NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD

TRB Webinar: Understanding the Effects of COVID-19 on Impaired Driving

May 13, 2022

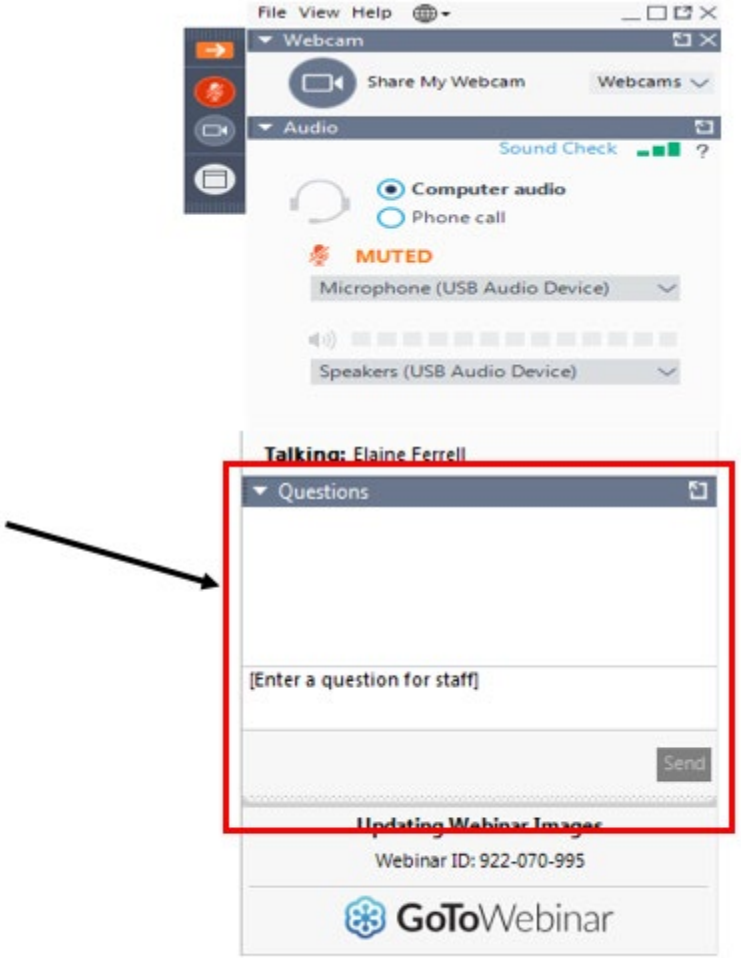
2:30 – 3:30 PM

Learning Objectives

- Make objective economic and planning decisions based on the impact of a pandemic on impaired driving behaviors
- Evaluate the potential impact of decisions designed to mitigate pandemic-related impaired driving behaviors
- Assess areas where additional research on the topic is needed

Questions and Answers

- Please type your questions into your webinar control panel
- We will read your questions out loud, and answer as many as time allows



Today's presenters

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UNDERSTANDING THE EFFECTS OF COVID-19 ON IMPAIRED DRIVING

- 2020 38,680 people died in MVC
  - 7.2% Increase from 2019
  - Despite people driving less
- Main behaviors driving increase
  - Failure to wear seatbelt
  - Speeding
  - Impaired Driving
- First ½ of 2021 20,160 people died in MVC
  - 18.4% increase from 2020
- Impact of COVID-19 has been tremendous

The impact of COVID-19 on road safety in Canada and the United States

TRB Webinar

Ward Vanlaar, Ph.D.
Traffic Injury Research Foundation
May 13, 2022

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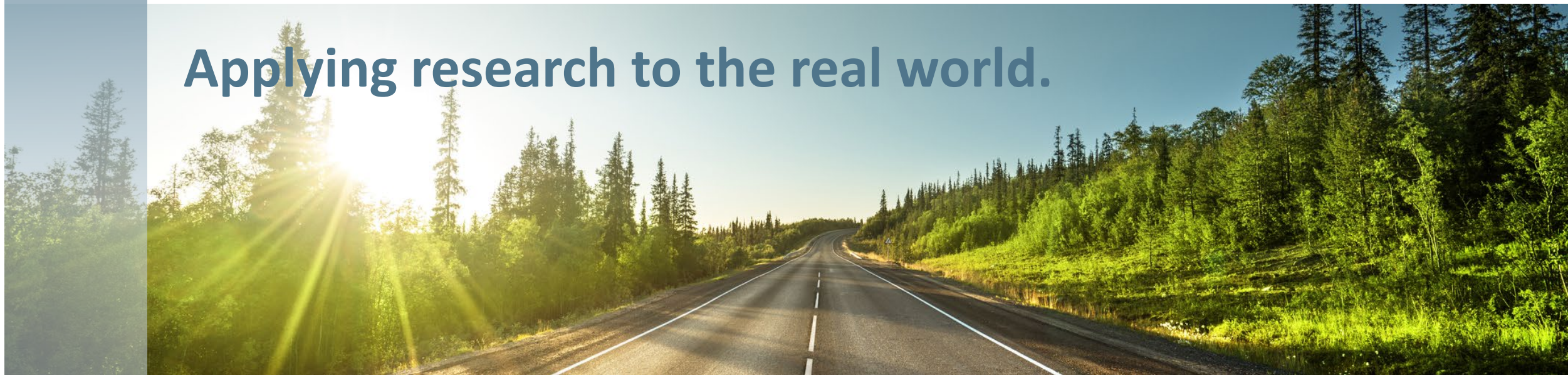

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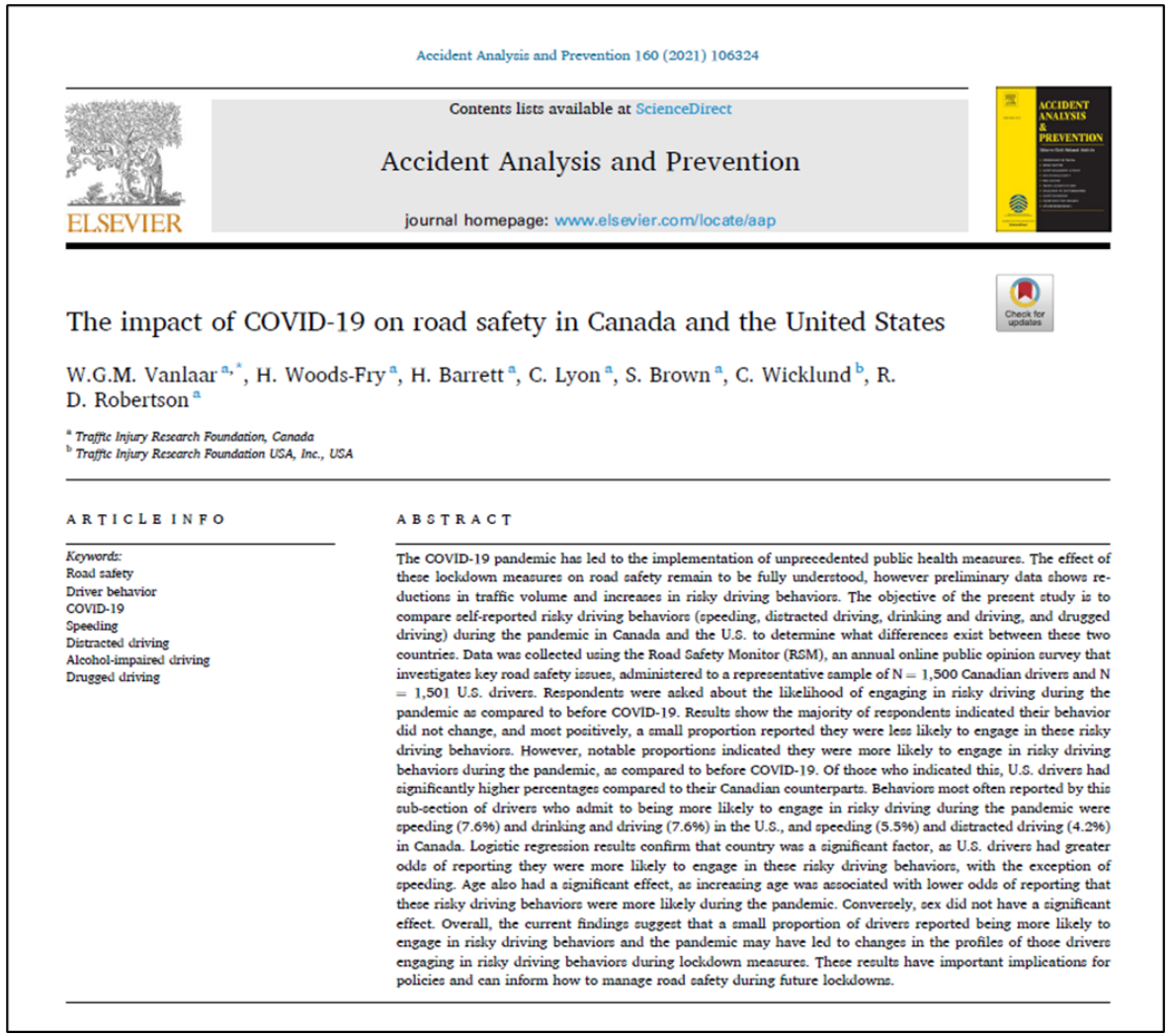

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The impact of COVID-19 on road safety in Canada and the United States

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Distracted driving
Alcohol-impaired driving
Drugged driving

ABSTRACT

The COVID-19 pandemic has led to the implementation of unprecedented public health measures. The effect of these lockdown measures on road safety remain to be fully understood, however preliminary data shows reductions in traffic volume and increases in risky driving behaviors. The objective of the present study is to compare self-reported risky driving behaviors (speeding, distracted driving, drinking and driving, and drugged driving) during the pandemic in Canada and the U.S. to determine what differences exist between these two countries. Data was collected using the Road Safety Monitor (RSM), an annual online public opinion survey that investigates key road safety issues, administered to a representative sample of N = 1,500 Canadian drivers and N = 1,501 U.S. drivers. Respondents were asked about the likelihood of engaging in risky driving during the pandemic as compared to before COVID-19. Results show the majority of respondents indicated their behavior did not change, and most positively, a small proportion reported they were less likely to engage in these risky driving behaviors. However, notable proportions indicated they were more likely to engage in risky driving behaviors during the pandemic, as compared to before COVID-19. Of those who indicated this, U.S. drivers had significantly higher percentages compared to their Canadian counterparts. Behaviors most often reported by this sub-section of drivers who admit to being more likely to engage in risky driving during the pandemic were speeding (7.6%) and drinking and driving (7.6%) in the U.S., and speeding (5.5%) and distracted driving (4.2%) in Canada. Logistic regression results confirm that country was a significant factor, as U.S. drivers had greater odds of reporting they were more likely to engage in these risky driving behaviors, with the exception of speeding. Age also had a significant effect, as increasing age was associated with lower odds of reporting that these risky driving behaviors were more likely during the pandemic. Conversely, sex did not have a significant effect. Overall, the current findings suggest that a small proportion of drivers reported being more likely to engage in risky driving behaviors and the pandemic may have led to changes in the profiles of those drivers engaging in risky driving behaviors during lockdown measures. These results have important implications for policies and can inform how to manage road safety during future lockdowns.

Road Safety Monitor 2021

Drinking & Driving in Canada

Ward G.M. Vanlaar, Steve Brown & Robyn D. Robertson, December 2021

This fact sheet summarizes results from the Road Safety Monitor (RSM) related to drinking and driving in Canada. The RSM is an annual public opinion survey conducted by the Traffic Injury Research Foundation (TIRF) under sponsorship from Beer Canada and Desjardins. The survey takes the pulse of the nation on key road safety issues by means of an online survey of a random, representative sample of Canadian drivers. Data from TIRF's National Fatality Database that explore trends in the role of alcohol among fatally injured victims are also presented.[1]

How many Canadians died in road crashes involving a drinking driver?

In 2018, the most recent year for which data are available, 466 Canadians were killed in a road crash involving a drinking driver. These fatalities occurred within 12 months of crashes on public roadways across the country. As illustrated in Figure 1, the number of persons who died in crashes involving a drinking driver between 1996 and 2018 generally decreased (466 compared to 1,079). This corresponds to an overall decrease of 56.8% since 1996, despite two consecutive increases in fatalities in 2015 and 2016.

What percentage of Canadians died in road crashes involving a drinking driver?

The percentage of persons killed in a crash on a public roadway in Canada involving a drinking driver was 24.8% (or 1 in 4 road deaths) in 2018. As shown in Figure 2, this percentage declined from a peak of 36.1% in 1996 and has since consistently remained below 35%, albeit with some fluctuation. Notably, from 2010 to 2014, there was a steady decrease in this percentage. The percentage of persons killed in road crashes involving alcohol rose slightly in 2015 and 2016, before decreasing to a low of 24.8% in 2018.

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TIRF

TIRF USA Road Safety Monitor 2021

Alcohol-impaired driving & COVID-19 in the United States

Ward G.M. Vanlaar[1], Steve Brown[1], Carl Wicklund[2] & Robyn D. Robertson[1]
December 2021

This fact sheet summarizes the national results of the 2021 USA Road Safety Monitor (USA RSM) on alcohol-impaired driving. This is the seventh annual public opinion survey conducted by the Traffic Injury Research Foundation USA, Inc. (TIRF USA) with sponsorship from Anheuser-Busch Foundation. The survey takes the pulse of the nation regarding the alcohol-impaired driving issue by means of an online survey of a random, representative sample of U.S. drivers aged 21 years or older. A total of 1,498 drivers completed the poll in September 2021 (results can be considered accurate within plus or minus 2.5%, 19 times out of 20).

This fact sheet summarizes key findings regarding the prevalence of alcohol-impaired driving, reasons for engaging in this behavior and characteristics of these drivers. Survey results are compared to data from previous years. In response to the COVID-19 pandemic, this RSM also describes the effects of the pandemic on risky driving behaviors. Research showed decreased traffic volumes led to increases in speeding and impaired driving (Hughes et al. 2020; Thomas et al. 2020; Vanlaar et al. 2021) and this survey provides additional insight.

Background

What proportion of total crashes involve alcohol-impaired driving?

According to the National Highway Traffic Safety Administration (NHTSA), the overall fatality rate decreased from 2016 to 2019 before rising in 2020. Vehicle miles traveled (VMT) decreased by 13.2% from 2019 to 2020 and the estimated fatality rate per 100 million VMT decreased by 3.5 percent from 1.14 in 2018 to 1.11 in 2019 before rising to 1.37 in 2020 (NHTSA

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TIRF USA Inc.

Background

- COVID-19 happened.
- Roads were empty, which led to the believe/hope/desire that the pandemic would have a positive impact on road safety.
- Early indicators showed mixed results:
  - Majority of drivers behaving safely on the roads;
  - Amongst those driving a minority behaving much more dangerously.

Methods

- Data sources:
  - Canada: TIRF's Road Safety Monitor (RSM), annual gen. pop survey research since 2002
  - US: TIRF USA's RSM, ongoing since 2015
- COVID-19 questions included for the first time in Sept. 2020
- Samples:
  - Canada: N=1,500 drivers aged 16 years and older who had driven in the past 30 days and held a valid driver's license;
  - US: N=1,500 drivers aged 21 years or older who had driven in the past 30 days and held a valid driver's license.
  - Stratified by region and weighted by sex and age.

Methods

Table 1
Sample characteristics.

	Canada	U.S.	Total
Mean age	46	46.9	N/A
Male (%)	748 (49.87)	751 (50.03)	1,499 (49.95)
Female (%)	750 (50)	750 (49.97)	1,500 (49.98)
Prefer not to say (%)	2 (0.13)	0 (0)	2 (0.07)
Total (%)	1,500 (100)	1,501 (100)	3,001 (100)

Methods

- Survey length: approximately 10 minutes.
- Data validation: self-reported data were correlated with fatality data, the assumption being if more people self-report drinking driving, you would expect more alcohol-related fatalities.
  - Canada: rho=0.66 (p=0.01)
  - US: rho=0.67 (p=0.34 – remember time series is short: 2015 – 2019)
- Data analysis:
  - Descriptive statistics;
  - Logistic regression analysis.

Results

Table 4

Comparison between Canada and the U.S. of the likelihood of drinking and driving during the pandemic.

	Canada	U.S.	P-value
More likely	2.4%	7.6%	$P < 0.01$
No change	75.4%	68.7%	$P < 0.01$
Less likely	22.1%	23.7%	n.s.

Results

Table 5

Comparison between Canada and the U.S. of the likelihood of consuming drugs and driving during the pandemic.

	Canada	U.S.	P-value
More likely	2.2%	6.2%	$P < 0.01$
No change	77.3	71.6%	$P < 0.01$
Less likely	20.6%	22.7%	n.s.

Results

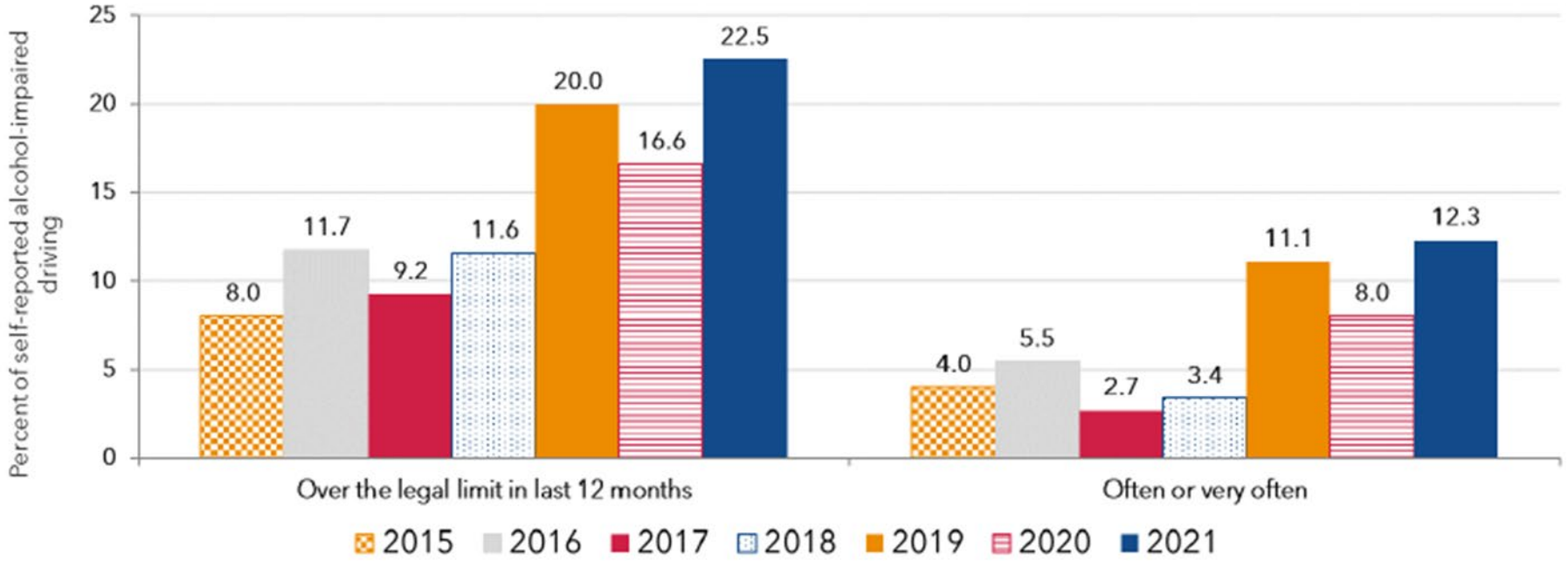
Table 6
Logistic Regression Model for Self-Reported Risky Driving Behaviors During COVID-19.

	Excessive Speeding	Distracted Driving	Drinking and driving	Drugged Driving
Factors (reference category)	Dependent variable: self-declared behavior (0 = unlikely; 1 = likely)			
	Odds Ratio (CI 95%)			
Country (Canada)				
USA	1.32 (0.92–1.89)	1.49* (1.03–2.16)	3.34** (2.11–5.28)	2.50** (1.46–4.28)
Sex (Female)				
Male	0.86 (0.61–1.22)	1.15 (0.79–1.66)	0.78 (0.53–1.15)	1.11 (0.70–1.75)
Age	0.74** (0.66–0.83)	0.69** (0.61–0.78)	0.63** (0.54–0.73)	0.62** (0.52–0.74)
Traffic tickets (<2 tickets)				
greater than 2 tickets	3.07** (1.66–5.68)	4.50** (2.49–8.14)	2.38** (1.27–4.48)	6.99** (3.74–13.05)
Typical miles driven	1.04 (0.99–1.08)	0.98 (0.93–1.03)	1.02 (0.97–1.07)	0.95 (0.89–1.02)
Injured in motor vehicle collision (No)				
Yes	1.09 (0.72–1.67)	1.34 (0.88–2.03)	1.09 (0.67–1.78)	1.87* (1.11–3.14)

Note. significance levels are denoted by *p < 0.05 **p < 0.01.

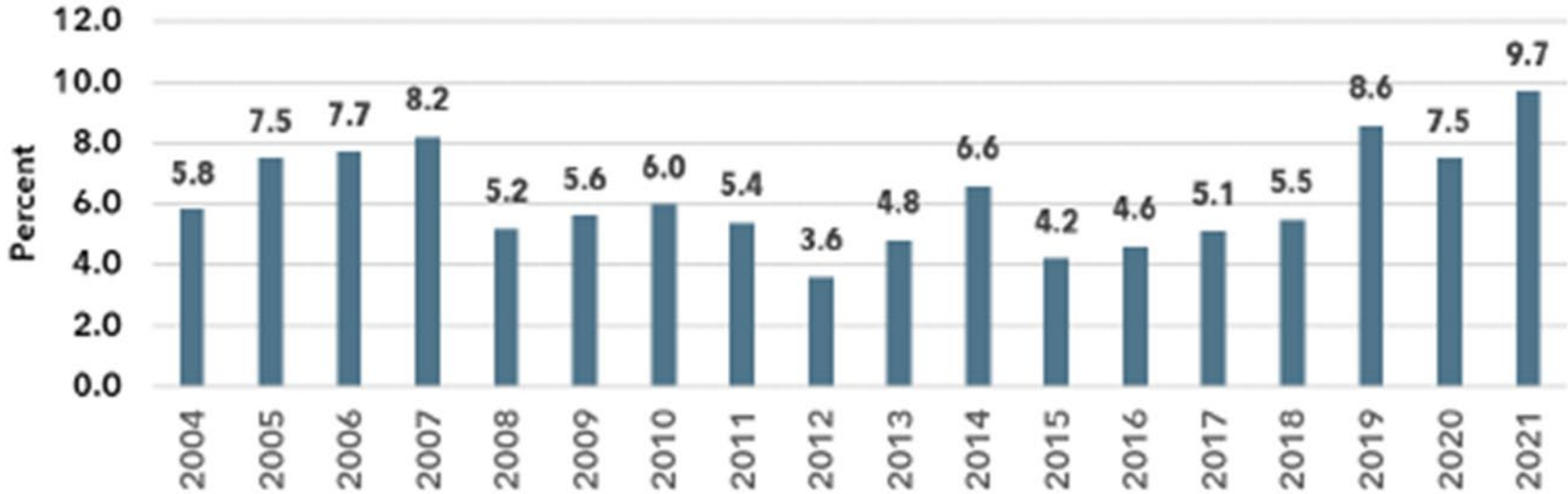
Results

Figure 3: Percent of U.S. drivers self-reporting alcohol-impaired driving in 2015-2021



Results

Figure 4: Percentage that drove when they thought they were over the legal limit



Conclusion

- Pandemic good for road safety…WRONG!
- Majority of drivers behave safely, but a minority of drivers are more likely to engage in dangerous behaviours, including alcohol-impaired driving and drug-impaired driving.
- At the beginning of the pandemic when roads were empty, it already created havoc. It seems that these risky drivers persist in their behaviour even when the roads are no longer empty, making this even more problematic.
- Pandemic may have led to changes in the profiles of the risk-takers, requiring careful consideration for programs and policies.

Thank you

wardv@tirf.ca

TRAFFIC INJURY RESEARCH FOUNDATION

CONVICTED DWI OFFENDERS: THEIR DRINKING, DRIVING, AND DRINKING AND DRIVING DURING COVID-19

Understanding the Effects of COVID-19 on Impaired Driving

May 13, 2022

Eduardo Romano,[1] Amy R. Manning,[1,2 3] Thomas H. Nochajski,[2] Eileen Taylor[1], Robert B Voas,[1] & Michael Scherer,[1,4]

[1] Pacific Institute for Research & Evaluation (PIRE), Beltsville, MD;
[2] University at Buffalo, The State University of New York, NY;
[3] Buffalo State College, The State University of New York, NY;
[4] The Chicago School of Professional Psychology, Washington, DC

Problem:

During COVID-19 the average American was increasingly buying and consuming alcohol

Goal:

What about individuals who had shown drinking problems since even before COVID?

1) Drinking

2) Driving

3) Drinking and Driving

4) Riding with a Drinking Driver

- Data

1) Managing Heavy Drinking (MHD) study (R01 AA022312)
   - Erie County, New York.
   - Longitudinal survey of convicted DWI-DWID individuals
   - Third wave of survey in February-March 2020 (just before NY State entered in lockdown)

2) Additional online survey during the COVID-19 lockdown (July-August 2020)

- Sample

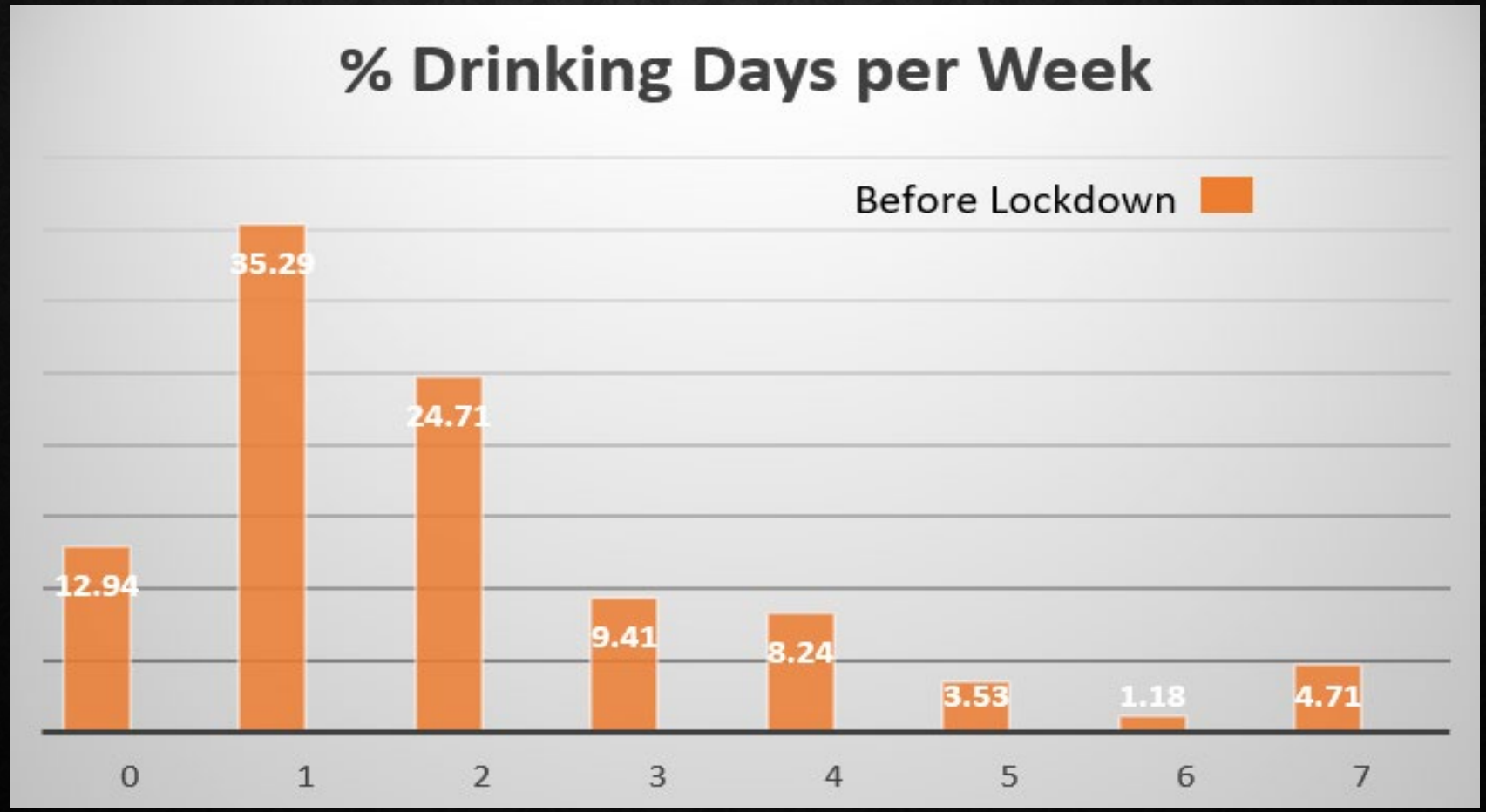
N	92
Sex	M & F about evenly represented
Age	21 y/o – 70 y/o (median: 37 y/o)
Education	10% HS or less; 39% 4+ years in college
Marital/House.	24% separated/divorced/widowed
	28% living with 1+ children
Income (before)	$15,000 - $50,000 (median $35,000)
Employ.(before)	80% for wages, 9% self-employed

- **COVID experiences and measures**

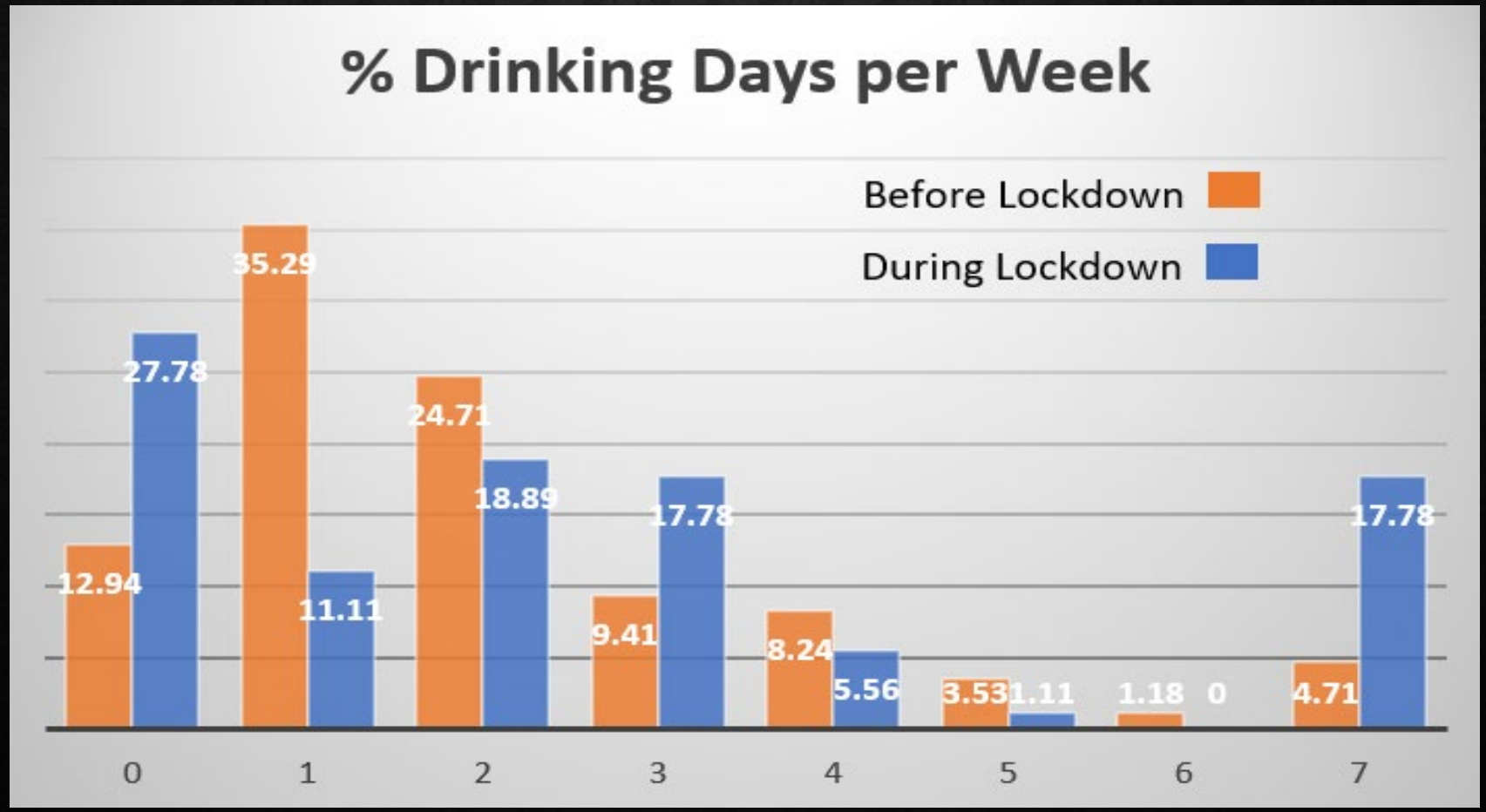
Tested	20% were tested, 1 tested positive
Experienced COVID	22% had a family or friend w/COVID
Stay home measures	86% said they were necessary
Closing non-essential business	68% said it was necessary
Wearing Masks in Public	76% said it was necessary
Social Distancing	80% said it was necessary

1) Drinking

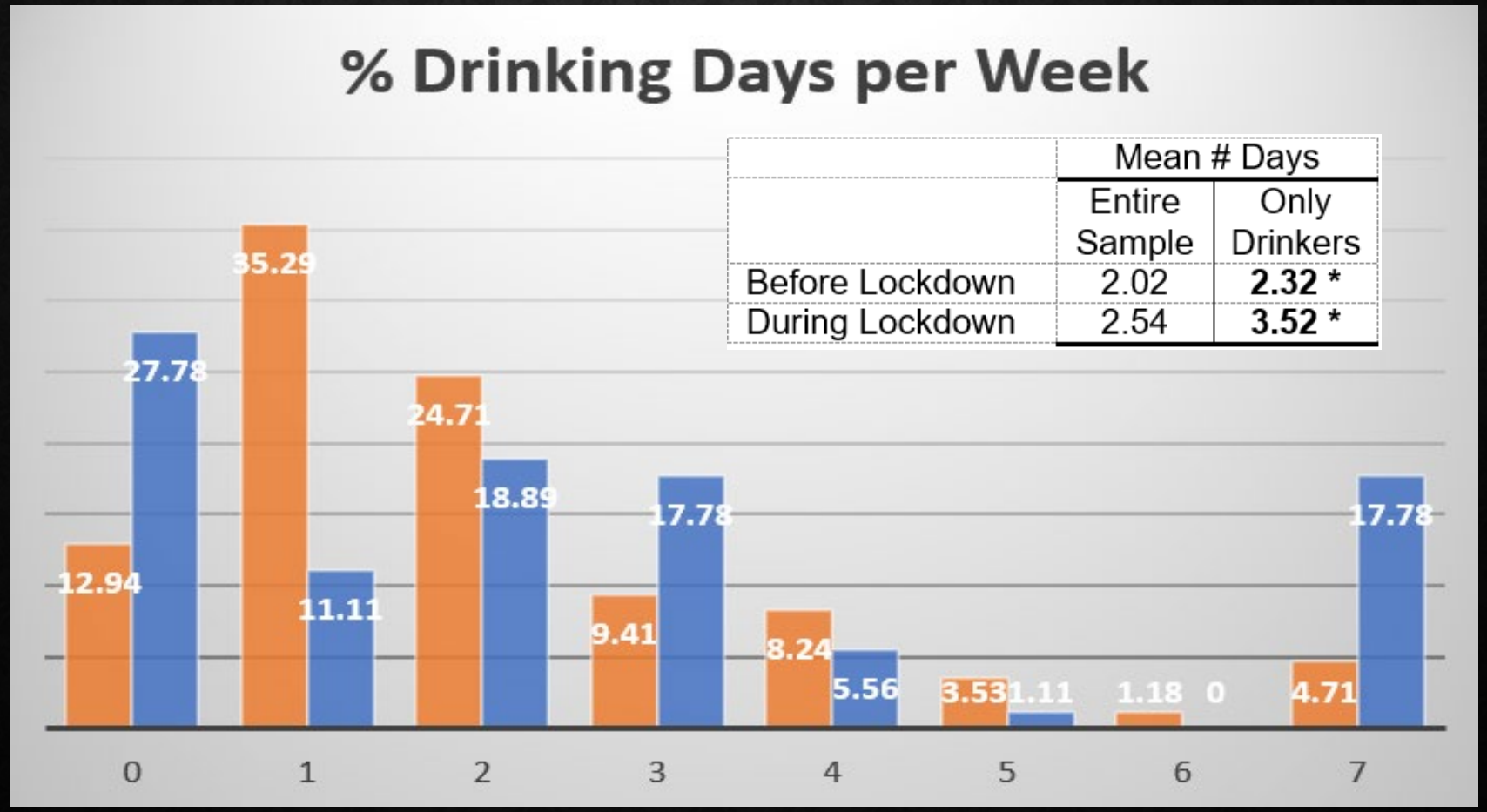
- Drinking Days



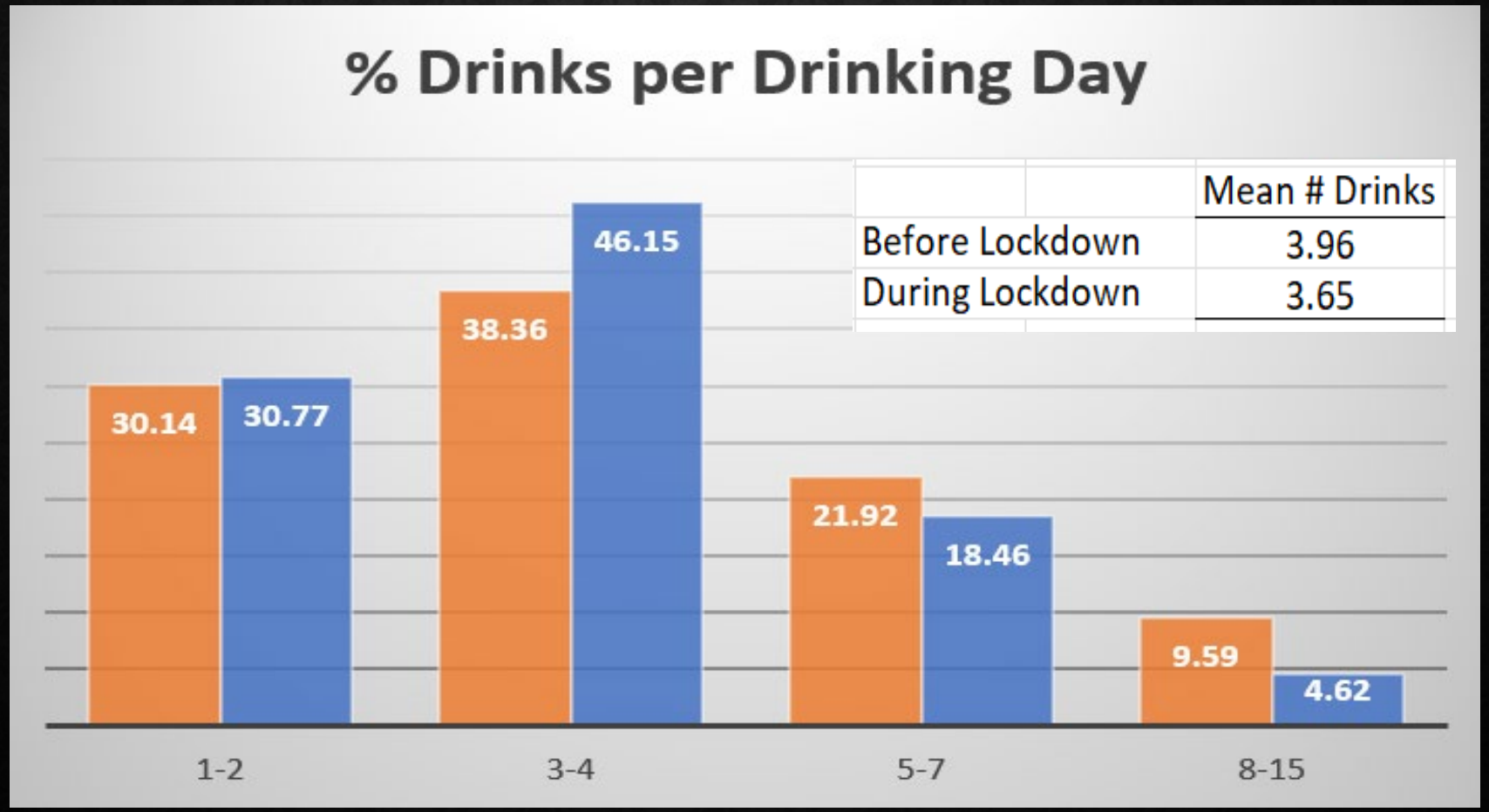
- Drinking Days



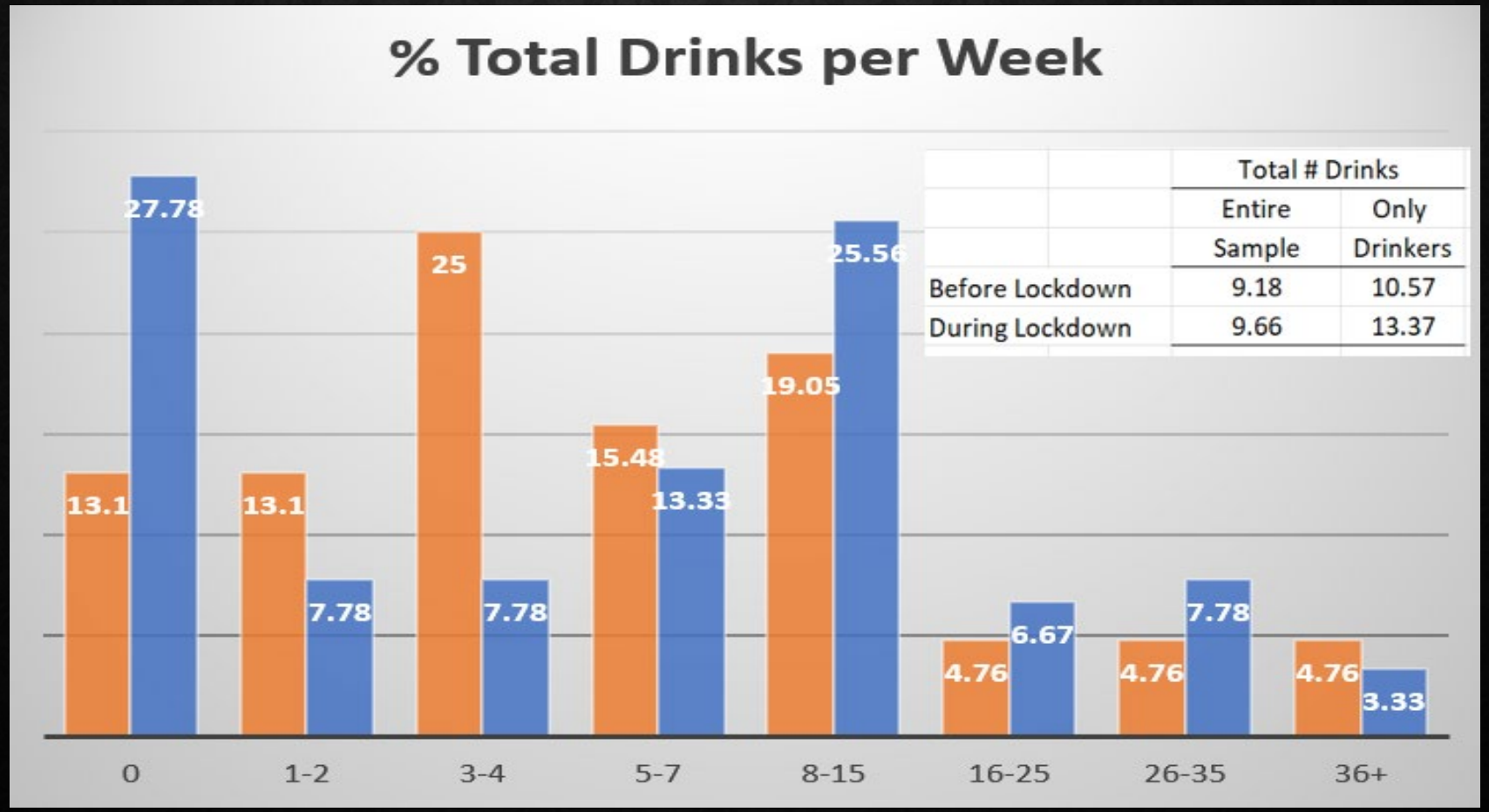
- Drinking Days



- # of Drinks per Drinking Day



- Total # of Drinks in a week



Factors Associated with increase in drinking days during the Lockdown

- Aged < 40 years old
- Married
- Used to drink at home before lockdown
- Worked outside home before lockdown
- Not in alcohol treatment during lockdown *
- Used recreational drugs *

* P < .07

Factors Associated with increase in number of drinks per drinking days during the Lockdown

- Women
- $40,000 + income

- Alcohol Use During COVID-19: Summary

Overall, participants kept drinking as much as before

2) Driving

Self-Reported Change in Driving		
Less	Same	More
30.4%	65.2%	4.4%

- **Factors Associated with a Decrease in Driving**
  - Employed, working from home
  - Unemployed
  - Often use Bicycle
  - No children at home
  - No need to drive family around
  - Only 1 car in household

3) Drinking and Driving

During the lockdown: Percent who drove within 2 hours of a drink at least once?

14.9%

The month before the lockdown:

29.9 %

- Factors Associated with an Increase in D&D

Amount of Driving	:	ns
Income	:	OR= 4.3
AUDIT Score 8+ (Before)	:	OR= 24.4
Drinking & Driving (before):		OR= 33.1
Alcohol Treatment	:	no D&D

- D&D During COVID-19: Summary

Overall, participants who D&D before the lockdown, kept D&D during the lockdown

4) Riding with a Drinking Driver

During the lockdown: Percent who rode with someone who had been drinking at least once?

20.4%

Before the lockdown:

?

Amount of Driving : ns

Income : ns

AUDIT Score 8+ (Before) : OR= 7.7

Drinking & Driving (Before): OR= 8.6

Alcohol Treatment : ns

Summary

During the lockdown, our sample of problem drinkers kept drinking as much as before .

Driving declined during the lockdown, mainly for those who worked from home

Despite the lockdown naturally imposed a reduction in driving, those who DUI before the lockdown kept that behavior during the lockdown.

The lockdown did not significantly alter attitudes towards alcohol use and DUI

Pre-pandemic measures & interventions to deter D&D in this population?

For instance, continuous alcohol treatment seems to work

HOWEVER:

This study focuses on what happened at the beginning of the lockdown.

We live now under a different reality

We need to develop/adapt measures to the new reality

Thank you!

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High Priority Research Needs on the Impact of the COVID-19 Pandemic on Impairment in Transportation

TRB Impairment in Transportation (ACS50)

Justin Chee, PhD

Ontario Ministry of Transportation

05/13/2022

Background

- COVID-19 has **changed** the **movement of people and goods**.

Higher rates of severe collisions despite reduced traffic flow[1]

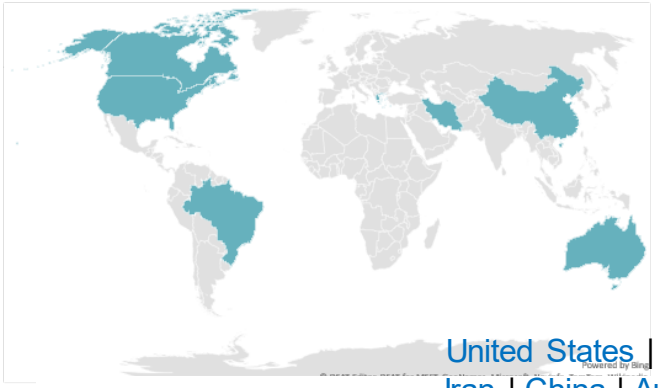
Increases in alcohol and drug use/misuse[2,3]

- Magnitude, scope, and lasting impact of these changes on the transportation sector are unknown.

1. Vingilis et al. *Accid Anal Prev.* 2020 Sep;144:105687; 2. Barbosa et al. *J Addict Med*. 2021;15(4):341-344; 3. Avena et al. *Front Psychiatry*. 2021 Apr 16;12:653674.

Background

- ACS50 COVID-19 working group established



United States | Canada | Brazil
Iran | China | Australia | Greece

- 19 members:
  from 7 countries on 5 continents
- Heterogeneous expertise:
  government, academia, industry
- Areas of specialty:
  traffic safety, policy development, and health

PURPOSE

To highlight the **research needs** identified by the working group regarding how COVID-19 has impacted impairment, transportation modes, and safety.

Methods

PROCESS

- How **important** is each topic?
- How much **influence** does TRB / committee have on each topic?
- How **interesting** is the topic?

Results

BRAINSTORMING FINDINGS

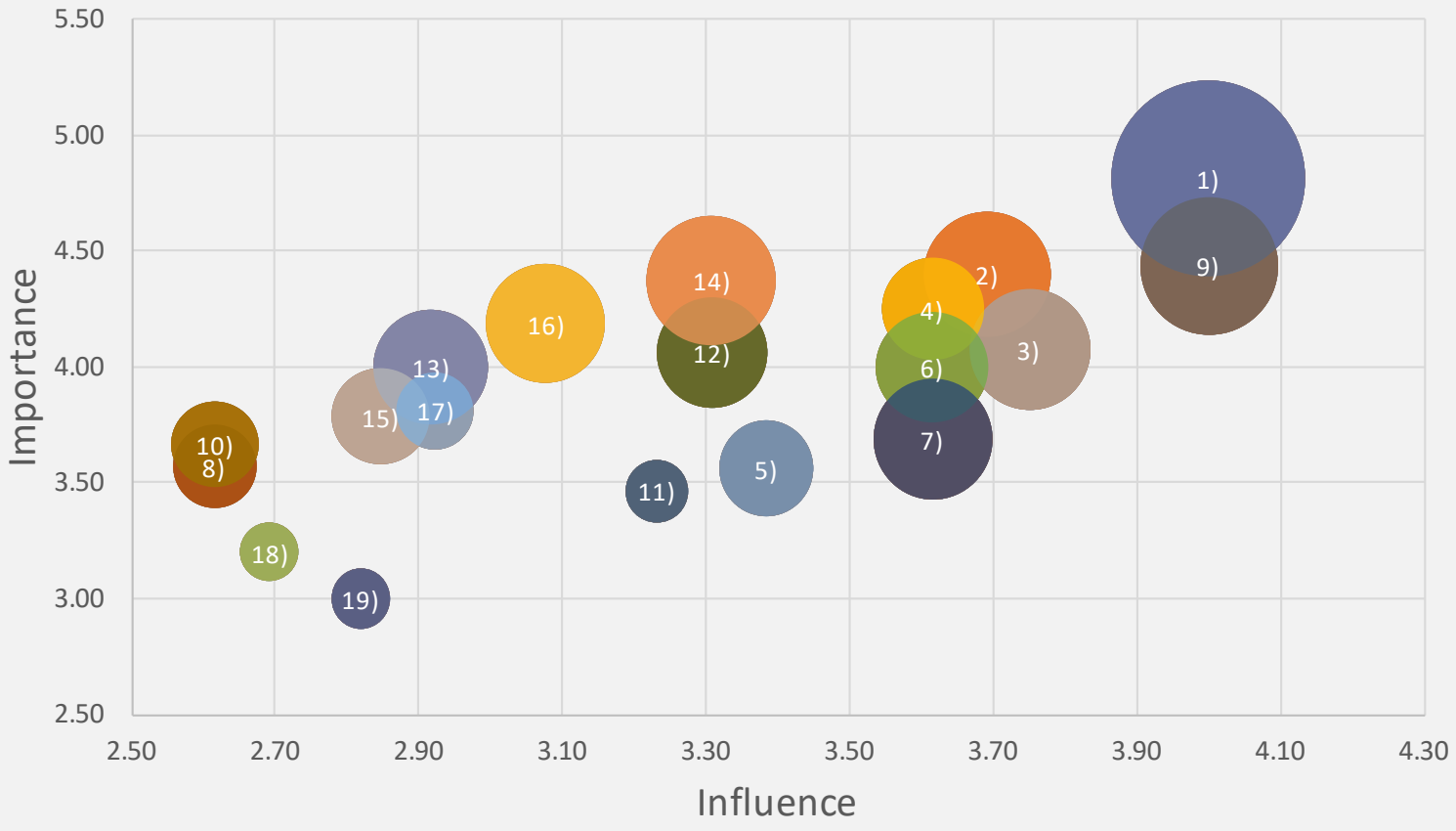
- Comprehensive list of research domains: 19 unique domains identified*

BEHAVIOURAL CHANGES	TRANSPORTATION MODE UTILIZATION TRENDS	IMPAIRED DRIVING INDICATORS: SOCIAL JUSTICE	PROACTIVE ENFORCEMENT	AUTOMATED ENFORCEMENT	PUBLIC OPINION ON IMPAIRED DRIVING	IMPAIRED DRIVING TECHNOLOGIES
IMPAIRED DRIVING INDICATORS: EMPLOYMENT	IMPAIRED DRIVING DATA	COST OF MOBILITY OPTIONS AND CHOICE OF TRANSPORTATION MODALITY	KNOWLEDGE AND TECHNOLOGY TRANSFER BETWEEN JURISDICTIONS	URBAN/RURAL DIFFERENCES	MARGINALIZED GROUPS	IMPAIRED DRIVING INDICATORS: DRUG USE/ABUSE
	IMPAIRED DRIVING INDICATORS: PUBLIC ATTITUDES ON VACCINATION AND PERSONAL PROTECTIVE EQUIPMENT	IMPAIRED DRIVING INDICATORS: EXTENT OF STATE OR JURISDICTIONAL CLOSURES DURING COVID-19	HOLISTIC APPROACH: MENTAL HEALTH	HOLISTIC APPROACH: NATURAL DISASTERS	HOLISTIC APPROACH: OTHER AREAS OF SPECIALTY	

* Descriptions provided in the Appendix

Results

PRIORITIZATION FINDINGS



Influence, Importance, and Interest in Research Domains

RESEARCH DOMAINS

1. Behavioural Changes
2. Transportation Mode Utilization Trends
3. Impaired Driving Indicators: Social Justice
4. Proactive Enforcement
5. Automated Enforcement
6. Public Opinion on Impaired Driving
7. Impaired Driving Technologies
8. Impaired Driving Indicators: Employment
9. Impaired Driving Data
10. Cost of Mobility Options and Choice of Transportation Modality
11. Knowledge and Technology Transfer Between Jurisdictions
12. Urban/Rural Differences
13. Marginalized Groups
14. Impaired Driving Indicators: Drug Use/Abuse
15. Impaired Driving Indicators: Public Attitudes on Vaccination and Personal Protective Equipment
16. Impaired Driving Indicators: Extent or State of Jurisdictional Closures During COVID-19
17. Holistic Approach: Mental Health
18. Holistic Approach: Natural Disasters
19. Holistic Approach: Other Areas of Specialty

Four high-priority research needs emerged

Results

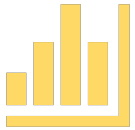
HIGH PRIORITY THEMES

1. BEHAVIOURAL CHANGES

- What is the lasting impact of COVID-19 on *future* driving behaviour?

2. TRANSPORTATION MODE UTILIZATION TRENDS

- How is COVID-19 shifting the trends in transportation mode utilization as individuals seek to reduce exposure?



3. IMPAIRED DRIVING DATA

- What are the gaps in current data systems that limit our understanding of impaired driving in the context of COVID-19 and how should data be collected?

4. PROACTIVE ENFORCEMENT

- What is the impact of decreasing proactive traffic enforcement on impaired driving rates during the COVID-19 pandemic?

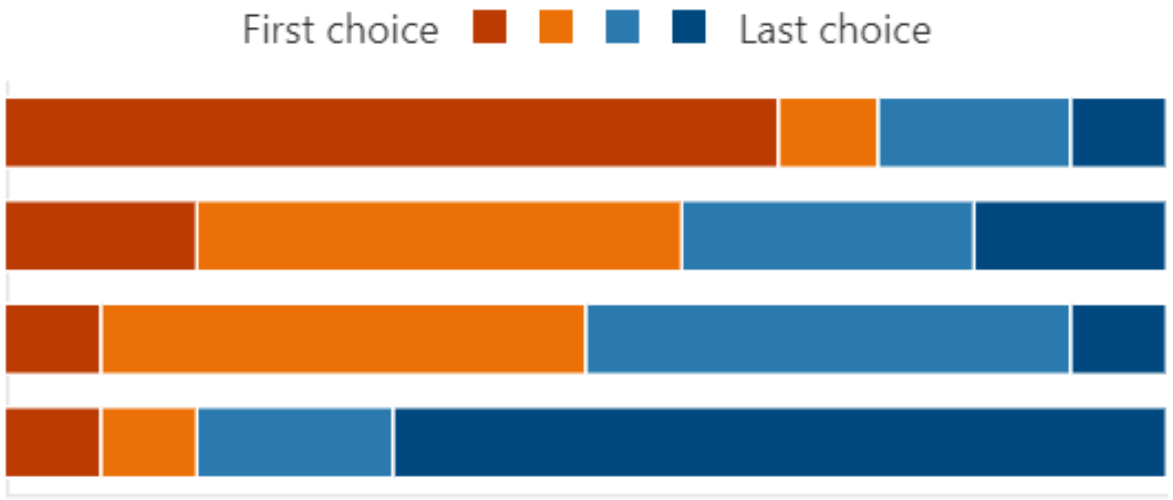
Theme 1: Behavioural Changes

OVERALL GOAL

To explore the **lasting impact** of COVID-19 on **future driving behaviour**.

SPECIFIC PRIORITIES

Rank	Options
1	**Are there changes in risk-taking propensity?**
2	**How has *law enforcement changes* affected driver behaviour?**
3	**Are there shifts in behaviour among specific *risk groups*?**
4	**How has the *education and testing* of novice drivers (young and old) been affected?**



Theme 2: Transportation Modes

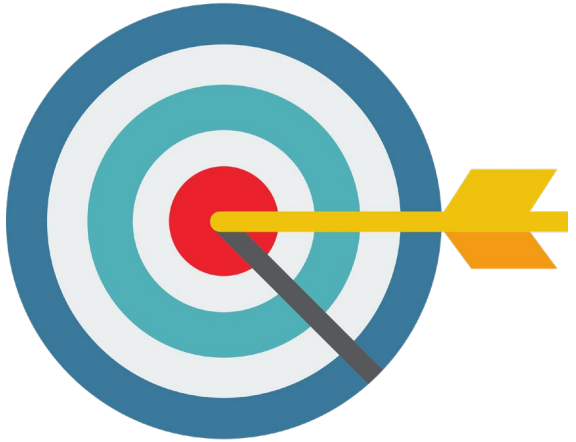
OVERALL GOAL

To explore how COVID-19 is **shifting the trends in transportation mode utilization** as individuals seek to reduce exposure.

SPECIFIC RESEARCH QUESTIONS

1. How has COVID-19 impacted the mobility of travelers and safety, including driving under the influence of alcohol and other drugs? (e.g., personal vehicles, pedestrians, cycling, public transit, long-distance travel modalities (rail, air travel, etc.))

2. How has COVID-19 impacted the movement of goods, including changes in timing and geography and the implications for safety? (e.g., freight: trucking, rail, maritime)



Theme 2: Transportation Modes

AREAS OF INTEREST

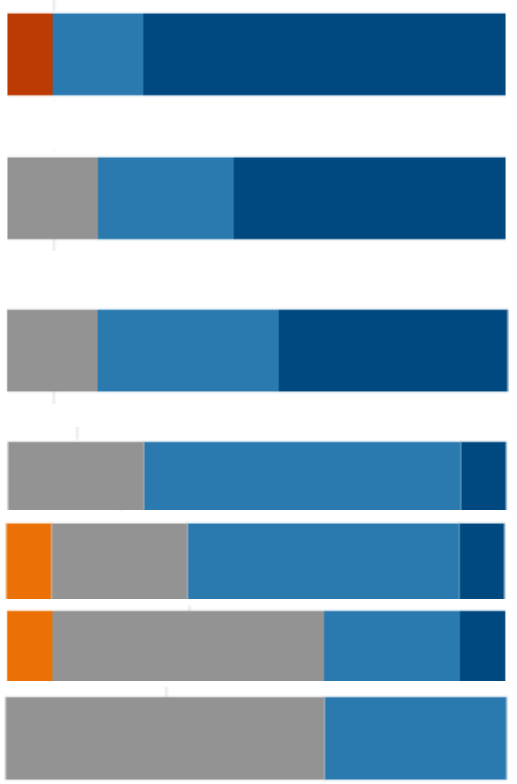
How important is it to study specific **trends in the mobility of travelers**?

MOST IMPORANT

1. The reasons for **increases in road fatalities** despite **decreases in transportation utilization** overall during the pandemic
2. Changes in **work-at-home policies** and how those affect transportation choices
3. Changes in transportation utilization trends for **different age groups**

LEAST IMPORANT

4. Changes in novice driver characteristics
5. Changes in types of licenses sought/attained and the changes in requirements
6. The relative change in road vs. rail vs. maritime vs. air transportation
7. The changes in and reason(s) for east/west movement vs. north/south movement



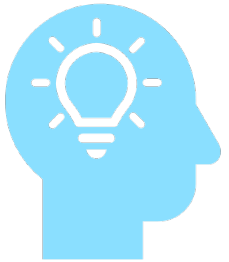
Theme 3: Impaired Driving Data

OVERALL GOAL

To explore the **gaps in current data systems** that limit our understanding of impaired driving in the context of COVID-19.

SPECIFIC RESEARCH QUESTION

How *should* data be collected?



SPECIFIC GAPS TO ADDRESS

1. Lack of recording of alcohol-related deaths in death certificates
2. Polysubstance driving

Theme 3: Impaired Driving Data

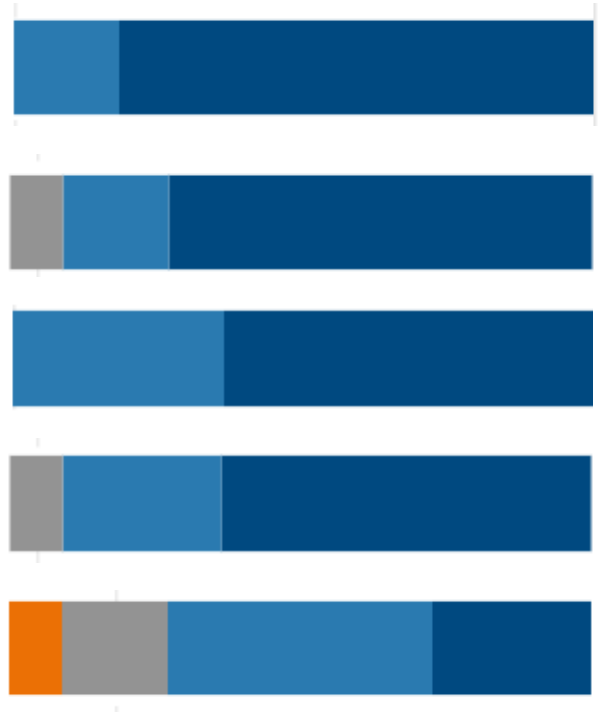
AREAS OF INTEREST

How important is it to study specific impaired driving **trends through improved data systems**?

VERY IMPORANT

IMPORANT

1. Changes in the **prevalence of certain drugs among the seriously injured** presenting at trauma centres during the pandemic
2. How the **legalization of certain drugs** (e.g., cannabis) affected impaired driving rates in **some jurisdictions relative to those that didn't**
3. The reason(s) for drivers who **use illicit drugs** being more **willing** (than alcohol users) **to drive impaired** and drive **with passengers**
4. The reasons for the **underrepresentation of drugs** (and the domination of alcohol) as the cause for charges and suspensions at roadside
5. Impact of increasing opioid use on impaired driving rates



Theme 4: Proactive Enforcement

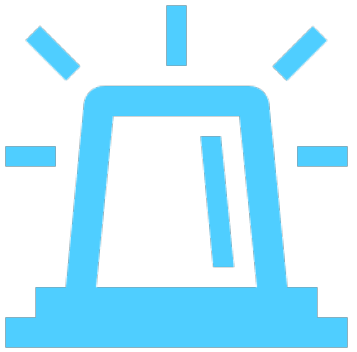
OVERALL GOAL

To explore the **impact of decreasing proactive traffic enforcement on impaired driving rates** during COVID-19.

SPECIFIC RESEARCH QUESTIONS

1. How have **attitudes and beliefs** on impaired driving changed as a result of ***decreasing*** **enforcement** and ***reduced*** **traffic** during COVID-19?

2. How have these changes impacted **road safety** (e.g., fatal collisions) and the effectiveness of **countermeasures**?



Theme 4: Proactive Enforcement

AREAS OF INTEREST

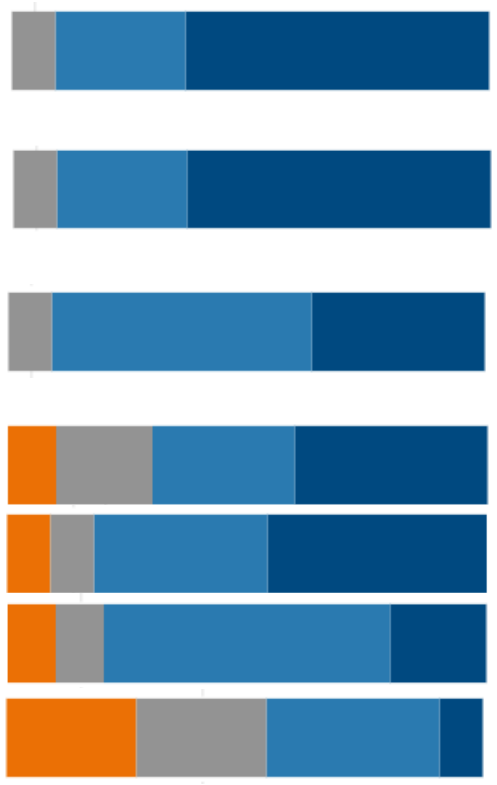
How important is it to study specific **enforcement related** impaired driving **trends and occurrences**?

MOST IMPORANT

1. Identify **risk taking activities** that ***increased*** as a result of ***decreased*** **traffic enforcement**
2. Changes in **fatalities and injuries** associated with risk taking activities during periods of reduced enforcement
3. Identify **technologies** (existing or emerging) that could be leveraged to counteract the reduction in traffic enforcement

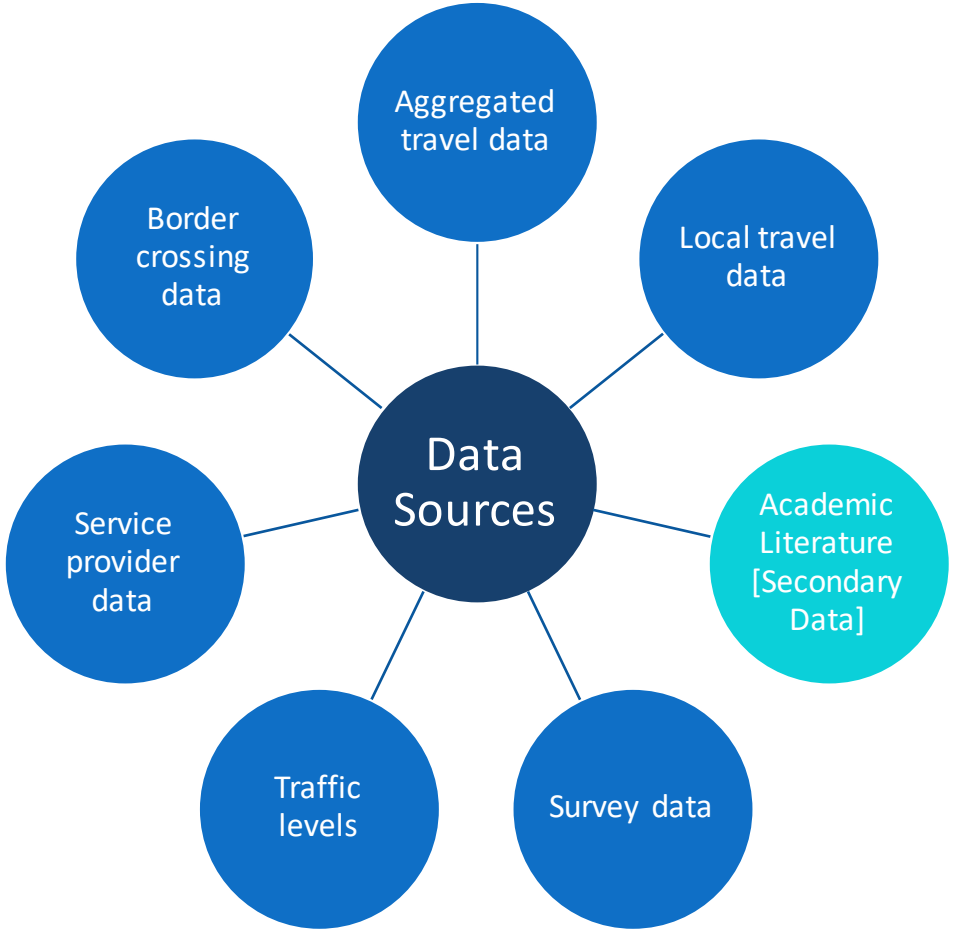
LEAST IMPORANT

4. Reasons for decreased traffic enforcement
5. Impact of pausing mandatory alcohol screening
6. Comparing and contrasting jurisdictions with high vs. low community transmission
7. The changes in incidence of unruly passengers on airlines and regulatory countermeasures



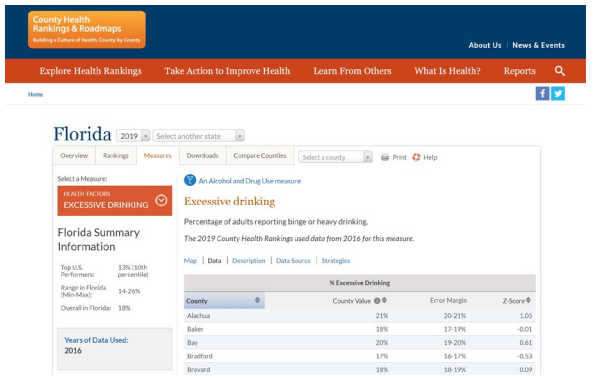
Key Resources

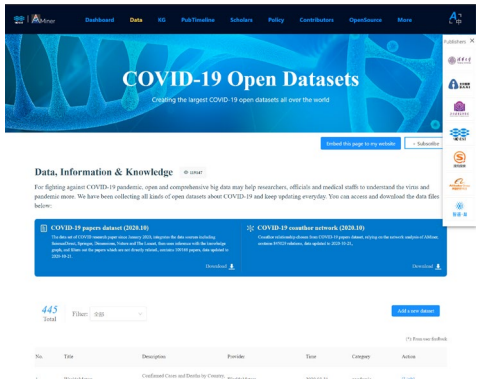
DATA SOURCES



Suggestions

1. Fatality Analysis Reporting System (FARS)
2. National Survey on Drug Use and Health
3. County Health Rankings & Roadmaps Website
4. COVID-19 Open Datasets





Conclusions

- **High priority research needs** identified by the COVID-19 working group

Behavioural Changes	Transportation Modes	Impaired Driving Data	Proactive Enforcement

APPENDIX

List of Topic Descriptions (1-10)

#	Topic Description
1	**BEHAVIOURAL CHANGES** What is the lasting impact of COVID-19 on future driving behaviour? (e.g., Are there changes in risk-taking propensity? Shifts in behaviour among specific risk groups? Cultural or national differences?)
2	**TRANSPORTATION MODE UTILIZATION TRENDS** How is COVID-19 shifting the trends in transportation mode utilization as individuals seek to reduce exposure? (e.g., To what extent has there been a shift from mass transit to personal vehicles or a reduction in air transportation? Does a lack of compliance with masks in some areas impact on trends regarding the use of transportation modes?)
3	**IMPAIRED DRIVING INDICATORS: SOCIAL JUSTICE** What is the impact of social justice issues on impaired driving within the context of COVID-19? (e.g., Do impaired driving rates increase during riots when the availability of police for traffic enforcement is lessened?)
4	**PROACTIVE ENFORCEMENT** What is the impact of decreasing proactive traffic enforcement on impaired driving rates during the COVID-19 pandemic?
5	**AUTOMATED ENFORCEMENT** How has COVID-19 impacted the adoption of automated enforcement? (e.g., Is the public more receptive to its adoption during a pandemic?)
6	**PUBLIC OPINION ON IMPAIRED DRIVING** How should traffic safety culture challenges be addressed during COVID-19? (e.g., How have attitudes and beliefs on impaired driving changed?)
7	**IMPAIRED DRIVING TECHNOLOGIES** What technologies can be leveraged to address impaired driving challenges during COVID-19? (e.g., Ignition interlock? Novel technologies?)
8	**IMPAIRED DRIVING INDICATORS: EMPLOYMENT** What is the impact of employment trends on impaired driving in the context of COVID-19?
9	**IMPAIRED DRIVING DATA** What are the gaps in current data systems that limit our understanding of impaired driving in the context of COVID-19 and how should data be collected?
10	**COST OF MOBILITY OPTIONS AND CHOICE OF TRANSPORTATION MODALITY** How does the price of mobility options influence choice of transportation mode and road safety? (e.g., Personal vehicles are more expensive than public transportation, so are motorcycles used more and are there more collisions/injuries involving motorcycles?)

List of Topic Descriptions (11-19)

#	Topic Description
11	**KNOWLEDGE AND TECHNOLOGY TRANSFER BETWEEN JURISDICTIONS** Do the post-COVID-19 transportation adaptations employed by developed countries work for developing countries?
12	**URBAN/RURAL DIFFERENCES** What are the similarities and differences between urban and rural areas regarding transportation issues and impaired driving in the context of COVID-19?
13	**MARGINALIZED GROUPS** What is the impact of COVID-19 on marginalized communities? (e.g., indigenous communities, lower socio-economic status groups, etc.)
14	**IMPAIRED DRIVING INDICATORS: DRUG USE/ABUSE** What drugs are people abusing during COVID-19, are they going on the road, and how are collision rates affected? (e.g., are impaired driving rates affected by jurisdictional-specific drug use epidemics, such as an opioid crisis, or rises in alcohol and cannabis purchase and use?)
15	**IMPAIRED DRIVING INDICATORS: PUBLIC ATTITUDES ON VACCINATION AND PERSONAL PROTECTIVE EQUIPMENT** How much would someone's anti-vaccine attitude reflect his/her behaviours regarding impaired driving, public vs. private transportation, issues on perception of deterrence/laws, etc.?
16	**IMPAIRED DRIVING INDICATORS: EXTENT OF STATE OR JURISDICTIONAL CLOSURES DURING COVID-19** How do differences in the extent of closing down a state or jurisdiction affect impaired driving rates (including how rates are measured), and what are the impact of confounders (e.g., enforcement, polysubstance driving issues)?
17	**HOLISTIC APPROACH: MENTAL HEALTH** How does whether someone is on active substance abuse treatment or not on active treatment affect impaired driving and risk-taking propensity during COVID-19? Are some substance abuse treatments working well and bringing about reductions in impaired driving rates and impairment-related collisions/injuries?
18	**HOLISTIC APPROACH: NATURAL DISASTERS** How can we use knowledge of other natural disasters (e.g., hurricanes) to understand risk-taking behaviour, impaired driving rates, and choice of transportation modality during COVID-19?
19	**HOLISTIC APPROACH: OTHER AREAS OF SPECIALTY** What can we learn from past disasters by reaching out to experts in other fields?

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