Outbreaks and Community Transmission during Ontario's Second Wave

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Ontario COVID-19 Science Advisory Table
November 12, 2020

SCIENCE TABLE
COVID-19 ADVISORY FOR ONTARIO

Why is this important?

- Less than 10% of cases linked to outbreaks
  - Not representative of community transmission
- Setting of transmission unknown in ~60%
- 40 to 60% of cases due to community transmission
  - Unknown source of infection/setting
  - External evidence: gatherings in public and private settings must predominantly be responsible for transmission
  - Restaurants with indoor dining most frequently visited
- Outbreak data important as marker to inform decision making
- Although controversial & challenging, restrictions appear to control surges in Ottawa, and to a lesser extent in Toronto & Peel

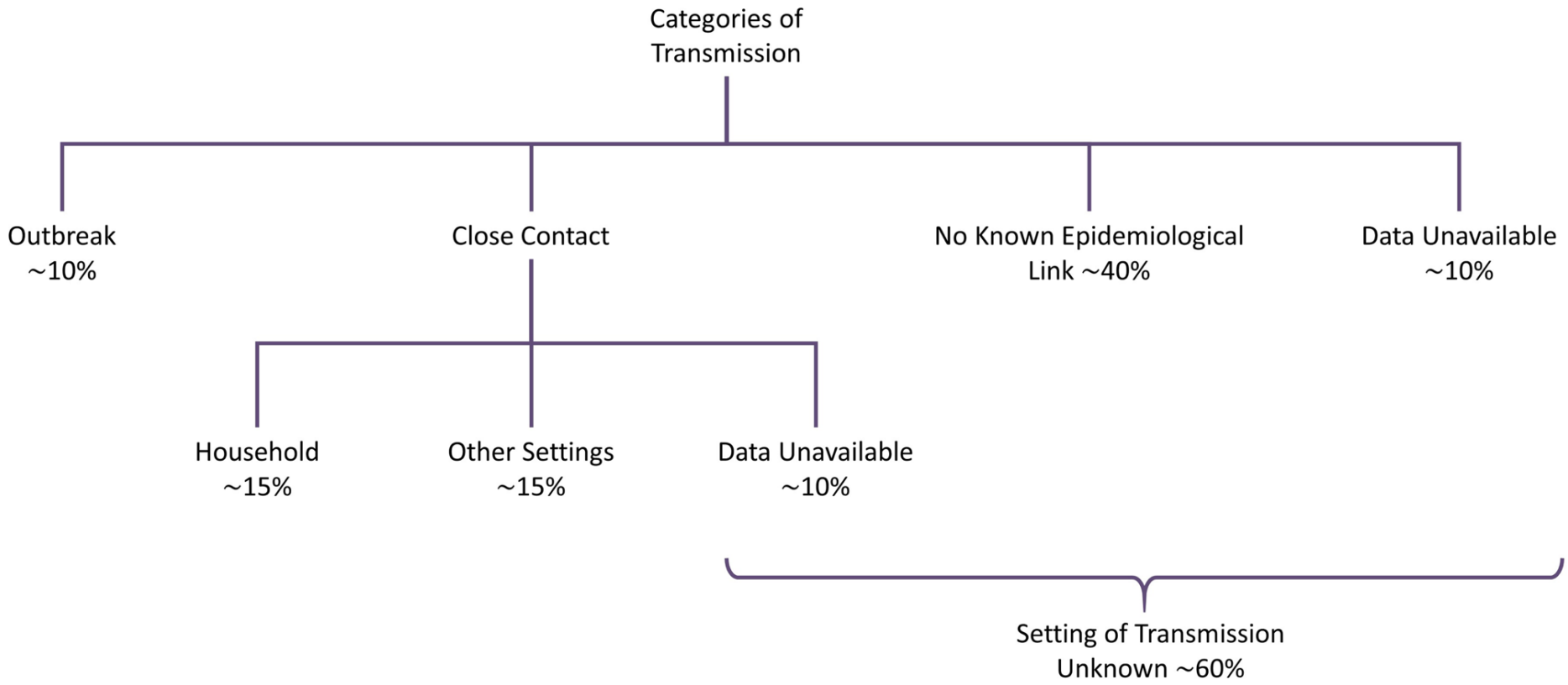
Modified Stage 2 Restrictions in Ontario's Toronto, Ottawa and Peel Regions

Restrictions in Toronto, Ottawa, and Peel Regions	Restrictions up to October 10, 2020	Restrictions on October 10, 2020
Maximum outdoor gathering size	25	25
Maximum indoor gathering size	10	10
Indoor food and drink service closed		✓
Gyms and fitness centres closed		✓
Strip clubs closed	✓	✓
Nightclubs, casinos, indoors cinemas, performing arts centres, spectator areas in racing venues, interactive exhibits closed		✓
Limiting team sports		✓
Personal care services closed if masks not possible		✓

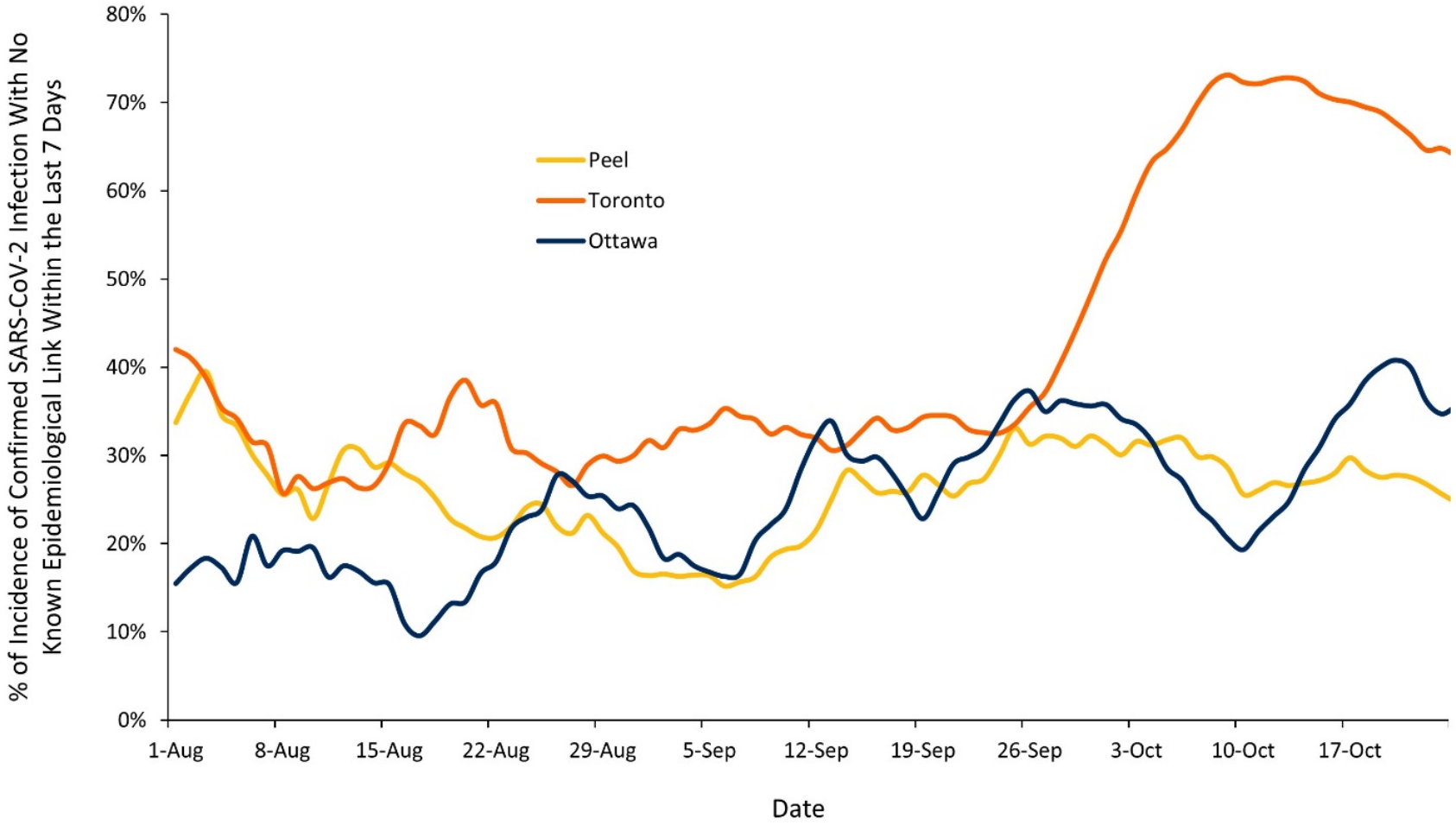
Concerns that were raised

- Perception that restaurants were rarely the setting of outbreaks
  - 2% of outbreaks in Ottawa
  - 3% of outbreaks in Peel
- What is the justification for closing restaurants in Ottawa and Peel?

Categories of Transmission in Ontario

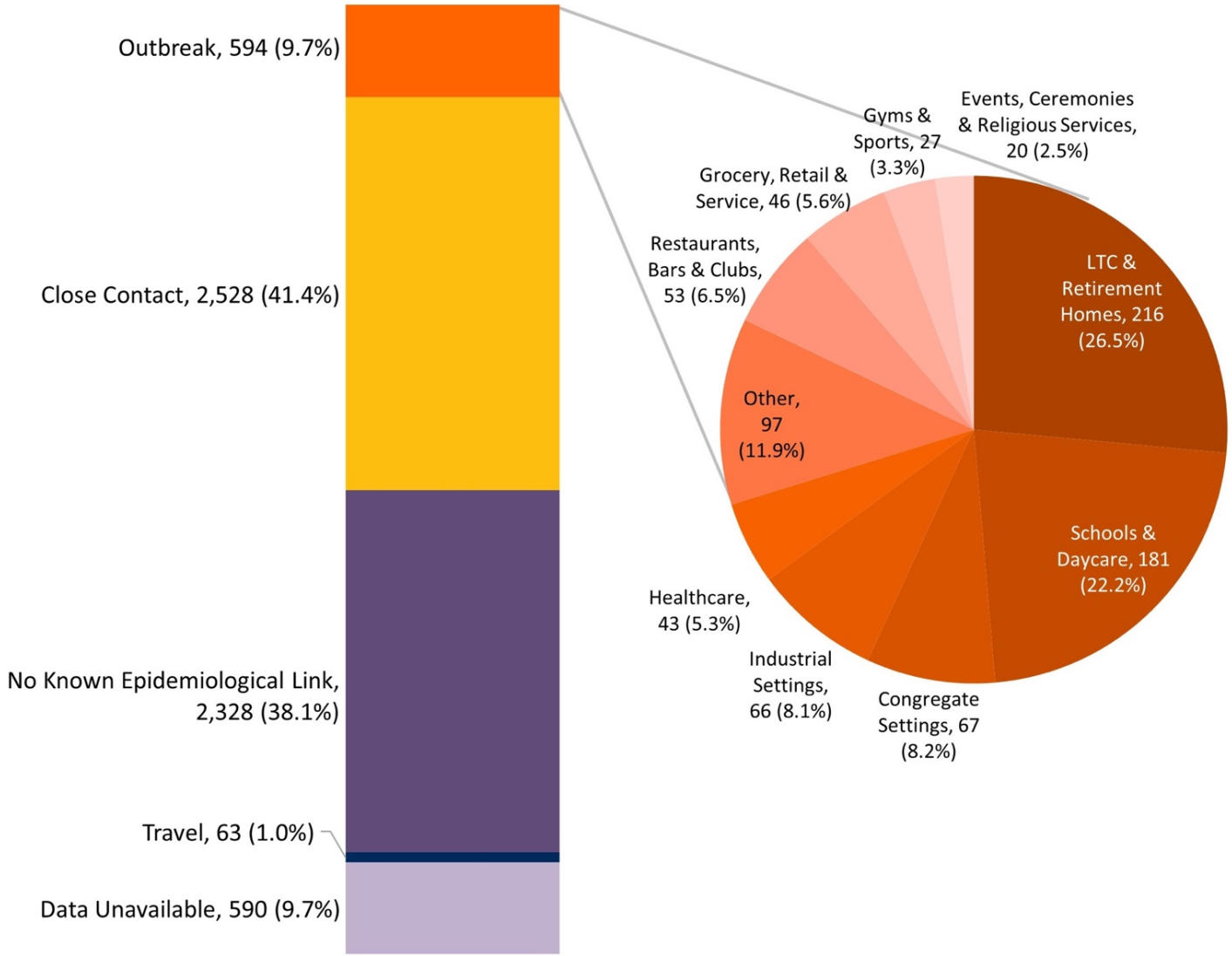


Percent of Cases with No Epidemiological Link



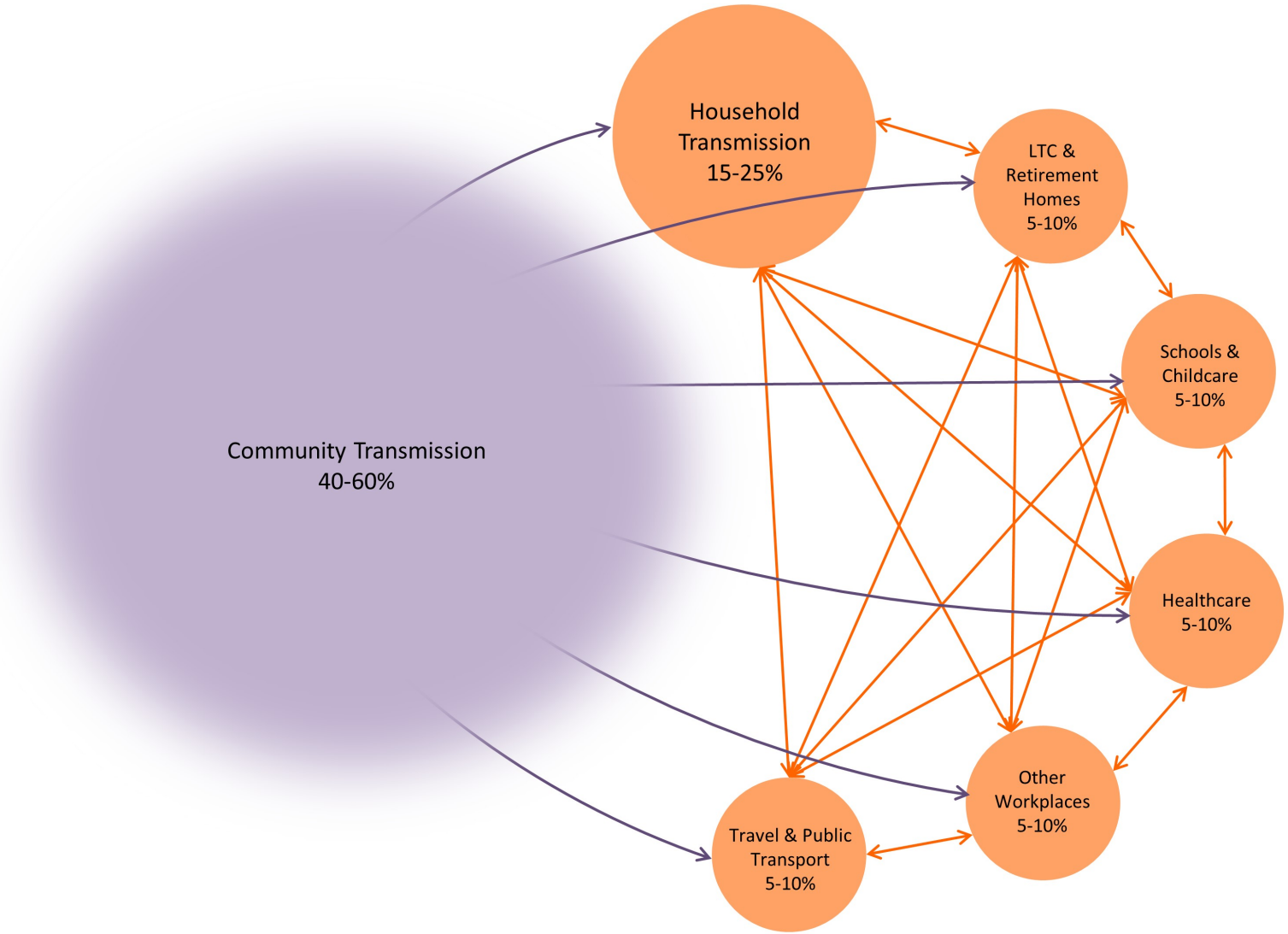
Data from the Case and Contact Management System (CCM).
Extracted November 2, 2020.

Cases by Type of Transmission & Outbreaks by Setting in Ontario



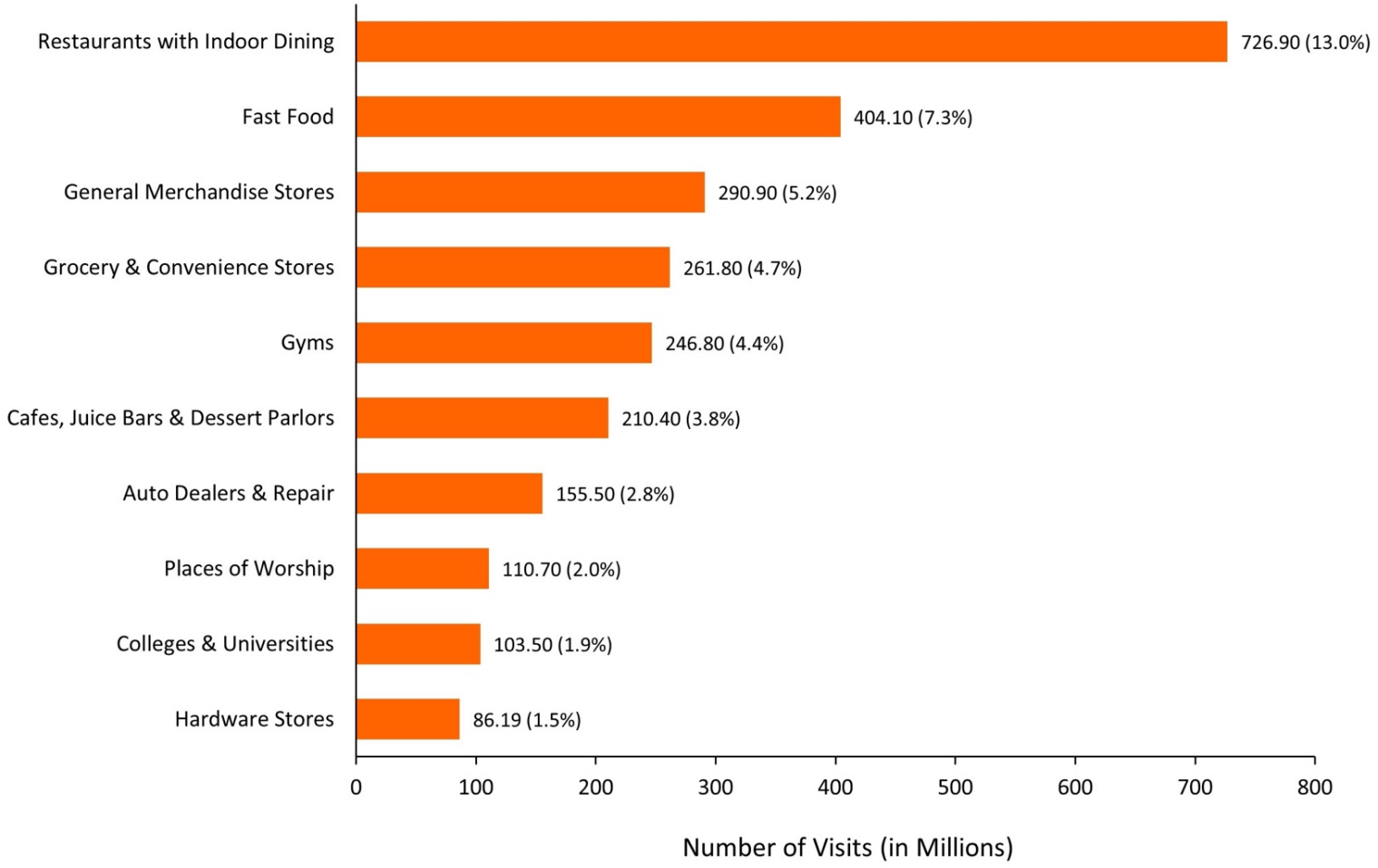
Data from the Case and Contact Management System (CCM).
Bar graph extracted October 27, 2020; pie chart extracted October 25, 2020.

Transmission Framework



External Evidence?

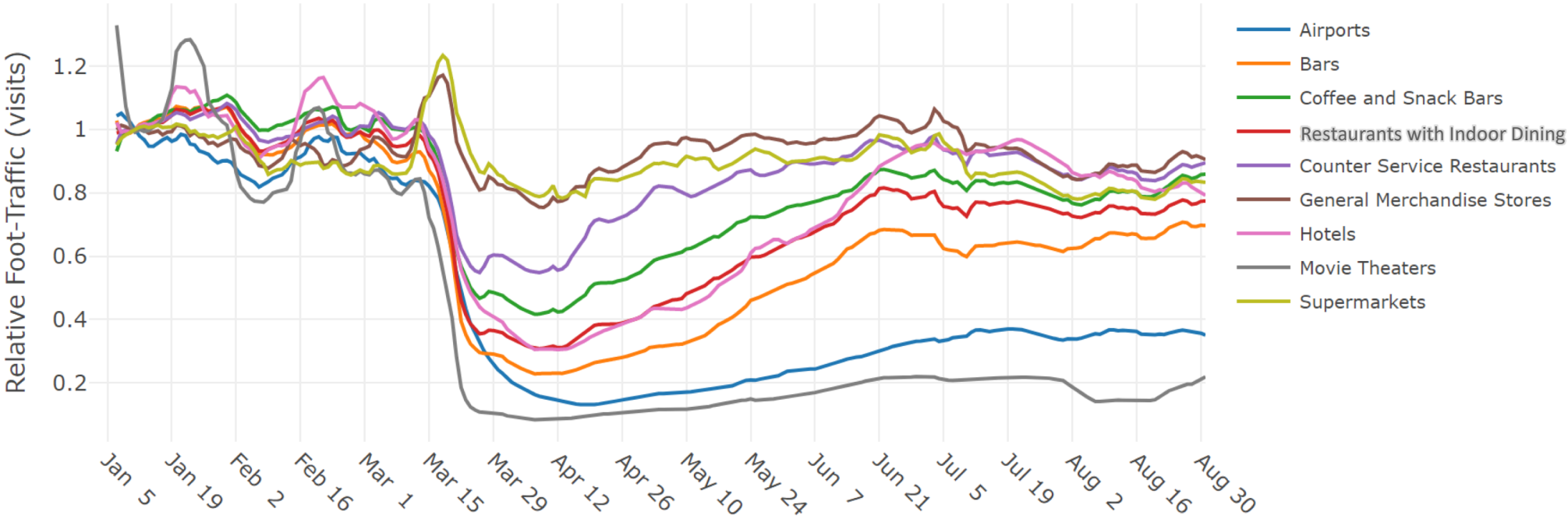
Visits by Setting, United States, Jan 2019 to March 2020



Based on 5.57 billion visits; private gatherings not ascertained

Benzell et al, PNAS. 2020

Visits by Setting Over Time
United States, Jan 5 to Aug 31, 2020



Source: SafeGraph, U.S. Consumer Activity During COVID-19 Pandemic
Last updated September 2, 2020

Morbidity and Mortality Weekly Report

Community and Close Contact Exposures Associated with COVID-19 Among Symptomatic Adults ≥18 Years in 11 Outpatient Health Care Facilities — United States, July 2020

Kiva A. Fisher, PhD[1]; Mark W. Tenforde, MD, PhD[1,2]; Leora R. Feldstein, PhD[1]; Christopher J. Lindsell, PhD[3,4]; Nathan I. Shapiro, MD[3,5]; D. Clark Files, MD[3,6]; Kevin W. Gibbs, MD[3,6]; Heidi L. Erickson, MD[3,7]; Matthew E. Prekker, MD[3,7]; Jay S. Steingrub, MD[3,8]; Matthew C. Exline, MD[3,9]; Daniel J. Henning, MD[3,10]; Jennifer G. Wilson, MD[3,11]; Samuel M. Brown, MD[3,12]; Ithan D. Peltan, MD[3,12]; Todd W. Rice, MD[3,4]; David N. Hager, MD, PhD[3,13]; Adit A. Ginde, MD[3,14]; H. Keipp Talbot, MD[3,4]; Jonathan D. Casey, MD[3,4]; Carlos G. Grijalva, MD[3,4]; Brendan Flannery, PhD[1]; Manish M. Patel, MD[1]; Wesley H. Self, MD[3,4]; IVY Network Investigators; CDC COVID-19 Response Team

Community and close contact exposures continue to drive the coronavirus disease 2019 (COVID-19) pandemic. CDC and other public health authorities recommend community mitigation strategies to reduce transmission of SARS-CoV-2, the virus that causes COVID-19 (*1*,*2*). Characterization of community exposures can be difficult to assess when widespread transmission is occurring, especially from asymptomatic persons within inherently interconnected communities. Potential exposures, such as close contact with a person with confirmed COVID-19, have primarily been assessed among COVID-19 cases, without a non-COVID-19 comparison group (*3*,*4*). To assess community and close contact exposures associated with COVID-19, exposures reported by case-patients (154) were compared with exposures reported by control-participants (160). Case-patients were symptomatic adults (persons aged ≥18 years) with SARS-CoV-2 infection confirmed by reverse transcription–polymerase chain reaction (RT-PCR) testing. Control-participants were symptomatic outpatient adults from the same

This investigation included adults aged ≥18 years who received a first test for SARS-CoV-2 infection at an outpatient testing or health care center at one of 11 Influenza Vaccine Effectiveness in the Critically Ill (IVY) Network sites* during July 1–29, 2020 (*5*). A COVID-19 case was confirmed by RT-PCR testing for SARS-CoV-2 RNA from respiratory specimens. Assays varied among facilities. Each site generated lists of adults tested within the study period by laboratory result; adults with laboratory-confirmed COVID-19 were selected by random sampling as case-patients. For each case-patient, two adults with negative SARS-CoV-2 RT-PCR test results were randomly selected as control-participants and matched by age, sex, and study location. After randomization and matching, 615 potential case-patients and 1,212 control-participants were identified and contacted 14–23 days after the date they received SARS-CoV-2 testing. Screening questions were asked to identify eligible adults. Eligible adults for the study were symptomatic at the time of their first SARS-CoV-2 test.

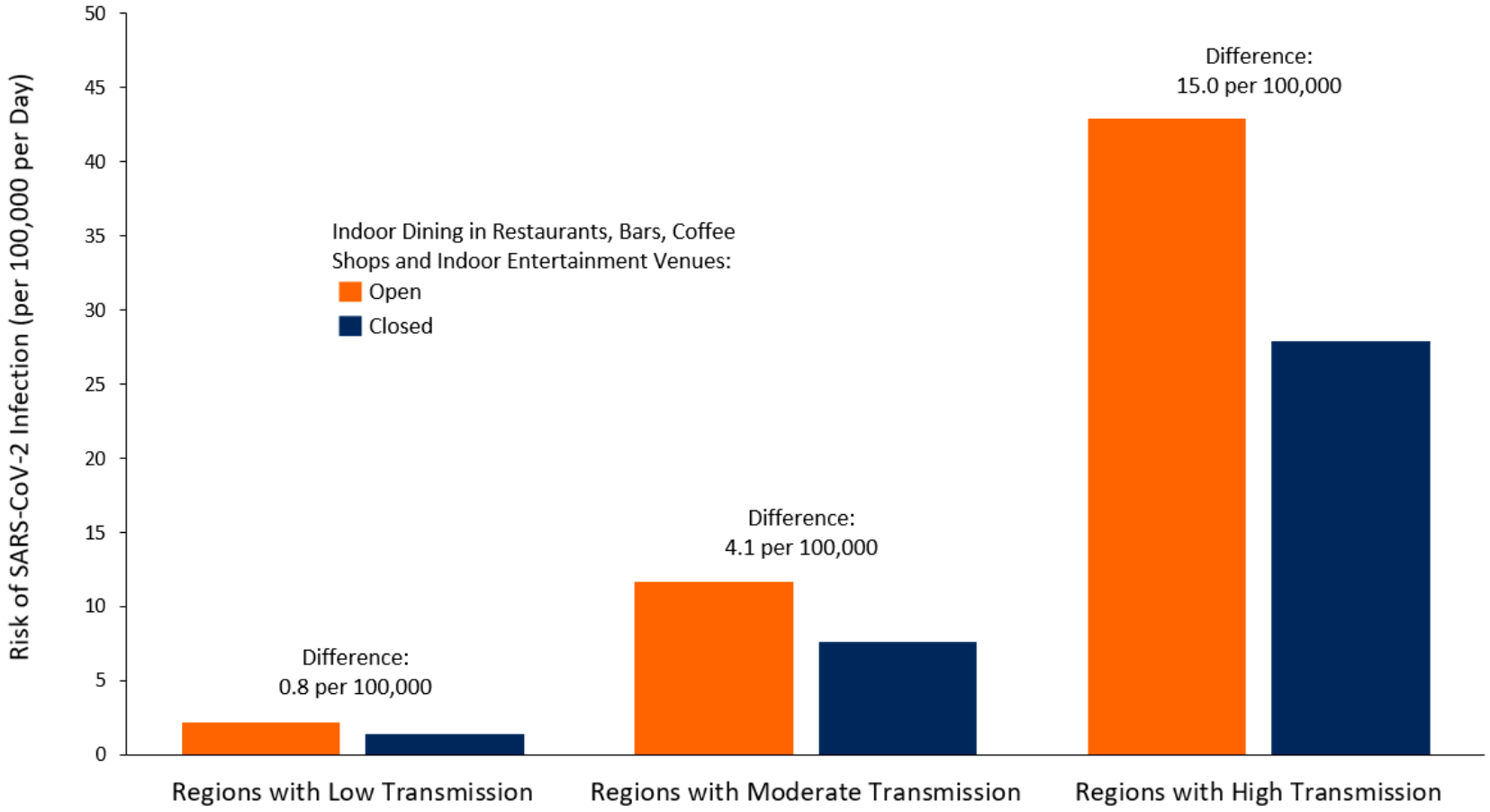
Fisher et al, MMWR Morb Mortal Wkly Rep 2020

Case control study

- United States, July 1 to 29, 2020
  - 154 cases
  - 160 controls
- 2.8-fold increase in odds of infection associated with visit of restaurants during previous 2 weeks

Fisher et al, MMWR Morb Mortal Wkly Rep 2020

Estimated Risks of Transmission in Ontario around Oct 11, 2020



Jüni et al, Science Briefs 2020

nature

https://doi.org/10.1038/s41586-020-2923-3

Accelerated Article Preview

Mobility network models of COVID-19 explain inequities and inform reopening

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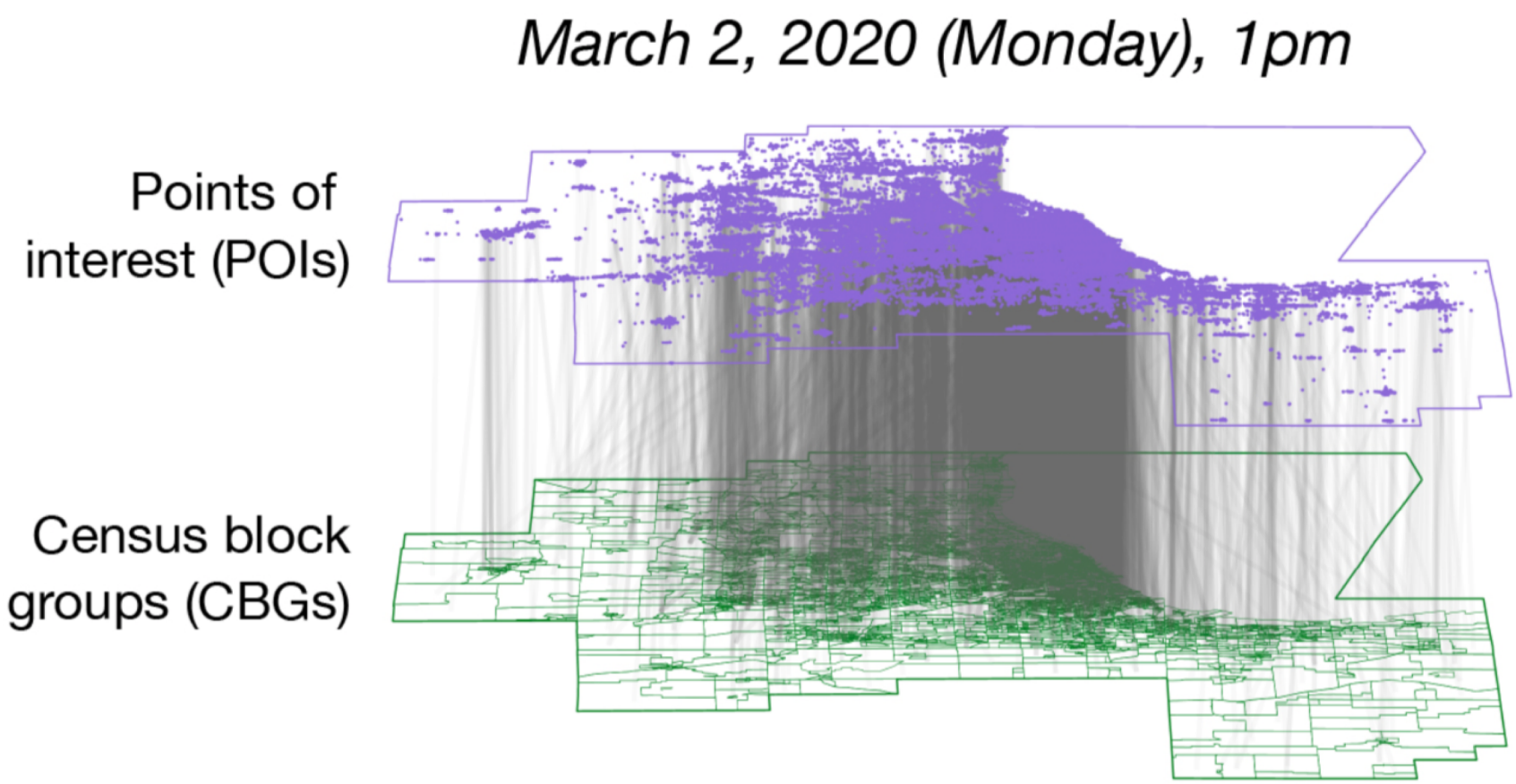
Accelerated Article Preview Published online 10 November 2020

Cite this article as: Chang, S. et al. Mobility network models of COVID-19 explain inequities and inform reopening. *Nature* https://doi.org/10.1038/s41586-020-2923-3 (2020).

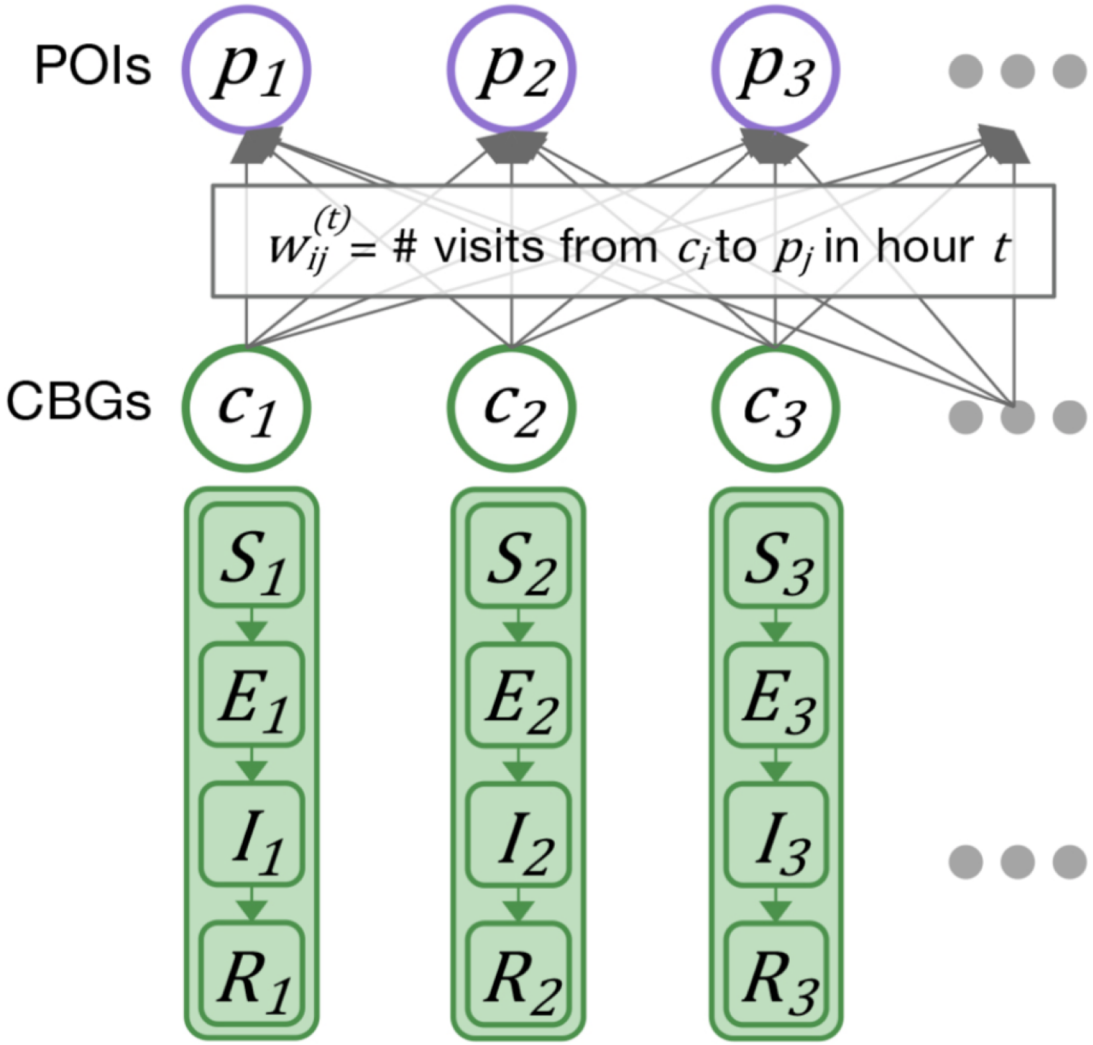
Serina Chang, Emma Pierson, Pang Wei Koh, Jaline Gerardin, Beth Redbird, David Grusky & Jure Leskovec

Mobility Networks, Chicago



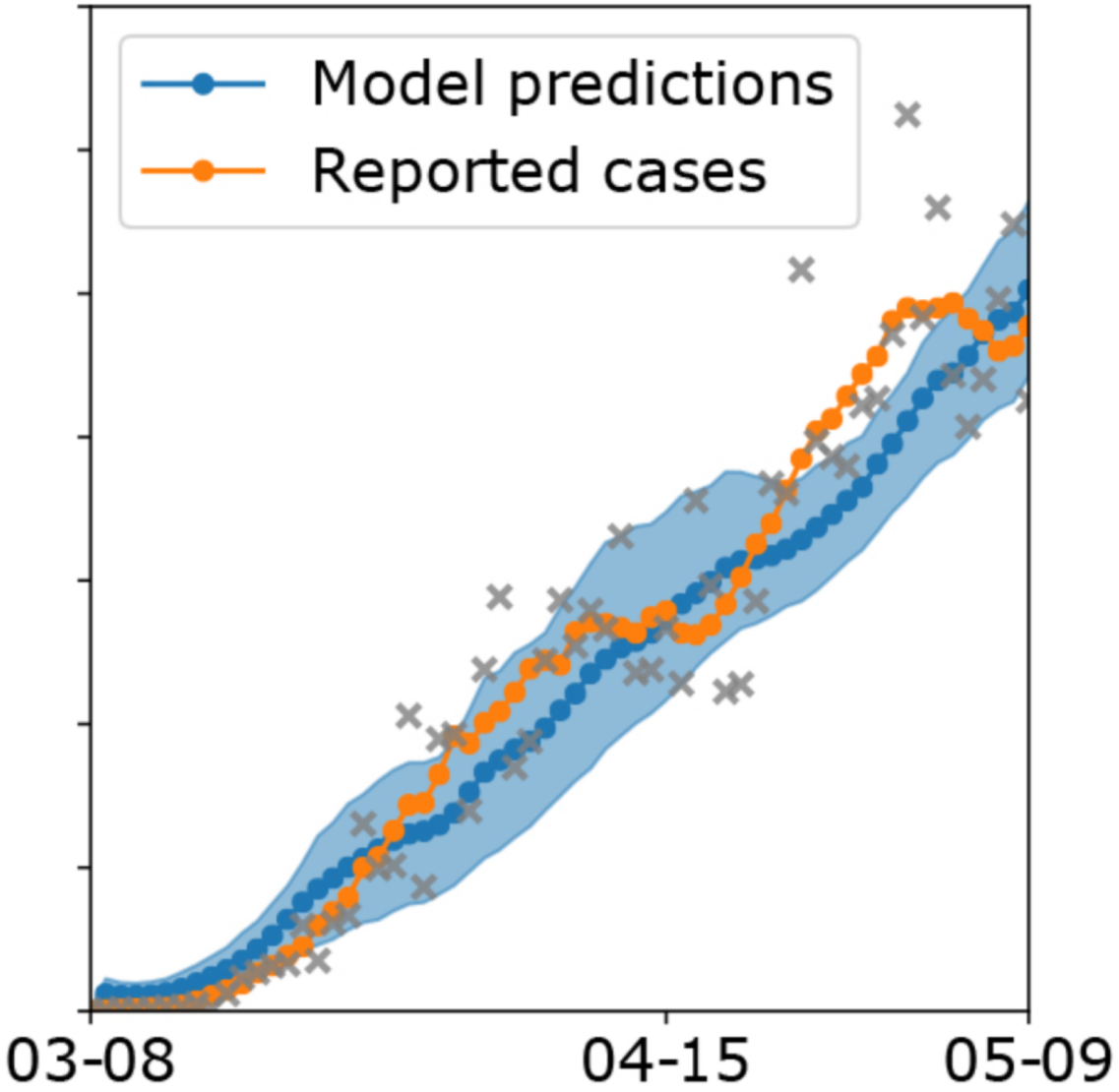
Chang et al, Nature 2020

Epidemiological model



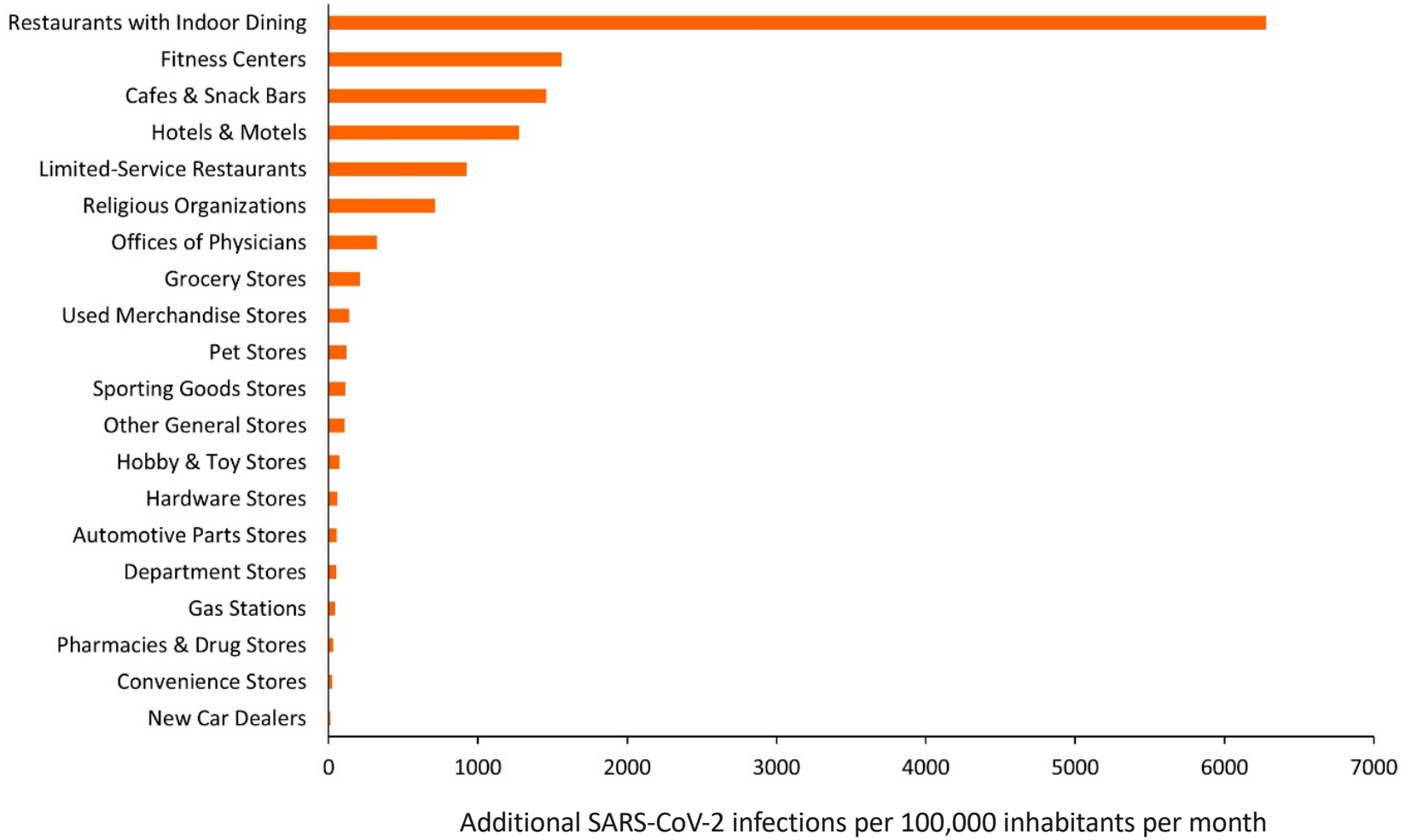
Chang et al, Nature 2020

Model fit, Chicago



Chang et al, Nature 2020

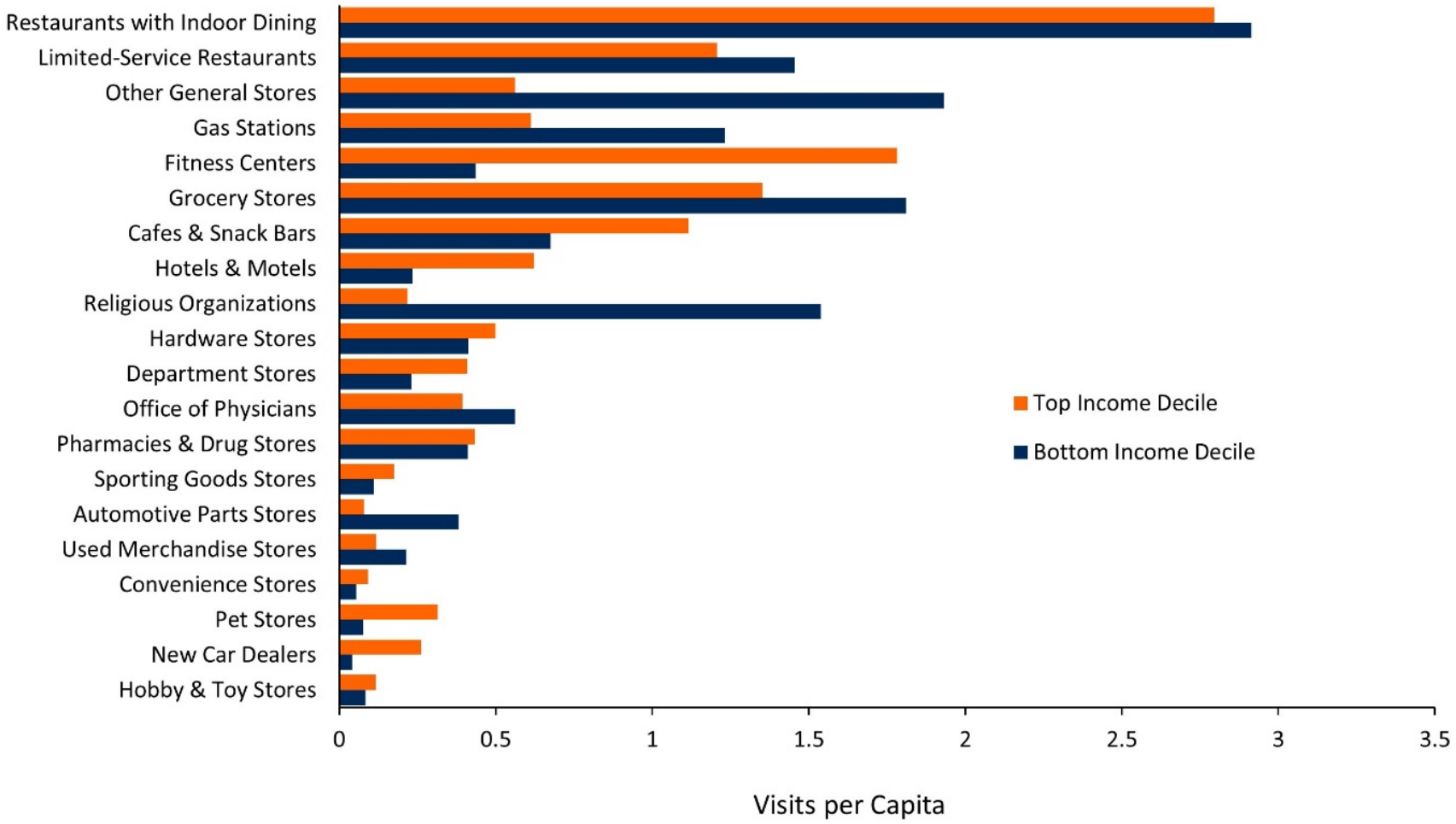
Additional infections associated with opening venue



Private gatherings not ascertained

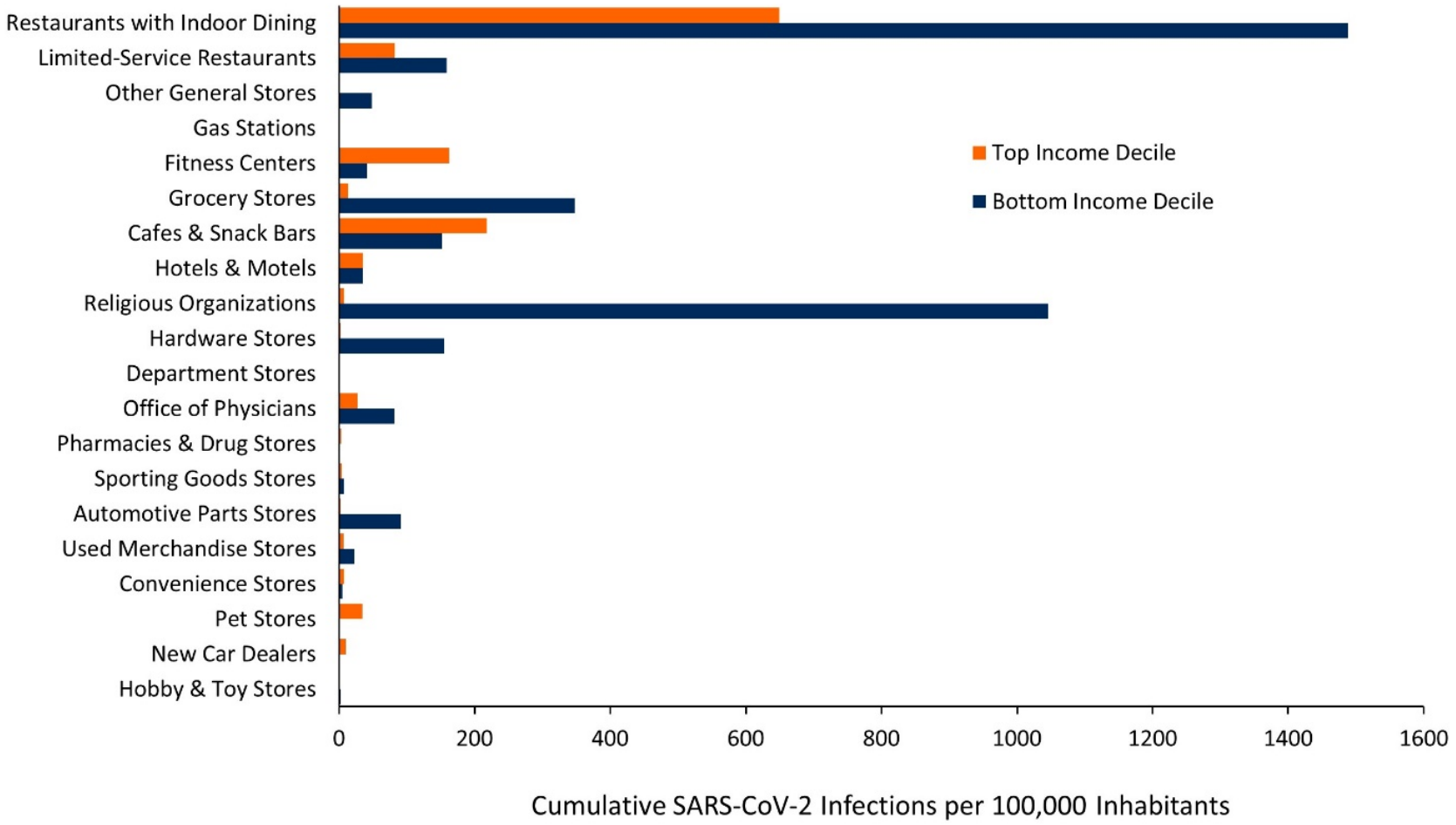
Adapted from Chang et al, Nature 2020

Visits per person, Chicago, March 1 to May 2, 2020, by income



Adapted from Chang et al, Nature 2020

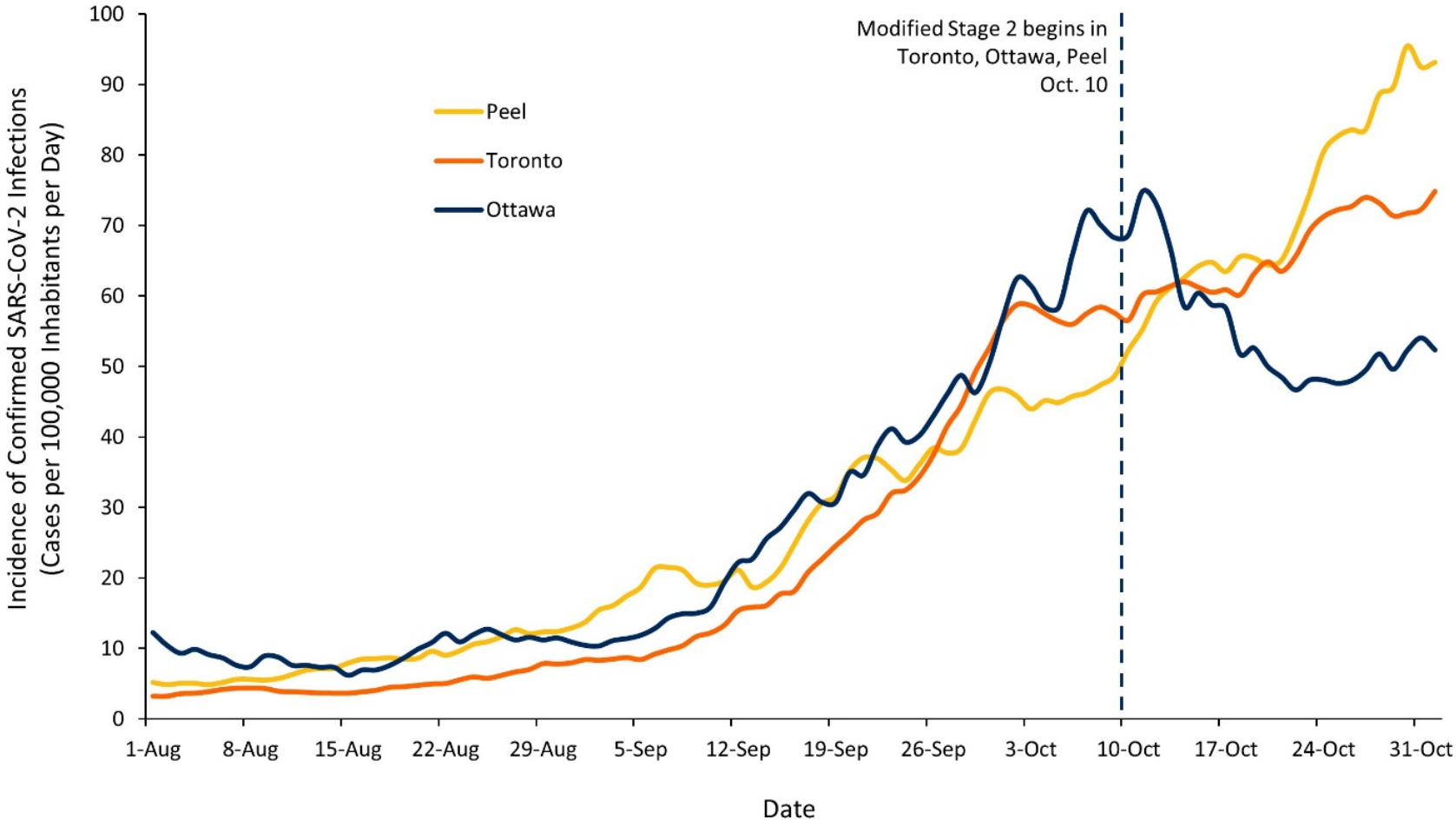
Additional infections associated with opening venue, by income



Adapted from Chang et al, Nature 2020

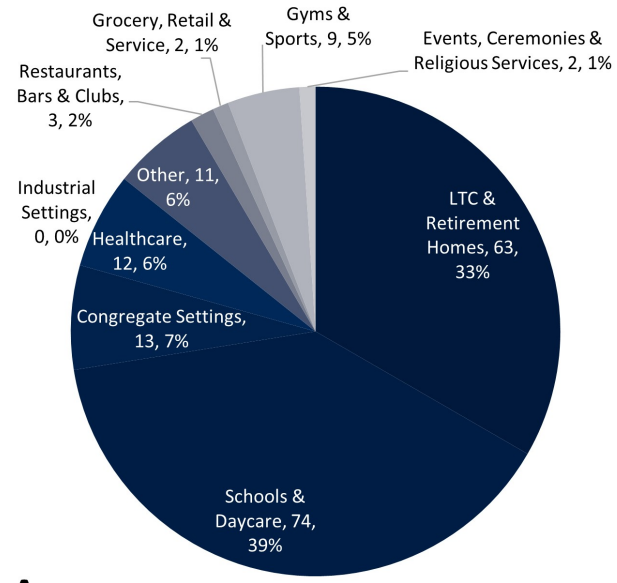
Impact?

Interpretation of Slopes Difficult Because of Temporary Testing Backlog

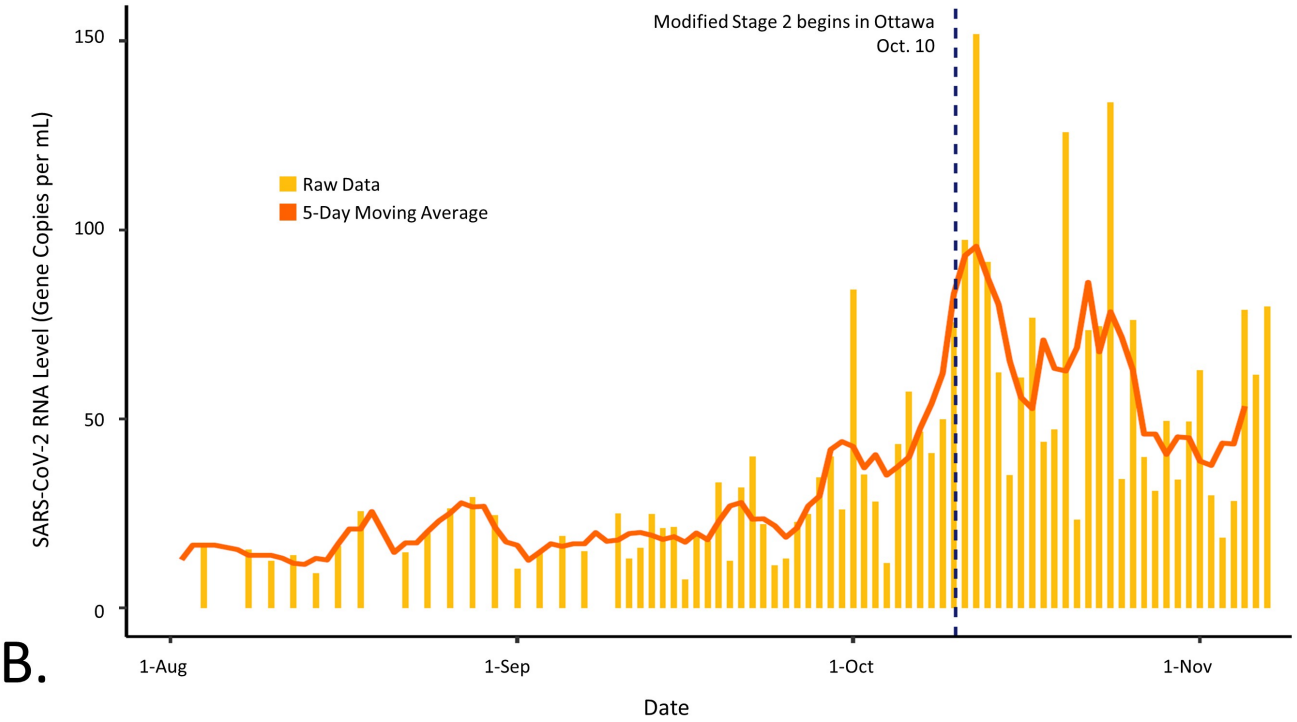


Data from the Case and Contact Management System (CCM).
Extracted November 2, 2020.

Modified Stage 2 associated with Decrease of Viral RNA in Wastewater in Ottawa



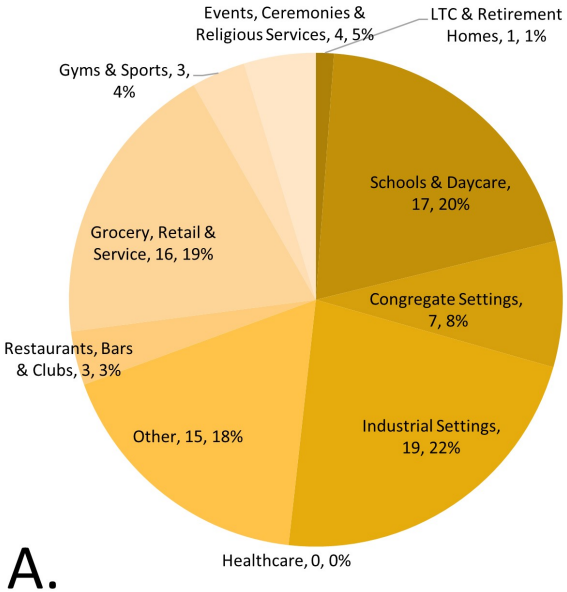
A.



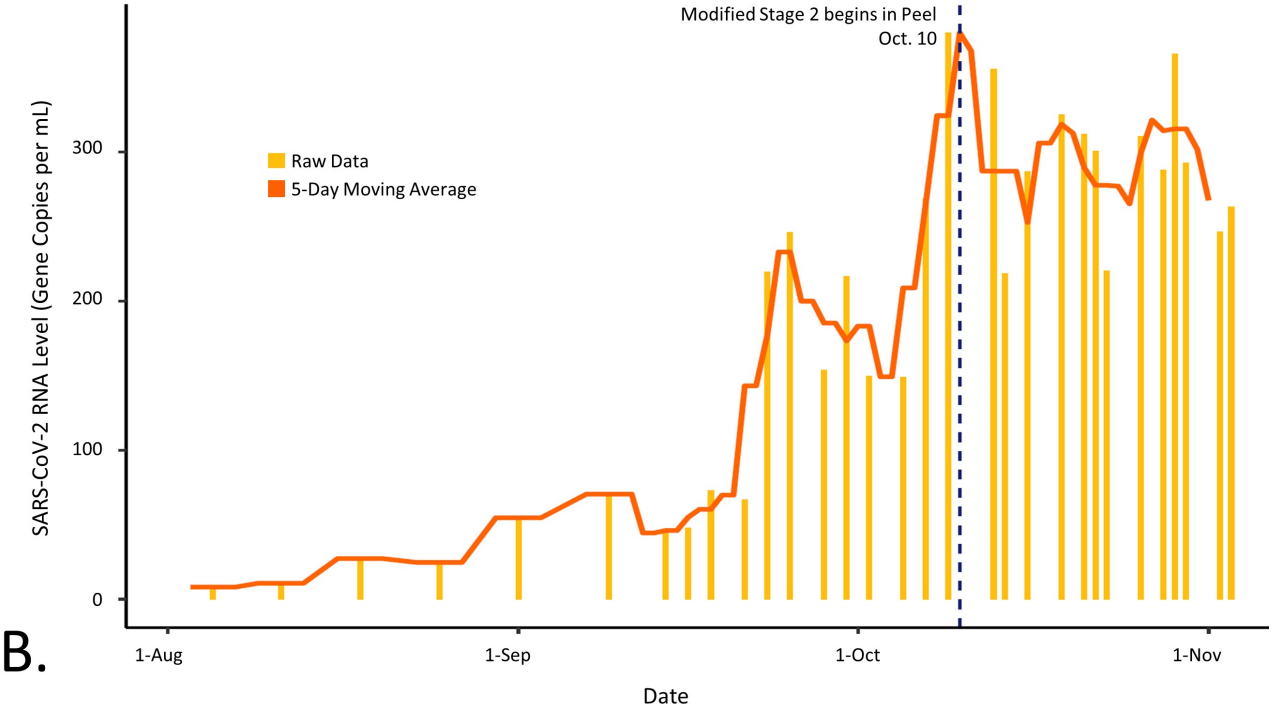
B.

Pie chart data from the Case and Contact Management System (CCM). Extracted October 25, 2020.
Bar graph data from Delatolla R, personal communication. November 7, 2020.

Modified Stage 2 associated with stabilization of Viral RNA in Wastewater in Peel



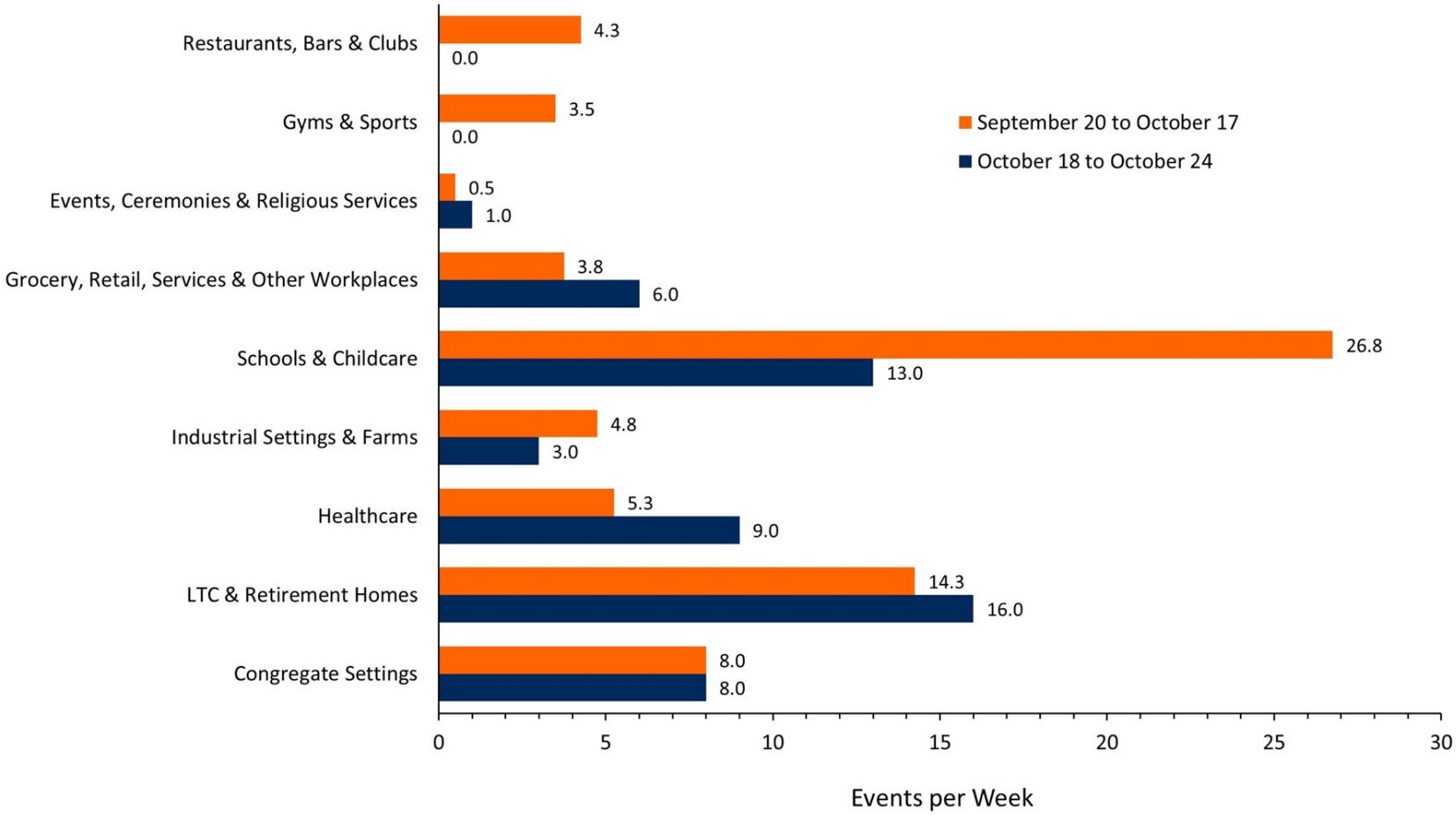
A.



B.

Pie chart data from the Case and Contact Management System (CCM). Extracted October 25, 2020.
Bar graph data from Servos M, personal communication. November 3, 2020.

Outbreaks as marker of impact of restrictions in 3 regions combined



Data from the Case and Contact Management System (CCM Plus). Extracted October 25, 2020.

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