had significantly lower odds of having normative parent-rated prosocial behaviour compared to females (83.3% vs. 93.8%, respectively; OR = 0.33, 95% CI: 0.23–0.46). Moreover, 8- to 9-year-olds had significantly higher odds of having normative parent-rated prosocial behaviour compared to 6- to 7-year-olds (89.8% vs. 85.6%, respectively; OR = 1.49, 95% CI: 1.05–2.12). In contrast, 10- to 11-year-olds had significantly lower odds of having high perceived happiness compared to 6- to 7-year-olds (88.9% vs. 94.3%, respectively; OR = 0.48, 95% CI: 0.30–0.78). No other significant sociodemographic differences were found.

Prosocial behaviour and happiness were positively associated (OR = 6.67, 95% CI: 4.20–10.60; Table 2). Children with high perceived happiness had significantly higher odds of having normative parent-rated prosocial behaviour (90.2%) compared to children without high perceived happiness (58.0%), and children with normative parent-rated prosocial behaviour had significantly higher odds of having high perceived happiness (94.9%) compared to children with nonnormative parent-rated prosocial behaviour (73.6%).

Discussion

Most children in Canada had normative parent-rated prosocial behaviour and high perceived happiness, with no notable differences since 2007–2009. The high prevalence is unsurprising for normative prosocial behaviour as its cut-off was selected to include approximately 80% of the highest scores on the SDQ prosocial subscale for children and youth in CHMS cycles 3 and 4 (2012–2015).[17] Whether normative prosocial behaviour and high perceived happiness remain as prevalent among children in more recent years could be explored if/when datasets from subsequent CHMS cycles with relevant data become available.

Examining other Canadian data,[1] the percentages of youth and adults who reported usually being "happy and interested in life" were lower than the estimates obtained for children in this study. However, we are unable to discern whether this is due to age-related changes,[21] generational differences, or methodological differences.[22] For instance, parental perceptions of mental health can be more positive than self-rated perceptions.[23] Longitudinal data are needed to provide clearer explanations. While children were present during the questionnaire administration to provide

TABLE 1
Comparing normative parent-rated prosocial behaviour and high perceived happiness over time, overall and stratified by sex, children aged 6 to 11 years old, CHMS, 2007–2015/2019, Canada

	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Normative parent-rated prosocial behaviour							
Cycle / cycle comparison	Cycle 1 Mar 2007 – Feb 2009	Cycle 2 Aug 2009 – Nov 2011	Cycle 3 Jan 2012 – Dec 2013	Cycle 4 Jan 2014 – Dec 2015	Cycle 2 vs. Cycle 1	Cycle 3 vs. Cycle 1	Cycle 4 vs. Cycle 1
Overall	89.6 (86.5–92.8)	86.0 (81.9–90.0)	88.1 (83.2–93.0)	90.2 (87.7–92.8)	0.71 (0.44–1.13)	0.86 (0.47–1.58)	1.07 (0.70–1.64)
Female	93.7 (91.3–96.0)	94.6 (92.2–97.0)	93.4 (90.5–96.3)	93.6 (91.0–96.3)	1.18 (0.60–2.32)	0.96 (0.52–1.77)	0.99 (0.56–1.77)
Male	85.8 (79.3–92.2)	77.9 (70.4–85.3)	83.1 (74.7–91.5)	87.0 (81.8–92.2)	0.58 (0.29–1.17)	0.82 (0.35–1.89)	1.11 (0.55–2.25)
High perceived happiness							
Cycle / cycle comparison	Cycle 1 Mar 2007 – Feb 2009	Cycle 2 Aug 2009 – Nov 2011	Cycle 5 Jan 2016 – Dec 2017	Cycle 6 Jan 2018 – Dec 2019	Cycle 2 vs. Cycle 1	Cycle 5 vs. Cycle 1	Cycle 6 vs. Cycle 1
Overall	92.0 (90.9–93.1)	92.2 (89.5–94.8)	91.3 (87.7–94.8)	91.1 (87.0–95.3)	1.02 (0.68–1.53)	0.91 (0.57–1.43)	0.89 (0.52–1.53)
Female	92.7 (90.3–95.1)	94.9 (92.2–97.6)	89.4 (84.2–94.6)	93.7 (90.2–97.2)	1.46 (0.71–3.00)	0.66 (0.35–1.25)	1.17 (0.59–2.30)
Male	91.3 (89.5–93.2)	89.6 (85.8–93.3)	93.0 (90.0–96.1)	88.7 (81.2–96.1)	0.82 (0.51–1.30)	1.27 (0.74–2.17)	0.74 (0.32–1.75)

Source: Canadian Health Measures Survey.

Abbreviations: CI, confidence interval; OR, odds ratio.

Notes: All estimates are weighted. After excluding respondents with missing responses on any of the items in the prosocial behaviour subscale, the combined sample sizes were 4196, 2097, and 2099 for the overall, female and male analyses involving prosocial behaviour, respectively. After excluding respondents with missing responses on the happiness item, the combined sample sizes were 4205, 2091, and 2114 for the overall, female and male analyses involving happiness, respectively. Estimates may differ slightly from those obtained when analyzing individual cycle data due to the modified weights that we used when combining Canadian Health Measures Survey data from multiple cycles. The degrees of freedom was 46.

input if needed, it is unclear how much they actually contributed. The amount of convergence/divergence between parent-rated and child-rated PMH indicators could be explored in future studies. The importance of capturing children's perspectives in the measurement and reporting of their PMH was a key takeaway from the aforementioned scoping review[3] and was an area flagged for future research by the OECD.[24]

We found sex differences in parent-rated prosocial behaviour, with normative levels being more common among females than males. This replicates previous research on prosocial behaviour, although the size of this difference can depend on the type of prosocial behaviour, the measurement method and the target of the behaviour, and could be partially influenced by gender stereotypes.[25] Also consistent with previous findings,[25] the older age groups of children tended to have higher parent-rated prosocial behaviour than the youngest (although the difference for the oldest age group did not reach statistical significance; $p = .06$). Conversely, perceived happiness was highest among the youngest (vs. oldest) age group. These discrepant findings reinforce the importance of monitoring multiple PMH outcomes.[2, 3, 24]

In sum, this study furthers our understanding of the epidemiology of prosocial behaviour and happiness among Canadian children. However, there are limitations. The very high prevalence for both indicators may be indicative of ceiling effects, which could have hindered the detection of differences over time and between groups. The presence of the child and interviewer could have also contributed to the high prevalence via socially desirable responding by parents.[26] Moreover, while the positive association between prosocial behaviour and happiness aligns with previous research[27] and provides evidence for their convergent validity, common method biases may also contribute to some of their overlapping variance.[28] The cross-sectional nature of the data limits causal inferences; whether perceived prosocial behaviour leads to perceived happiness (or vice versa) cannot be established. Results may not generalize to those excluded from the CHMS (e.g. those living on First Nations reserves). Ongoing surveillance beyond 2019 and of other (self-reported) PMH indicators are needed for a comprehensive understanding of child PMH in Canada. Nevertheless, this study provides initial insights into the PMH of children in Canada based on two indicators, which could be integrated into surveillance tools like the PMHSIF.

Conflicts of interest

The authors have no conflicts of interest to disclose.

Authors' contributions and statement

CAC: Conceptualization, methodology, formal analysis, writing – original draft.

DL: Writing – review and editing.

KRA: Writing – review and editing.

LLO: Writing – review and editing.

MV: Writing – review and editing, validation.

TABLE 2
Comparing normative parent-rated prosocial behaviour and high perceived happiness across sociodemographic characteristics and to each other, children aged 6 to 11 years, CHMS, 2007–2015/2019, Canada

Sociodemographic characteristic/ PMH outcome	Normative parent-rated prosocial behaviour		High perceived happiness	
	Weighted % (95% CI)	OR (95% CI)	Weighted % (95% CI)	OR (95% CI)
Sex				
Female	93.8 (92.5–95.2)	Reference	92.6 (90.8–94.5)	Reference
Male	83.3 (79.8–86.7)	**0.33 (0.23–0.46)**	90.6 (88.4–92.9)	0.77 (0.54–1.10)
Age (years)				
6–7	85.6 (81.5–89.6)	Reference	94.3 (92.2–96.4)	Reference
8–9	89.8 (87.6–92.1)	**1.49 (1.05–2.12)**	92.0 (89.2–94.8)	0.69 (0.39–1.24)
10–11	89.6 (87.3–91.9)	1.45 (0.99–2.14)	88.9 (86.4–91.4)	**0.48 (0.30–0.78)**
Household income tertile				
Low	88.4 (84.8–91.9)	Reference	90.8 (87.9–93.6)	Reference
Middle	88.4 (85.2–91.6)	1.01 (0.62–1.64)	92.7 (90.1–95.3)	1.29 (0.80–2.10)
High	88.5 (85.9–91.0)	1.01 (0.67–1.53)	91.8 (87.5–96.2)	1.14 (0.52–2.51)
Household educational attainment				
High school or less	89.2 (84.9–93.5)	Reference	89.6 (86.1–93.1)	Reference
Post-secondary	88.0 (86.1–90.0)	0.90 (0.57–1.40)	91.9 (90.1–93.7)	1.31 (0.81–2.14)
Household composition				
Lone-parent	85.7 (77.3–94.2)	Reference	86.6 (79.1–94.0)	Reference
Two-parent	88.8 (86.5–91.1)	1.32 (0.60–2.91)	92.1 (90.6–93.6)	1.81 (0.92–3.57)
Prosocial behaviour				
Nonnormative	–	–	73.6 (65.2–82.0)	Reference
Normative	–	–	94.9 (93.7–96.1)	**6.67 (4.20–10.60)**
Happiness				
Not high	58.0 (47.3–68.8)	Reference	–	–
High	90.2 (87.6–92.8)	**6.67 (4.20–10.60)**	–	–

Source: Canadian Health Measures Survey.

Abbreviations: CI, confidence interval; OR, odds ratio; PMH, positive mental health; "–", not applicable.

Notes: All estimates are weighted. Analyses involving prosocial behaviour and sociodemographic characteristics are based on combined data from cycles 1–4 of the Canadian Health Measures Survey (degrees of freedom = 46), with sample sizes of 4196 for the sex, age, and household income tertile comparisons; 4046 for the household educational attainment comparison; and 3388 for the household composition comparison. Analyses involving happiness and sociodemographic characteristics are based on combined data from cycles 1, 2, 5, and 6 of the Canadian Health Measures Survey (degrees of freedom = 46), except for the analysis involving household income tertile that only includes cycles 1, 2, and 6 (degrees of freedom = 35). In those happiness analyses, sample sizes are 4205 for the sex and age comparisons, 4129 for the household educational attainment comparison, 3377 for the household composition comparison, and 3165 for the household income tertile comparison. The sample size was notably lower for analyses involving household composition as we excluded households with others living in the house beyond the child's parent(s) and sibling(s) (e.g. grandparent, uncle/aunt); nevertheless, interpretation of results did not change when these households were included. To account for rising household income over time, tertiles were calculated separately for each cycle. Income tertiles could not be calculated for cycle 5 as permission was not obtained from respondents for sharing household income data with Health Canada or the Public Health Agency of Canada in that cycle. Analyses examining the association between prosocial behaviour and happiness includes cycle 1 and 2, with a sample size of 2149 (degrees of freedom = 24). Odds ratios that are bolded have confidence intervals that exclude 1.0 and are considered statistically significant.

The content and views expressed in this article are those of the authors and do not necessarily reflect those of the Government of Canada.

References

1. Public Health Agency of Canada (PHAC), Centre for Surveillance and Applied Research. Positive Mental Health Surveillance Indicator Framework: overview [Internet]. Ottawa (ON): PHAC; 2024 [modified 2024 Nov 21; cited 2025 Mar 5]. Available from: https://health-infobase.canada.ca/positive-mental-health/Index

2. Orpana H, Vachon J, Dykxhoorn J, McRae L, Jayaraman G. Monitoring positive mental health and its determinants in Canada: the development of the Positive Mental Health Surveillance Indicator Framework. Health Promot Chronic Dis Prev Can. 2016; 36(1):1-10. https://doi.org/10.24095/hpcdp.36.1.01

3. Varin M, Jhumi M, Capaldi CA, Dopko RL, Ooi LL. Positive mental health among children 11 years and under in Western countries: a scoping review to inform Canada's public health surveillance. medRxiv [Preprint]. 2025 [cited 2025 Oct 9]. Available from: https://doi.org/10.1101/2025.10.08.25337090

4. Dunfield KA. A construct divided: prosocial behavior as helping, sharing, and comforting subtypes. Front Psychol. 2014;5:958. https://doi.org/10.3389/fpsyg.2014.00958

5. Denham SA, Brown C. "Plays nice with others": social–emotional learning and academic success. Early Educ Dev. 2010;21(5):652-80. https://doi.org/10.1080/10409289.2010.497450

6. Huber L, Plötner M, Schmitz J. Social competence and psychopathology in early childhood: a systematic review. Eur Child Adolesc Psy. 2019;28:443-59. https://doi.org/10.1007/s00787-018-1152-x

7. Oishi S, Graham J, Kesebir S, Galinha IC. Concepts of happiness across time and cultures. Pers Soc Psychol B. 2013; 39(5):559-77. https://doi.org/10.1177/0146167213480042

8. Huta V, Waterman AS. Eudaimonia and its distinction from hedonia: developing a classification and terminology for understanding conceptual and operational definitions. J Happiness Stud. 2014;15:1425-56. https://doi.org/10.1007/s10902-013-9485-0

9. Statistics Canada. Canadian Health Measures Survey (CHMS): detailed information for spring 2007 to spring 2009 (cycle 1) [Internet]. Ottawa (ON): Statistics Canada; 2007 [modified 2007 Oct 24; cited 2025 Mar 5]. Available from: https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=10263

10. Statistics Canada. Canadian Health Measures Survey (CHMS): detailed information for August 2009 to November 2011 (cycle 2) [Internet]. Ottawa (ON): Statistics Canada; 2012 [modified 2012 May 18; cited 2025 Mar 5]. Available from: https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=62444

11. Statistics Canada. Canadian Health Measures Survey (CHMS): detailed information for January 2012 to December 2013 (cycle 3) [Internet]. Ottawa (ON): Statistics Canada; 2014 [modified 2014 Sep 10; cited 2025 Mar 5]. Available from: https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=136652

12. Statistics Canada. Canadian Health Measures Survey (CHMS): detailed information for January 2014 to December 2015 (cycle 4) [Internet]. Ottawa (ON): Statistics Canada; 2014 [modified 2014 April 15; cited 2025 Mar 5]. Available from: https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=148760

13. Statistics Canada. Canadian Health Measures Survey (CHMS): detailed information for January 2016 to December 2017 (cycle 5) [Internet]. Ottawa (ON): Statistics Canada; 2018 [modified 2018 Oct 23; cited 2025 Mar 5]. Available from: https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=251160

14. Statistics Canada. Canadian Health Measures Survey (CHMS): detailed information for January 2018 to December 2019 (cycle 6) [Internet]. Ottawa (ON): Statistics Canada; 2019 [modified 2019 Dec 4; cited 2025 Mar 5]. Available from: https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=1195092

15. Goodman R. The Strengths and Difficulties Questionnaire: a research note. J Child Psychol Psyc. 1997;38(5): 581-6. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x

16. Hoffmann MD, Lang JJ, Guerrero MD, Cameron JD, Goldfield GS, Orpana HM, et al. Evaluating the psychometric properties of the parent-rated Strengths and Difficulties Questionnaire in a nationally representative sample of Canadian children and adolescents aged 6 to 17 years. Health Rep. 2020; 31(8):13-20. https://www.doi.org/10.25318/82-003-x202000800002-eng

17. Turner SE, Dopko RL, Goldfield G, Cloutier P, Pajer K, Abdessemed M, et al. Validating existing clinical cut-points for the parent-reported Strengths and Difficulties Questionnaire in a large sample of Canadian children and youth. Health Promot Chronic Dis Prev Can. 2023;43(9):409-20. https://doi.org/10.24095/hpcdp.43.9.03

18. Horsman J, Furlong W, Feeny D, Torrance G. The Health Utilities Index (HUI®): concepts, measurement properties and applications. Health Qual Life Out. 2003;1:54. https://doi.org/10.1186/1477-7525-1-54

19. Statistics Canada. Combining weights – instructions: Canadian Health Measures Survey (CHMS). Ottawa (ON): Statistics Canada; 2019.

20. Statistics Canada. Instructions for combining multiple cycles of Canadian Health Measures Survey (CHMS) data. Ottawa (ON): Statistics Canada; 2021.

21. Buecker S, Luhmann M, Haehner P, Bühler JL, Dapp LC, Luciano EC, et al. The development of subjective well-being across the life span: a meta-analytic review of longitudinal studies. Psychol Bull. 2023;149(7-8): 418-46. https://doi.org/10.1037/bul0000401

22. Khanna D, Khadka J, Mpundu-Kaambwa C, Lay K, Russo R, Ratcliffe J. Are we agreed? Self- versus proxy-reporting of paediatric health-related quality of life (HRQoL) using generic preference-based measures: a systematic review and meta-analysis. Pharmacoeconomics. 2022;40:1043-67. https://doi.org/10.1007/s40273-022-01177-z

23. Statistics Canada. Canadian Health Survey on Children and Youth, 2019 [Internet]. Ottawa (ON): Statistics Canada; 2020 Jul 23 [cited 2025 Mar 5]. Available from: https://www150.statcan.gc.ca/n1/daily-quotidien/200723/dq200723a-eng.htm

24. Organisation for Economic Co-operation and Development (OECD). Measuring what matters for child well-being and policies. Paris (FR): OECD Publishing; 2021. https://doi.org/10.1787/e82fded1-en

25. Eisenberg N, Fabes RA, Spinrad TL. Prosocial development. In: Eisenberg N, Damon W, Lerner RM, editors. Handbook of child psychology. 6th ed. Hoboken (NJ): John Wiley & Sons; 2007. p. 646-718. https://doi.org/10.1002/9780470147658.chpsy0311

26. Zhang X, Kuchinke L, Woud ML, Velten J, Margraf J. Survey method matters: online/offline questionnaires and face-to-face or telephone interviews differ. Comput Hum Behav. 2017;71:172-80. https://doi.org/10.1016/j.chb.2017.02.006

27. Aknin LB, Van de Vondervoort JW, Hamlin JK. Positive feelings reward and promote prosocial behavior. Curr Opin Psychol. 2018;20:55-9. https://doi.org/10.1016/j.copsyc.2017.08.017

28. Podsakoff PM, MacKenzie SB, Lee J-Y, Podsakoff NP. Common method biases in behavioral research: a critical review of the literature and recommended remedies. J Appl Psychol. 2003;88(5):879-903. https://doi.org/10.1037/0021-9010.88.5.879

https://doi.org/10.24095/hpcdp.46.2.04

Corrigendum

Supervised consumption sites and population-level overdose mortality: a systematic review of recent evidence, 2016–2024

Geneviève Gariépy, PhD (1,2); Rebecca K. M. Prowse, MPH (1); Rebecca Plouffe, MPH (1); Eva Graham, PhD (1,3)

This corrigendum is being published to add a clarification on page 361 of the following article:

Gariépy G, Prowse RKM, Plouffe R, Graham E. Supervised consumption sites and population-level overdose mortality: a systematic review of recent evidence, 2016–2024. Health Promot Chronic Dis Prev Can. 2025;45(9):357-66. https://doi.org/10.24095/hpcdp.45.9.02

Text has been added to highlight an important precision about the Rammohan et al. study[1]. Bold has been used to identify the added text.

The authors thank Dr. Daniel Werb for raising this concern.

Before correction

The two observational studies used ecological study designs to examine associations between SCSs and overdose mortality, one at the province level[33] and the other at the neighbourhood level.[34] In Alberta, a province-wide analysis found that higher SCS visits across the seven provincial SCSs correlated with fewer fentanyl-related overdose deaths between 2017 and 2020 ($r = -0.64$; $p = 0.03$).[33] A study in Toronto, Ontario, compared overdose mortality rates in 2017 and 2019, that is, before and after SCSs were implemented, at different distances from the sites.[34] Neighbourhoods within 500 m of an SCS had 67% fewer overdose deaths per 100 000 people ($p = 0.04$) after the SCSs had been implemented. Areas beyond 500 m of an SCS had 24% fewer deaths, but this difference was not statistically significant ($p = 0.38$).[34] Quality assessment found that both ecological studies had high risk of bias, primarily because of a lack of control for confounding factors (Additional File 3; available from the authors upon request).

After correction

The two observational studies used ecological study designs to examine associations between SCSs and overdose mortality, one at the province level[33] and the other at the neighbourhood level.[34] In Alberta, a province-wide analysis found that higher SCS visits across the seven provincial SCSs correlated with fewer fentanyl-related overdose deaths between 2017 and 2020 ($r = -0.64$; $p = 0.03$).[33] A study in Toronto, Ontario, compared overdose mortality rates in 2017 and 2019, that is, before and after SCSs were implemented, at different distances from the sites.[34] Neighbourhoods within 500 m of an SCS had 67% fewer overdose deaths per 100 000 people ($p = 0.04$) after the SCSs had been implemented. Areas beyond 500 m of an SCS had 24% fewer deaths, but this difference was not statistically significant ($p = 0.38$).[34] **The study also conducted geographically weighted regression analyses of post-implementation spatial patterns, finding inverse associations between SCS proximity and overdose mortality that strengthened from 2018 to 2019. These analyses adjusted for neighbourhood-level sociodemographic factors and substance-use-related health services.** Quality assessment found that both ecological studies had high risk of bias, primarily because of a lack of control for confounding factors (Additional File 3; available from the authors upon request).

Reference

1. Rammohan I, Gaines T, Scheim A, Bayoumi A, Werb D. Overdose mortality incidence and supervised consumption services in Toronto, Canada: an ecological study and spatial analysis. Lancet Public Health. 2024;9(2):e79-87. https://doi.org/10.1016/s2468-2667(23)00300-6

Author references:

1. Public Health Agency of Canada, Ottawa, Ontario, Canada
2. School of Public Health, Université de Montréal, Montréal, Quebec, Canada
3. Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada

Correspondence: Geneviève Gariépy, Public Health Agency of Canada, 785 Carling Ave., Ottawa, ON K1A 0K9; Tel: 613-952-7608; Email: genevieve.gariepy@phac-aspc.gc.ca

https://doi.org/10.24095/hpcdp.46.2.05

Release notice

Updated child protection legislation review with focus on Indigenous rights and data sharing, Canada

The Government of Canada has released an updated version of *Provincial and Territorial Child Protection Legislation and Policy*,[1] which offers a comprehensive overview of child protection laws across the country. Developed collaboratively by the Department of Justice Canada and the Public Health Agency of Canada (PHAC), the report highlights legislative changes from 2018 to 2023, with an added focus on Indigenous laws and information sharing for research or statistical purposes.

This updated report serves as a central resource for decision-makers, public health and child welfare professionals, researchers and others who may be interested in comparative analyses of legislation frameworks in child protection. The report complements PHAC's related work on child maltreatment, including public health surveillance, the development of national child welfare data, applied research, and policy and programs. It responds to priorities set by PHAC's Child Maltreatment Surveillance and Research Working Group, which also oversees the Canadian Child Welfare Information System, a national database that tracks children and youth in out-of-home care.

Key highlights of the report include:

- an overview of the *Act respecting First Nations, Inuit and Métis children, youth and families*, including effects, governing principles and impacts;
- a snapshot of the age of eligibility for protection and extended services by jurisdiction;
- a summary of expanded support services for youth transitioning out of care, available up to 27 years of age in some regions;
- a review of mandatory reporting requirements with respect to child maltreatment;
- an examination of the rules related to sharing data for research or statistical purposes.

The report underscores Canada's commitment to addressing child maltreatment, including child welfare, and advancing equity for Indigenous children and communities.

Reference

1. Public Health Agency of Canada (PHAC). Provincial and Territorial Child Protection Legislation and Policy—2023. Ottawa (ON): PHAC; 2025. Available from: https://publications.gc.ca/collections/collection_2025/aspc-phac/HP35-116-2025-eng.pdf

https://doi.org/10.24095/hpcdp.46.2.06

Release notice

2022 Health Behaviour in School-aged Children topic-specific reports

The 2022 Health Behaviour in School-aged Children (HBSC) is a national cross-sectional study of over 26 000 students in Grades 6–10 from over 300 Canadian schools. Queen's University, in collaboration with national experts, has developed four topic-specific national reports offering focussed insights into the 2022 HBSC.

Highlights

- **Food insecurity** impacts 1 in 5 students, with higher rates among families of lower socioeconomic status. Youth experiencing food insecurity were less likely to meet nutrition, sleep and physical activity recommendations. They were also more likely to report weekly health symptoms (i.e. headaches, irritability and feeling low) and lower life satisfaction.
- **Adherence to 24-hour movement behaviour recommendations** continues to decline. Only 38% met daily physical activity recommendations in 2022 (down from 59% in 2018). Screen time (averages of 4.5–5.5 hours per day) exceeded recommendations and adherence to sleep guidelines fell to 58%. Fewer than 1 in 10 youth met all three recommendations, with gender-diverse youth reporting the lowest proportion meeting recommendations.
- **Online risk-taking** is common among youth, with 40% having friended strangers, 40% having followed social media diets or exercise plans and 30% having participated in "internet challenges." Smaller proportions of youth bought drugs online (7%) or met online strangers (5%). These behaviours were linked to poor mental health, especially loneliness and low life satisfaction.
- **Adolescent dating violence** impacted 36% of youth who were in a relationship, with higher rates among transgender and gender-diverse youth (44%) and cisgender girls (42%). Strong family, peer and teacher support reduced the risks.

To access or download the national reports, visit the Queen's University HBSC web page.

Other PHAC publications

Researchers from the Public Health Agency of Canada also contribute to work published in other journals and books. Look for the following articles published in 2025:

Chen SX, Lee MJ, McVea DA, **Henderson SB**. Antipsychotics and other risk factors for mortality among people with schizophrenia during an extreme heat event: a population-based case-control study. Sci Rep. 2025;15(1):34505. https://doi.org/10.1038/s41598-025-17591-0

John S, Joseph KS, Fahey J, **Liu S**, Lisonkova S, Kramer MS. Do birthweight-for-gestational age centiles predict serious neonatal morbidity and neonatal mortality? Paediatr Perinat Epidemiol. 2025. https://doi.org/10.1111/ppe.70065

Nussbaumer-Streit B, Booth A, **Garritty C**, Hamel C, Munn Z, Tricco AC, et al. Overview of evidence synthesis types and modes. J Clin Epidemiol. 2025;187:111970. https://doi.org/10.1016/j.jclinepi.2025.111970

Walker KL, Gaudreault A, **Prince SA**, Goldfield G, Taler V, Taljaard M, et al. Cycling and cognition in middle-aged and older adults: a scoping review. J Cycl Micromobil Res. 2025;6:100092. https://doi.org/10.1016/j.jcmr.2025.100092