To view an archived recording of this presentation please click the following link:

https://youtu.be/xVafSZBPbv0

Please scroll down this file to view a copy of the slides from the session.

Land Acknowledgment

- We acknowledge the land we are meeting on is the traditional territory of many nations including the Mississauga's of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples and is now home to many diverse First Nations, Inuit and Métis peoples. We also acknowledge that Toronto is covered by Treaty 13 of the Mississaugas of the Credit.

Inequities in Alcohol Use and Harm

PHO Rounds Alcohol Risk and Policy Series

Brendan Smith, PhD

Naomi Schwartz, PhD

PHO Rounds, January 30, 2024

PHO Rounds series on alcohol risk and policy

January 30	Inequities in alcohol use and harm
February 22	Canadian Alcohol Policy Evaluation (CAPE) 3.0 - Ontario Results
February 27	Epidemiology and outcomes of alcohol-associated liver disease in adolescents and young adults
April 23	Impacts of alcohol container labels - a systematic review
May 14	Minimum legal drinking age – an underrated alcohol control policy

Learning objectives

1. Describe how the concepts of differential exposure and vulnerability to alcohol relate to alcohol inequities

2. Explain emerging research trends related to socioeconomic inequities in alcohol use and harm in Canada

3. Understand the potential of population-level alcohol policies for reducing social inequities in alcohol harm

Acknowledgments

Co-Principal Applicant

- Erin Hobin

Co-authors

- Alessandra Andreacchi

- Claire Benny

- Samantha Forbes

- Naomi Schwartz

- Christine Warren

Burden of alcohol

- Leading cause of death and disability in Canada and internationally

- Causes over 200 negative chronic and acute health harms[1]
  - 30 conditions are wholly (100%) alcohol-attributable

- Highest cost burden of any substance (including tobacco) in Ontario.[2] In 2020:
  - $7.1B due to lost productivity, healthcare, criminal justice, and other costs
  - total alcohol deficit in Ontario alone is $1.95B

- The most commonly consumed psychoactive substances in Canada.[3] In 2017:
  - 78% of people were current alcohol users (i.e., past year use)
  - 20% reported heavy episodic drinking (i.e., binge drinking at least monthly in the past year)

Socioeconomic position and alcohol harm

- Socioeconomic position is inversely associated with alcohol-attributable morbidity and mortality

  - consistently found in high-income countries

- Risk of alcohol-attributable mortality is *3.8- to 5.2-fold higher* in individuals with low compared to high socioeconomic position[4]

- Socioeconomic inequities in alcohol-attributable mortality are greater in men than women[5]

Social inequities in alcohol-attributable hospitalizations

Age-standardized rates of 100% alcohol-attributable hospitalizations by material resources quintile in Ontario, 2021
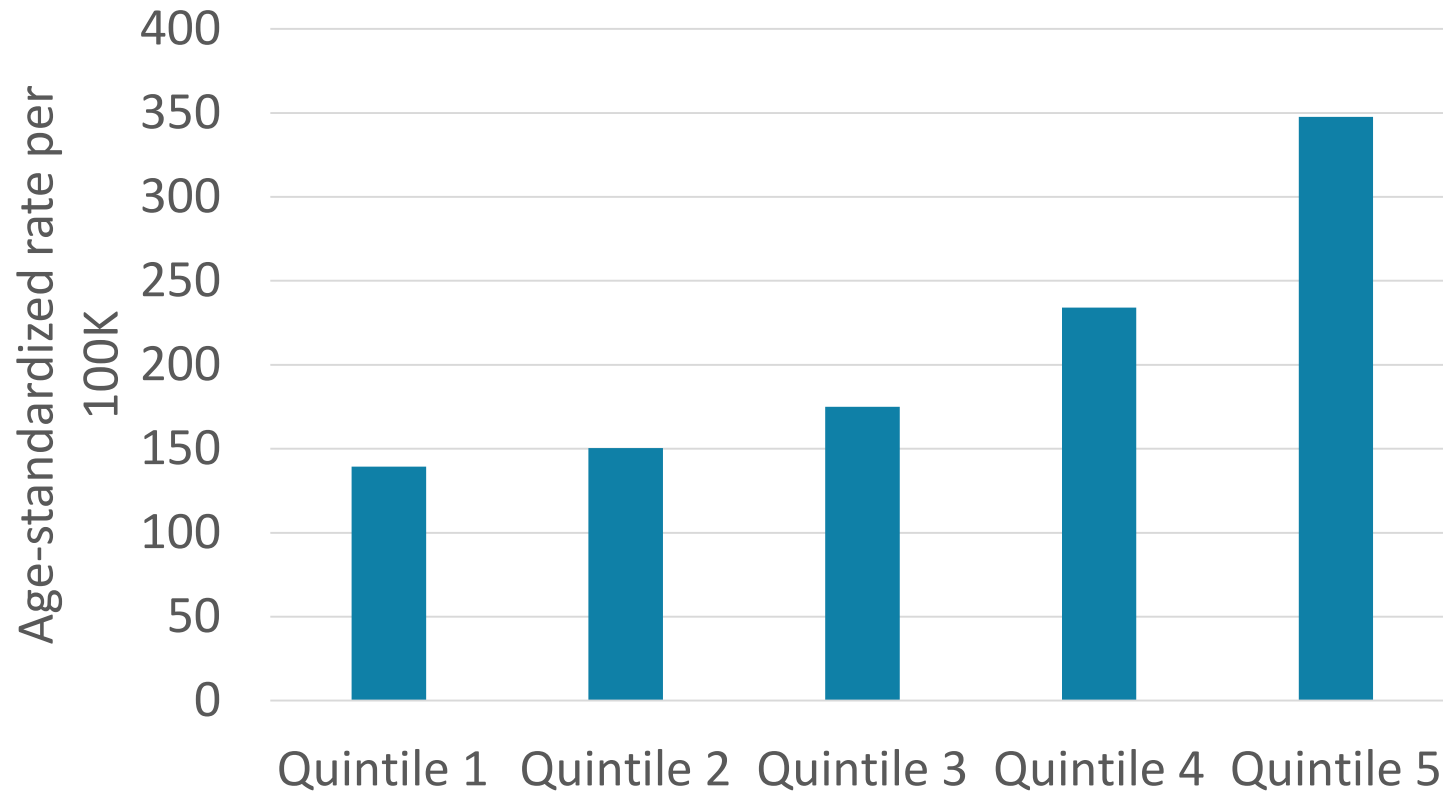

Data from: Public Health Ontario. Snapshots. Toronto, ON: Ontario Agency for Health Protection and Promotion; 2024 January. Available from: https://www.publichealthontario.ca/en/Data-and-Analysis/Health-Equity/Alcohol-Attributable-Hospitalizations

Poll 1

On average, would you expect individuals with lower socioeconomic position to consume higher or lower volumes of alcohol compared to individuals with high socioeconomic position?

- Consume lower volumes alcohol;

- Consume similar amounts alcohol;

- Consume higher volumes of alcohol

Health impact of social position and social context
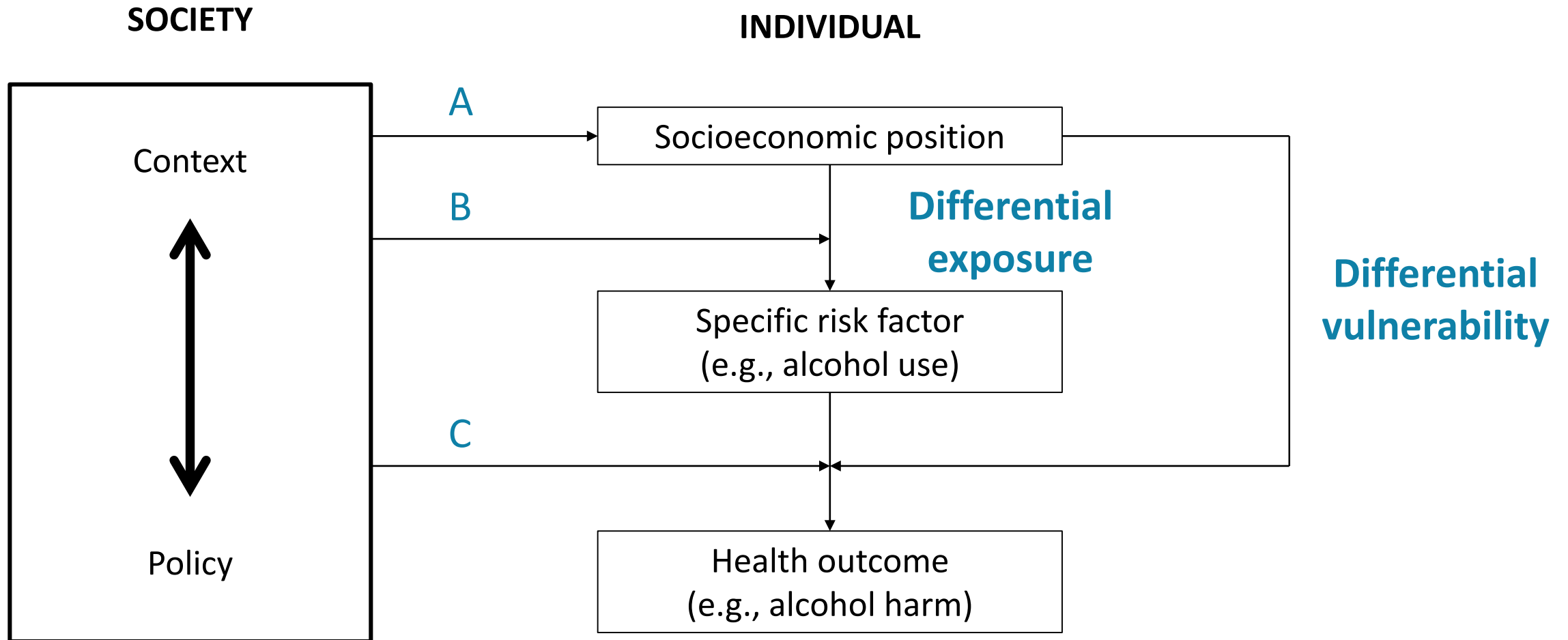
Adapted from: Whitehead M, Burström B, Diderichsen F. Social policies and the pathways to inequalities in health: a comparative analysis of lone mothers in Britain and Sweden. Social Science & Medicine. 2000 Jan;50(2):255–70. [6]

Differential exposure to alcohol

- alcohol use is unevenly distributed across subpopulations
    - e.g., higher among individuals with lower socioeconomic position

- percent of inequities explained[4]:
    - **15% to 30%** by heavy (episodic) drinking
    - **−5% to 15%** by volume (quantity and frequency) of alcohol use

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Public Health

ARTICLES | VOLUME 5, ISSUE 6, E324-E332, JUNE 2020

The role of alcohol use and drinking patterns in socioeconomic inequalities in mortality: a systematic review

Charlotte Probst, PhD • Carolin Kilian, MSc • Sherald Sanchez, MSc • Shannon Lange, PhD • Prof Jürgen Rehm, PhD

Alcohol harm paradox

- individuals with lower compared to higher socioeconomic position experience disproportionately greater alcohol-attributable harm despite similar or less alcohol use

Potential mechanisms[7]:

- Individual or lifestyle risk factors (e.g., smoking, overweight/obesity)

- Contextual (e.g., social support, drinking contexts)

- Disadvantage (e.g., lifecourse exposures, material resources, access to healthcare)

- Upstream (e.g., structural, employment)

- Artifactual (e.g., measurement error, underreporting)

Differential vulnerability to alcohol

- Understudies mechanisms of social inequities in alcohol harm

- Effect of alcohol use differs across subpopulations

  - at the same level of alcohol use, do individuals with lower socioeconomic position experience more harm?

- Emerging evidence indicate a potential joint effect between low socioeconomic position and higher alcohol use

The Joint Effect of Education and Alcohol Use on 100% Alcohol-attributable Hospitalization or Death in Canada [7]

Smith, Brendan T.[a,b]; Warren, Christine M.[a]; Andreacchi, Alessandra T.[a,b]; Schwartz, Naomi[a]; Hobin, Erin[a,b]

The joint effect of socioeconomic position and alcohol use on 100% alcohol attributable emergency department visits from 2003 to 2017 in Ontario and Alberta, Canada

Brendan T. Smith, Claire Benny, Alessandra Andreacchi, Naomi Schwartz, Christine Warren, Samantha Forbes, Erin Hobin

Under peer review

Objectives

- The studies aimed to estimate the sex/gender-specific joint effect of education and alcohol use (both heavy drinking and volume of alcohol use) on:

  1. 100% alcohol-attributable hospitalization or death
  2. 100% alcohol-attributable emergency department (ED) visits

Data sources

Canadian Community Health Survey (CCHS) linked to health administrative data

1. Canadian Community Health Survey (CCHS, 2000-2017)
2. Discharge Abstract Database (DAD, 1999-2017)
3. Ontario Mental Health Reporting System (OMHRS, 2006-2017):

4. National Ambulatory Care Reporting System (NACRS, 2002-2017)
5. The Canadian Vital Statistics–Death Database (CVSD, 2000-2017)

This novel data linkage includes both individual-level measures of socioeconomic position, alcohol use and up to 15 years of follow up for alcohol-attributable harm

Study population

Alcohol-attributable hospitalizations/deaths	Alcohol-attributable ED visits
Pooled 440,370 respondents from the 2000-2008	Pooled 326,600 respondents from 2003-2008
Respondents were excluded if they were: • from Quebec (n=88,900) • from three territories and health regions where alcohol use module was not included (n=37,400) • had a 100% alcohol-attributable hospitalization prior to CCHS interview (n=1,700) • aged <15 or 65+ (n=65,900) • pregnant or breastfeeding (n=5,600), missing primary exposures or covariates data (n=13,300) or lifetime alcohol abstainers (n=28,200)	• outside of Ontario and Alberta (n=192,700) • from health regions where alcohol use module was not included (n=9,600) • had a 100% alcohol-attributable healthcare encounter prior to CCHS interview (n=700) • aged <15 or 65+ (n=28,000) • pregnant or breastfeeding (n=2,200), missing primary exposures or covariates data (n=8,000) or lifetime alcohol abstainers (n=8,900)
n= 95,545 men and 103,580 women	**n=36,900 men and 39,700 women**

Alcohol harm outcomes

1. incident 100% Alcohol-attributable Hospitalization or Death
2. incident 100% alcohol-attributable ED visits

Definition:

- based on CIHI's indicator "Conditions Entirely Caused by Alcohol"
- identified using ICD-10 and DSM-5 diagnostic codes listed as the underlying or contributing cause

Socioeconomic position

- Operationalized using education:

  - less than high school

  - high school diploma/some post-secondary

  - trades or certificate below Bachelor's degree

  - Bachelor's degree or above

Self-report alcohol use

1. **Heavy (episodic) drinking** (yes/no):
   - binge drinking, consuming ≥5 standard drinks (13.45 grams of ethanol) on a single occasion, at least monthly in the past year

2. **Volume of alcohol use:**
   - number of standard drinks consumed in the past 7 days
   - risk groups: former consumer (no use in past year), low (≤2 drinks/week), medium (3-6 drinks/week), high (7-15 drinks/week), and excess risk (>15 drinks/week)
   - consistent with the continuum of risk in Canada's Guidance on Alcohol and Health

Sex and gender

- Sex was measured based on respondent's self-report to the question "is [respondent name] male or female"

  - 'male' and 'female' characterize biological constructs, although they likely capture both biological and sociocultural aspects when asked in this way

- We use the terms sex/gender, women and men to interpret both:

  - sex differences (e.g., females experience greater alcohol harm from similar volumes of alcohol use)

  - gender differences: (e.g., socially constructed roles, attitudes, expectations) are entangled in relation to alcohol use and harm

Covariates

- Potential confounders:
  - age (in years)
  - marital status
  - immigrant status (immigrant/non-immigrant)
  - province (categorical)
  - rurality (urban/rural defined as population concentration ≥1,000 and a population density ≥400km^2)
 - survey cycle (categorical)

Statistical analysis

- Assessed sex/gender-specific prevalence of heavy drinking and volume of alcohol use by education

- Fine and Gray subdistribution hazard models to estimate the association between education and alcohol-attributable harm
  - competing risk (all-cause mortality)
  - models incorporated linkage survey weights and 500 bootstrap repetitions

Statistical analysis

- We tested joint effect of by including an interaction term between education and alcohol use

  - education was dichotomized into:

    - <u>low</u>: <high school, high school diploma/some post-secondary

    - <u>high</u>: trades/certificate below Bachelor's, Bachelor's or above

  - tested joint effects on the additive scale using the Synergy Index (S)

    - S reflects the ratio of whether the joint relative effect of the two exposures together and the sum of the relative effects of each exposure independently

    - S>1 indicates a superadditive interaction between exposures

    - S<1 indicates a subadditive interaction between exposures

Heavy episodic drinking by education
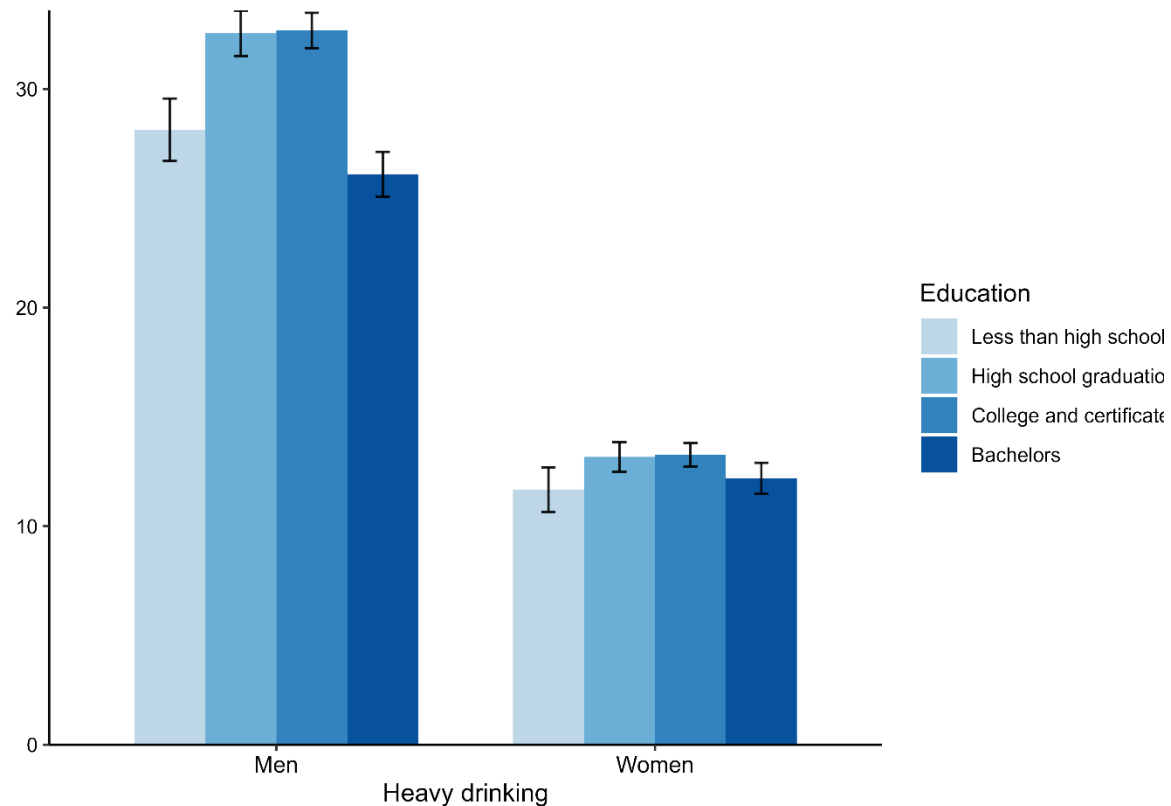
Test for differential exposure:

- Highest prevalence of heavy drinking in individuals with:
  - a high school diploma
  - some post secondary

- Higher prevalence of heavy drinking in men compared to women

Volume of alcohol use by education
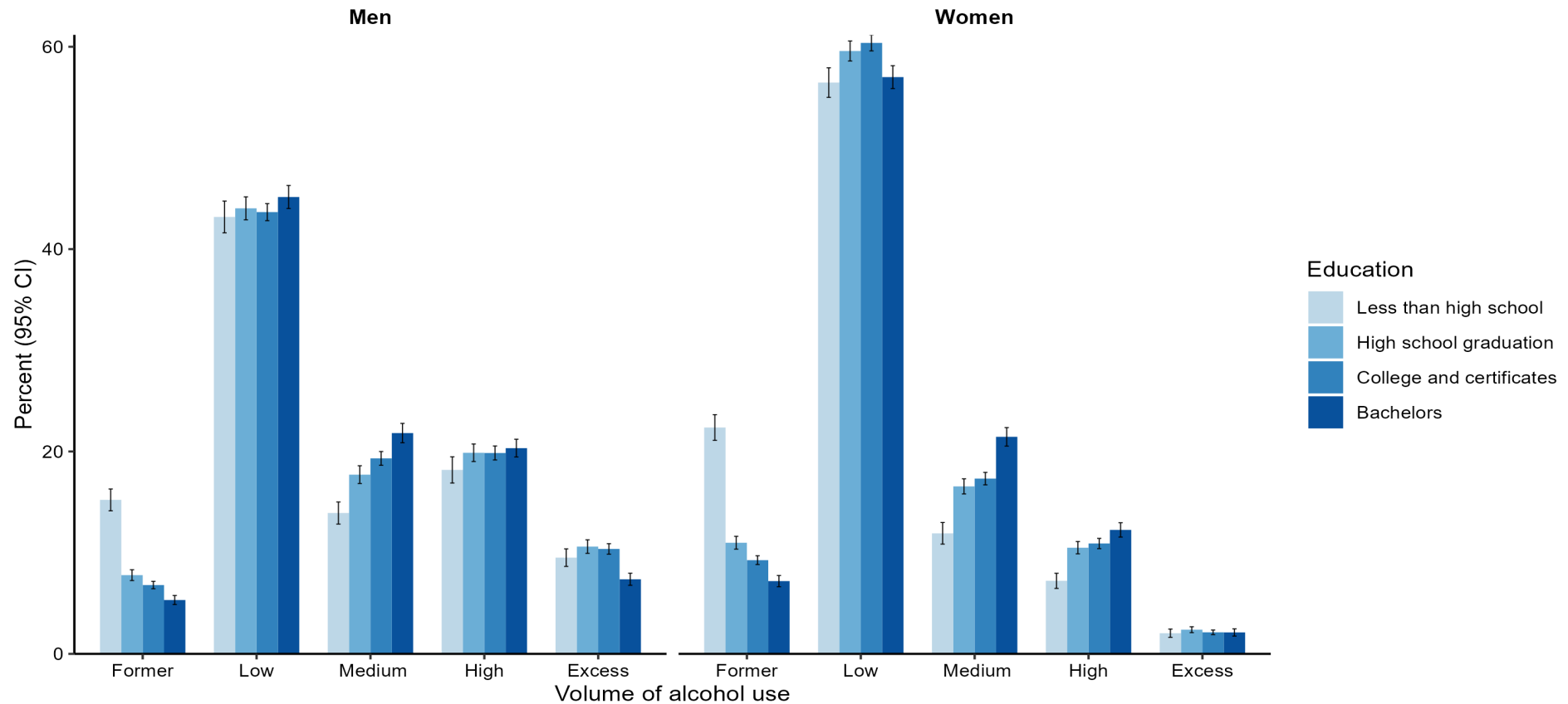
- Prevalence of medium and high-volume alcohol use increased with higher education, up to the excess volume category, where men with Bachelor's degree or above group had the lowest prevalence

Educational inequities in alcohol-attributable harms

	Hospitalizations/deaths		ED visits	
	Men	Women	Men	Women
	Hazard Ratio (95%CI)	Hazard Ratio (95%CI)	Hazard Ratio (95%CI)	Hazard Ratio (95%CI)
Educational Attainment				
less than high school	2.78 (2.17, 3.56)	2.98 (2.00, 4.44)	3.71 (2.47, 5.58)	1.75 (1.15, 2.68)
high school graduation	2.08 (1.63, 2.66)	1.21 (0.85, 1.71)	1.78 (1.28, 2.46)	1.18 (0.80, 1.76)
trades/certificate below Bachelor's degree	1.79 (1.42, 2.27)	1.17 (0.84, 1.64)	1.51 (1.09, 2.08)	1.55 (1.06, 2.27)
Bachelor's degree or above	Ref	Ref	Ref	Ref

Models adjusted for cycle, age (continuous), age^2, marital status, immigrant, province, and rurality

Joint effect of education and heavy drinking

Alcohol-attributable hospitalization or death

Alcohol Use	Education	Hazard Ratio (95% CI)	Synergy Index (95% CI)
Men			
No Heavy Drinking	High education	1.00 (Reference)	
	Low Education	1.65 (1.36, 2.00)	
Heavy Drinking	High Education	3.67 (2.97, 4.54)	
	Low Education	5.06 (4.22, 6.06)	1.22 (1.14, 1.30)
Women			
No Heavy Drinking	High Education	1.00 (Reference)	
	Low Education	1.39 (1.08, 1.80)	
Heavy Drinking	High Education	4.10 (2.95, 5.70)	
	Low Education	5.68 (4.31, 7.50)	1.34 (0.88, 2.04)

>1
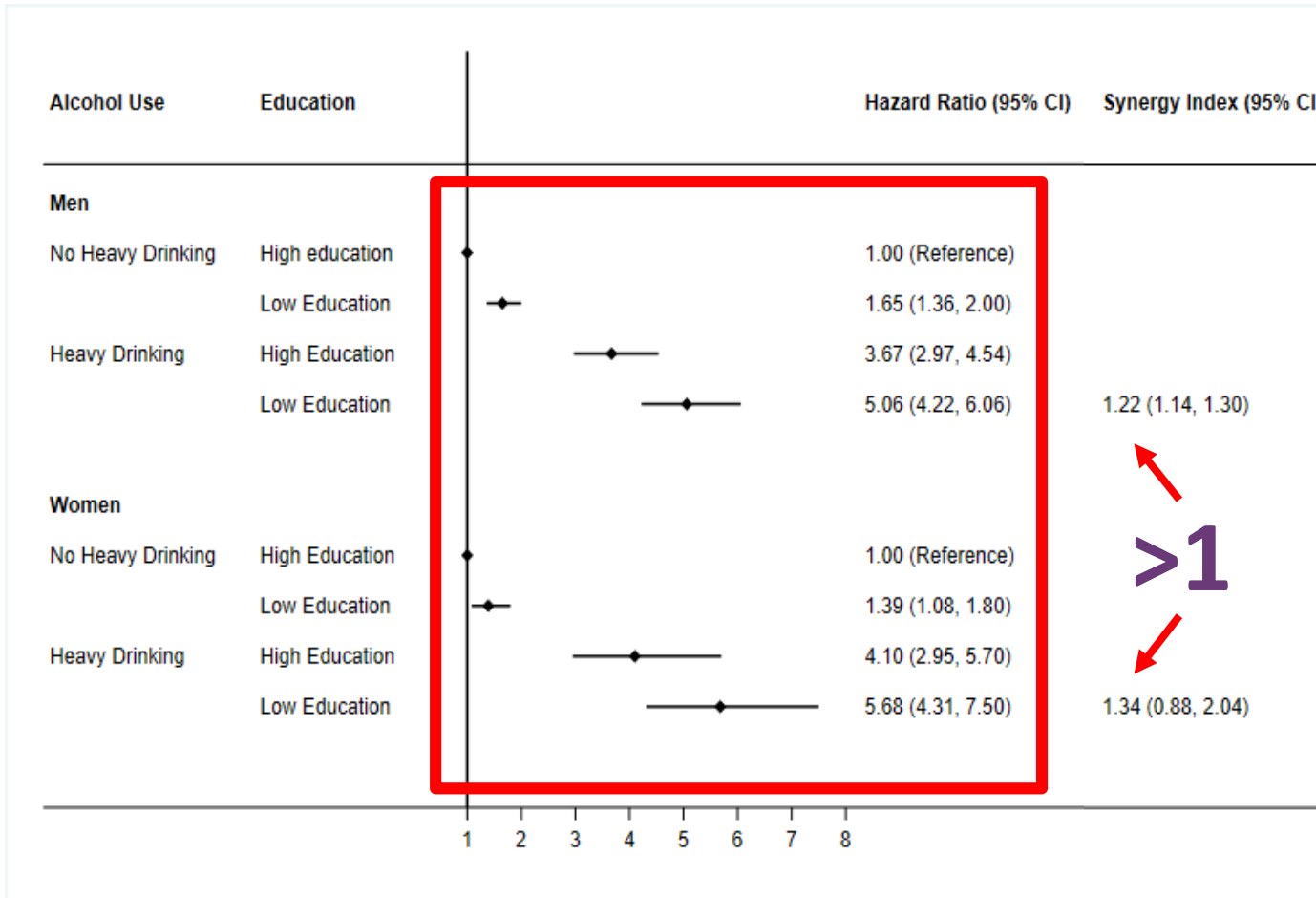
Joint effect of education and volume of alcohol use

Alcohol-attributable hospitalization or death — **Alcohol-attributable ED visits**

Alcohol Use	Education	Hazard Ratio (95% CI)	Synergy Index (95% CI)	Hazard Ratio (95% CI)	Synergy Index (95% CI)
Men					
Low Volume	High Education	1.00 (Reference)		1.00 (Reference)	
	Low Education	1.46 (1.12, 1.90)		1.64 (1.11, 2.44)	
Former User	High Education	1.03 (0.70, 1.53)		1.79 (1.06, 3.02)	
	Low Education	2.10 (1.55, 2.85)	2.24 (0.89, 5.64)	3.00 (1.48, 6.08)	1.40 (0.61, 2.19)
Medium Volume	High Education	1.35 (0.99, 1.84)		1.06 (0.71, 1.59)	
	Low Education	2.49 (1.84, 3.36)	1.84 (1.26, 2.68)	2.31 (1.41, 3.78)	1.87 (0.21, 3.54)
High Volume	High Education	2.46 (1.86, 3.26)		2.15 (1.48, 3.14)	
	Low Education	3.88 (2.91, 5.17)	1.50 (1.19, 1.88)	3.23 (1.97, 5.29)	1.25 (0.78, 1.72)
Excess Volume	High Education	5.32 (4.00, 7.08)		3.17 (2.14, 4.68)	
	Low Education	7.23 (5.58, 9.38)	1.30 (1.05, 1.62)	5.69 (3.92, 8.26)	1.70 (1.31, 2.03)
Women					
Low Volume	High Education	1.00 (Reference)		1.00 (Reference)	
	Low Education	2.04 (1.50, 2.78)		1.20 (0.80, 1.78)	
Former User	High Education	2.54 (1.46, 4.42)		1.98 (0.70, 5.63)	
	Low Education	1.59 (1.04, 2.45)	0.23 (0.07, 0.73)	1.17 (0.58, 2.39)	0.14 (-0.47, 0.76)
Medium Volume	High Education	2.04 (1.37, 3.03)		2.00 (1.30, 3.07)	
	Low Education	3.91 (2.54, 6.01)	1.40 (1.27, 1.55)	1.84 (1.06, 3.18)	0.70 (0.13, 1.27)
High Volume	High Education	4.73 (3.24, 6.89)		3.90 (2.48, 6.13)	
	Low Education	5.07 (3.49, 7.37)	0.85 (0.54, 1.35)	3.41 (2.13, 5.47)	0.78 (0.56, 0.99)
Excess Volume	High Education	10.08 (6.23, 16.31)		7.61 (4.16, 13.92)	
	Low Education	15.23 (9.53, 24.32)	1.41 (0.77, 2.58)	8.67 (4.30, 17.48)	1.13 (0.97, 1.28)

Conclusions

In a large population-representative sample:

✓ Individuals with low compared with high education experienced increased rates of alcohol attributable harm

✗ **Differential exposure to alcohol:** no evidence of increased heavy drinking or higher volume of alcohol use in individuals with lower education

✓ **Differential vulnerability to alcohol:** joint effect of low education and both heavy drinking and volume of alcohol use on 100% alcohol-attributable harm

- Population-level interventions are urgently needed that reduce both the high burden and socioeconomic inequities in alcohol-attributable harm

Limitations

- Nonresponse bias (may be larger among individuals with heavy drinking)

- Selection bias (exclusion of hard-to-reach populations from the CCHS sampling frame who may have higher alcohol use)

- Measurement error
  - self-reported measures that underestimate alcohol use – between 30-60%
    - no evidence this is different by sociodemographic factors
  - alcohol use only measured at one point in time

- True socioeconomic inequities in alcohol harm are likely underestimated
  - partially attributable health harm and non health harm due to alcohol not included

Poll 2

Which population-level alcohol policies will help reduce socioeconomic inequities in alcohol-attributable harm?

- Interventions that target the entire population;

- Interventions that have a larger impact in individuals with lower socioeconomic status;

- Interventions that target the social determinants of health

Alcohol policy options for reducing social inequities in alcohol harm

1. **<u>Social determinants of alcohol use and harm</u>**: directly target existing structural inequities whose effects accumulate over the lifecourse to influence risk of alcohol harm

Alcohol policy options for reducing social inequities in alcohol harm

1. **Social determinants of alcohol use and harm**: directly target existing structural inequities whose effects accumulate over the lifecourse to influence risk of alcohol harm

2. **Alcohol policies with differential impact**: disproportionately reduce alcohol use in populations experiencing inequities

   - minimum alcohol unit pricing introduced in Scotland in 2018 reduced alcohol sales overall, with greater reductions in lower-income households

Alcohol policy options for reducing social inequities in alcohol harm

1. **Social determinants of alcohol use and harm**: directly target existing structural inequities whose effects accumulate over the lifecourse to influence risk of alcohol harm

2. **Alcohol policies with differential impact**: disproportionately reduce alcohol use in populations experiencing inequities

    - minimum alcohol unit pricing introduced in Scotland in 2018 reduced alcohol sales overall, with greater reductions in lower-income households

3. **Population-level alcohol policies**: effective in reducing population per capita alcohol use

    - e.g., controlling alcohol availability, price, and advertising

Health impact of social position and social context
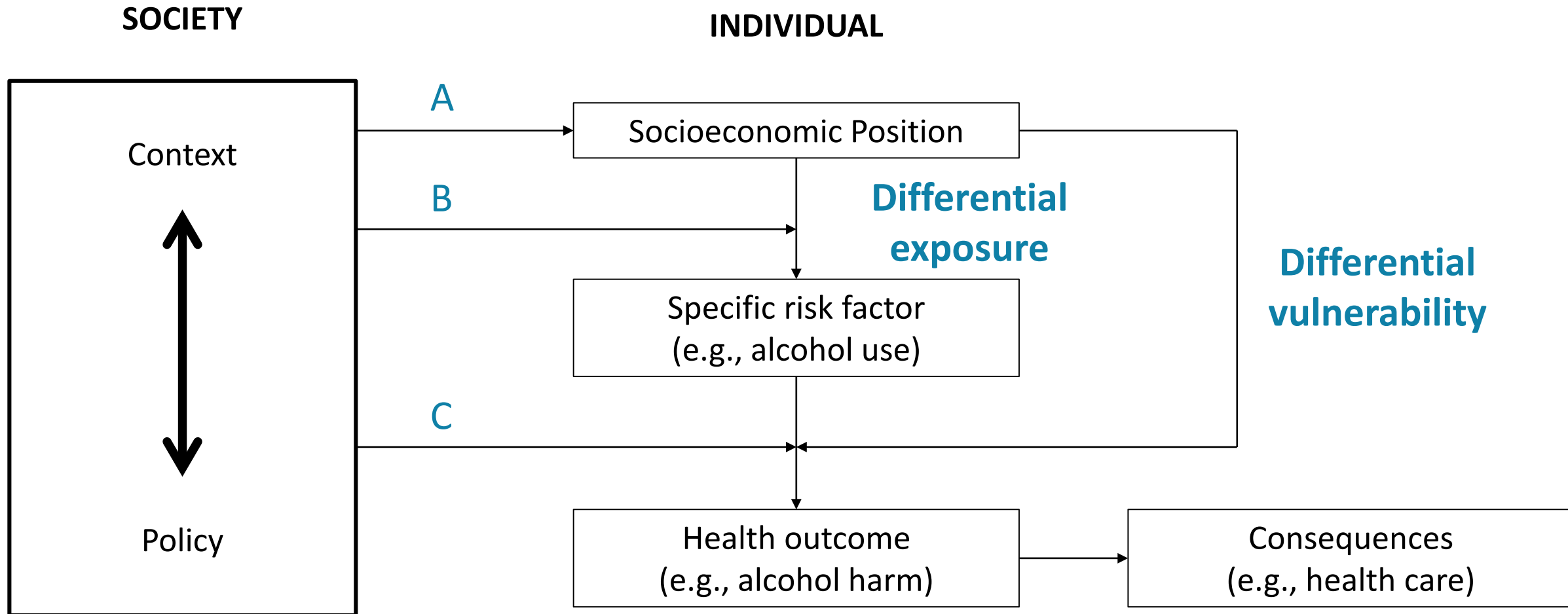
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Thank you!

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The impacts of selling alcohol in grocery stores in Ontario, Canada: a controlled before-after study

Poll 3

During the period of alcohol expansion into grocery stores – what percentage of new alcohol outlets in Ontario were from grocery stores?

1. <30%

2. 30-50%

3. 50-75%

4. 75-95%

5. 95-100%

Background

- Starting in December 2015, the Government of Ontario expanded privatized sales of alcohol, allowing select grocery stores to sell beer, cider and wine

- From 2015-2019, 450 Ontario grocery stores gained a license to sell beer and cider

  - Of these, 160 stores also began selling wine

  - From 2015-17, 15% increase in alcohol outlets in Ontario. Grocery stores made up 88% of these new alcohol outlets[1]

- Increasing alcohol availability has generally been associated with increases in alcohol use and harm[2,3,4,5,6]

Objectives

- To study the impacts of a nearby grocery store gaining an alcohol license on adults' alcohol use in Ontario

  - To examine whether impacts differed by gender

- We hypothesized that alcohol use would increase among adults living close to grocery stores that gained an alcohol license, particularly among women

  - Women are more likely responsible for household grocery shopping.

  - Past studies have shown greater associations with alcohol availability among women compared to men[7,8]

Data sources

- Canadian Community Health Survey (CCHS)

  - Population based survey, conducted annually on a two-year cycle

  - ~30,000 Ontarians are interviewed per two-year cycle

  - Excludes institutionalized populations, on-reserve communities, and certain remote populations

  - CCHS Sample, age 20+, not pregnant or breastfeeding, 2015-19

  - Sample to be limited post-2015 due to changes in CCHS sampling method, limited to 2019 because of changes in alcohol use and availability from COVID-19 in 2020

- Alcohol and Gaming Commission of Ontario (AGCO) list of stores licensed to sell alcohol

Selecting geographies

- 308 Ontario grocery stores were granted a license to sell alcohol between 2016 to 2018

  - Limited intervention to stores with available pre- and post- data from the CCHS (308/450 stores licensed)

- Selected Canadian Census Dissemination Areas (DAs) where the population weighted centroid was within buffer distances (1000m, 1500m) of the 308 "intervention" grocery store

Map of intervention grocery stores

Ontario
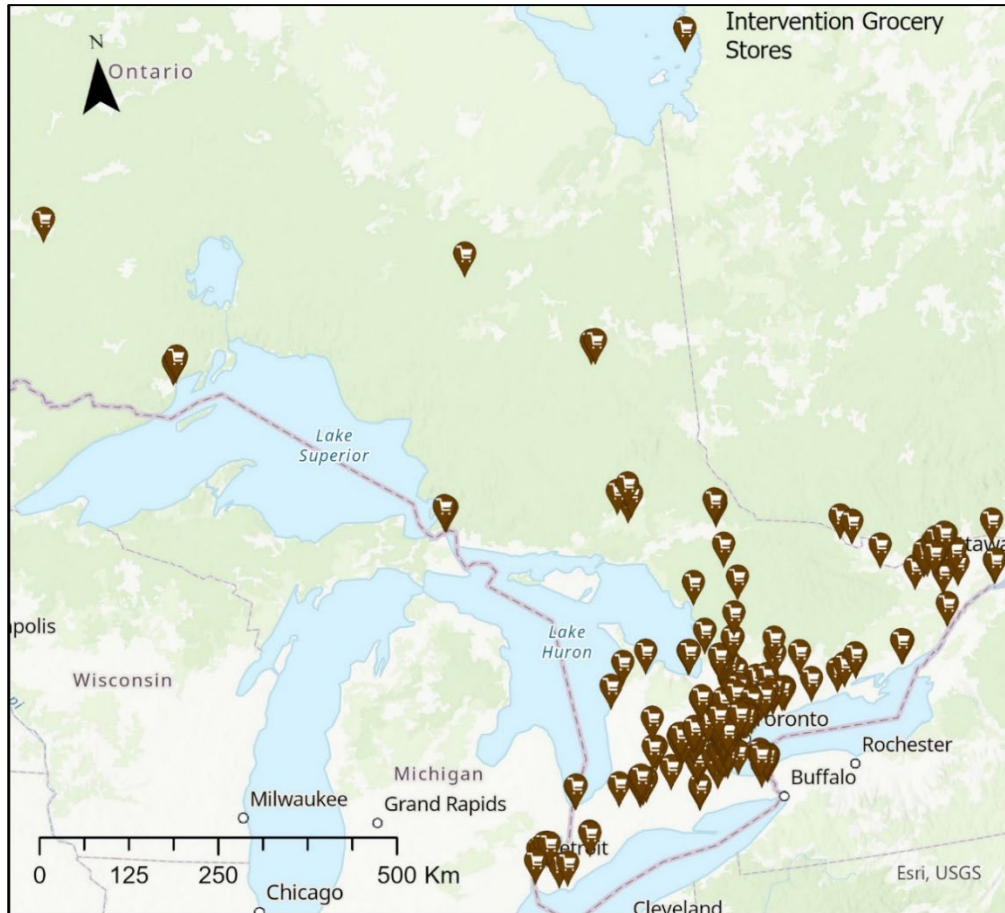
Toronto
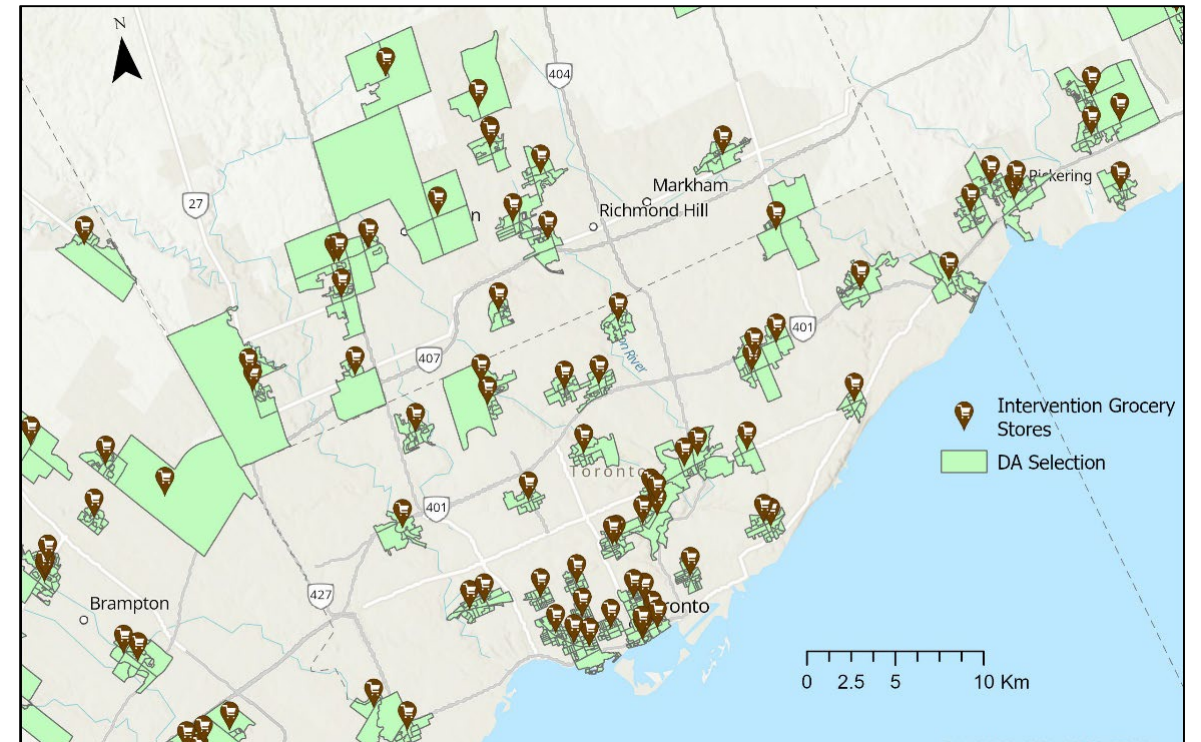
Alcohol and Gaming Commission of Ontario (AGCO). Alcohol licensed outlets [data]. Toronto, ON: AGCO; 2022 [cited 2024 Jan 29]. Unpublished.

Alcohol use outcomes

1. Number of standard drinks in the past 7-days

2. Near daily drinking (4+ days per week): yes/no

3. Heavy drinking – 4+ (women) / 5+ (men) drinks on one occasion at least once a month in past 12 months: yes/no

- Outcomes were tested separately

Analysis

1. Cases: Selected 2015-2019 CCHS participants living within selected DAs

2. Controls: Selected from Ontario CCHS participants living in DAs where population weighted centroid >1500m from grocery stores that gained an alcohol license

   - Used propensity score matching (2:1 ratio) to select controls. Exact match on sex, 10 year age group, population centre size, CCHS cycle. Matched also on population density, race, income, education

3. Analysis: Difference-in-differences (DiD) modelling, stratified by gender

   - Examined with just difference-in-differences terms (Model 1), and additional adjustments for covariates included in propensity score matching (Model 2)

Intervention/Control Population

| Sample included-Pre-intervention	Grocery Stores	Sample included-Post-intervention
Pre-intervention Data #1 CCHS annual 2015 ➕ Pre-intervention Data #2 CCHS 2015, 2016 ➕ Pre-intervention Data #3 CCHS 2015, 2016, 2017	n= 69 2016 grocery stores n= 132 2017 grocery stores n= 107 2018 grocery stores	Post-intervention Data #1 CCHS 2017, 2018, 2019 ➕ Post-intervention Data #1 CCHS 2018, 2019 ➕ Post-intervention Data #1 CCHS 2019

- 1000m: 4684 intervention participants; 9368 controls (2:1 matched)

- 1500m: 10162 intervention participants; 20324 controls (2:1 matched)

Model results for difference-in-differences analyses, 1000m buffer

Model: Past 7-day number of drinks	Overall		Men		Women	
	Model 1[a] RR (95% CI)	Model 2[b] RR (94% CI)	Model 1[a] RR (95% CI)	Model 2[b] RR (95% CI)	Model 1[a] RR (95% CI)	Model 2[b] RR (95% CI)
Intervention (v. Control)	1.00 (0.83 - 1.20)	0.93 (0.77 - 1.11)	1.02 (0.82 – 1.28)	0.91 (0.70 - 1.17)	0.88 (0.70 - 1.10)	0.89 (0.71 - 1.13)
Post (v. Pre)	0.86 (0.74 – 1.00)	0.79 (0.69 - 0.90)	0.90 (0.74 - 1.08)	0.84 (0.70 – 1.02)	0.79 (0.65 - 0.95)	0.71 (0.59 - 0.85)
Difference in differences	1.00 (0.78 – 1.27)	1.09 (0.87 - 1.36)	0.98 (0.73 - 1.32)	1.06 (0.78 - 1.45)	1.14 (0.83 - 1.56)	1.21 (0.88 - 1.65)
Model: Near daily drinking	Model 1[a] OR (95% CI)	Model 2[b] OR (95% CI)	Model 1[a] OR (95% CI)	Model 2[b] OR (95% CI)	Model 1[a] OR (95% CI)	Model 2[b] OR (95% CI)
Intervention (v. Control)	0.98 (0.75 - 1.29)	0.98 (0.74 - 1.28)	1.07 (0.76 - 1.50)	1.06 (0.74 - 1.52)	0.80 (0.55 - 1.15)	0.83 (0.57 - 1.19)
Post (v. Pre)	0.79 (0.65 - 0.97)	0.81 (0.65 – 1.01)	0.86 (0.66 - 1.12)	0.86 (0.65 - 1.15)	0.69 (0.51 - 0.92)	0.70 (0.51 - 0.97)
Difference in differences	0.97 (0.66 - 1.43)	0.96 (0.66 - 1.41)	0.92 (0.57 - 1.48)	0.90 (0.55 - 1.49)	1.14 (0.63 - 2.06)	1.07 (0.60 - 1.92)
Model: Heavy drinking	Model 1[a] OR (95% CI)	Model 2[b] OR (95% CI)	Model 1[a] OR (95% CI)	Model 2[b] OR (95% CI)	Model 1[a] OR (95% CI)	Model 2[b] OR (95% CI)
Intervention (v. Control)	0.98 (0.78 - 1.25)	0.88 (0.69 - 1.11)	0.98 (0.72 - 1.35)	0.85 (0.61 - 1.17)	0.94 (0.67 - 1.32)	0.95 (0.65 - 1.38)
Post (v. Pre)	0.83 (0.70 - 0.99)	0.74 (0.61 – 0.90)	0.83 (0.65 - 1.06)	0.76 (0.58 - 1.00)	0.82 (0.64 - 1.06)	0.73 (0.54 – 0.98)
Difference in differences	1.08 (0.79 - 1.48)	1.21 (0.87 - 1.67)	1.27 (0.83 - 1.96)	1.39 (0.88 - 2.20)	0.87 (0.57 - 1.34)	0.91 (0.55 - 1.50)

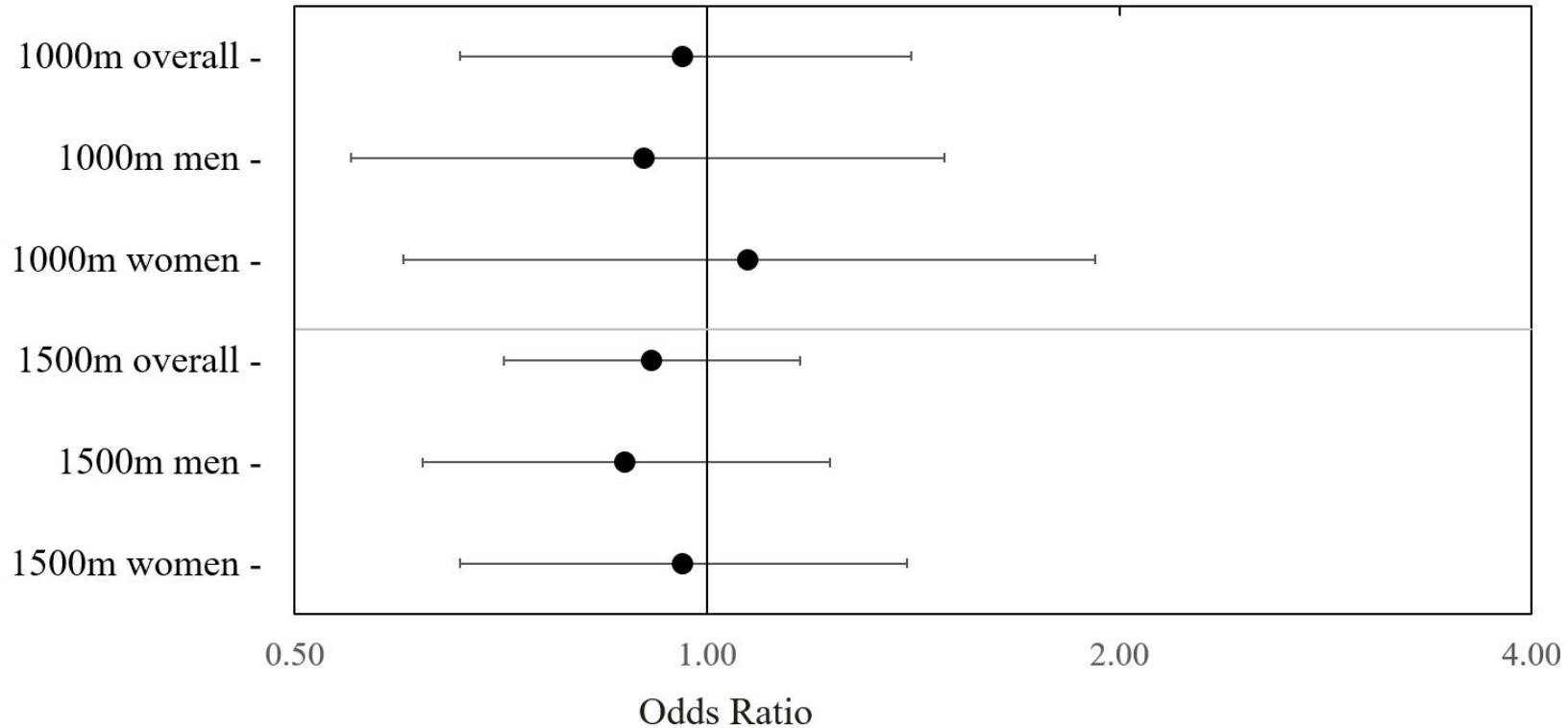# DiD – Past 7-day number of drinks
RR Model 2: 1000m and 1500m buffers
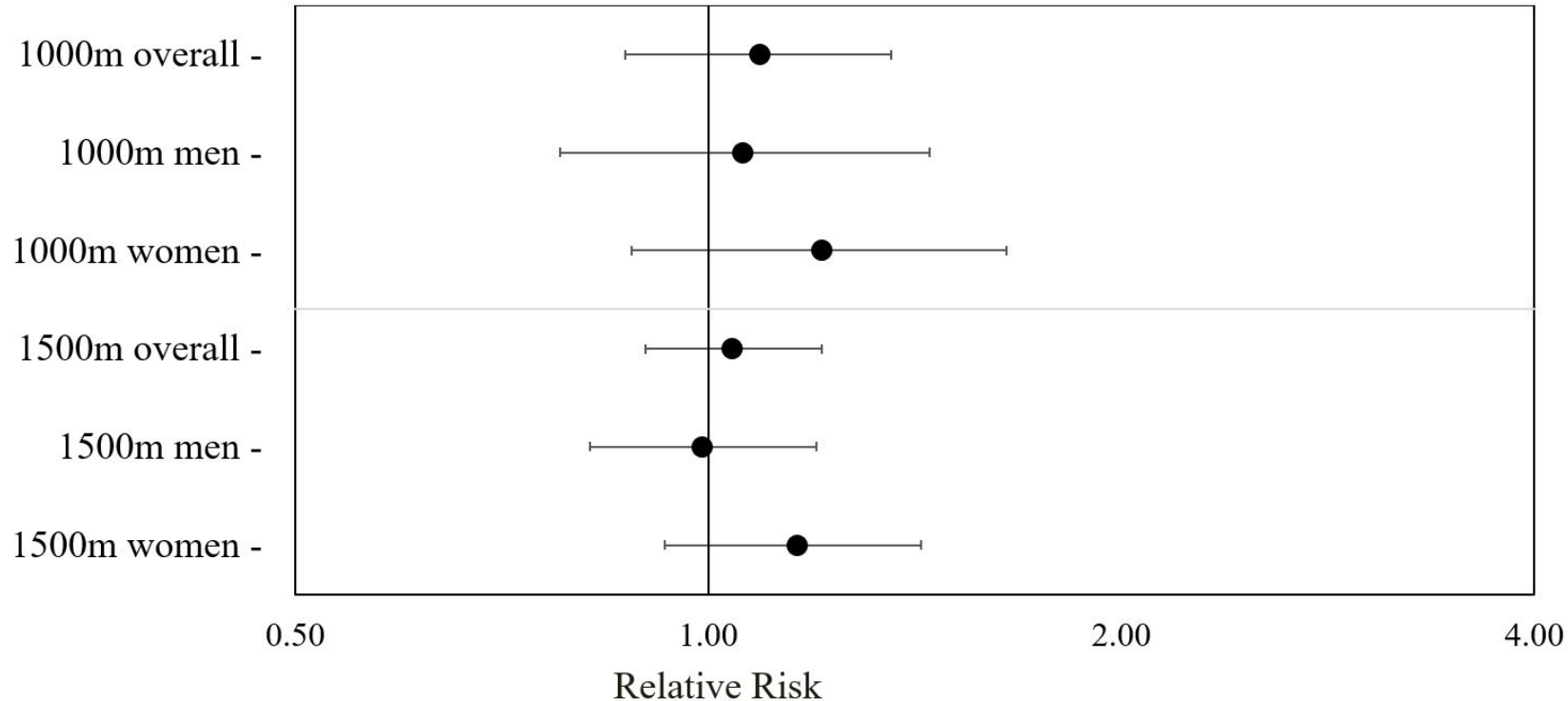
- Confidence intervals for all difference-in differences measures crossed one. For women at 1000m and 1500m associations were above one.
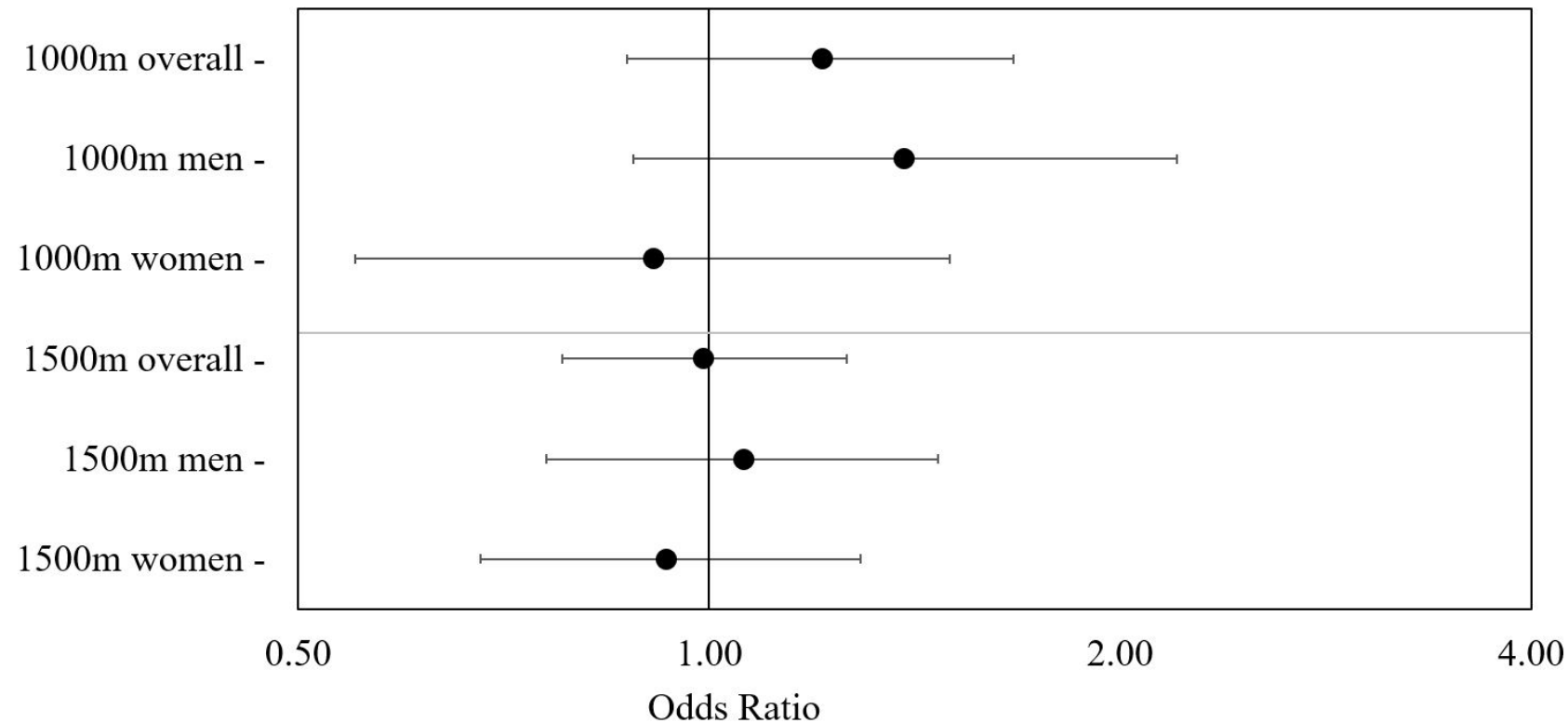
DiD – Near daily drinking
OR adjusted 1000m and 1500m buffers

- Confidence intervals for all difference-in differences measures crossed one.

DiD – Heavy drinking (at least once per month) OR adjusted 1000m and 1500m buffers

- Confidence intervals for all difference-in differences measures crossed one. For men at 1000m associations were above one.

Summary

- All alcohol use measures decreased during the study period

- There were **no clear and consistent trends** in the relationship between living near a grocery store that gained an alcohol license and an increase in alcohol use

- In women, an increase over controls for past 7-day drinking, but confidence intervals crossed one

- In men, an increase over controls for heavy drinking at 1000m, but confidence intervals crossed one and effect disappears at 1500m

Discussion – Interpretation of null findings

1. Controlled nature of expansion may include limited impacts

    a) Limit on selling spirits/high volume alcohol products and product size.

    b) 3.9% of total LCBO dollar sales in 2019 [9]

2. Difficulty in measuring exposure

    a) People don't always shop at closest grocery store

    b) Urban areas already have high density of alcohol outlets

3. Increases may be concentrated in subgroups

    a) For example, greatest increases in consumption in a prior study was found in those consuming most at baseline [10]

Limitations

- Areas near a grocery store receiving a license are different in other ways from control areas

    - Generally more affluent/denser [11]

- Use of repeat cross-sectional survey data

- Measures of alcohol use make it hard to detect small effects/changes

- Challenging to assess effects in isolation given other major changes in policies from 2016-2018, including cannabis legalization

Implications

- In a population-wide natural experimental study, a controlled expansion of alcohol sales into Ontario grocery stores included null associations with alcohol use

- More research is needed on impacts among higher volume alcohol consumers, or normalizing alcohol use over time

- As Ontario plans to further deregulate alcohol sales, it is important to continue monitoring impacts of these changes

  e.g., impacts of alcohol sales in corner stores

Citation

The Impacts of Selling Alcohol in Grocery Stores in Ontario, Canada: A Before–After Study

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ABSTRACT. Objective: From 2015 to 2019, the Government of Ontario expanded privatized sales of alcohol, licensing 450 grocery stores to sell beer, cider, and wine. The impacts of a nearby grocery store gaining an alcohol license on adults' alcohol use in Ontario are examined, including whether impacts differed by gender. **Method:** Data from 2015–2019 Canadian Community Health Survey participants in Ontario (age ≥ 20 years), living within 1,000 m and 1,500 m of grocery stores that gained a license to sell alcohol and propensity-matched controls were included (1,000 m n = 14,052, 1,500 m n = 30,486). Alcohol use outcomes included past-7-day number of standard drinks consumed, near-daily drinking (≥4 days/week), and heavy drinking (5+ drinks in men/4+ in women, at least once/month). Gender-specific difference-in-differences (DiD) analyses compared changes in alcohol use before and after intervention in intervention and control populations. **Results:** Decreases in past-7-day drinks, near-daily drinking, and heavy drinking were observed after intervention in both intervention and control populations. At the 1,000 m level, adjusted DiD analyses showed past-7-day drinking in women (risk ratio = 1.21, 95% CI [0.88, 1.60]) and heavy drinking in men (odds ratio = 1.38, 95% CI [0.92, 2.08]) had effect sizes above 1, a relative increase over controls, although confidence intervals crossed 1. Findings did not indicate significant differences in alcohol use in intervention relative to controls for other alcohol use measures and at 1,500 m. **Conclusions:** Findings suggest no association between a partial alcohol deregulation initiative in Ontario and alcohol use from 2015 to 2019. It is important to monitor the impacts on alcohol use over time as further alcohol deregulation plans in Ontario and other jurisdictions are considered. (*J. Stud. Alcohol Drugs, 85,* 109–119, 2024)

Schwartz N, Smith BT, Fu SH, Myran D, Friesen EL, Hobin E. The impacts of selling alcohol in grocery stores in Ontario, Canada: a before after study. J Stud Alcohol Drugs. 2024;85(1):109-119. Available from: http://dx.doi.org/10.15288/jsad.23-00113

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