

Surveillance Advances
Progrès dans le domaine de la surveillance

CANCOVID-Preg: A pan-Canadian surveillance program of outcomes for pregnant women and people and their infants who acquired COVID-19 in pregnancy.

CANCOVID-Preg : un programme pancanadien de surveillance de la santé des femmes enceintes et des personnes et de leurs nourrissons ayant contracté la COVID-19 pendant la grossesse.

March 25, 2025

12:00 – 1:00pm CT / 1:00 – 2:00pm ET

Speaker

Dr. Deborah Money

Head,
Department of Obstetrics & Gynaecology,
University of British Columbia



National Collaborating Centre
for Infectious Diseases
Centre de collaboration nationale
des maladies infectieuses



Public Health
Agency of Canada

Agence de la santé
publique du Canada



Land Acknowledgment:



Both moderators are located in the City of Hamilton, Ontario.

Situated upon the traditional territories of the Erie, Neutral, Huron-Wendat, Haudenosaunee and Mississauga Peoples, this land is covered by the Dish With One Spoon Wampum Belt Covenant, an agreement between the Haudenosaunee and Anishinaabek to share and care for the resources around the Great Lakes.

Today, Hamilton is home to many Indigenous Peoples from across the Turtle Island. We honour the Indigenous Peoples who have lived on and cared for these lands for generations. We are grateful for the opportunity to share and call this place home.

Housekeeping



- Seminar recording and presentation slides will be available shortly after the seminar at the NCCID website: <https://nccid.ca/>
- If you have technical problems with Zoom, please email us at nccid@umanitoba.ca
- The chat box for participants has been disabled for this session. We will use the chat box to share additional information.
- Please use the Q&A tab to submit your questions for our speakers. You can “like” other people’s questions to push them up in priority



Accreditation



Surveillance Advances is a self-approved group learning activity (Section 1) as defined by the Maintenance of Certification Program of the **Royal College of Physicians and Surgeons of Canada**.

The seminar series is also approved by the Council of Professional Experience for professional development hours for members of the **Canadian Institute of Public Health Inspectors**.

If you would like a letter of participation, please complete the survey which will be shared after the seminar.



Today's speaker



Dr. Deborah Money

CM, BSc, MD, FRCSC, FCAHS

Professor & Head

Department of Obstetrics & Gynaecology
University of British Columbia

Clinician Scientist

Women's Health Research Institute

Chair

Infections in Pregnancy committee
International Federation of Gynecology and Obstetrics

CANCOVID-Preg: Canadian Surveillance of COVID-19 in Pregnancy: Epidemiology, Maternal and Infant Outcomes

Deborah Money, CM, MD, FRCSC, FCAHS
Professor and Head, Dept. Ob/Gyn
University of British Columbia

25 March 2025

Land Acknowledgment

The coordinating centre where our research is conducted is on the **traditional, ancestral, and unceded territory** of the x^wməθk^wəyəm (Musqueam), Skwxwú7mesh (Squamish), and səlilwətał (Tsleil-Waututh) Nations.

Background: Respiratory disease during pregnancy

- ▶ In March 2020, at the onset of the pandemic declaration there was very little data on SARS-CoV-2 infection in pregnancy
- ▶ Our pan Canadian team looked to experiences with other respiratory illnesses to help guide clinical management, while simultaneously seeking to rapidly acquire quality data specific to SARS-CoV-2.
- ▶ What we did know:
 - ▶ Pregnancy is associated with complex anatomical, immunological, and physiological changes.
 - ▶ Due to these changes, pregnant women exhibit greater predisposition and susceptibility to some infections.
 - ▶ Pregnant women with lower respiratory tract infection often have more severe illness and have higher rates of admission to hospital and intensive care compared to non-pregnant counterparts.

CANCOVID-Preg Objectives

- ▶ Aim: To provide Canadian data on COVID-19 in pregnancy to support optimal care and inform public policy
- ▶ Objectives:
 - ▶ To determine the burden of COVID-19 on pregnant women and gender diverse people.
 - ▶ To understand the impact of COVID-19 in pregnancy on infant outcomes.
 - ▶ To determine the relationship between SARS-CoV-2 variants and maternal, pregnancy, and infant outcomes.
 - ▶ To report the effect of vaccination on the burden of COVID-19 in pregnant women and gender diverse people and their infants.

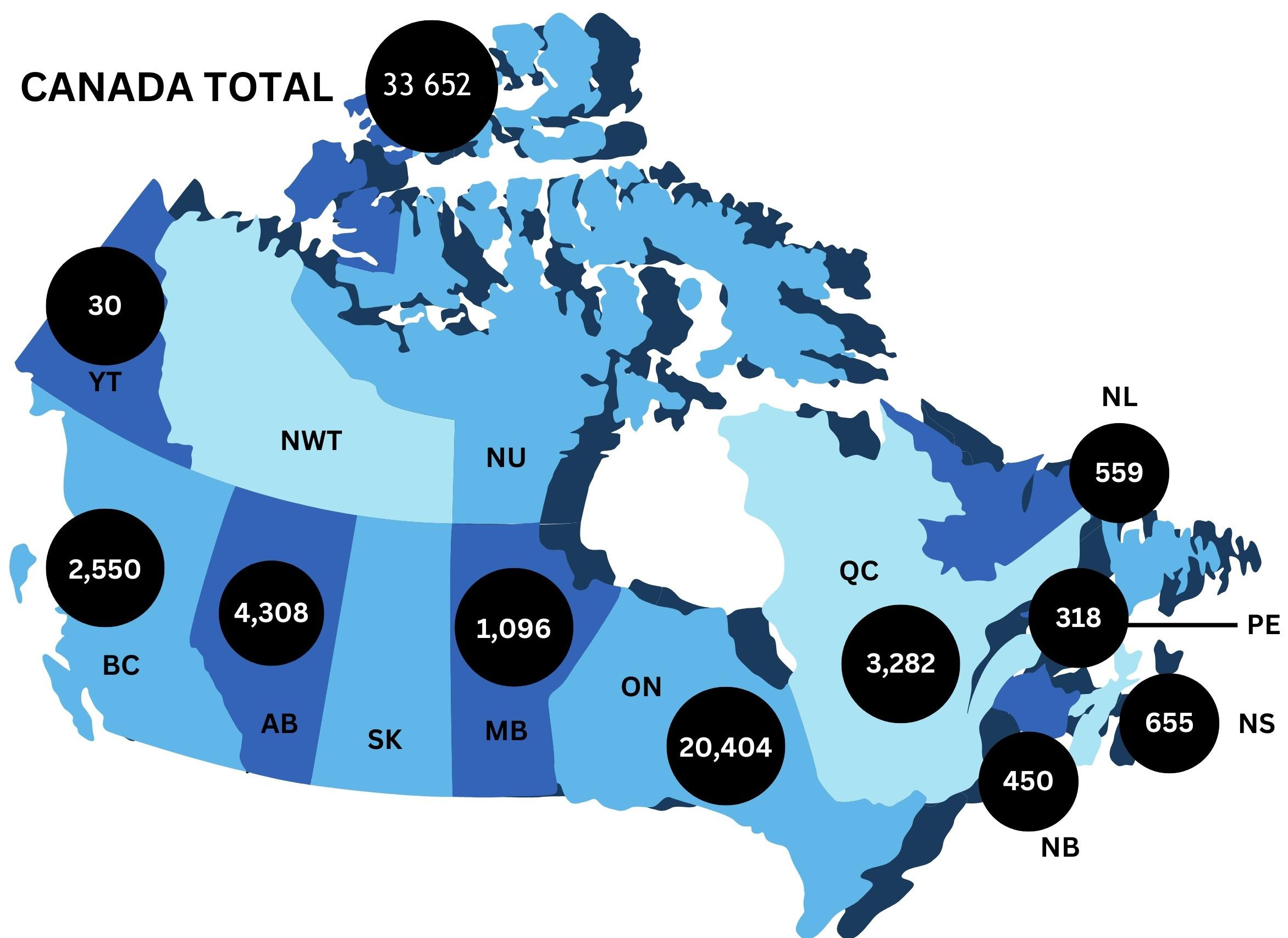
Timeline

- ▶ National surveillance project began in March 2020, responding to the COVID-19 pandemic.
- ▶ Assembled pan-Canadian team to provide critical Canadian data to guide healthcare for pregnant women and their infants both nationally and internationally.
- ▶ Developed protocol including:
 - ▶ Case identification
 - ▶ Data collection
 - ▶ Data management/stewardship
 - ▶ Statistical analysis and metrics
- ▶ Completed data entry from Mid-2020 to December 2023.
- ▶ Data from participating provinces was sent to the coordinating centre for final analysis between January 2024 to March 2025.
- ▶ Funded by contracts and grants from PHAC and CIHR

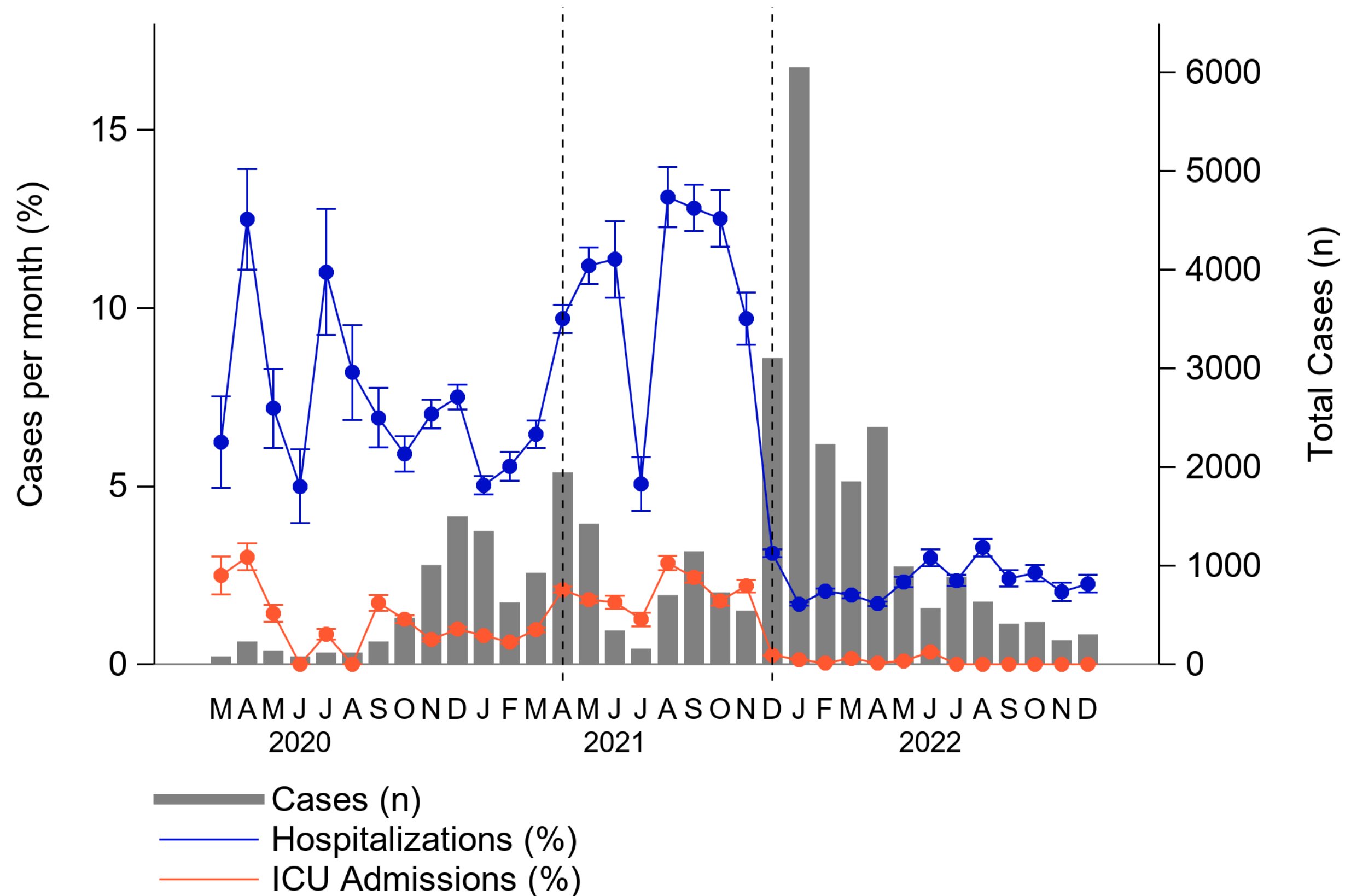
Methods

- ▶ Surveillance program of COVID-19 in pregnancy in Canada.
- ▶ Nine provinces and one territory collected and sent data to the coordinating centre in British Columbia for analysis.
- ▶ Cases were identified by laboratory confirmed SARS-CoV-2 PCR or rapid antigen tests.
- ▶ Pregnancies with a SARS-CoV-2 infection between March 1, 2020, and December 31, 2022 were included.
- ▶ Variant time-period analyses were based on the following estimates of variant dominance in Canada for pre-Delta: 2020-Mar-01 to 2021-Apr-04, Delta: 2021-Apr-05 to 2021-Dec-20, and Omicron: 2021-Dec-21 to 2022-Dec-31.
- ▶ Comparison groups:
 - ▶ Statistics Canada: Positive reproductive aged (20-49 years of age) female SARS-CoV-2 cases used for comparison to our pregnant cohort.
 - ▶ Canadian Institute for Health Information: COVID-19 unaffected pregnancies during the same time frame used to compare perinatal outcomes.

Final Results (March 2020-December 2022)

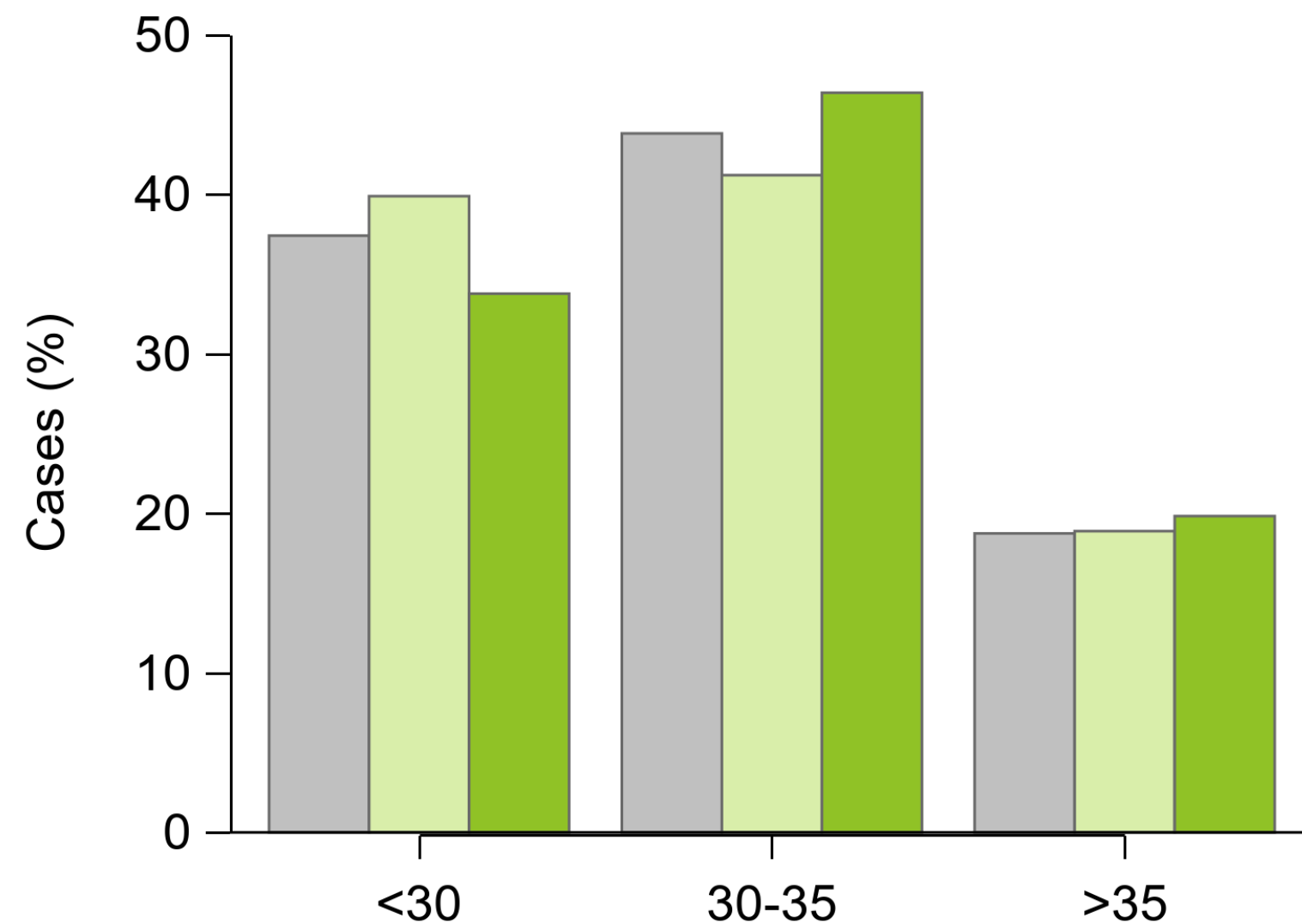


Monthly case counts, hospitalizations, and ICU admissions from March 2020-December 2022

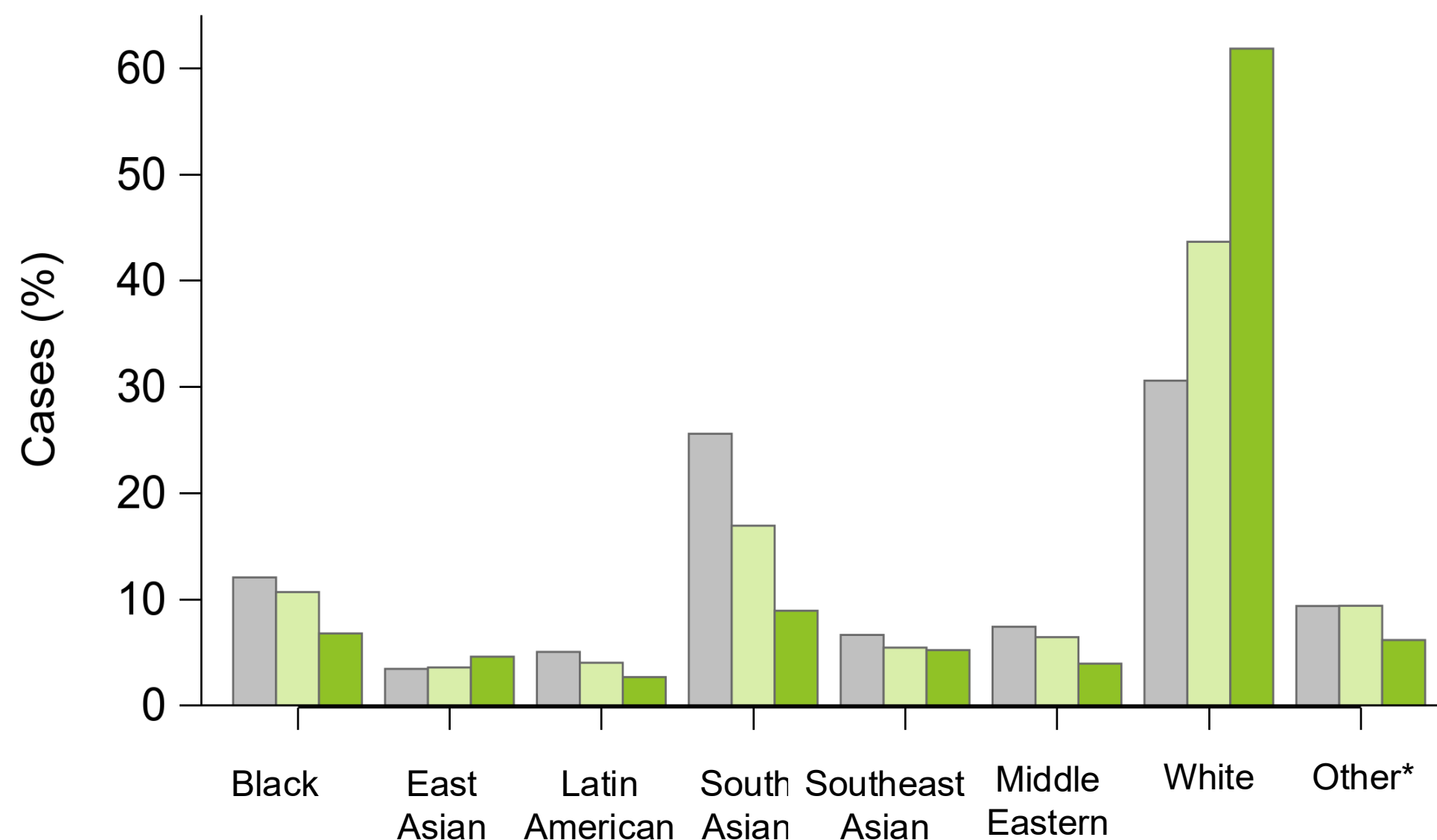


Maternal Demographics

Age



Race

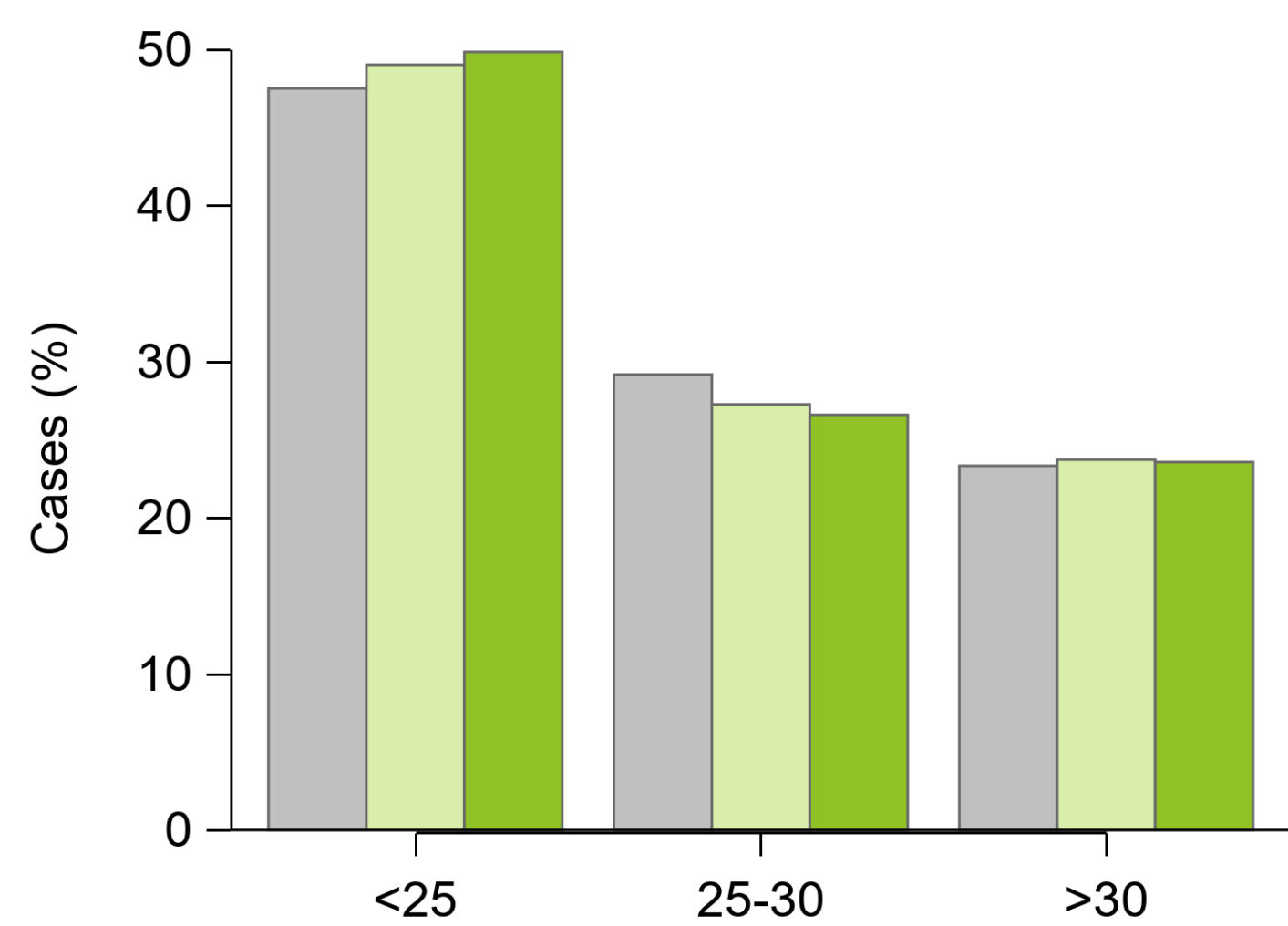


■ Pre-Delta
■ Delta
■ Omicron

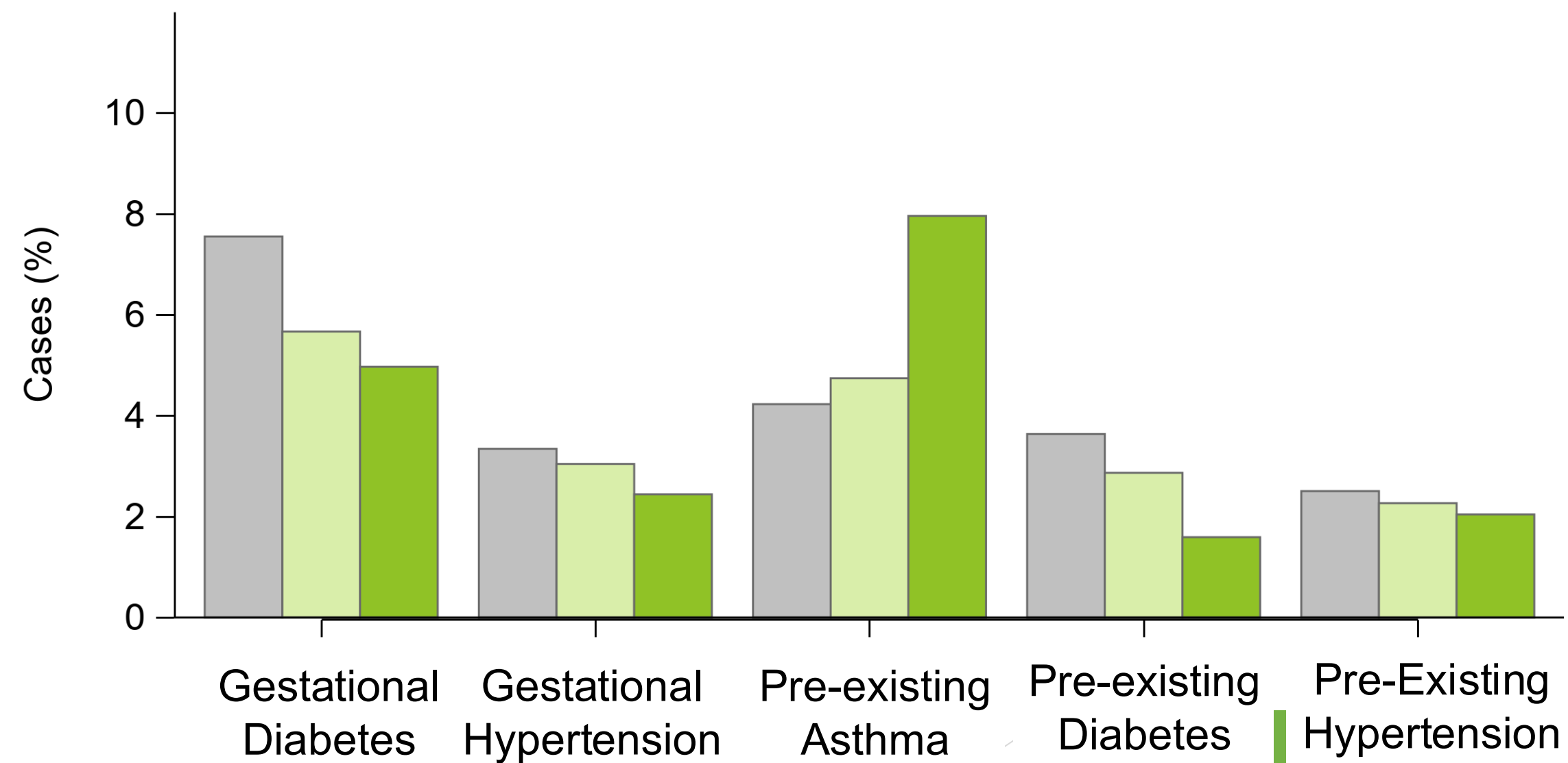
*Due to reporting constraints in some jurisdictions, other includes Indigenous people

Maternal Clinical Characteristics

BMI

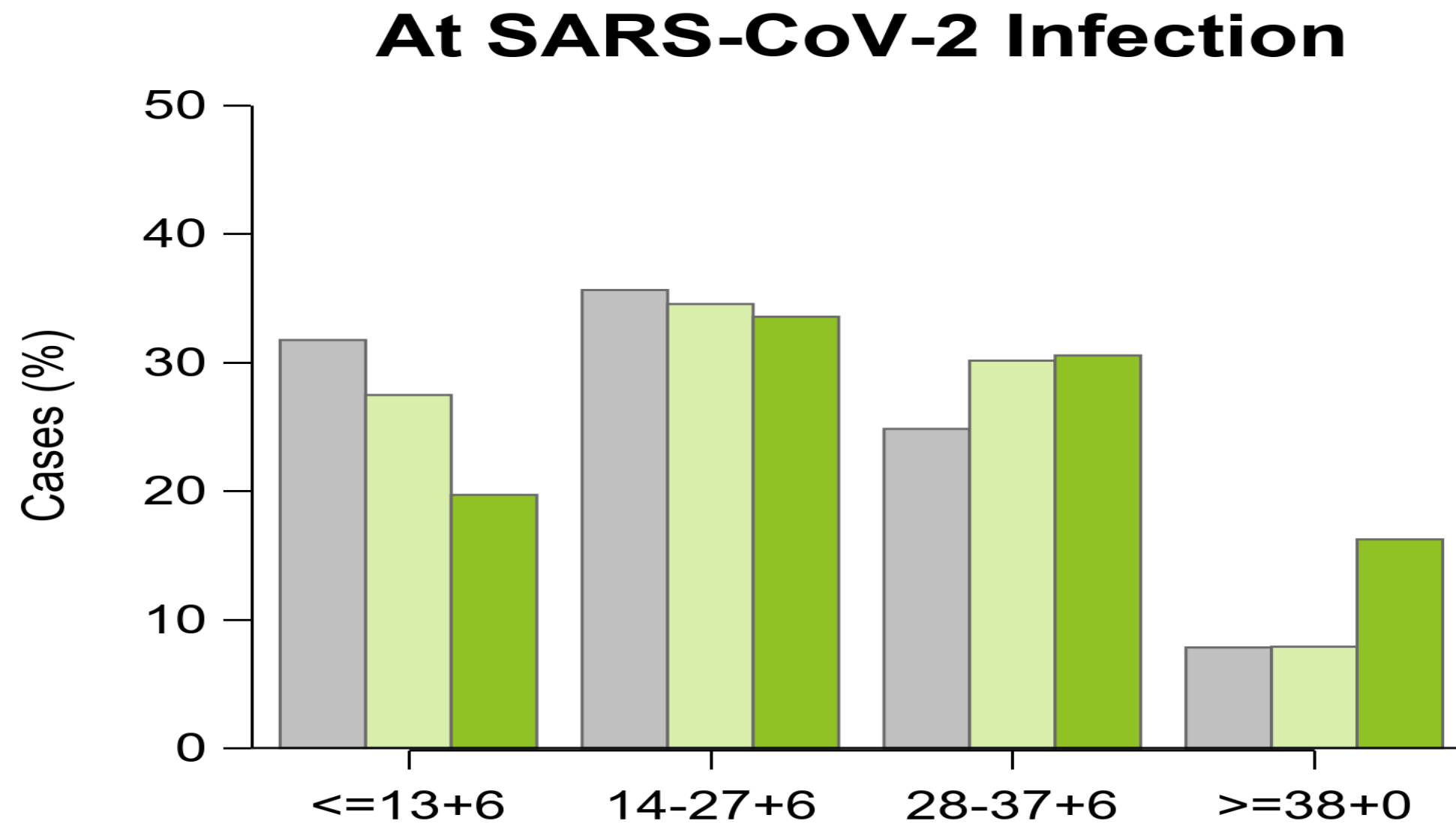


Comorbidities



Pre-Delta
Delta
Omicron

Gestational Age at time of SARS-CoV-2 diagnosis



■ Pre-Delta
■ Delta
■ Omicron

Birth Details

		Pre-Delta (n = 7068)	Delta (n = 7417)	Omicron (n = 19167)	p-value
GA at delivery, n (%)	Preterm	653 (9.6%)	618 (8.7%)	1431 (8.0%)	<.001
Preterm etiology, n (%)	Iatrogenic	222 (47.8%)	193 (48.6%)	664 (49.0%)	0.91
	Spontaneous	242 (52.2%)	204 (51.4%)	690 (51.0%)	
Delivery Mode, n (%)	C-Section	2241 (32.9%)	2322 (32.5%)	5816 (32.9%)	0.86
Stillbirth (≥ 20 w or > 500 g), n (%)		34 (0.5%)	30 (0.4%)	111 (0.6%)	0.16
Loss (< 20 w or < 500 g), n (%)		56 (1.1%)	26 (0.6%)	51 (0.3%)	<.0001

Being pregnant increased the risk of hospitalization or ICU admission due to SARS-CoV-2 infection

		Pregnancies with SARS-CoV-2 infection		Reproductive age females with SARS-CoV-2 infection ¹		Risk Ratio (95% CI)
		n/N	%	n/N	%	
Hospitalization for COVID-19	Pre-Delta	475/7068	6.7	4935/240667	2.1	3.3 (3.0-3.6)
	Delta	786/7417	10.6	5618/193576	2.9	3.7 (3.4-3.9)
	Omicron	379/19167	2.0	12387/720233	1.7	1.1 (1.0-1.3)
ICU admission	Pre-Delta	70/7068	1.0	710/240667	0.3	3.4 (2.6-4.3)
	Delta	148/7417	2.0	918/193576	0.5	4.2 (3.5-5.0)
	Omicron	22/19167	0.1	866/720233	0.1	0.95 (0.6-1.5)

1. Canada Gov. COVID-19 epidemiology update: Current situation. 2024.

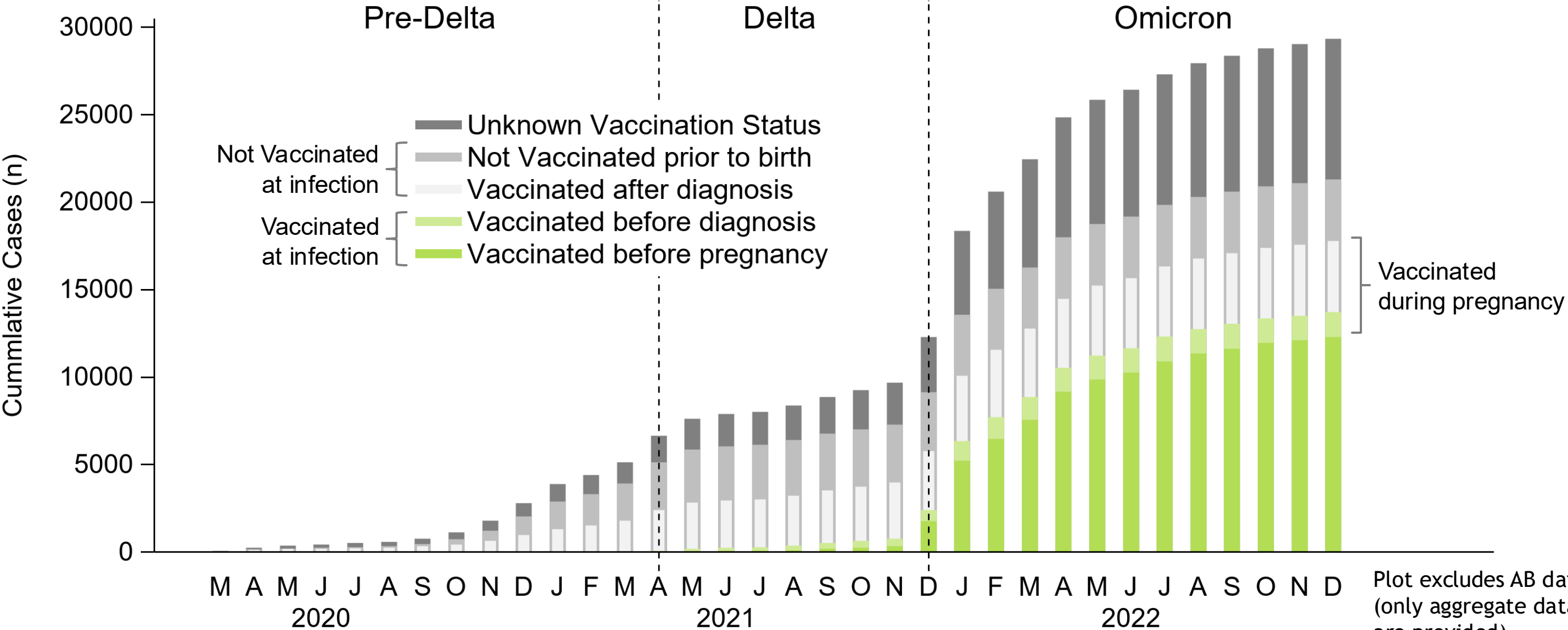
A SARS-CoV-2 infection in pregnancy increased the risk of preterm birth

		Pregnancies with SARS-CoV-2 infection		Pregnancies without SARS-CoV-2 infection ¹		Risk Ratio (95% CI)
		n/N	%	n/N	%	
Preterm birth	Pre-Delta	653/6796	9.6	Not Available		
	Delta	618/7078	8.7	13699/203911	6.7	1.3 (1.2-1.4)
	Omicron	1431/17884	8.0	16169/232227	7.0	1.1 (1.1-1.2)
Caesarean section	Pre-Delta	2241/6808	32.9	Not Available		
	Delta	2322/7134	32.5	68543/208264	32.9	0.99 (0.96-1.02)
	Omicron	5816/17683	32.9	80403/237497	33.9	0.97 (0.95-0.99)
Stillbirth	Pre-Delta	34/6874	0.5	Not Available		
	Delta	30/7141	0.4	1570/193158	0.8	0.5 (0.4-0.7)
	Omicron	111/18266	0.6	2495/269753	0.9	0.7 (0.5-0.8)

1. Information CIHI. Discharge Abstract Database (DAD) metadata, 2024.

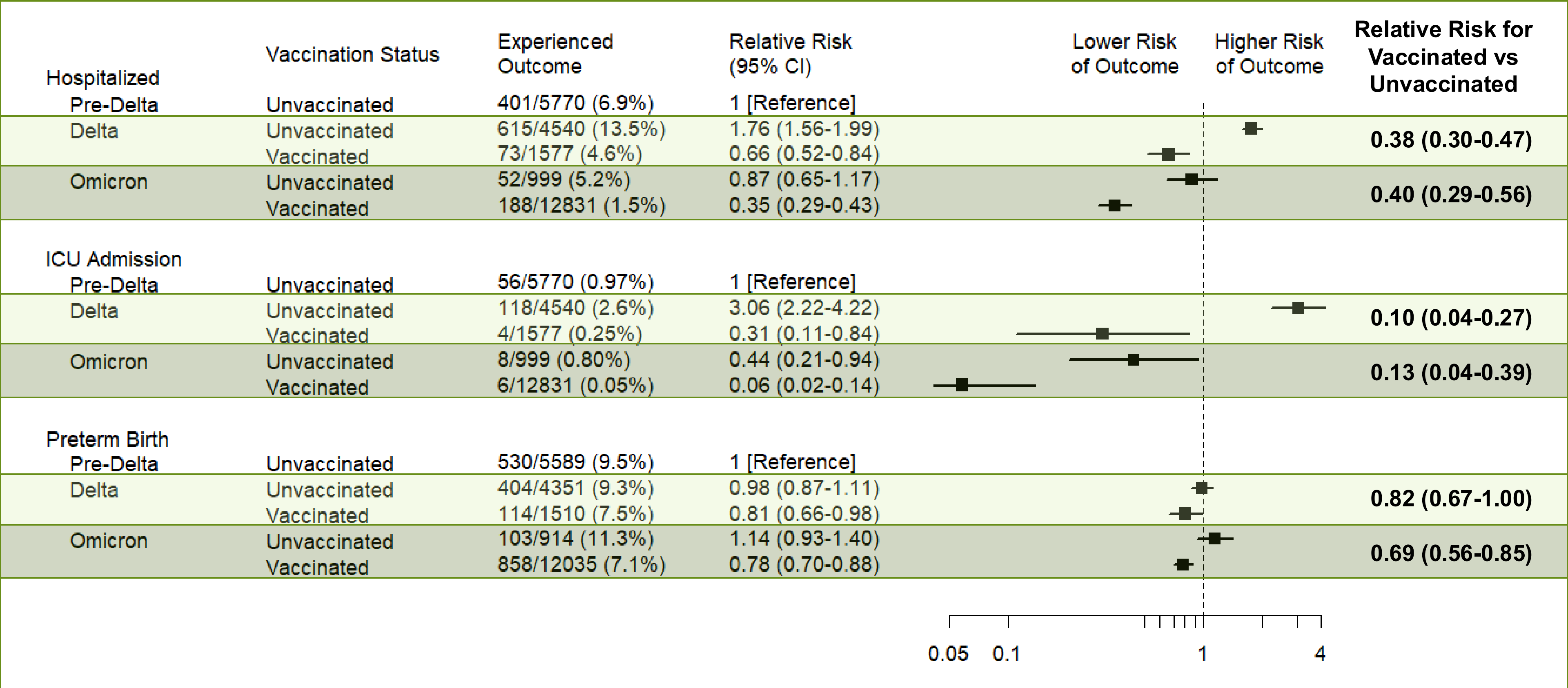
Maternal Vaccination Status

25608 (76%) cases with documented vaccination status at SARS-CoV-2 infection.



Timing of First Vaccination	n=7068	n=7417	n=19167
Before pregnancy	0	563 (7.6%)	11742 (61.3%)
During pregnancy, before infection	37 (0.5%)	996 (13.4%)	961 (5.0%)
During pregnancy, after infection	3162 (44.7)	2456 (33.1%)	782 (4.1%)
After pregnancy	2608 (36.9%)	2084 (28.1%)	217 (1.1%)
Vaccination Status Not Available or Missing Vaccination Dates	1261 (17.8%)	1318 (17.8%)	5465 (28.5%)

Outcomes by Vaccination Status



CANCOVID-Preg informed public policy

Report #1
December 2, 2020

Society of Obstetricians and Gynecologists of Canada (SOGC) **recommends vaccination** for all pregnant individuals due to risk of COVID-19 in pregnancy

Report #2
January 15, 2021

COVID-19 in pregnancy guideline for clinical care - February 15, 2021

Report #3
February 25, 2021

SOGC calls for a Canada-wide policy change to **prioritize pregnant individuals** for vaccination
Vaccination policies updated in: ON, BC, NL, NB, SK, MB

Report #4
June 3, 2021

Pregnant persons at risk of COVID complications similar to age 55-59 year olds

June 2021, all provinces recommend pregnant individuals be vaccinated.

Key Takeaways

- ▶ Vaccination before or during pregnancy reduced the risk of hospitalization or ICU admission due to COVID-19 infection.
- ▶ Racial disparities were seen, especially during the early pandemic period.
- ▶ Comorbidities played a role in increasing risk of disease severity.
- ▶ Significant amounts of time and effort spent on moving data across provincial boundaries was an impediment to timely release of the full data.
- ▶ Improving health equity in surveillance models may require:
 - ▶ Improved data sharing abilities across provincial borders.
 - ▶ Prioritizing collection of sociodemographic data in the clinical setting.
 - ▶ Having more time to discuss with indigenous communities to permit specific collection of their data with them

The CANCOVID-Preg Team

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CIHR IRSC

Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

BC WOMEN'S
HEALTH
FOUNDATION



COVID-19
IMMUNITY
TASK FORCE

GROUPE DE TRAVAIL
SUR L'IMMUNITÉ
FACE À LA COVID-19

Discussion Period

Any questions?

Please use the **Q&A tab** to submit your questions for our speaker. You can “**like**” other people’s questions to push them up in priority.



Closing Remarks



Thank You!

The seminar recording and presentation slides will be posted on <https://nccid.ca/> in the coming weeks.

Please complete our **post-seminar evaluation survey** by scanning its QR code. Today's survey will also be distributed to you shortly after the seminar.

Join us on **Tuesday, April 22, 2025** (1:00-2:00pm ET) for the next seminar to learn more about Canada's Immunization Monitoring Program ACTive (IMPACT).

Visit <https://nccid.ca/surveillance-advances-seminar-series/> for more information about the Surveillance Advances seminar series.

