

## Original quantitative research

# Social disparities in alcohol consumption among Canadian emerging adults

Stephanie Sersli, PhD (1,2); Thierry Gagné, PhD (3,4,5); Martine Shareck, PhD (1,2)

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### Abstract

**Introduction:** Young adult drinking is a public health priority, but knowledge of socioeconomic status (SES) indicators and alcohol use among emerging adults (EAs; aged 18–29 years) is primarily informed by college samples, populations in their late teens and early twenties and non-Canadian data. We compared the association of three different SES indicators with monthly heavy episodic drinking (HED), less-than-monthly HED, no HED, and no drinking among Canadian EAs.

**Methods:** We pooled the 2015 to 2019 waves of the Canadian Community Health Survey to include participants aged 18 to 29 years ( $n = 29\,598$ ). Using multinomial regression, we calculated weighted estimates of alcohol use by education, household income and area-level disadvantage, adjusting for adult roles and sociodemographic characteristics.

**Results:** Approximately 30% of EAs engaged in monthly HED, whereas 16% did not drink at all in the past year. Compared to those in the lowest household incomes, being in the top income quintile was significantly associated with increased relative odds of monthly HED (e.g. in combined SES model, RRR = 1.21, 95% CI: 1.04–1.39). Higher levels of education, being in higher income quintiles and living in less disadvantaged areas were significantly associated with reduced relative odds of no HED and not drinking. Adjusting for adult roles did not substantially change the associations between SES and alcohol use.

**Conclusion:** Higher SES was associated with HED among EAs, although the magnitude of association was small. Universal prevention measures addressing the affordability, availability and marketing of alcohol could be complemented by interventions targeting EA populations at higher risk of HED.

**Keywords:** *alcohol drinking, alcohol abstinence, young adult, social class*

### Introduction

Canada's low-risk drinking guidelines recommend avoiding binge or heavy episodic drinking (HED), as it is linked to short-term harms such as injury, aggression and violence as well as long-term chronic health problems.<sup>1</sup> HED—usually defined as consuming five standard drinks or more for men and four standard drinks or

more for women within a two-hour period—remains a public health concern among young or “emerging” adults (i.e. aged 18–29 years), given that HED prevalence is highest in this age group.<sup>2,3</sup> In emerging adult (EA) populations, HED is characterized by age-related escalations and reductions. Many researchers believe these peaks and subsequent reductions are linked to developmental transitions

### Highlights

- Approximately 30% of respondents engaged in monthly HED, whereas 16% did not consume alcohol in the past year.
- Being in the highest income quintile was significantly associated with increased relative odds of monthly HED.
- Higher education, higher income and lower neighbourhood disadvantage were significantly associated with reduced relative odds of nondrinking.
- Universal prevention measures addressing the affordability, availability and marketing of alcohol could be complemented by interventions targeting EA populations at higher risk of HED.

into adult social roles such as attending postsecondary or completing formal education, full-time employment, residential independence, getting married, and having children.<sup>4,7</sup>

Much of what we know about EA alcohol use comes from studies conducted in four-year college or university settings,<sup>8</sup> with far fewer studies on EA alcohol use originating outside of these settings.<sup>9</sup> However, trends among undergraduates may not be generalizable to EAs not attending school, as there are important socioeconomic differences between undergraduates and their peers not attending postsecondary institutions.<sup>9–11</sup> Moreover, recent American

### Author references:

1. Faculté de médecine et des sciences de la santé, Département des sciences de la santé communautaire, Université de Sherbrooke, Sherbrooke, Quebec, Canada
2. Centre de recherche du Centre hospitalier universitaire de Sherbrooke (CRCHUS), Sherbrooke, Quebec, Canada
3. Research Department of Epidemiology and Public Health, University College London, London, United Kingdom
4. International Centre for Lifecourse Studies in Society and Health, London, United Kingdom
5. Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Montréal, Quebec, Canada

**Correspondence:** Martine Shareck, Faculté de médecine et des sciences de la santé, Département des sciences de la santé communautaire, Université de Sherbrooke, 3001 12e Avenue Nord, Sherbrooke, QC J1H 5N4; Email: [martine.shareck@usherbrooke.ca](mailto:martine.shareck@usherbrooke.ca)

work suggests that the age at which EAs initiate into and mature out of HED is shifting: more EAs aged 18 and 19 years are delaying HED, but are also engaging in HED later into their twenties than in previous decades.<sup>12,13</sup> Despite these trends, few studies consider the experience of EAs in their mid-to-late twenties. This gap has implications for prevention efforts: for example, the bulk of EA alcohol intervention research has focussed on undergraduate students, with other youth possibly being missed,<sup>14</sup> and underscores the need to consider nationally representative data across a broader EA age range.

A limitation of current evidence concerns understanding socioeconomic disparities in HED in EAs. SES disparities are seen across many health behaviours, including alcohol consumption. In general, lower-SES groups are more likely to abstain, yet also to drink more heavily than wealthier groups.<sup>15</sup> However, the relationship between SES and alcohol consumption is unclear for EAs; most evidence on SES and alcohol consumption has been limited to adolescents or general adult populations older than 25 years. Part of the reason for this knowledge gap may be that assessing SES among EAs is complicated, as there is often overlap between SES and adult roles. For example, education, income and employment are indicators of SES, but EAs are likely to be in the midst of educational attainment, and income and employment status may evolve accordingly.<sup>16</sup> Furthermore, early or delayed adoption of traditional adult roles may be linked to socioeconomic status; that is, the early onset of adult role milestones is more common among disadvantaged groups, whereas more advantaged groups spend more years in education and thus delay onset of adult roles.<sup>17</sup>

In light of shifts in age-related drinking and the evidence gap pertaining to SES in this age group, we examined SES disparities in alcohol consumption patterns—including not drinking—in Canadian EAs. There were two specific questions:

1. How were three different indicators of SES—educational attainment, household income and area-level disadvantage—associated with alcohol consumption among Canadian EAs?
2. How were these three SES indicators associated with alcohol consumption when further adjusted for EA concurrent

adult role status (i.e. attending school full-time, working full-time, living with parents, cohabiting/married, parenting)?

Informed by the literature on alcohol abstinence, we hypothesized that SES indicators would be inversely associated with nondrinking (i.e. those with lower education, household income and area-level advantage would have higher relative odds of nondrinking). With respect to HED, we hypothesized that EAs would be more like the general adult population than adolescents, and that higher SES would be inversely associated with HED. We also expected to see that those living with their parents, those who were married or cohabiting and those who were parents themselves would have higher relative odds of nondrinking, but that students would have higher relative odds of HED.

## Methods

### Data

Data came from the Canadian Community Health Survey (CCHS), an annual, repeated, cross-sectional survey containing nationally representative data on the health of Canadians. The CCHS collects data on health measures, behaviours and services usage of Canadians aged 12 years and older living in the 10 provinces and three territories. The sampling frame represents approximately 98% of the Canadian population. Our analysis was restricted to respondents aged 18 to 29 years. To increase sample size, we merged three survey cycles from 2015 to 2019.

### Study variables

#### Outcome: drinking behaviour in the past year

CCHS participants were asked about ever (lifetime) alcohol consumption; alcohol consumption in the previous year; and how often they consumed five or more (for women, four or more) alcoholic beverages on one occasion over the past 12 months. The latter measure is a standard threshold for assessing HED.<sup>18</sup> Response options for HED ranged from “never” to “more than once a week.” From these items we created a new variable for past-year alcohol consumption with four mutually exclusive levels: (1) none (no lifetime drinking and no drinking in the past year); (2) no HED (past-year drinkers who did not engage in HED); (3) less-than-monthly

HED (past-year drinkers who engaged in HED less than once per month); and (4) monthly HED (past-year drinkers who engaged in HED once per month or more).

### Correlates

We included three groups of predictors representing socioeconomic status (SES), adult roles and sociodemographic factors. SES comprised (1) educational attainment (less than high school diploma, high school diploma, community college/technical school/CEGEP, undergraduate university degree or higher); (2) distribution of household income at the national level (relative to a low-income cut-off that accounts for household size, expressed in population quintiles); and (3) area-level material disadvantage (based on the Material and Social Deprivation Index [MSDI]<sup>19</sup> derived from the 2016 Canadian Census; we used the material deprivation values, expressed as quintiles). The material deprivation values reflect low income, low education and a low employment-to-population ratio at the dissemination area (DA) level.<sup>19</sup> We merged MSDI with CCHS data using a common variable: dissemination area identification codes (dissemination areas are the smallest standard geographic unit available for analysis and cover all of Canada).<sup>20</sup>

We treated adult roles as binary statuses (yes/no): “full-time student”; “full-time employment” (including self-employment, 30+ hours/week); “cohabiting/married”; “living at home with parents”; “living with children” (in a parental role).

Sociodemographic factors included age (three groups to correspond with early, middle and late phases of emerging adulthood: 18–19, 20–24, 25–29); sex (male, female); ethnoracial and Indigenous identity (White, Indigenous, racialized non-Indigenous); and urbanicity (rural, small, medium or large population centre), as these have been shown to be strong predictors of both drinking behaviour and SES.<sup>3,21–24</sup> Legal drinking age differs across provinces; thus, we also adjusted for provincial legal drinking age (18 years, 19 years), as well as for survey year (corresponding with the available two-year CCHS cycles: 2015–2016, 2017–2018, 2019).

### Analysis

For all analyses, we used the survey and bootstrap weights created by Statistics Canada to obtain nationally representative

estimates. Respondents with missing data for any study variable were excluded from the analytical sample.

We first described characteristics of the overall sample and then those of non-drinkers, and no-, less-than-monthly, and monthly heavy episodic drinkers (Table 1). We next estimated relative risk ratios (RRRs) of no drinking, no HED and monthly HED respectively, compared to less-than-monthly HED, using multinomial logistic regression. Less-than-monthly HED was the reference category, as it was the largest group. In the context of multinomial logistic regression, the relative risk ratio (RRR) denotes ratio of relative risks of exposure (e.g. education, household income) in the outcome groups (e.g. monthly HED, less-than-monthly HED), which is equivalent to odds ratio (OR) or relative odds. We built separate, partially adjusted (for age, sex, ethno-racial and Indigenous identity, urbanicity, legal drinking age and survey year) models for each SES variable (i.e. education, household income and area-level disadvantage), and then added all three SES variables as covariates in a single model (hereafter “combined SES”; Table 2). To address our second research question, we added adult role variables, one at a time, to the combined SES model (Table 3).

Given that drinking behaviours and SES have been found to differ between men and women,<sup>25</sup> we tested an interaction between SES and gender in partially adjusted models to determine whether to build gender-stratified models. As CCHS data did not distinguish between biological sex and gender prior to 2021, we used the sex variable as a proxy for gender. We found no statistically significant interactions between any SES indicator and sex; therefore, men and women were modelled together.

All analyses were conducted within the Statistics Canada Research Data Centre using R version 4.0 (R Foundation for Statistical Computing Vienna, AT) and the `svy_vglm` and `survey` packages.

## Results

### Analytical sample

The final analytical sample consisted of 29 598 respondents, representing a national population of 4 869 039 EAs. We excluded 4624 participants from the analysis due to

missing data. The largest source of missing data was in the category of area-level disadvantage, resulting from linkage with the area-level material disadvantage (MSDI) dataset, which is missing information for certain DAs.<sup>19</sup> The next largest source of missing data was for the category of household income (because the CCHS does not include information on this variable for the three territories), followed by ethnoracial and Indigenous identity. There were some differences between included and excluded respondents with respect to age, sex, ethnoracial and Indigenous identity, attending school, living with parents and urbanicity. Older youth, males, Indigenous and racialized youth, those not attending school full-time, those not living with parents and those in medium population centres were underrepresented in the analytical sample (see [Supplemental Table 1](#) at <https://osf.io/pb5wg>).

### Descriptive overview of alcohol consumption

The largest number of emerging adults engaged in less-than-monthly HED (32.3%,  $N = 1\ 572\ 013$ ), followed by monthly HED (29.9%,  $N = 1\ 455\ 469$ ), no HED (21.6%,  $N = 1\ 050\ 887$ ) and abstaining from alcohol (16.2%,  $N = 790\ 671$ ; Table 1). Of the 29.9% engaging in monthly HED, almost one-third (29.4%,  $N = 428\ 333$ ) reported binge-drinking every week. Compared to nondrinkers or less-than-monthly heavy episodic drinkers, monthly heavy episodic drinkers were more likely to be male, to identify as White, to be in the highest (richest) household income quintiles, to live in the lowest (least) disadvantaged areas and to be in full-time employment. In contrast, nondrinkers were more likely to be the youngest, to have non-Indigenous racialized identities, to be in the lowest (poorest) income quintiles, to live in the highest (most) disadvantaged areas, to live in large population centres, to be in full-time schooling and to be living at home with parents.

### How are different indicators of SES associated with alcohol consumption?

The unadjusted and adjusted associations between SES indicators (education, household income and area-level disadvantage) and alcohol use are shown in Table 2. In the monthly HED (vs. less-than-monthly HED) model, EAs with higher education (relative to no high school diploma) had higher relative odds of monthly HED,

though not statistically significant. Compared to those living in the lowest household income (poorest) quintile, those in the two highest household income quintiles (Q4 and Q5) had higher relative odds of monthly HED (RRR = 1.18 [95% CI: 1.01–1.38] and RRR = 1.25 [95% CI: 1.09–1.44], respectively). Compared to those living in the most disadvantaged neighbourhoods, only those in the least disadvantaged neighbourhood had higher relative odds of monthly HED (RRR = 1.23, 95% CI: 1.05–1.44). Including all SES indicators (education, household income and area-level disadvantage) in a single model resulted in a slight attenuation of associations, and only the highest household income quintile remained statistically significant.

The no HED (vs. less-than-monthly HED) and no drinking (vs. less-than-monthly HED) models suggest that EAs with higher education (e.g. university degree relative to no high school diploma) had lower relative odds of no HED (RRR = 0.59, 95% CI: 0.47–0.74) and no drinking (RRR = 0.26, 95% CI: 0.21–0.33). EAs in higher household income quintiles (relative to the lowest) had lower relative odds of no HED and no drinking (e.g. for those in the richest income quintile, RRR = 0.62 [0.52–1.38] of no HED, and RRR = 0.37 [0.30–0.46] of no drinking). EAs in less disadvantaged quintiles (relative to the most) had lower relative odds of no HED and no drinking (e.g. for those in the lowest area-level disadvantage quintile, RRR = 0.72 [0.60–0.87] of no HED, and RRR = 0.39 [0.31–0.49] of no drinking). Including all SES indicators (education, household income and area-level disadvantage) in a single model resulted in attenuation of their associations with no HED and no drinking, which nonetheless remained statistically significant.

### Do SES–alcohol consumption associations change when adult roles are considered?

The associations between SES and alcohol consumption adjusted for adult social roles are shown in Table 3. Two roles were associated with monthly HED: being in a cohabiting or marital relationship (RRR = 0.81, 95% CI: 0.73–0.91) and being a parent (RRR = 0.66, 95% CI: 0.56–0.77). Three roles were associated with no HED: full-time employment (RRR = 0.74, 95% CI: 0.66–0.82), being in a cohabiting or marital relationship (RRR = 1.23, 95% CI:

**TABLE 1**  
Study sample characteristics of Canadian emerging adults aged 18 to 29 years, Canadian Community Health Survey (2015–2019)

		Total weighted sample	Stratified by drinking behaviour			
			No drinking	No HED	Less-than-monthly HED	Monthly HED
			N = 4 869 039	N = 790 671	N = 1 050 887	N = 1 572 013
		column %	column %	column %	column %	column %
Education	Less than high school diploma	7.6	13.6	7.7	5.9	6.1
	High school diploma	37.6	41.3	38.7	37.1	35.2
	College/technical/CEGEP	31.3	24.8	30.5	32.9	33.7
	University degree or higher	23.5	20.3	23.1	24.1	25.0
Household income	Q1 (lowest)	25.5	37.8	29.2	22.4	19.6
	Q2 (medium-low)	19.4	22.1	21.4	18.4	17.5
	Q3 (middle)	19.0	19.0	18.4	19.9	18.3
	Q4 (medium-high)	18.5	12.4	17.2	19.8	21.5
	Q5 (highest)	17.6	8.7	13.8	19.5	23.0
Area-level material disadvantage	Q1 (lowest)	22.3	14.2	20.4	23.8	26.5
	Q2 (medium-low)	18.8	15.1	17.9	19.9	20.4
	Q3 (middle)	19.5	18.8	20.0	19.4	19.6
	Q4 (medium-high)	20.0	21.4	20.4	20.4	18.7
	Q5 (highest)	19.4	30.6	21.4	16.6	14.8
Age (y)	18–19	16.0	24.4	17.1	14.5	12.4
	20–24	40.4	36.2	38.9	41.7	42.6
	25–29	43.5	39.5	43.9	43.9	45.0
Sex	Female	49.1	53.4	51.8	51.6	42.2
	Male	50.9	46.6	48.2	48.4	57.8
Ethnoracial and Indigenous identity <sup>a</sup>	White	63.7	37.4	55.7	70.8	76.1
	Indigenous	5.0	4.2	3.3	5.1	6.5
	Racialized non-Indigenous	31.3	58.4	40.9	24.0	17.4
Attending school full-time	No	69.2	62.4	68.2	69.6	73.2
	Yes	30.8	37.6	31.8	30.4	26.8
Working full-time	No	45.8	64.5	51.1	41.2	36.9
	Yes	54.2	35.5	48.9	58.8	63.1
Living with parents	No	53.0	46.8	55.1	53.1	54.6
	Yes	47.0	53.2	44.9	46.9	45.4
Cohabiting/married	No	74.1	76.5	71.9	73.0	75.7
	Yes	25.9	23.5	28.1	27.0	24.3
Parenting	No	90.8	88.8	88.0	90.9	93.8
	Yes	9.2	11.2	12.0	9.1	6.2
Urbanicity	Rural	13.1	9.5	12.5	13.8	14.5
	Small population centre	10.0	6.7	7.7	11.4	11.9
	Medium population centre	8.3	6.6	7.9	8.6	9.3
	Large population centre	68.6	77.1	71.8	66.2	64.3
Legal drinking age (y)	18	37.1	30.7	35.2	39.3	39.5
	19	62.9	69.3	64.8	60.7	60.5
Year	2015–2016	32.5	28.8	32.9	32.7	34.0
	2017–2018	33.6	32.7	32.9	33.5	34.8
	2019	33.9	38.5	34.2	33.9	31.2

**Abbreviations:** HED, heavy episodic drinking; Q, quintile; y, years.

**Notes:** Complete cases. Frequencies are weighted using the survey weights created by Statistics Canada to produce nationally representative estimates of the Canadian population. Column percentages may not add to 100% due to rounding. Unweighted sample size of total analytical sample is n = 29 598; n = 4154 for no drinking; n = 5962 for no HED; n = 9950 for less-than-monthly HED; n = 9532 for monthly HED.

<sup>a</sup> The Canadian Community Health Survey asks individuals to self-identify as an “Aboriginal person,” or as belonging to one or more “racial or cultural groups” including: Arab, Black, Chinese, Filipino, Japanese, Korean, Latin American, South Asian, Southeast Asian, West Asian, White. Respondents could also specify another identity.

**TABLE 2**  
**Associations between socioeconomic indicators and alcohol consumption among Canadian emerging adults aged 18 to 29 years, Canadian Community Health Survey (2015–2019), N = 4 869 039**

		Education		Household income		Area-level disadvantage		Combined SES <sup>a</sup>	
		RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI
<b>Monthly HED (vs. less-than-monthly HED) model</b>									
Education	Less than high school	REF						REF	
	High school diploma	0.99	0.82–1.19					0.94	0.78–1.13
	College/technical/CEGEP	1.06	0.89–1.28					1.01	0.84–1.21
	University degree or higher	1.15	0.93–1.41					1.04	0.84–1.29
Household income	Q1 (lowest or poorest)			REF				REF	
	Q2 (medium-low)			1.06	0.91–1.24			1.06	0.91–1.23
	Q3 (middle)			1.00	0.86–1.17			0.99	0.85–1.16
	Q4 (medium-high)			<b>1.18</b>	<b>1.01–1.38</b>			1.15	0.99–1.35
	Q5 (highest)			<b>1.25</b>	<b>1.09–1.44</b>			<b>1.21</b>	<b>1.04–1.39</b>
Area-level material disadvantage	Q5 (highest or most disadvantaged)					REF		REF	
	Q4 (medium-high)					1.00	0.85–1.17	0.98	0.84–1.15
	Q3 (middle)					1.08	0.93–1.26	1.05	0.90–1.23
	Q2 (medium-low)					1.10	0.94–1.28	1.06	0.91–1.25
	Q1 (lowest)					<b>1.23</b>	<b>1.05–1.44</b>	1.18	1.00–1.38
<b>No HED (vs. less-than-monthly HED) model</b>									
Education	Less than high school	REF						REF	
	High school diploma	<b>0.71</b>	<b>0.57–0.88</b>					<b>0.77</b>	<b>0.62–0.96</b>
	College/technical/CEGEP	<b>0.65</b>	<b>0.53–0.80</b>					<b>0.72</b>	<b>0.58–0.89</b>
	University degree or higher	<b>0.59</b>	<b>0.47–0.74</b>					<b>0.69</b>	<b>0.55–0.88</b>
Household income	Q1 (lowest or poorest)			REF				REF	
	Q2 (medium-low)			0.91	0.78–1.07			0.93	0.79–1.09
	Q3 (middle)			<b>0.76</b>	<b>0.64–0.90</b>			<b>0.79</b>	<b>0.66–0.94</b>
	Q4 (medium-high)			<b>0.73</b>	<b>0.62–0.86</b>			<b>0.77</b>	<b>0.65–0.91</b>
	Q5 (highest)			<b>0.62</b>	<b>0.52–0.76</b>			<b>0.67</b>	<b>0.55–0.81</b>
Area-level material disadvantage	Q5 (highest or most disadvantaged)					REF		REF	
	Q4 (medium-high)					0.84	0.70–1.01	0.88	0.74–1.06
	Q3 (middle)					0.88	0.74–1.05	0.94	0.79–1.12
	Q2 (medium-low)					<b>0.80</b>	<b>0.67–0.96</b>	0.87	0.72–1.05
	Q1 (lowest)					<b>0.72</b>	<b>0.60–0.87</b>	<b>0.80</b>	<b>0.66–0.97</b>
<b>No drinking (vs. less-than-monthly HED) model</b>									
Education	Less than high school	REF						REF	
	High school diploma	<b>0.37</b>	<b>0.30–0.46</b>					<b>0.45</b>	<b>0.37–0.56</b>
	College/technical/CEGEP	<b>0.29</b>	<b>0.23–0.37</b>					<b>0.36</b>	<b>0.28–0.45</b>
	University degree or higher	<b>0.26</b>	<b>0.21–0.33</b>					<b>0.38</b>	<b>0.30–0.47</b>
Household income	Q1 (lowest or poorest)			REF				REF	
	Q2 (medium-low)			<b>0.76</b>	<b>0.64–0.91</b>			<b>0.81</b>	<b>0.68–0.97</b>
	Q3 (middle)			<b>0.67</b>	<b>0.55–0.81</b>			<b>0.75</b>	<b>0.62–0.91</b>
	Q4 (medium-high)			<b>0.46</b>	<b>0.38–0.56</b>			<b>0.54</b>	<b>0.44–0.66</b>
	Q5 (highest)			<b>0.37</b>	<b>0.30–0.46</b>			<b>0.47</b>	<b>0.38–0.58</b>
Area-level material disadvantage	Q5 (highest or most disadvantaged)					REF		REF	
	Q4 (medium-high)					<b>0.67</b>	<b>0.55–0.82</b>	<b>0.74</b>	<b>0.60–0.90</b>
	Q3 (middle)					<b>0.64</b>	<b>0.52–0.78</b>	<b>0.72</b>	<b>0.58–0.88</b>
	Q2 (medium-low)					<b>0.55</b>	<b>0.44–0.67</b>	<b>0.64</b>	<b>0.52–0.79</b>
	Q1 (lowest)					<b>0.39</b>	<b>0.31–0.49</b>	<b>0.47</b>	<b>0.38–0.59</b>

**Abbreviations:** CI, confidence interval; HED, heavy episodic drinking; Q, quintile; REF, reference group; RRR, relative risk ratio; SES, socioeconomic status.

**Notes:** Weighted multinomial logistic regression using complete case analysis. Models were adjusted for age, sex, ethnoracial and Indigenous identity, urbanicity, provincial legal drinking age and survey year. Bold typeface indicates significance.

<sup>a</sup> In the combined SES model, education, household income and area-level material disadvantage were included as covariates.

**TABLE 3**  
**Associations between SES, adult roles and alcohol consumption among Canadian emerging adults aged 18 to 29 years,**  
**Canadian Community Health Survey (2015–2019), N = 4 869 039**

		Full-time student <sup>a</sup>		Working full-time <sup>b</sup>		Living with parents <sup>c</sup>		Cohabiting/ married <sup>d</sup>		Parenting <sup>e</sup>	
		RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI
<b>Monthly HED (vs. less-than-monthly HED) model</b>											
Education	Less than high school	REF		REF		REF		REF		REF	
	High school diploma	0.95	0.79–1.15	0.93	0.77–1.12	0.94	0.78–1.13	0.94	0.78–1.13	0.93	0.77–1.12
	College/technical/CEGEP	1.01	0.84–1.22	0.99	0.82–1.20	1.00	0.83–1.21	1.01	0.84–1.22	1.00	0.83–1.20
	University degree or higher	1.05	0.85–1.30	1.03	0.83–1.27	1.04	0.84–1.28	1.06	0.85–1.31	1.02	0.82–1.26
Household income	Q1 (lowest or poorest)	REF		REF		REF		REF		REF	
	Q2 (medium-low)	1.05	0.90–1.23	1.05	0.90–1.22	1.07	0.92–1.25	1.06	0.91–1.24	1.05	0.90–1.22
	Q3 (middle)	0.99	0.84–1.15	0.98	0.84–1.14	1.01	0.86–1.18	0.99	0.85–1.16	0.98	0.84–1.14
	Q4 (medium-high)	1.15	0.98–1.35	1.14	0.97–1.33	<b>1.18</b>	<b>1.01–1.38</b>	1.15	0.98–1.35	1.13	0.96–1.32
	Q5 (highest)	<b>1.21</b>	<b>1.04–1.39</b>	<b>1.19</b>	<b>1.03–1.38</b>	<b>1.24</b>	<b>1.07–1.44</b>	<b>1.20</b>	<b>1.04–1.38</b>	<b>1.17</b>	<b>1.01–1.35</b>
Area-level material disadvantage	Q5 (highest or most disadvantaged)	REF		REF		REF		REF		REF	
	Q4 (medium-high)	0.98	0.84–1.15	0.98	0.84–1.15	0.98	0.84–1.15	0.98	0.84–1.15	0.98	0.83–1.14
	Q3 (middle)	1.05	0.90–1.23	1.05	0.90–1.22	1.05	0.90–1.23	1.05	0.90–1.23	1.05	0.89–1.22
	Q2 (medium-low)	1.07	0.91–1.25	1.06	0.91–1.24	1.06	0.91–1.25	1.06	0.91–1.25	1.06	0.90–1.24
	Q1 (lowest)	<b>1.18</b>	<b>1.01–1.39</b>	1.17	1.00–1.38	1.17	1.00–1.38	1.17	1.00–1.38	1.16	0.99–1.37
Attending school full-time	Yes	0.91	0.81–1.03								
Working full-time	Yes			1.09	0.98–1.20						
Living with parents	Yes					0.92	0.81–1.03				
Cohabiting/married	Yes							<b>0.81</b>	<b>0.73–0.91</b>		
Parenting	Yes									<b>0.66</b>	<b>0.56–0.77</b>
<b>No HED (vs. less-than-monthly HED) model</b>											
Education	Less than high school	REF		REF		REF		REF		REF	
	High school diploma	<b>0.78</b>	<b>0.63–0.97</b>	<b>0.79</b>	<b>0.63–0.98</b>	<b>0.77</b>	<b>0.62–0.96</b>	<b>0.77</b>	<b>0.62–0.96</b>	<b>0.78</b>	<b>0.63–0.97</b>
	College/technical/CEGEP	<b>0.72</b>	<b>0.58–0.89</b>	<b>0.75</b>	<b>0.61–0.93</b>	<b>0.71</b>	<b>0.58–0.89</b>	<b>0.71</b>	<b>0.57–0.89</b>	<b>0.73</b>	<b>0.59–0.91</b>
	University degree or higher	<b>0.70</b>	<b>0.55–0.88</b>	<b>0.73</b>	<b>0.58–0.93</b>	<b>0.69</b>	<b>0.55–0.87</b>	<b>0.69</b>	<b>0.55–0.87</b>	<b>0.72</b>	<b>0.57–0.91</b>
Household income	Q1 (lowest or poorest)	REF		REF		REF		REF		REF	
	Q2 (medium-low)	0.93	0.79–1.09	0.97	0.83–1.14	0.95	0.81–1.11	0.93	0.79–1.09	0.94	0.80–1.11
	Q3 (middle)	<b>0.78</b>	<b>0.66–0.93</b>	<b>0.82</b>	<b>0.69–0.98</b>	<b>0.81</b>	<b>0.68–0.96</b>	<b>0.79</b>	<b>0.66–0.94</b>	<b>0.80</b>	<b>0.67–0.96</b>
	Q4 (medium-high)	<b>0.77</b>	<b>0.65–0.91</b>	<b>0.81</b>	<b>0.68–0.96</b>	<b>0.79</b>	<b>0.67–0.95</b>	<b>0.77</b>	<b>0.65–0.91</b>	<b>0.79</b>	<b>0.67–0.94</b>
	Q5 (highest)	<b>0.67</b>	<b>0.55–0.81</b>	<b>0.71</b>	<b>0.59–0.86</b>	<b>0.70</b>	<b>0.57–0.85</b>	<b>0.68</b>	<b>0.56–0.82</b>	<b>0.70</b>	<b>0.58–0.85</b>
Area-level material disadvantage	Q5 (highest or most disadvantaged)	REF		REF		REF		REF		REF	
	Q4 (medium-high)	0.88	0.74–1.06	0.89	0.74–1.06	0.88	0.73–1.05	0.88	0.74–1.06	0.89	0.74–1.07
	Q3 (middle)	0.94	0.79–1.12	0.94	0.79–1.12	0.94	0.79–1.12	0.94	0.79–1.12	0.94	0.79–1.13
	Q2 (medium-low)	0.87	0.73–1.05	0.87	0.72–1.05	0.87	0.72–1.05	0.87	0.73–1.05	0.88	0.74–1.07
	Q1 (lowest)	<b>0.81</b>	<b>0.67–0.97</b>	<b>0.81</b>	<b>0.67–0.97</b>	<b>0.80</b>	<b>0.66–0.96</b>	<b>0.80</b>	<b>0.67–0.97</b>	<b>0.82</b>	<b>0.68–0.99</b>
Attending school full-time	Yes	0.92	0.81–1.06								
Working full-time	Yes			<b>0.74</b>	<b>0.66–0.82</b>						
Living with parents	Yes					0.88	0.77–1.01				
Cohabiting/married	Yes							<b>1.23</b>	<b>1.09–1.39</b>		
Parenting	Yes									<b>1.55</b>	<b>1.35–1.79</b>

Continued on the following page

**TABLE 3 (continued)**  
**Associations between SES, adult roles and alcohol consumption among Canadian emerging adults aged 18 to 29 years, Canadian Community Health Survey (2015–2019), N = 4 869 039**

		Full-time student <sup>a</sup>		Working full-time <sup>b</sup>		Living with parents <sup>c</sup>		Cohabiting/ married <sup>d</sup>		Parenting <sup>e</sup>	
		RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI
<b>No drinking (vs. less-than-monthly HED) model</b>											
Education	Less than high school	REF		REF		REF		REF		REF	
	High school diploma	<b>0.46</b>	<b>0.37–0.56</b>	<b>0.47</b>	<b>0.38–0.58</b>	<b>0.45</b>	<b>0.37–0.56</b>	<b>0.45</b>	<b>0.37–0.56</b>	<b>0.46</b>	<b>0.38–0.57</b>
	College/technical/CEGEP	<b>0.36</b>	<b>0.28–0.45</b>	<b>0.39</b>	<b>0.31–0.49</b>	<b>0.36</b>	<b>0.29–0.45</b>	<b>0.36</b>	<b>0.28–0.44</b>	<b>0.37</b>	<b>0.29–0.46</b>
	University degree or higher	<b>0.38</b>	<b>0.30–0.48</b>	<b>0.42</b>	<b>0.33–0.53</b>	<b>0.38</b>	<b>0.30–0.48</b>	<b>0.37</b>	<b>0.29–0.47</b>	<b>0.39</b>	<b>0.31–0.50</b>
Household income	Q1 (lowest or poorest)	REF		REF		REF		REF		REF	
	Q2 (medium-low)	<b>0.81</b>	<b>0.68–0.96</b>	<b>0.90</b>	<b>0.75–1.07</b>	<b>0.79</b>	<b>0.67–0.94</b>	<b>0.81</b>	<b>0.68–0.97</b>	<b>0.83</b>	<b>0.69–0.98</b>
	Q3 (middle)	<b>0.75</b>	<b>0.62–0.91</b>	<b>0.83</b>	<b>0.68–1.01</b>	<b>0.73</b>	<b>0.60–0.88</b>	<b>0.75</b>	<b>0.62–0.91</b>	<b>0.77</b>	<b>0.64–0.93</b>
	Q4 (medium-high)	<b>0.54</b>	<b>0.44–0.65</b>	<b>0.60</b>	<b>0.49–0.73</b>	<b>0.52</b>	<b>0.42–0.63</b>	<b>0.54</b>	<b>0.44–0.66</b>	<b>0.56</b>	<b>0.46–0.68</b>
	Q5 (highest)	<b>0.47</b>	<b>0.38–0.58</b>	<b>0.53</b>	<b>0.43–0.67</b>	<b>0.45</b>	<b>0.36–0.55</b>	<b>0.47</b>	<b>0.38–0.58</b>	<b>0.49</b>	<b>0.39–0.61</b>
Area-level material disadvantage	Q5 (highest or most disadvantaged)	REF		REF		REF		REF		REF	
	Q4 (medium-high)	<b>0.74</b>	<b>0.60–0.90</b>	<b>0.74</b>	<b>0.61–0.91</b>	<b>0.74</b>	<b>0.61–0.90</b>	<b>0.74</b>	<b>0.60–0.90</b>	<b>0.74</b>	<b>0.61–0.91</b>
	Q3 (middle)	<b>0.72</b>	<b>0.58–0.88</b>	<b>0.71</b>	<b>0.58–0.88</b>	<b>0.71</b>	<b>0.58–0.87</b>	<b>0.72</b>	<b>0.58–0.88</b>	<b>0.72</b>	<b>0.59–0.88</b>
	Q2 (medium-low)	<b>0.64</b>	<b>0.52–0.79</b>	<b>0.64</b>	<b>0.52–0.79</b>	<b>0.64</b>	<b>0.52–0.79</b>	<b>0.64</b>	<b>0.52–0.79</b>	<b>0.65</b>	<b>0.53–0.80</b>
	Q1 (lowest)	<b>0.48</b>	<b>0.38–0.60</b>	<b>0.48</b>	<b>0.38–0.60</b>	<b>0.48</b>	<b>0.39–0.60</b>	<b>0.48</b>	<b>0.38–0.59</b>	<b>0.48</b>	<b>0.39–0.61</b>
Attending school full-time	Yes	0.96	0.82–1.13								
Working full-time	Yes			<b>0.51</b>	<b>0.44–0.59</b>						
Living with parents	Yes					<b>1.19</b>	<b>1.02–1.39</b>				
Cohabiting/married	Yes							<b>1.18</b>	<b>1.01–1.37</b>		
Parenting	Yes									<b>1.62</b>	<b>1.35–1.94</b>

**Abbreviations:** CI, confidence interval; HED, heavy episodic drinking; REF, reference group; RRR, relative risk ratio; Q, quintile; SES, socioeconomic status.

**Notes:** Models adjusted for age, sex, ethnoracial and Indigenous identity, urbanicity, provincial legal drinking age and survey year. Bold type indicates significance.

<sup>a</sup> Reference: not attending school full-time.

<sup>b</sup> Reference: not working full-time.

<sup>c</sup> Reference: not living with parents.

<sup>d</sup> Reference: not cohabiting/married.

<sup>e</sup> Reference: not a parent.

1.09–1.39) and being a parent (RRR = 1.55, 95% CI: 1.35–1.79). Four roles were associated with no drinking: full-time employment (RRR = 0.51, 95% CI: 0.44–0.59), living with parents (RRR = 1.19, 95% CI: 1.02–1.39), being in a cohabiting or marital relationship (RRR = 1.18, 95% CI: 1.01–1.37) and being a parent (RRR = 1.62, 95% CI: 1.35–1.94). Overall, adjusting for adult roles did not change the association of SES with drinking.

## Discussion

This study expands what is known about the social disparities of alcohol consumption among emerging adults aged 18 to 29 in Canada. There were clear socioeconomic gradients. Compared to those with

lower SES, EAs in the highest-income households were more likely to report monthly HED and less likely to report no HED and no drinking in the past year. Likewise, EAs in the lowest area-level disadvantage quintiles were more likely to report monthly HED, and also less likely to report no HED and no drinking. EAs with higher education were less likely to report no HED and no drinking in the past year.

The inclusion of adult roles into models did not meaningfully change the association of SES variables with alcohol consumption. However, some adult roles were also independently associated with alcohol consumption. For instance, EAs in parenting roles or in cohabiting or married

relationships were less likely to report monthly HED and more likely to report no HED and no drinking in the past year. However, those working full-time had the opposite pattern: they were slightly more likely to report monthly HED (not statistically significant) and less likely to report no HED and no drinking. Finally, those living with parents were more likely to report no drinking in the past year. Overall, we found the strongest SES disparities in the models examining no-past-year drinking.

### SES and HED in emerging adults

The relationship between socioeconomic status and alcohol consumption has been less clear for EAs<sup>26</sup> than for adults or

adolescents. Whereas research on heavy alcohol use in the general population found that those with less education and lower household incomes were more likely to engage in heavy alcohol use,<sup>24</sup> among adolescent populations, those from families with higher education, with higher household income and living in wealthier neighbourhoods were more likely to engage in binge drinking.<sup>26-28</sup> For EA populations, the associations are mixed, and depend on the SES indicator.

SES has been operationalized in different ways across EA studies, making direct comparisons challenging. Some studies have incorporated measures assessing family SES (e.g. parental education, parental income or other indicators of family wealth). These studies suggest that EA HED is associated with higher parental education;<sup>29-32</sup> however, this measure was not available in the CCHS. Whereas we expected monthly HED to be associated with lower educational attainment as in the general population, we found that education was not meaningfully associated with monthly HED (compared to less-than-monthly HED). It is likely that educational inequalities in drinking only become manifest later into adulthood.

Fewer studies have used measures of personal income or area-level disadvantage. Our finding that higher household income is associated with EA monthly HED complements studies that incorporated either household or personal income into analysis.<sup>26,33</sup> One possible reason for this association is that these EAs have more disposable income to spend on alcohol.<sup>33</sup> It is also possible that frequent HED is a more accepted practice among EAs in high-income households and networks.<sup>26</sup> That we found living in the least disadvantaged (i.e. wealthiest) neighbourhoods positively associated with EA HED complements findings from two studies,<sup>22,31</sup> but not from two others.<sup>34,35</sup> Area-level material disadvantage may be linked to alcohol consumption via social norms that might permit or discourage heavy alcohol use (or abstinence), or via availability of alcohol.<sup>23</sup>

### **SES, no HED, and no drinking in emerging adults**

We found that no HED and not drinking in the past year was more prevalent among EAs with less education, living in a lower-income household and living in a more

disadvantaged neighbourhood. The no drinking findings are in line with studies in EA populations in Britain, France, the US and Australia.<sup>36-39</sup> The reasons for the association between lower SES and not drinking are not well understood, although pre-existing poor physical or mental health may influence lifetime abstention.<sup>36</sup>

It is increasingly recognized that EAs are drinking less than ever before, yet few population studies include nondrinking EAs as a subject of analysis. Nondrinkers in general adult populations are often described as “sick quitters,” considered too different from the population average to be included in analysis, as poor health is shown to underpin both abstaining from alcohol and lower SES.<sup>36,40</sup> However, in an analysis of nondrinking trends over time among British EAs, Ng Fat and colleagues<sup>41</sup> suggested that nondrinking is becoming more mainstream, with much of the increase coming from young people who never take up drinking at all, despite reporting good health. Nearly all (99%) nondrinkers in our study reported no lifetime consumption; in other words, there were few “former drinkers.”

That we found a similar direction of associations between lower SES and not engaging in HED among drinkers also suggests nondrinking is part of a continuum of drinking behaviour, rather than being an outlier behaviour. Given that Canada has positioned low-risk drinking as a public health goal (and has recently strengthened its low-risk drinking guidelines<sup>1</sup>), understanding the characteristics of EA nondrinkers is important. It would be valuable to examine Canadian EA nondrinking trends over time, and to assess if social disparities are narrowing.

### **Adult roles and drinking**

We did not find any association between student status and drinking. The evidence on the relationship between student status and alcohol consumption is mixed: some studies have found that postsecondary students are more likely to engage in HED than their nonstudent peers,<sup>42,43</sup> with other studies reporting no differences.<sup>44,45</sup> We add to this literature by finding again no association between student status and alcohol consumption in the Canadian context.

The evidence on the relationship between drinking and employment in EAs is sparse

and inconsistent.<sup>46,47</sup> Our results indicated that working full-time may be a risk factor for monthly HED in EAs, in line with two previous studies.<sup>45,48</sup> Full-time employment may increase drinking frequency due to increased income or social opportunities for drinking with colleagues.<sup>45,46,49</sup> We also found that full-time employment was inversely associated with no HED and not drinking in the past year. These associations differ from studies with general adult populations, which find that HED is associated with unemployment.<sup>15,24</sup> This suggests that the effect of employment may differ by life stage, and unemployment may become an increasingly meaningful predictor of alcohol misuse as it becomes more impactful on one’s identity and finances with increasing age.

As expected, we found that parenthood and cohabitation/marriage were protective factors against HED and positively associated with nondrinking, which has been well documented in other studies.<sup>5,36,50-53</sup> We had expected to find living with parents would reduce the odds of monthly HED, as documented in other studies, but our findings were not statistically significant.<sup>44,54</sup> However, living with parents was positively associated with never drinking in the past year. One proposed mechanism for the increase in EA nondrinking is the growing proportion of EAs continuing to live at home throughout their twenties.<sup>55</sup>

### **Strengths and limitations**

The key strength of this study lies in the methodological qualities of the CCHS, a large national sample including emerging adults who were not students or university educated. However, the study is cross-sectional and so cannot provide evidence of a causal relationship between SES and alcohol consumption. Furthermore, the dataset assessed frequency of HED but not the amounts consumed per HED occasion. Therefore, we did not have a measure of high-intensity drinking (e.g. defined as 8+/10+ drinks in a single sitting for women/men<sup>2</sup>), which would be worth studying, given that HED is common in this age group. Nor did we account for immigrant status or age of migration (associated with nondrinking and HED);<sup>56</sup> doing so may have attenuated results. Finally, approximately 12% of the weighted dataset was excluded from analysis due to missing data. This included all respondents from Canada’s three territories;



therefore, the results of this study may not be generalizable to EAs living in the territories.

### Implications

We used three SES indicators, as they may reflect different and non-interchangeable resources and life circumstances. As expected, indicators overlapped somewhat, and the direction of associations was the same regardless of SES indicator, although the associations were attenuated when included in combined SES models. We used education as a component of SES in relation to drinking behaviour because education can influence norms and attitudes, whereas household income may influence purchasing ability. Area-level disadvantage may reflect environmental context such as community drinking norms and alcohol availability. Whereas all SES indicators were positively associated with monthly HED, only the highest household income quintile was statistically significant; all SES indicators were inversely associated with not drinking, and these associations were also stronger than in the monthly HED models. One plausible explanation why HED was more prevalent among more socioeconomically advantaged EAs could be that, unlike smoking, HED is not widely regarded as a health risk, nor is it socially stigmatized.<sup>57</sup>

Evidence from this and other research demonstrates that the relationship between SES and HED is not the same among EAs as in the general adult population,<sup>58</sup> although we found the association between SES and EA nondrinking *does* follow the same trend as in general adult populations. Understanding the role of socioeconomic factors in EAs' drinking behaviour as they adopt adult roles may aid in identifying targets for prevention. A recent scoping review found that most brief alcohol interventions targeting EAs occur within undergraduate settings;<sup>14</sup> our results suggest that preventive initiatives could be extended to EAs in full-time employment.

Declines in EA drinking have been documented across multiple countries.<sup>39,59</sup> This trend provides opportunities to normalize lighter alcohol consumption, especially in contexts where socializing is linked with cultures of heavy drinking (e.g. starting postsecondary studies, going out with friends or colleagues).<sup>60</sup> However, the strongest evidence for preventing alcohol-related

harm comes from broad-based policies that target the affordability, physical availability and marketing of alcohol.<sup>59</sup> Such measures may also sustain lighter alcohol consumption, and are relevant to EAs (who are sensitive to alcohol pricing and targeted by digital marketers)<sup>59</sup> as well as to adolescents. It is more effective to use a combination of policies addressing alcohol affordability, availability and marketing than any of these measures alone.<sup>61</sup>

Although this study did not examine harms, there is increasing recognition of an alcohol-harms paradox—the unequal burden that alcohol-related harms (e.g. hospitalization, death) place on low SES groups despite lower consumption. In the general adult population, people with low SES experience disproportionate harm from a given level of alcohol use.<sup>62</sup> A nascent body of evidence suggests that this paradox also exists for adolescents<sup>63,64</sup> and EAs,<sup>65</sup> whereby lower-SES EAs are more vulnerable to alcohol-based harms such as violence, injury, hospitalization and encounters with police. One explanation as to why lower-SES EAs may be more vulnerable to such harms is because their resources do not afford them the same buffering influence as experienced by their more affluent peers.<sup>26,31</sup>

### Conclusion

SES associations with monthly HED among emerging adults differed from what has been observed in general adult populations, and underscore the importance of multidimensional assessments of SES. EA monthly HED was associated with higher household income. It was also associated, though not significantly, with living in the least disadvantaged neighbourhoods. EA nondrinking and not engaging in HED was associated with lower education, income and neighbourhood advantage. Structural policies addressing the affordability, availability and marketing of alcohol have been shown to be effective in reducing EA drinking. These universal prevention measures could be complemented by targeted approaches directed at EA populations at higher risk of HED.

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### Conflicts of interest

The authors declare that they have no conflicts of interest.

### Authors' contributions and statement

SS, MS—conceptualization. SS—analysis, writing—original draft. SS, MS, TG—writing—review and editing.

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

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