Workplace COVID-19 protections and transmission: Findings from population-level data in Canada

Peter Smith
IWH Speaker Series
19th October, 2021

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Three take home messages for today

1. In large sample of Canadian employees working outside of the home (July to September 2020) there were generally high proportions of self-reported infection control practices to reduce the spread of COVID-19.
2. Over the period April 1, 2020 to March 31, 2021 workplace outbreaks accounted for 12% of all cases and 7% of all hospitalisations among working aged Ontarians.
3. Despite the workplace being identified as an important site for COVID-19 transmission from early in the pandemic, there has not been consistent data collection to understand the relative contribution of workplace transmission compared to transmission in other locations.

Background

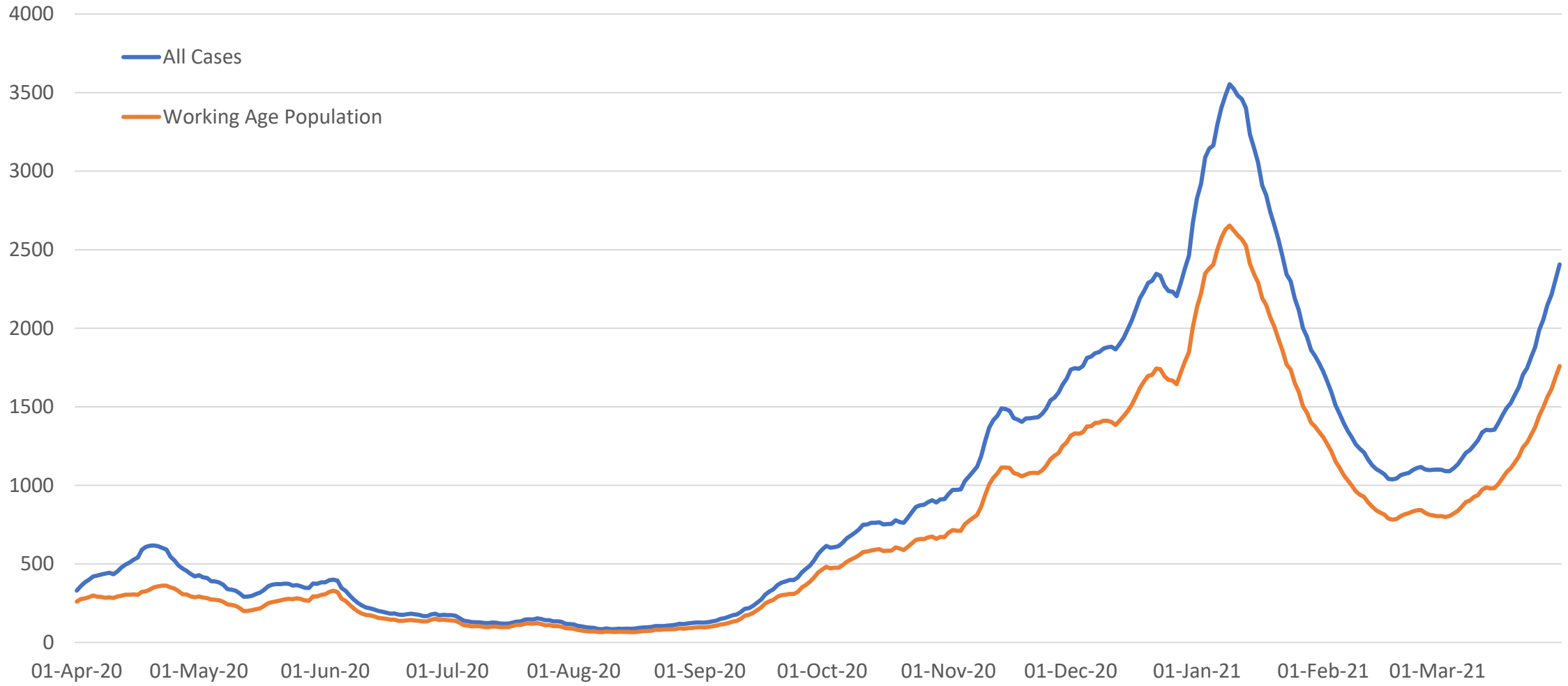
- The workplace was identified as a potential location for increased COVID-19 transmission from relatively early in the pandemic
- Workplaces are settings where people from different communities come together
- Levers to prevent COVID-19 transmission in a workplace setting might be easier to administer
- Lack of PPE and infection control procedures have been associated with high levels of anxiety among both healthcare and non-healthcare workers

Two questions for today

1. What were the levels of workplace infection control practices among workers who were working outside of the home in July to September 2020?

2. What were the rates of cases of COVID-19 due to workplace outbreaks between April 2020 and March 2021, and how do these compare to rates of non-workplace outbreak cases?

7-day average for all cases and cases among working age population. April 1, 2020 to March 31, 2021



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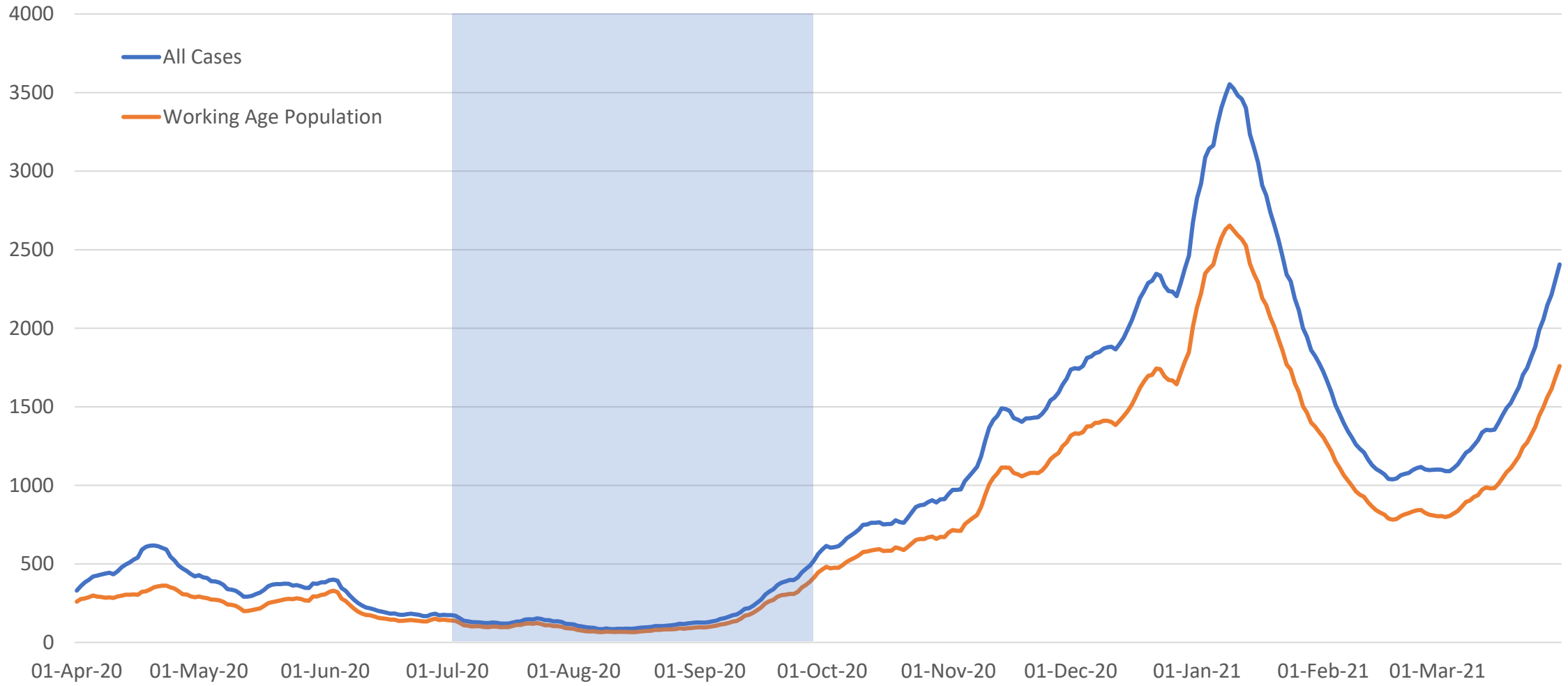

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Q1 Data source: Statistics Canada's Labour Force Survey

- Starting in April 2020 a Supplement to the Labour Force Survey included COVID-19-relevant content
- In July to September the supplement included questions on workplace protections
- Sample: July (N= 63,719); August (N = 67,179); September (N= 70,345)
- Questions on work arrangements asked of respondents aged 15 to 69 years of age, not members of Canadian Armed Forces (N = 77,907)
- Of this sample 50,096 (64.3%) worked in a fixed location outside of the home, and 10,237 (13.1%) worked outside the home at no fixed location
- 53,316 responses from paid employees (analytical sample)

Workplace infection control practices

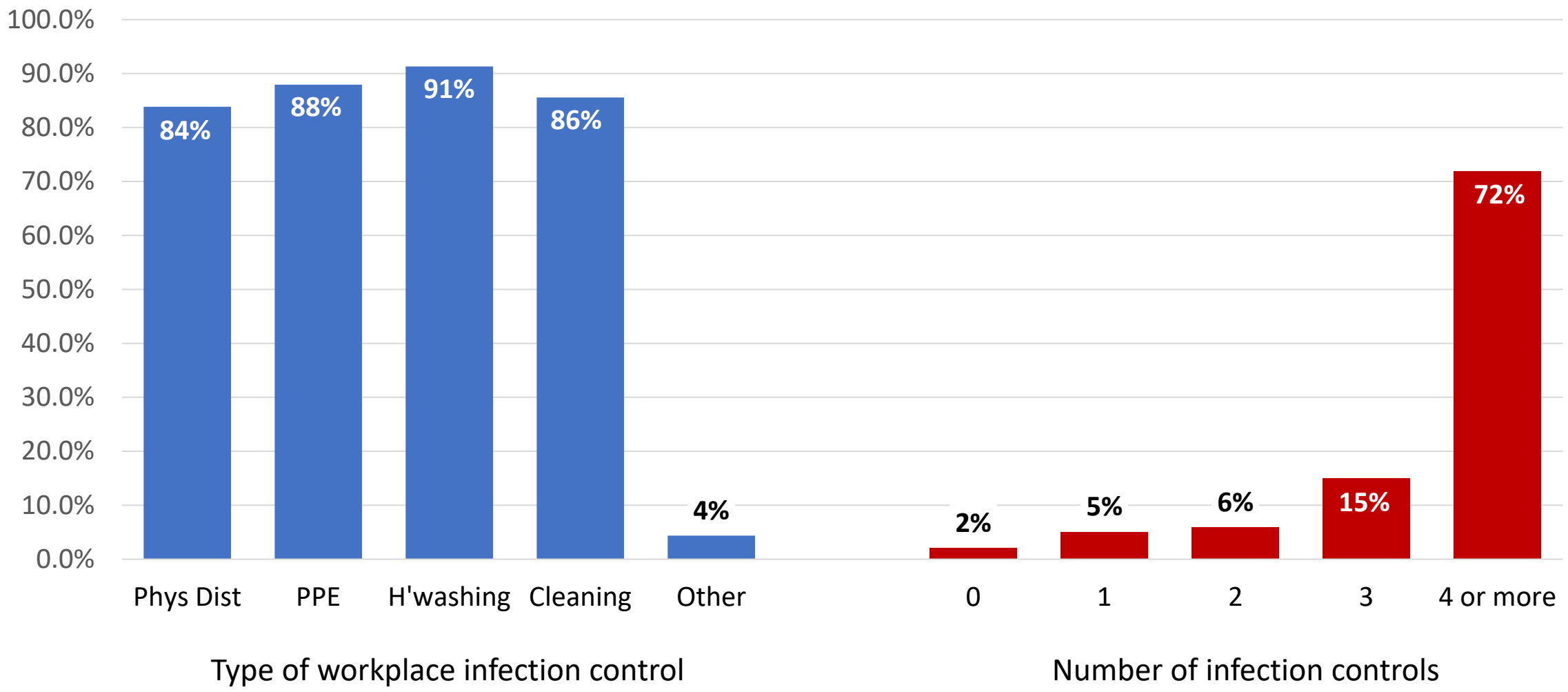
1. Workplace or work practices being re-organised to allow for physical distancing (e.g. installation of protective screens, reorganising of shifts)
2. Access to personal protective equipment (e.g. masks, face shields, gloves, gowns)
3. Increased access to hand sanitizer or handwashing facilities
4. Enhanced cleaning practices
5. Other protections

Respondents could also indicate no measures were in place

Other measures

- Age; sex; immigration status; race; marital status; dependent children; education level; province of residence; population density.
- Public/private employer; union membership; full-time/part-time hours; permanent/non-permanent job; regular/irregular work hours; job tenure; hourly earnings; working indoors in non-environmentally controlled environment.
- Industry of employment; size of workplace; multiple locations; if workplace allows employees to work from home (partially or fully).

Distribution of infection controls in the workplace. Employed labour force participants (N = 53,316): July, August and September 2020



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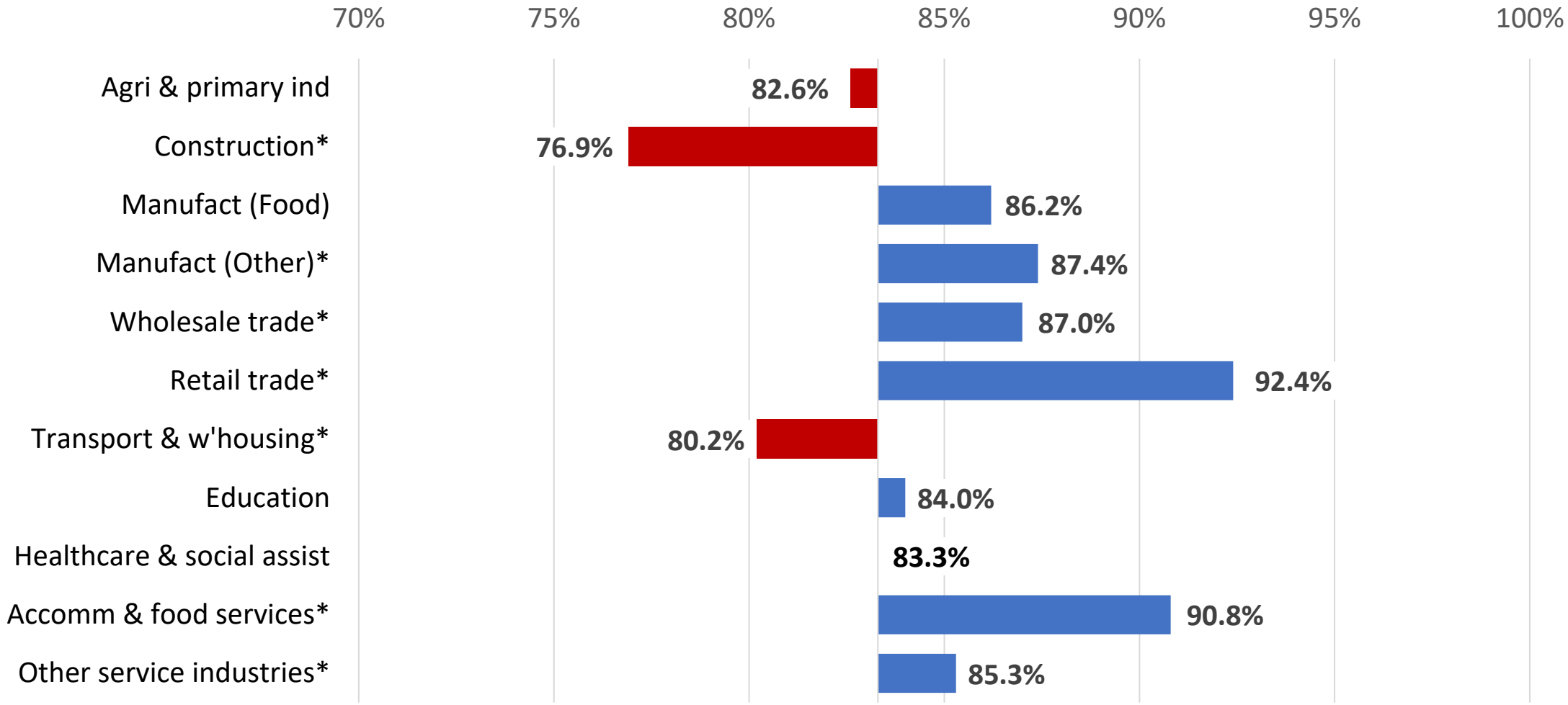
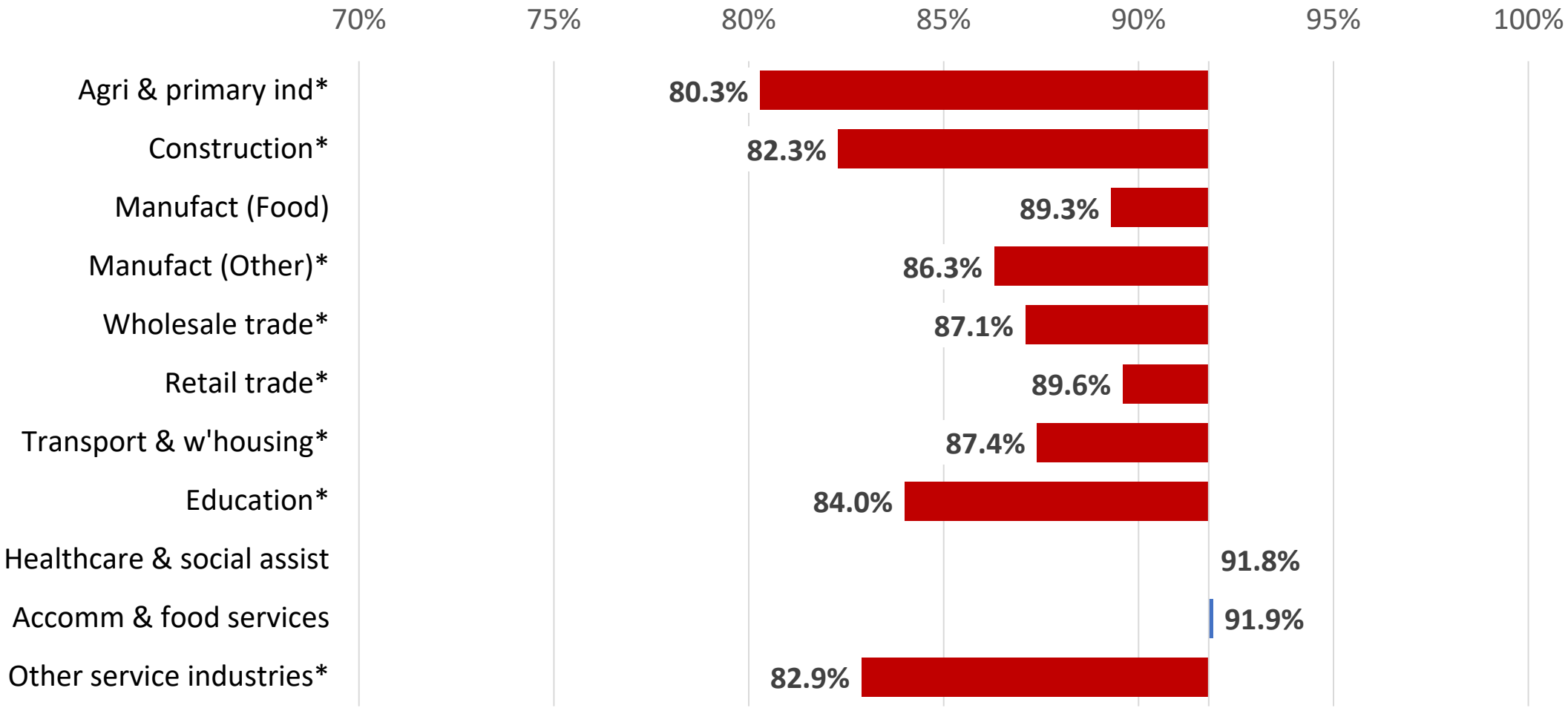
Adjusted prevalence for presence of physical distancing by industry group (ref = healthcare and social assistance)



* = estimate different from healthcare and social assistance

Adjusted prevalence for presence of PPE by industry group (ref = healthcare and social assistance)



* = estimate different from healthcare and social assistance

Other groups with lower levels of protections

- Males (all ICP practices)
- Workers with lower levels of education (less physical distancing, and less enhanced cleaning)
- Workers with 6 months or less job tenure (all ICP practices)
- Non-permanent workers (less access to PPE, less enhanced cleaning)
- Workplaces with fewer than 20 workers (less access to PPE)
- Workers with no options to work from home (less physical distancing, less enhanced cleaning)

All differences in range of 2% to 6%.

Summary

- Rates of workplace infection control practices were generally high among Canadian workers, working outside of home, in July to September 2020.
- Lower prevalence of ICP was observed across some industry groups, in particular construction, agriculture, transport and warehousing, and non-food manufacturing; and also among employers who did not provide an option to work from home.
- Lower prevalence of ICP was observed among workers at the start of their employment, workers in non-permanent relationships, and those with lower levels of education.

Challenges in assessing COVID-19 transmission at work

- Risk of COVID-19 transmission is continuous across settings
- Historical estimates of labour force participation don't tell who was still working; and who was going to the workplace, and who was working from home.
- Population level collection of work-related information was restricted to if a positive case was a healthcare worker.
- Public health units did collect information on workplace outbreaks, but outbreaks in education, healthcare and congregate living settings did not distinguish between cases among workers and non-workers.

What are workplace outbreaks?

- Public Health Units are responsible for declaring outbreaks
- When two cases occur in a 14-day period, and these cases can be linked*
- Definition varied by industry during the pandemic

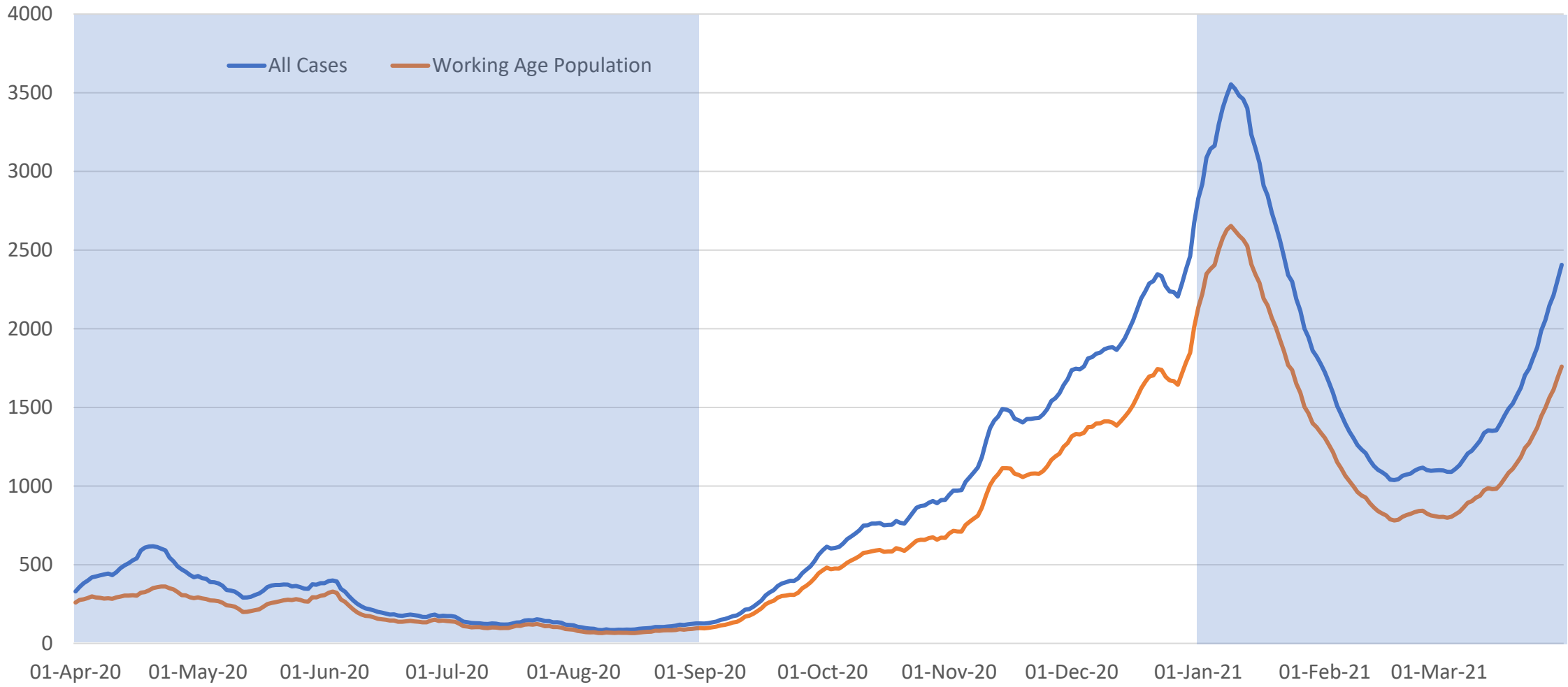
Rates of workplace outbreaks in Ontario

- PHO retrospectively assigned all outbreak cases to one of 13 industry groups, and disaggregated worker cases from non-worker cases in education, congregate living and healthcare settings.
- IWH provided hours spent at the workplace across the same industry groups using the supplementary questionnaire from the Labour Force Survey
- Analyses conducted across three time periods
  - April 1 to August 31, 2020
  - September 1 to December 31, 2020
  - January 1 to March 31, 2021

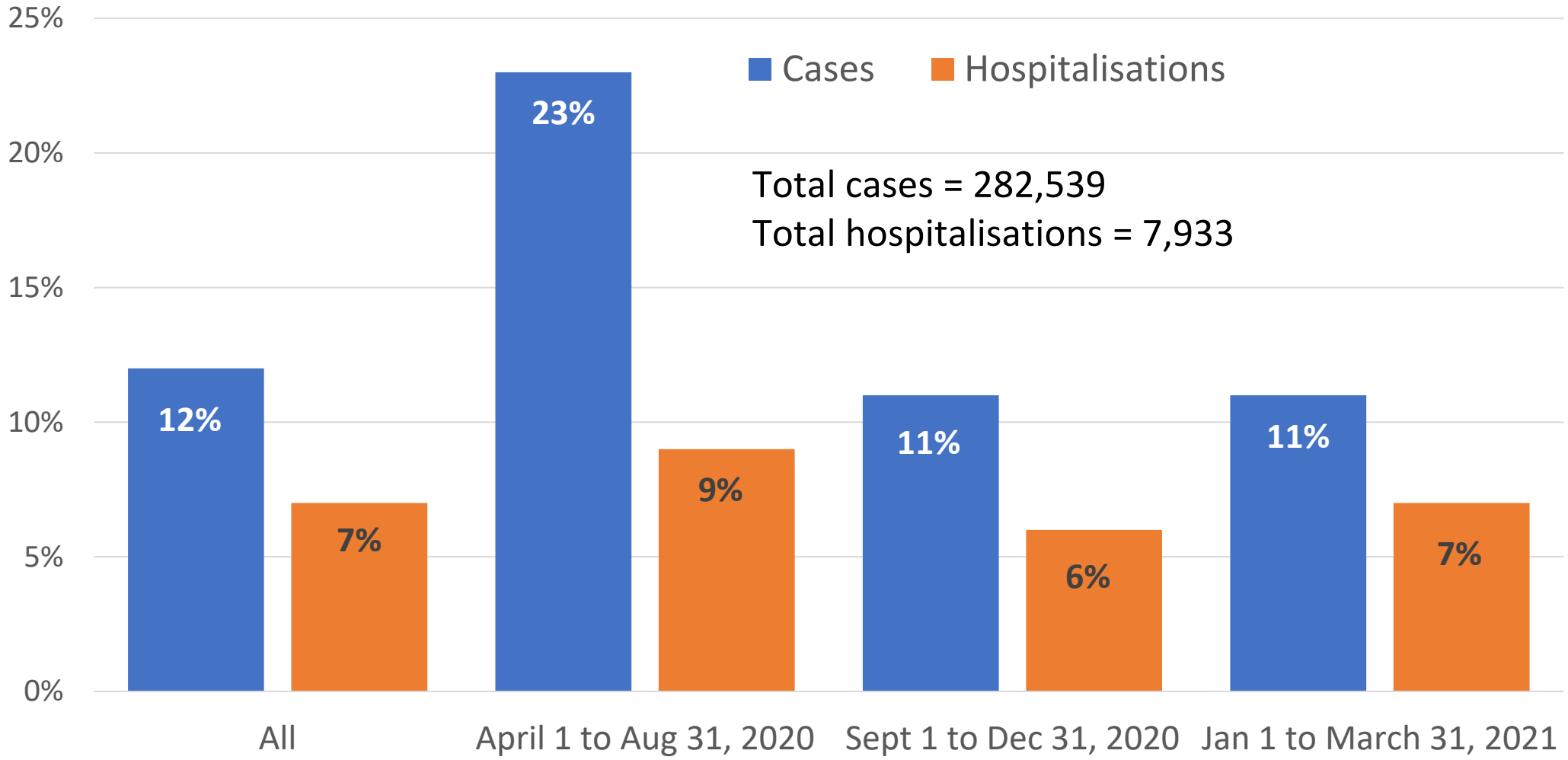
Data and analysis (cont)

- We calculated a standardized incidence ratio (SIR) for each industry group by time period.
- The rate per 200,000 hours worked was compared to the overall rate of COVID-19 among Ontarians 15 to 69 years of age per 200,000 hours awake (assuming 16 waking hours per person 15 to 69 years of age)
- SIRs greater than one indicate higher rate for workers at the workplace in that industry compared to the overall rate of COVID-19 transmission among the general population aged 15 to 69 years of age in Ontario; and *vice versa* for SIRs less than one.

7-day average for all cases and cases among working age population. April 1, 2020 to March 31, 2021



Proportion of cases and hospitalisations due to workplace outbreaks (age 15 to 69 years). April 1, 2020 to March 31, 2021



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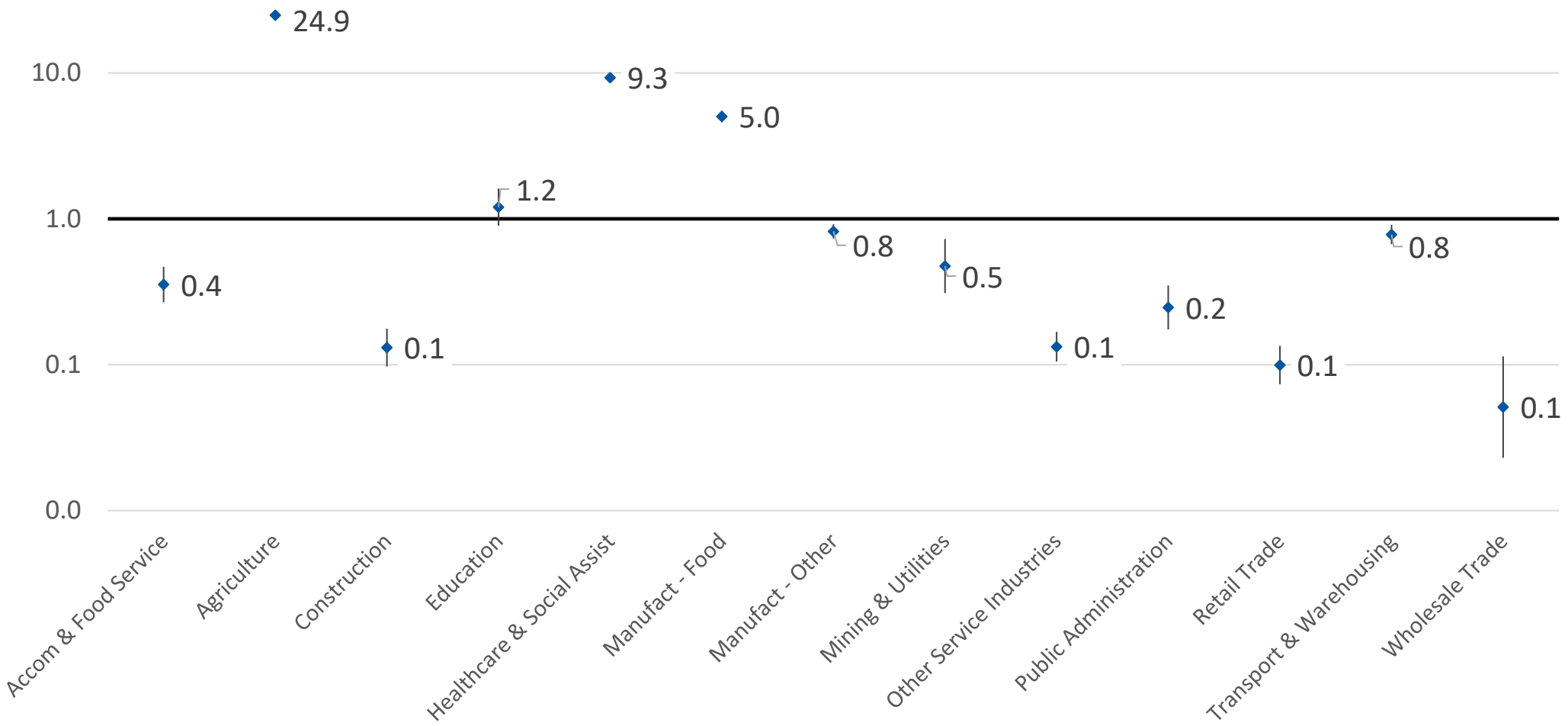
Buchan et al (under review) https://www.medrxiv.org/content/10.1101/2021.06.30.21259770v1

Standardised COVID incidence rate by industry. April 1 to Aug 31, 2020



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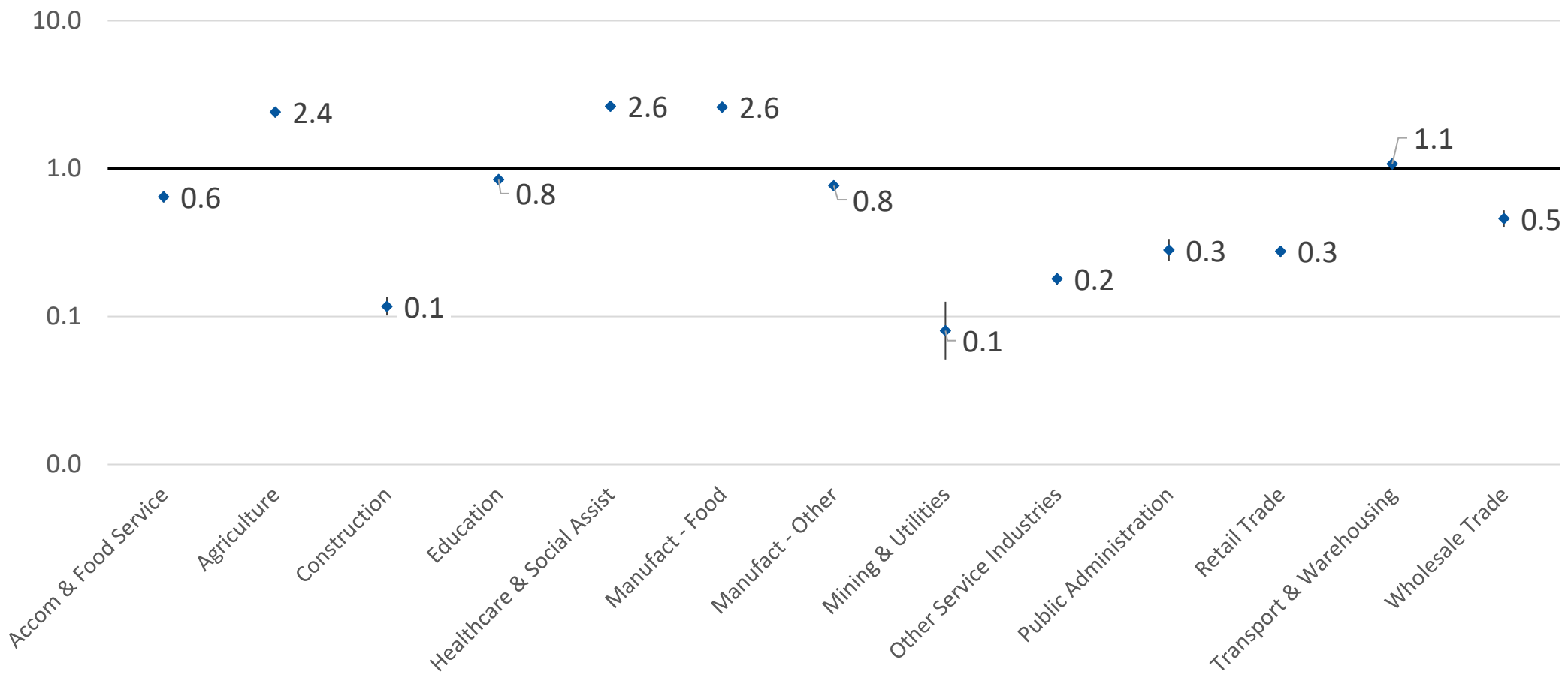
Standardised COVID incidence rate by industry. Sept 1 to Dec 31, 2020



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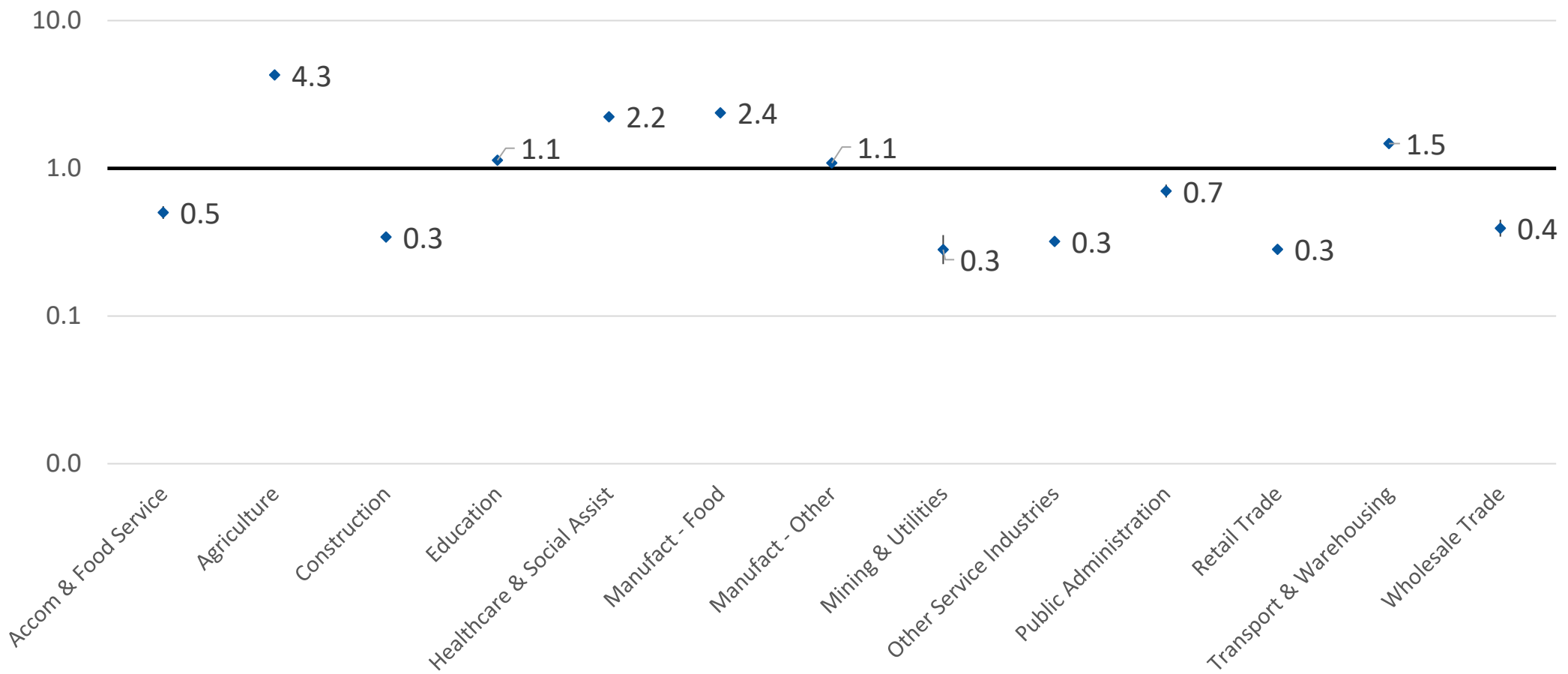
Standardised COVID incidence rate by industry. Jan 1 to March 31, 2021



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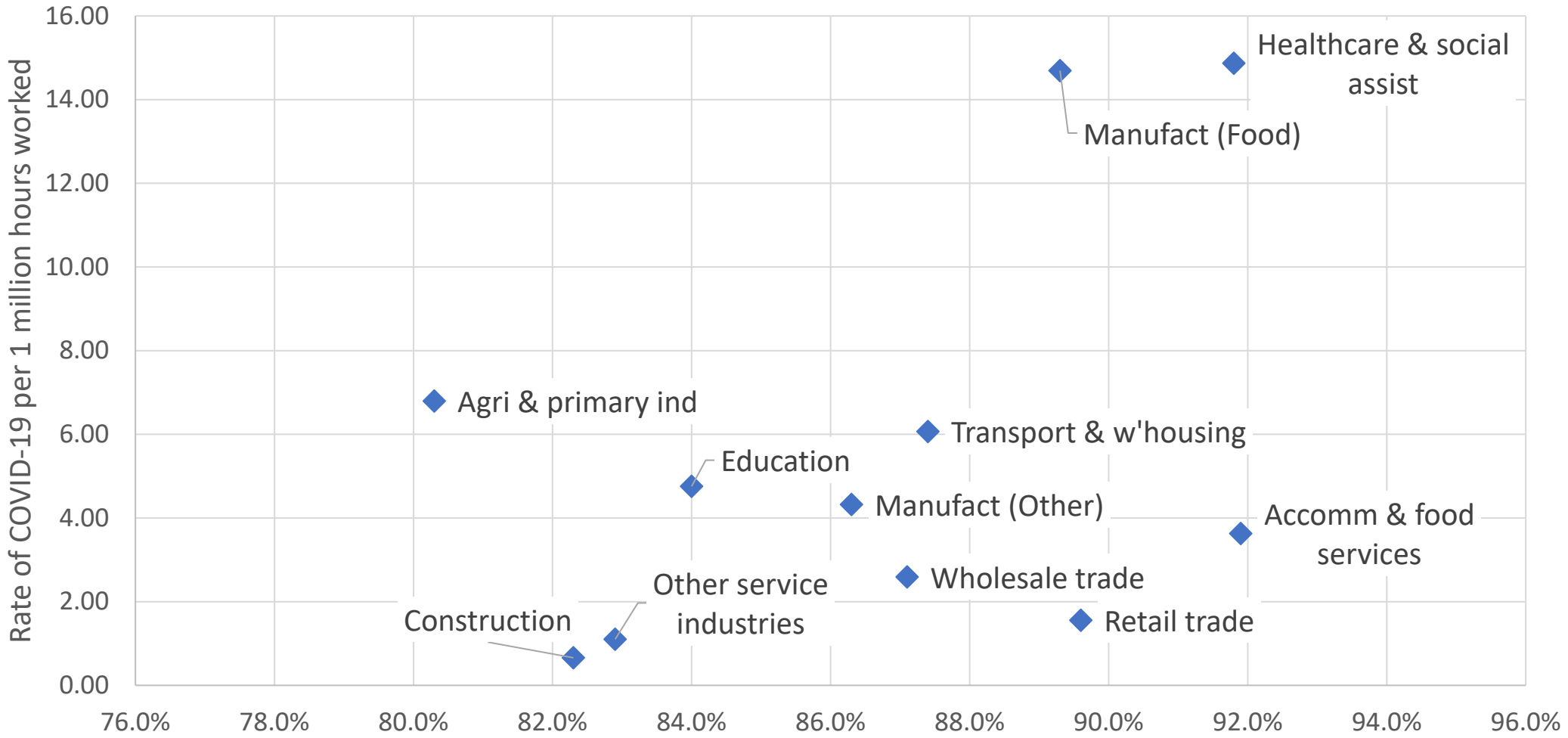
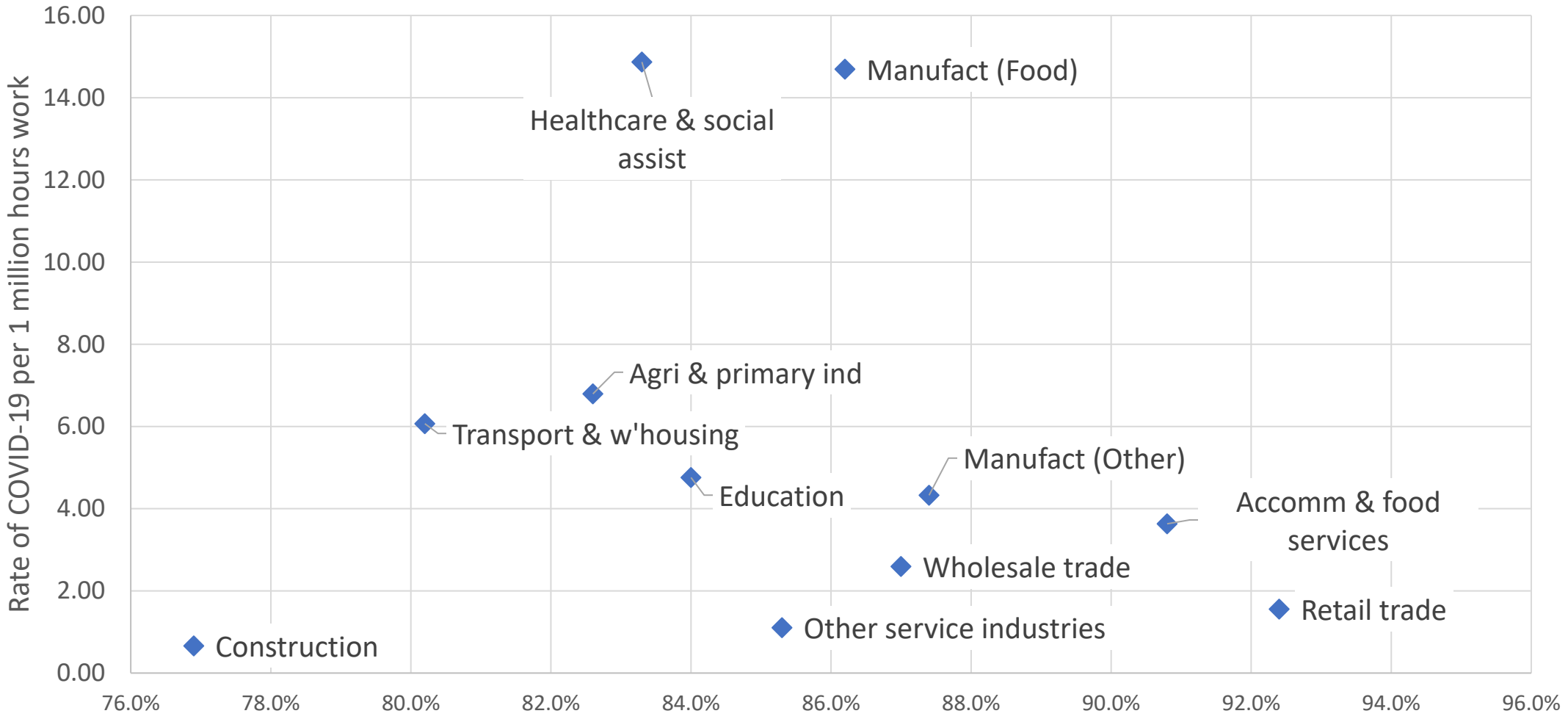
Summary of workplace outbreak findings

- In the period April 1, 2020 to March 31, 2021 workplace outbreaks accounted for 12% of all cases and 7% of all hospitalisations among working aged Ontarians.
- Rates of COVID-19 (per hour exposed) were consistently higher than the general transmission rate among the working aged population in the industries of agriculture, healthcare, and food manufacturing.
- The majority of industry groups had rates of COVID-19 transmission due to workplace outbreaks that were lower than the general transmission rate (about 75% to 80% of the labour force at the worksite).

Level of PPE and rate of workplace outbreaks (per 1 million hours worked, Sept to Dec, 2020) by industry



Level of physical distancing and rate of workplace outbreaks (per 1 million hours worked, Sept to Dec, 2020) by industry



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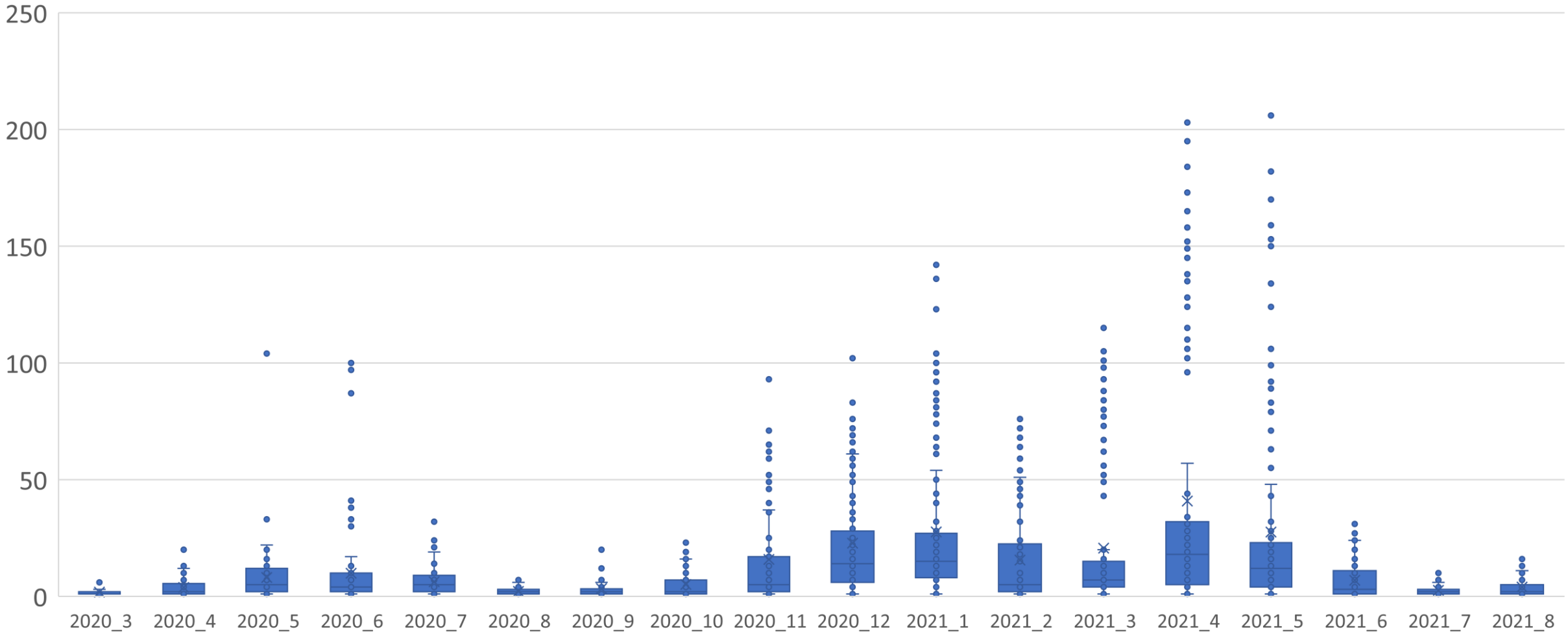
Distribution of workplace outbreak cases by month. Ontario, March 2020 to August 2021



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Acknowledgements

The workplace outbreak findings presented today was led by Sarah Buchan at Public Health Ontario.

Other research team members for studies presented today include:

- Christine Warren (PHO), Michelle Murti (PHO), JinHee Kim (PHO), Sandya Menon (PHO), Kevin A. Brown (PHO), Trevor van Ingen (PHO) and Brendan T. Smith (PHO),
- Cameron Mustard (IWH) and Faraz Shahidi (IWH)

Thanks to the excellent staff at the Statistics Canada Research Data Centre for assistance in accessing the Labour Force Survey data and vetting output for the project.

For More Information

Smith et al (2021) The prevalence and correlates of workplace infection control practices in Canada between July and September 2020. *Health Reports*. 32 (11), https://www.doi.org/10.25318/82-003-x202101100002-eng

Buchan et al (2021). Incidence of outbreak-associated COVID-19 cases by industry in Ontario, Canada, April 1, 2020- March 31, 2021. (under review: revise and resubmit). https://www.medrxiv.org/content/10.1101/2021.06.30.21259770v1

Thank you

Peter Smith

Senior Scientist and Co-Scientific Director

psmith@iwh.on.ca

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