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Gambling, Gaming, & Youth Mental Health

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Learning objectives

1

Describe the current landscape of youth gambling, including online and land-based, sports betting, and gambling like features in gaming.

2

Describe the range of gambling modalities youth are exposed to, and how these blur the line between gaming and gambling.

3

Summarize evidence linking adolescent behaviours and mental health to engagement in online gambling.

4

Identify subgroups of youth who may be at elevated risk for gambling-related harms.

Background

Sports

Single-event sport gambling to become legal in Canada as Bill C-218 passes in Senate

Upper chamber approves bill by a vote of 57-20 with 5 abstentions

The Canadian Press · Posted: Jun 22, 2021 6:56 PM EDT | Last Updated: June 22, 2021

CANADA SPORTS

How Ontario became the epicenter of sports betting in Canada

January 26, 2025 / Supplied

<https://durhampost.ca/how-ontario-became-the-epicenter-of-sports-betting-in-canada>

NEWS RELEASE

Ontario Creating a Safe, Legal and Competitive Online Gaming Market

iGaming Ontario to manage internet gaming in the province, ensuring protection for consumers

July 06, 2021

[Attorney General](#)



Background

- Legal gambling age 18/19 years old
- In 2018, 44% of Canadians 15-24 years old reported any type gambling in the past year (Statistics Canada)
- In 2019, 32% of Ontario students in Grades 7-12 reported at least one gambling activity in the past year (OSDUHS)
- Early gambling is associated with health and social risks

Objective

To advance understanding of risk and protective factors for online gambling among Canadian youth.



Identify & rank
factors using a
random forest
(RF) approach



Examine gaming
as a predictor of
online gambling



Examine mental
health as a
predictor of online
gambling



Examine the
prevalence of
different gambling
types



The COMPASS Study

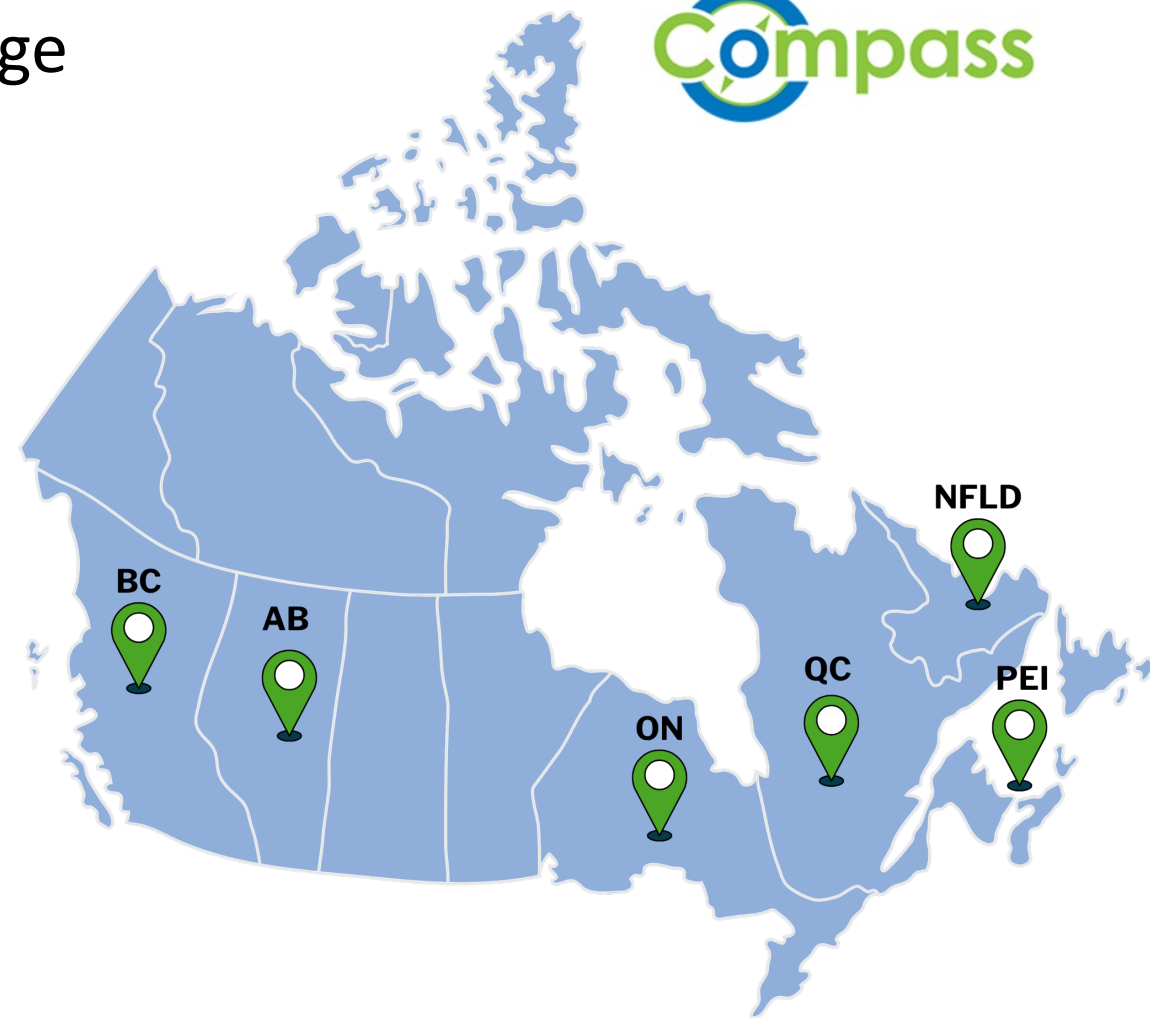
A prospective school-based study designed to annually collect health survey data from students attending secondary schools in Canada

The COMPASS study (2012-2027)

Designed to collect **longitudinal data** from a rolling cohort of students attending a large sample of Canadian secondary schools.



- Passive consent (“Opt out”)
- Data collected **once annually**
- **Full school samples**
- Annual Sample:
 - >100,000 Grade 7-12 students
 - >200 schools



Sample for this work

- 3 survey waves: 2017-18, 2018-19, 2019-20
- Cross-sectional sample: >103,000 students
- Longitudinal sample: >26,000 students



COMPASS Student Questionnaire (Cq)

Anonymous survey that asks questions in the areas of:

- Sociodemographic characteristics
- Mental health
- Substance use
- Movement behaviours (physical activity, screen use, sleep)
- Eating behaviours & dietary intake
- Weight & body image
- School climate & belonging
- Peer & family relationships
- Academic performance & Aspirations
- **Gambling**
- & more

“In the last 30 days, did you gamble online for money?”

- ☐ Yes
- ☐ No



• This is NOT a test. All of your answers will be kept confidential. No one, not even your parents or teachers, will ever know what you answered. So, please be honest when you answer the questions.

• Mark only one option per question unless the instructions tell you to do something else.

• Choose the option that is the **closest** to what you think/feel is true for you.

Please, use an HB pencil



●○○○ Exact Mark ✖✖✖✖ Improper Marks

START HERE

Please read each sentence below carefully and write the correct letter or number for each question on the line and then fill in the corresponding circle.

The first letter of your middle name (if you have more than one middle name use your first middle name, if you don't have a middle name use "2")	The first letter of the month in which you were born	The last letter of your full first name	The second letter of your last name	The number of older brothers you have alive and deceased
① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩	① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩	① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩
① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩	① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩	① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩
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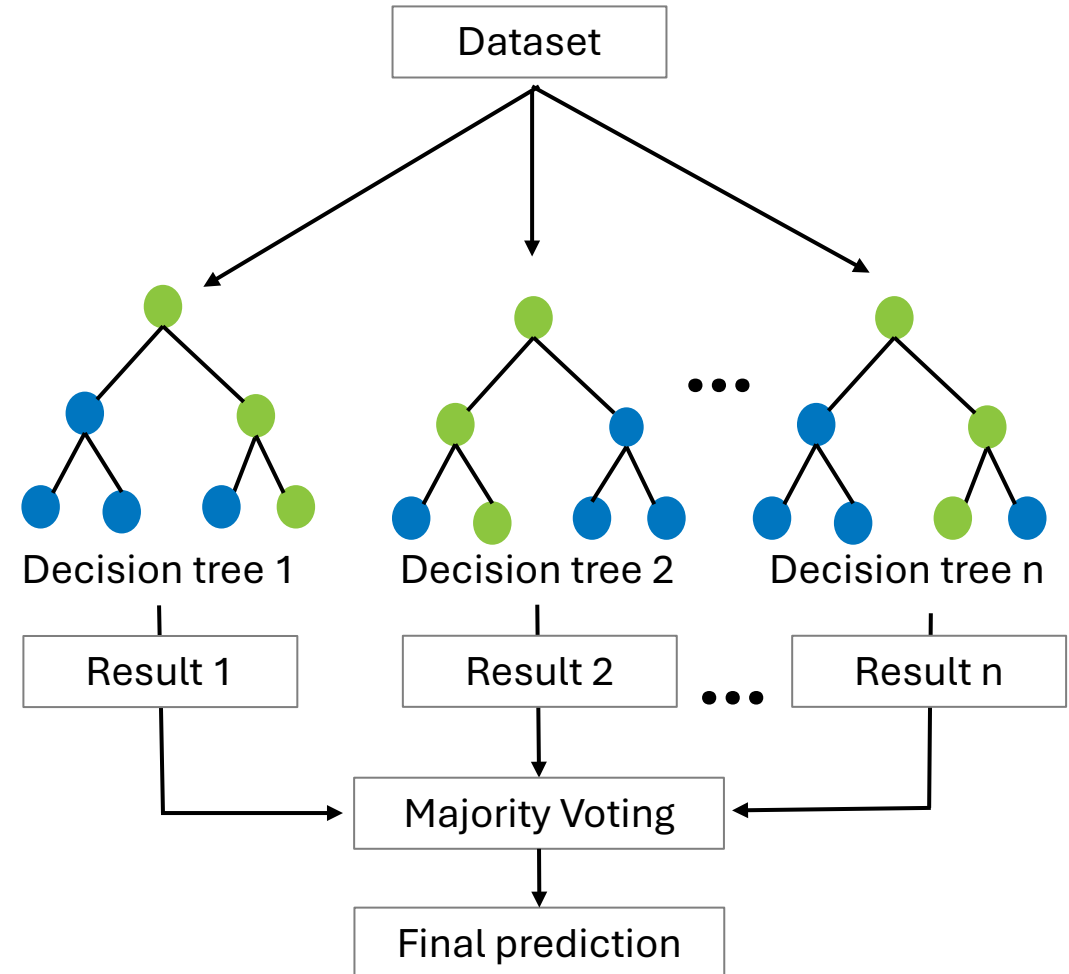


Factors associated with online gambling among youth

A Random Forrest (RF) analysis to identify and rank risk and protective factors for online gambling

Random Forest (RF)

- Machine learning algorithm that uses multiple decision trees based on subsamples of data and combines results across trees through majority voting
- Can handle large datasets, many potential explanatory variables, and multicollinearity



Methods

Sample: Repeat cross-sectional data from >103,000 students

34 potential factors included in the RF analysis:

- **Sociodemographic factors** (4): gender, age, ethnicity, spending money
- **Movement behaviours** (10): physical activity, sport, sleep duration, screen-time behaviours
- **Substance use** (5): smoking, vaping, binge drinking, cannabis use, opioid misuse
- **Mental health** (6): overall mental health, anxiety, depression, emotional dysregulation, flourishing, resilience
- **Social connections** (7): home life, parental expectations, friend/family support, school connectedness, bullying
- **Other** (2): weight perceptions, perceived importance of school grades

Sample characteristics

Repeat cross-sectional sample of over 103,000 students in Grades 9-12

	2017-18	2018-19	2019-20
Online gambling in past 30-days	3.8%	3.6%	3.5%
% female	52.7%	52.5%	51.3%
Mean age	15.6	15.6	15.4

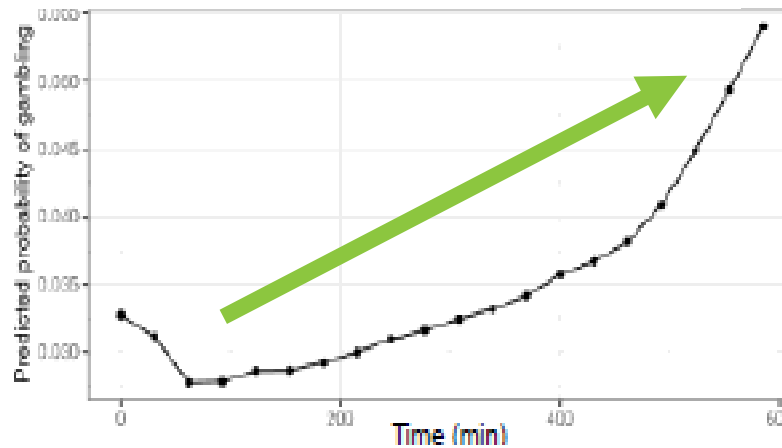
Always
identified
within the
top 10 factors
associated
with online
gambling

Factor	Mean Decrease in Accuracy
Flourishing	47.7
Physical Activity	45.5
Depression symptoms	45.3
Emotional dysregulation	45.2
Anxiety symptoms	44.4
Texting	44.4
Sleep duration	42.8
TV / movies	42.5
Internet	41.8
Video game	34.6

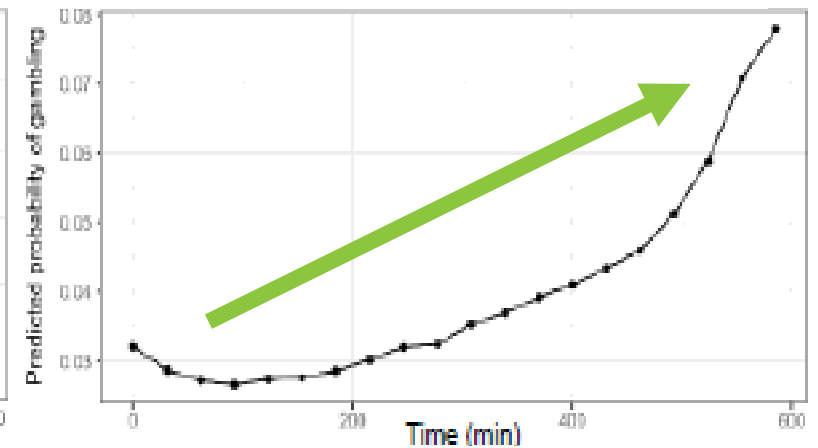
Partial probability plots

Higher **screen time** was associated with increased predicted probability of online gambling

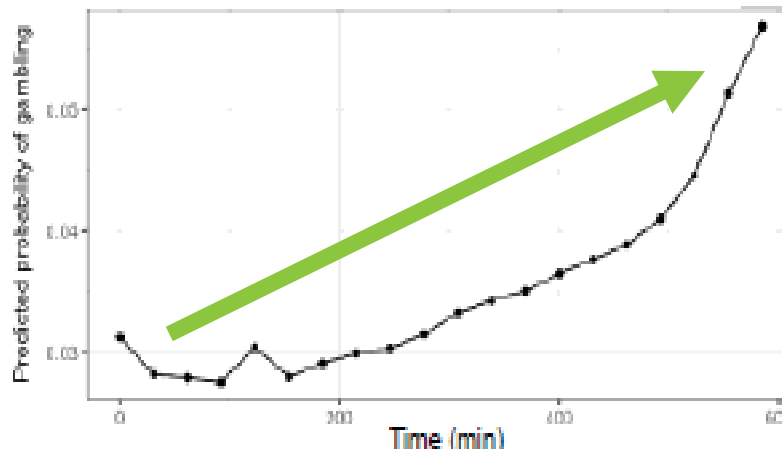
Texting



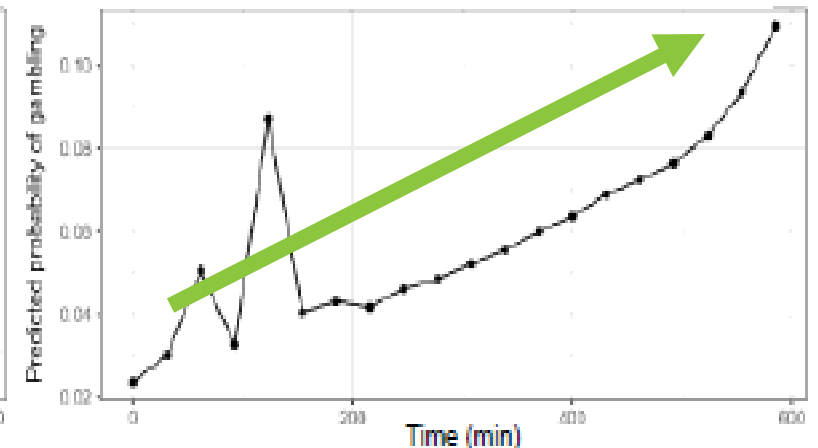
Watching TV/movies



Surfing the Internet



Playing Video Games

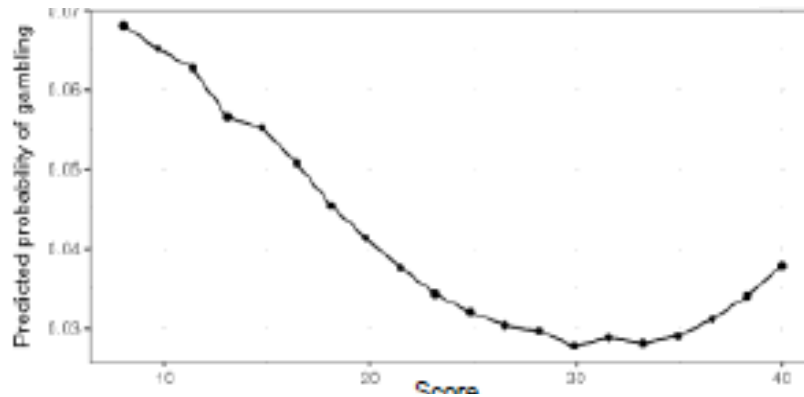


Partial probability plots

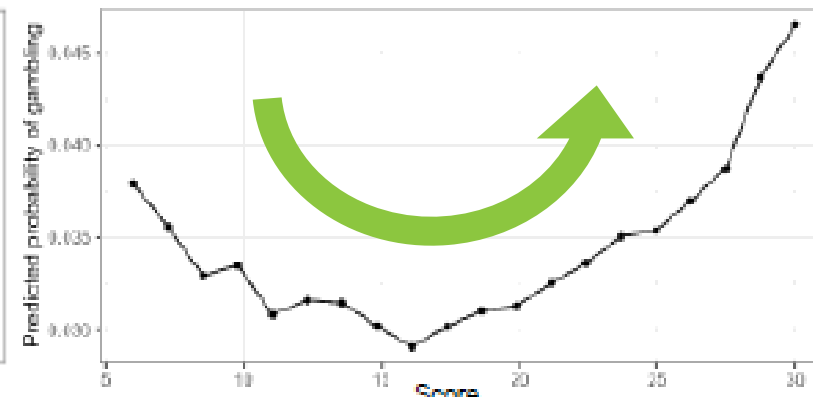
Mental health

measures had non-linear relationships with the predicted probability of gambling

Flourishing



Emotional Dysregulation



Depression symptoms

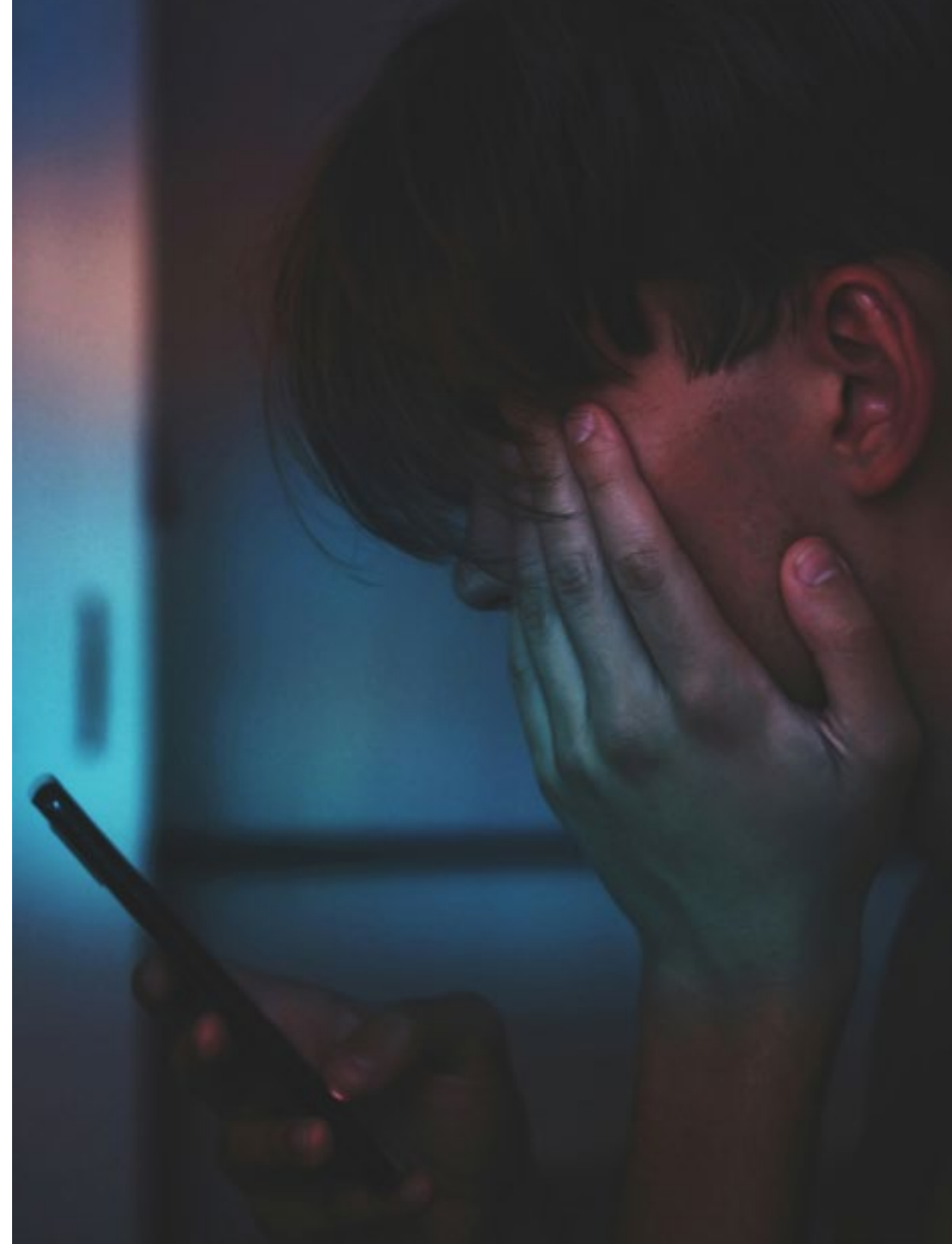


Anxiety symptoms



Implications

- Mental health & screen time consistently highly ranked among factors associated with online gambling
- Address mental health in gambling interventions
- Policies & interventions need to limit gambling exposure on TV, social media, and video games





Video Games and Online Gambling

A prospective study of time playing video games in relation to online gambling one year later among high school students

Video games and online gambling

- Youth spent an average of 13.5 hrs/wk playing video games in 2020
 - Boys spend twice as long as girls
(Entertainment Software of Canada, 2022)
- Convergence between video games & gambling
 - Betting on video games
 - Buying loot boxes in video games with real or virtual money



Photo by [Sam Pak](#) on [Unsplash](#)

Methods

Sample: Longitudinal cohort data including >26,000 students

Video game time:

- “How much time per day do you usually spend playing video/computer games?”
- Divided into quartiles



SEDENTARY BEHAVIOUR

SEDENTARY BEHAVIOUR



No more than 2 hours per day
of recreational screen time;

Association between video game time at baseline and online gambling at follow-up among adolescents

	Overall sample
Video game time	
0 minutes (ref)	1.00
1-60 minutes	1.21 (0.92, 1.59)
61-120 minutes	1.37 (1.03, 1.83)
>120 minutes	1.32 (1.01, 1.72)

Longitudinal cohort of 26,000+ high school students that participated in COMPASS 2017/18, 2018/19, & 2019/20

*adjusted for sex, grade, ethnicity, spending money, & baseline gambling



Association between video game time at baseline and online gambling at follow-up among adolescents

	Overall sample	Female students	Male students
Video game time			
0 minutes (ref)	1.00	1.00	1.00
1-60 minutes	1.21 (0.92, 1.59)	0.69 (0.36, 1.35)	1.35 (0.92, 1.86)
61-120 minutes	1.37 (1.03, 1.83)	1.99 (0.92, 4.27)	1.42 (1.02, 1.97)
>120 minutes	1.32 (1.01, 1.72)	1.49 (0.06, 3.54)	1.39 (1.03, 1.89)

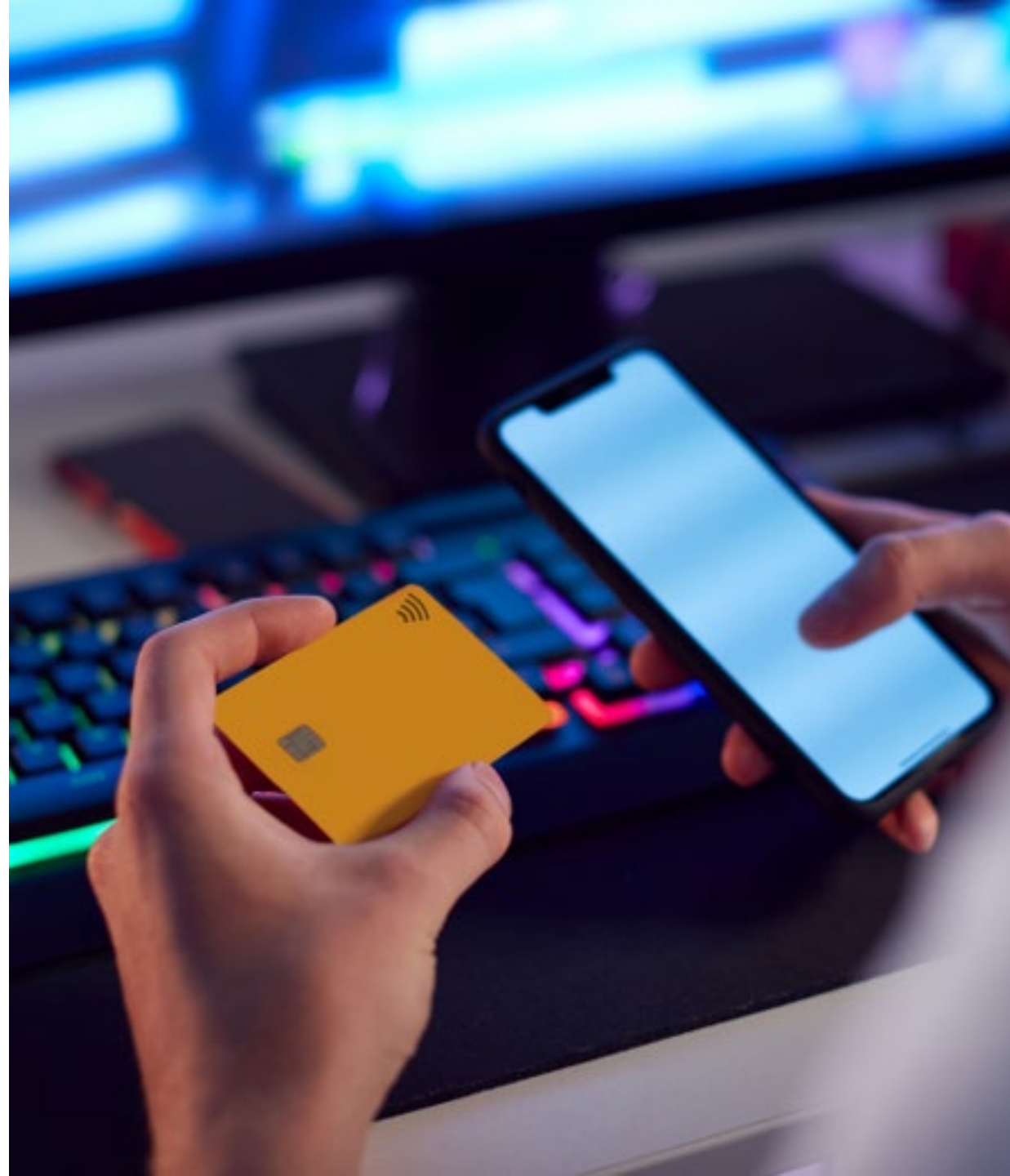
Longitudinal cohort of 26,000+ high school students that participated in COMPASS 2017/18, 2018/19, & 2019/20

*adjusted for sex, grade, ethnicity, spending money, & baseline gambling



Implications

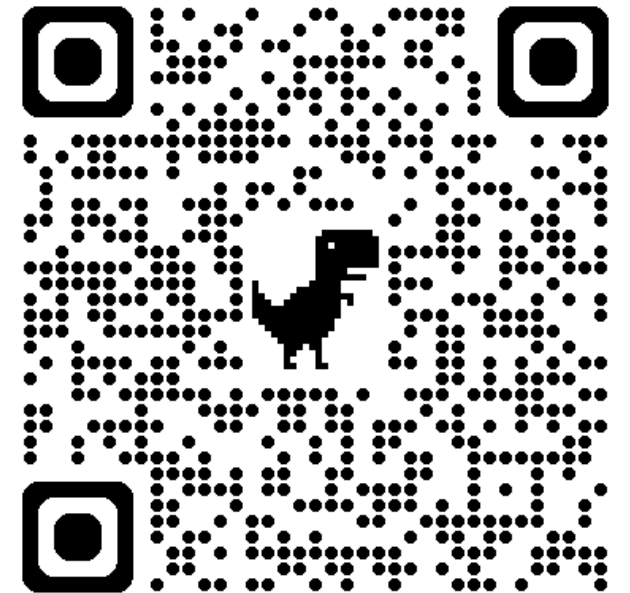
- Longitudinal evidence of the association between video game time and online gambling
 - Even those at lower risk may try online gambling
- Gender differences, but male students reported more daily video game time and higher rates of online gambling
 - Continued monitoring is needed
- Policies and interventions to limit gambling exposure through video games





Mental Health and Online Gambling

A prospective study of mental health in relation to online gambling among high school students



Methods

Sample: Longitudinal cohort of >26,000 high school students

Mental Health Measures:

- **Depressive symptoms**
(Centre for Epidemiological Studies – Depression 10-item scale [CESD10])
- **Anxiety symptoms**
(Generalized Anxiety Disorder 7-item scale [GAD-7])
- **Psychosocial well-being**
(Diener's 8-item Flourishing Scale)
- **Emotional dysregulation**
(6-items Difficulty in Emotional Regulation Scale [DERS] items)

Divided into tertiles: low, moderate, & high scores

Association between baseline mental health and online gambling at follow-up among adolescents

	Separate Models Odds Ratio (95% CI)	One Model Odds Ratio (95% CI)
Depression symptoms (ref: low)		
Moderate (score: 6-9)	1.15 (0.94, 1.41)	1.21 (0.97, 1.50)
High (score: ≥10)	1.44 (1.18, 1.77)	1.58 (1.19, 2.09)
Anxiety symptoms (ref: low)		
Moderate (score: 3-7)	1.14 (0.94, 1.38)	1.00 (0.81, 1.24)
High (score: ≥8)	1.27 (1.03, 1.57)	0.97 (0.73, 1.30)
Flourishing (ref: low)		
Moderate (score: 31-34)	1.03 (0.85, 1.26)	1.23 (0.99, 1.54)
High (score: ≥35)	0.99 (0.81, 1.22)	1.27 (1.00, 1.61)
Emotional dysregulation (ref: low)		
Moderate (score: 12-15)	1.09 (0.89, 1.33)	0.99 (0.80, 1.23)
High (score: ≥16)	1.34 (1.09, 1.64)	1.10 (0.85, 1.42)

Implications

- Longitudinal evidence of the association between mental health and online gambling
- Potential value in screening for depression
- May be differences in gambling motivations





Youth gambling in Ontario

Preliminary prevalence estimates of engagement in different gambling modalities among Ontario high school students

Methods

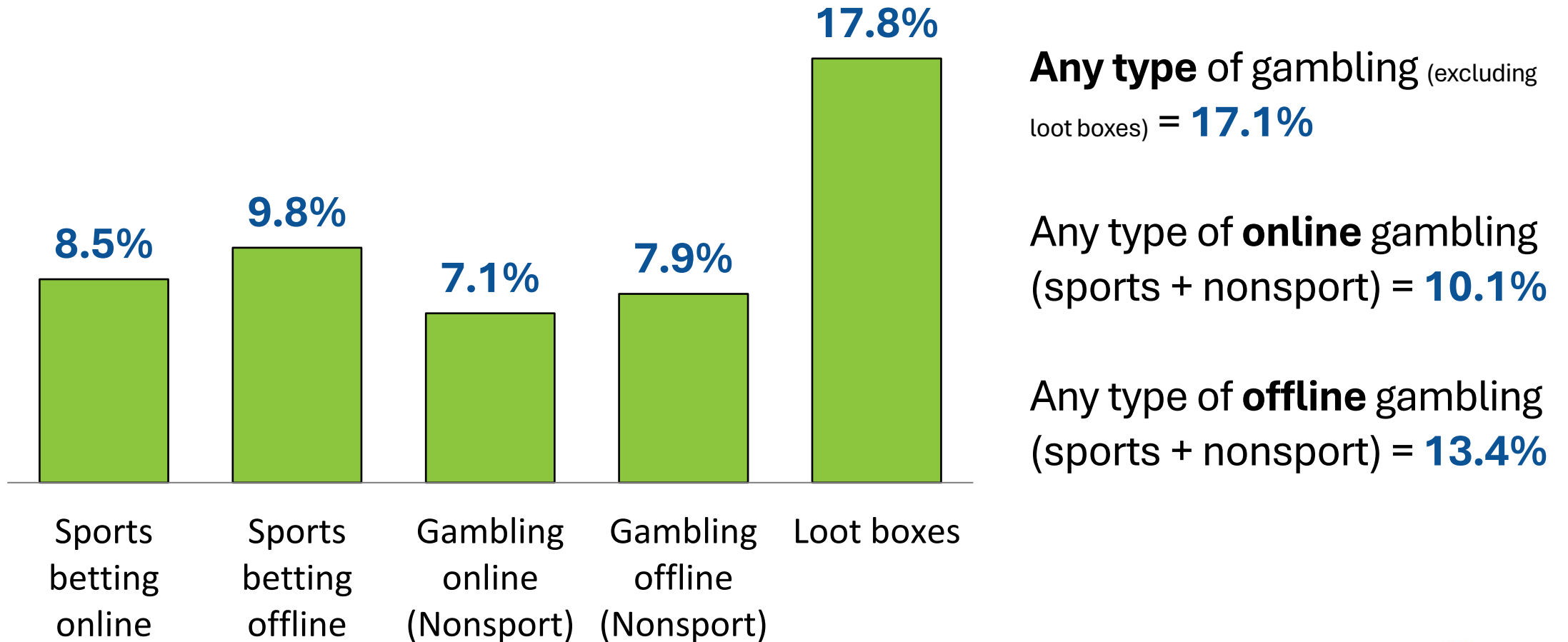
Sample: Cross-sectional 2024/25 COMPASS data from 19,000+ Ontario high school students

Gambling Measures:

In the last 30 days, how many days have you engaged in... ?

1. Sports betting online
2. Sports betting not online
3. Gambling online, excluding sports betting (e.g., online casino games)
4. Gambling not online, excluding sports betting (e.g., scratch tickets, playing Poker or Black Jack)
5. Spent on microtransactions or loot boxes while playing video games

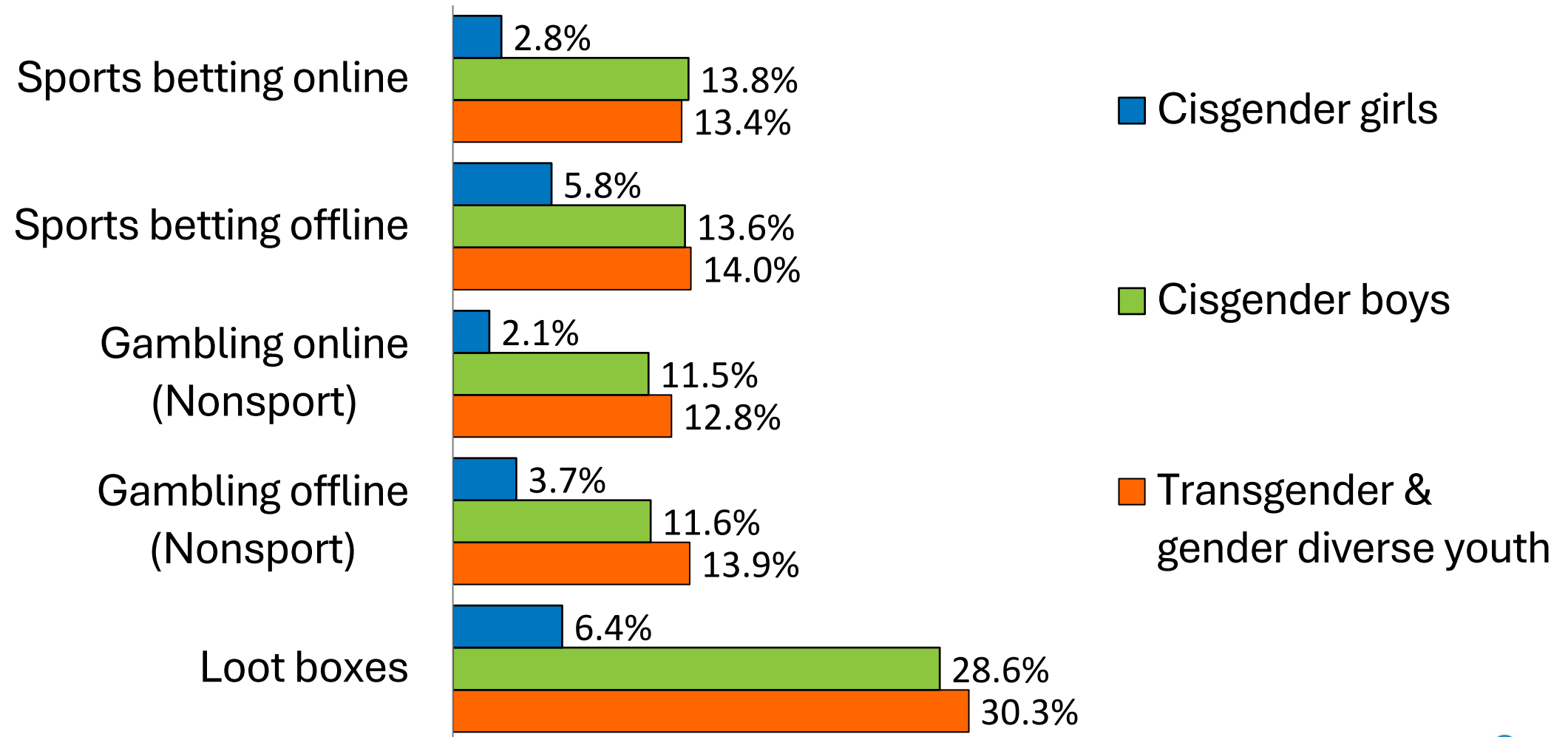
Prevalence of engagement in different forms of gambling **within the last 30 days** among youth in Ontario



N = 19000+ students at Ontario high schools that participated in COMPASS 2024-25

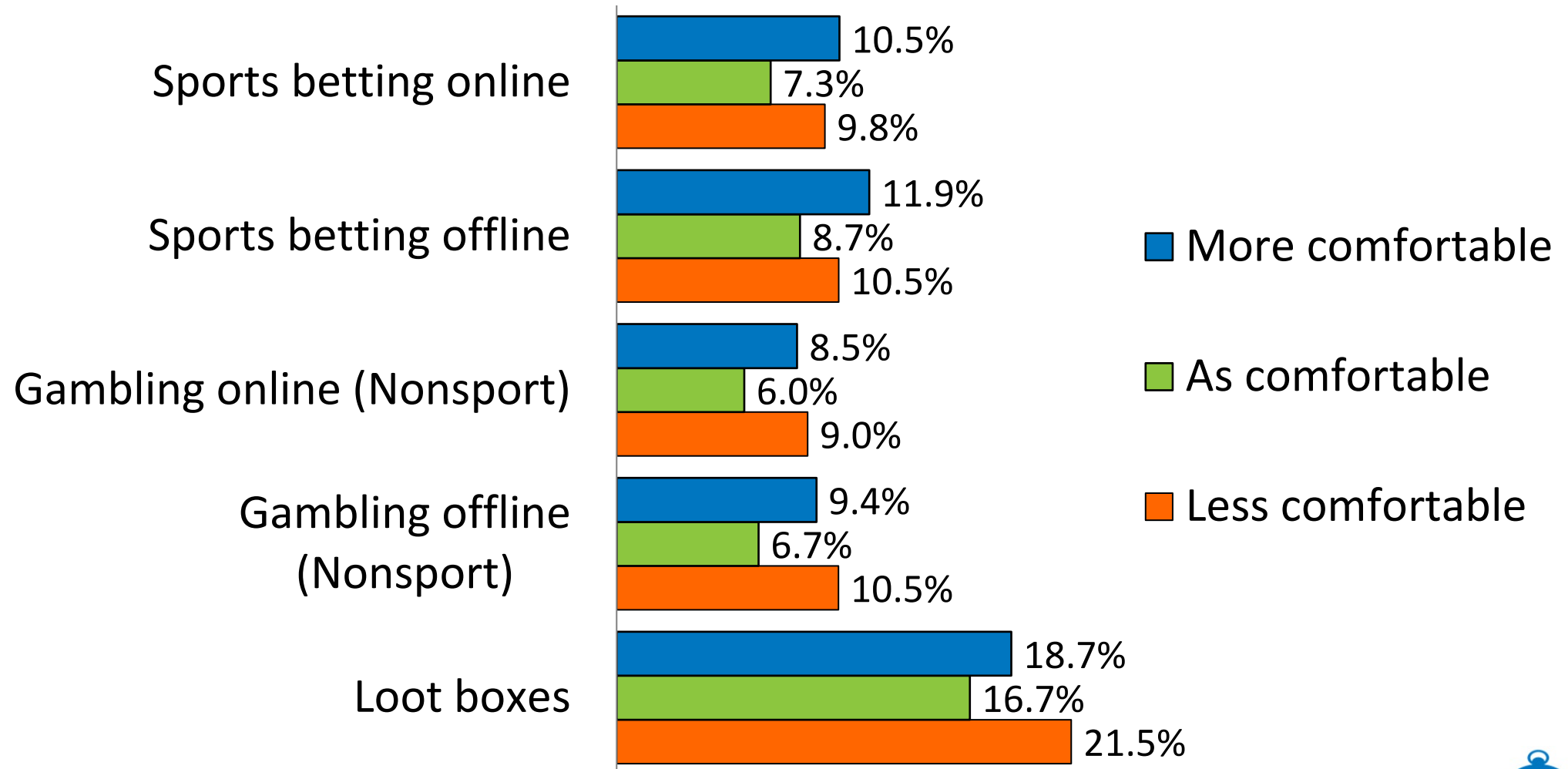


Gambling within the last 30-days **by gender**



N = 19000+ students at Ontario high schools that participated in COMPASS 2024-25

Gambling within the last 30 days **by relative affluence**



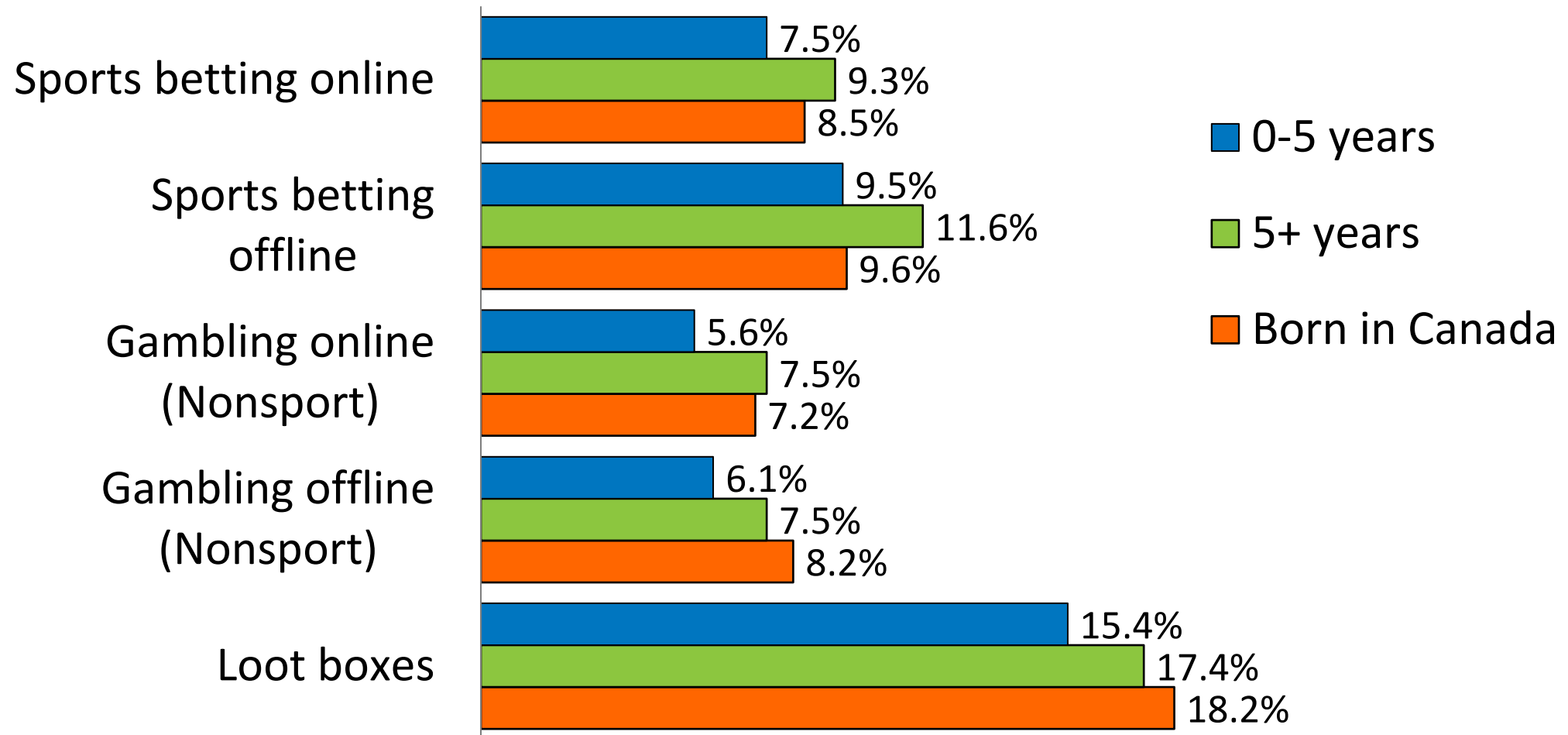
N = 19000+ students at Ontario high schools that participated in COMPASS 2024-25

Gambling within the last 30-days **by ethnicity**

	Sports betting online	Sports betting offline	Online gambling (Nonsport)	Offline gambling (Nonsport)	Loot boxes
White	8.1%	8.8%	7.0%	8.2%	16.5%
Black	11.2%	12.8%	8.8%	8.5%	16.8%
Asian	5.1%	7.8%	4.2%	4.4%	16.9%
Latine	8.5%	11.1%	5.9%	6.7%	18.7%
Multi-ethnic	11.1%	11.0%	9.2%	9.9%	21.6%
Another ethnicity	8.5%	11.3%	6.8%	7.8%	20.1%

N = 19000+ students at Ontario high schools that participated in COMPASS 2024-25

Prevalence of gambling in the past 30-days **by years lived in Canada**



N = 19000+ students at Ontario high schools that participated in COMPASS 2024-25

Next steps

- Continued collection of longitudinal gambling data
- Profiles of youth gambling
- Prospective analysis of loot box spending and gambling
- School and contextual risk and protective factors
- Consequences of gambling





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