

REPORT #6

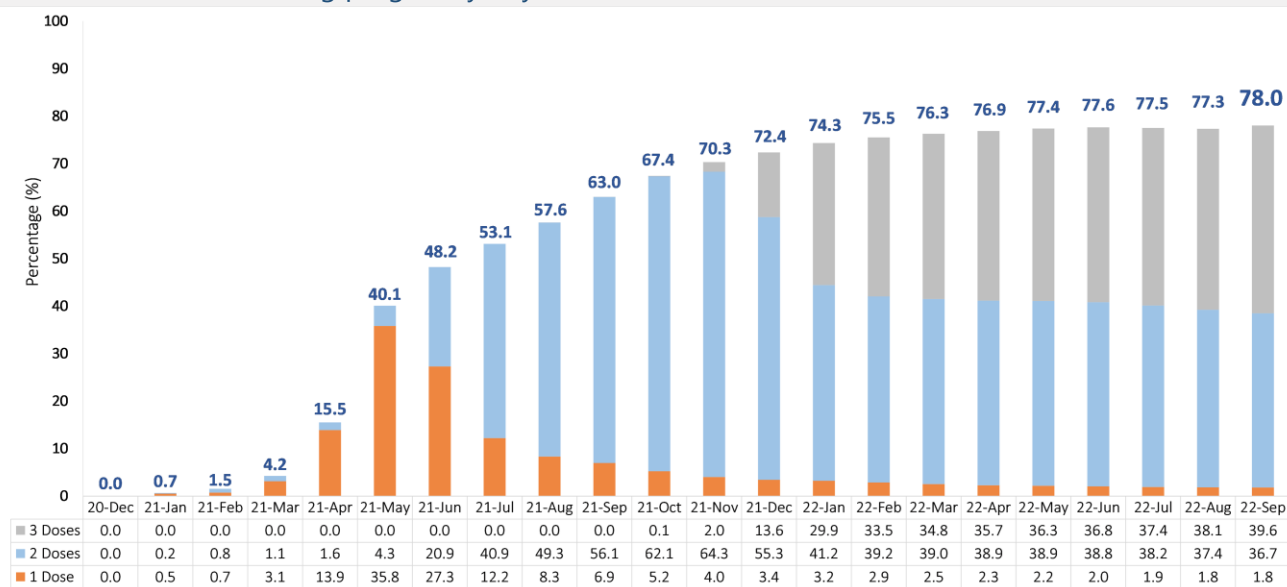
COVID-19 VACCINATION DURING PREGNANCY IN ONTARIO

December 14, 2020 to September 30, 2022

BACKGROUND:

Pregnant individuals are considered a high-risk population for COVID-19 complications, based on higher rates of COVID-19 hospitalization, intensive care unit (ICU) admission, and death compared with non-pregnant individuals. Since late April 2021, pregnant people in Ontario have been prioritized for COVID-19 vaccination as part of Phase 2 of the COVID-19 vaccine program implementation. The **Better Outcomes Registry & Network (BORN) Ontario** (www.bornontario.ca) is evaluating COVID-19 vaccination in pregnant individuals in Ontario. **This report presents data on vaccine coverage among individuals who were pregnant at any point between December 14, 2020 and September 30, 2022.**

FIGURE 1. Estimated percentage of pregnant people who had received at least one COVID-19 vaccine (before or during pregnancy), by calendar month



*Pregnant people in Ontario were prioritized for COVID-19 vaccination on April 23, 2021
 ** Coverage estimates may be underestimated in the later months due to data processing lag times
 *** Data on 4th dose during pregnancy were not yet available, but will be provided in the future

WHAT THE DATA SHOW:



Among people who were pregnant in September 2022, 78.0% had received one or more doses before or during pregnancy:

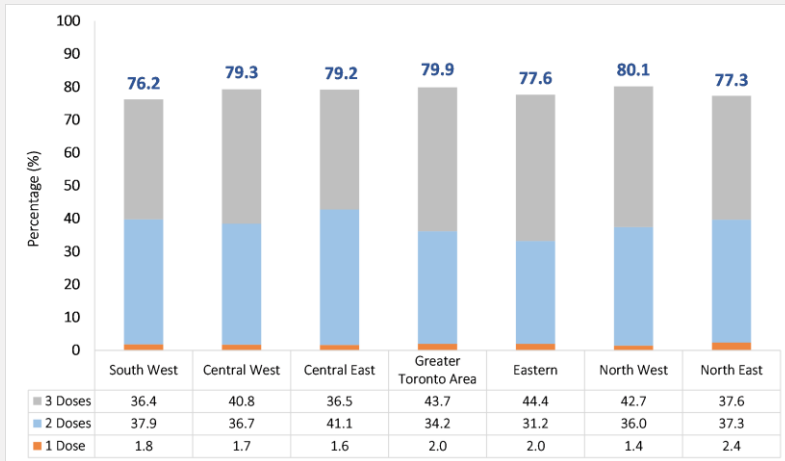
- 36.7% had received two doses of COVID-19 vaccine before or during pregnancy
- 39.6% had received three doses of COVID-19 vaccine before or during pregnancy
- COVID-19 vaccine coverage (at least one dose) in the pregnant population remains lower than in the general female population of reproductive age in Ontario (approximately 89% by September 2022)^a

This work is supported by the **Public Health Agency of Canada**, through the **Vaccine Surveillance Reference Group** and the **COVID-19 Immunity Task Force**.

The report is based on data extracted from the Ontario Ministry of Health's COVaxON and from the BORN Information System (BIS).

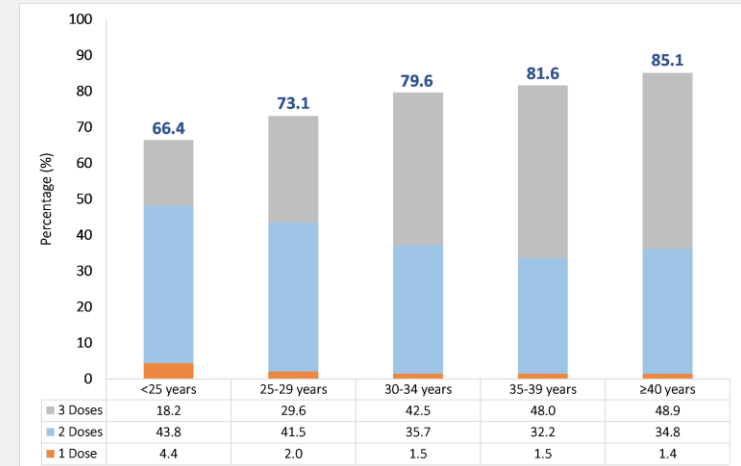
Disclaimer: the results of this report may differ from other reported estimates due to differences in data sources and data processing lag times.

FIGURE 2. COVID-19 vaccine coverage (≥1 dose before or during pregnancy) in the pregnant population by Public Health Region in September 2022



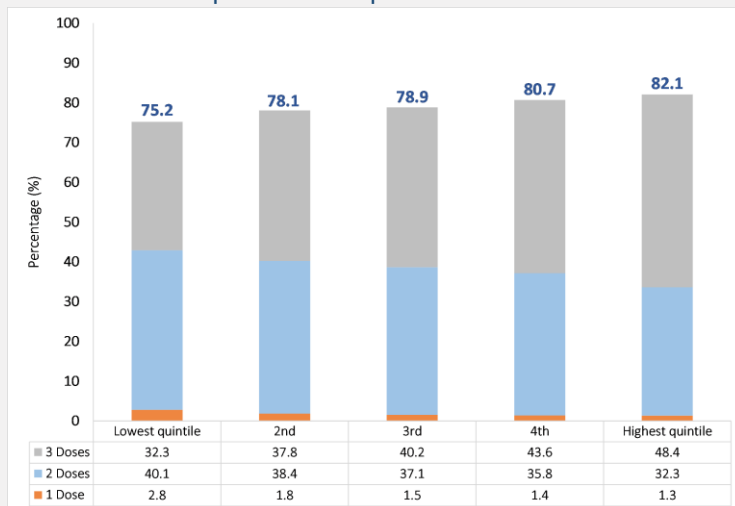
*Completed pregnancies and pregnancies ongoing as of September 30, 2022
** Coverage estimates may be underestimated due to data processing lag times

FIGURE 3. COVID-19 vaccine coverage (≥1 dose before or during pregnancy) in the pregnant population by maternal age in September 2022



*Completed pregnancies and pregnancies ongoing as of September 30, 2022
** Coverage estimates may be underestimated due to data processing lag times

FIGURE 4. COVID-19 vaccine coverage (≥1 dose before or during pregnancy) in the pregnant population by neighbourhood income quintile in September 2022



*Completed pregnancies and pregnancies ongoing as of September 30, 2022
** Coverage estimates may be underestimated due to data processing lag times

WHAT THE DATA SHOW:

Among people who were pregnant in September 2022:

- 3-dose vaccine coverage across Public Health Regions ranged from 36.4% to 44.4%
- 3-dose vaccine coverage across age groups varied from 18.2% to 48.9%
- 3-dose vaccine coverage across income quintiles varied from 32.3% to 48.4%
- The gradient in vaccine coverage with at least one dose across age groups and income quintiles decreased considerably since September 2021 (see [Report #3](#))^b



BIRTH OUTCOMES

Data from the BORN Information System were used in two studies to investigate the association of COVID-19 vaccination in pregnancy with maternal and neonatal outcomes:

1. A study published in the *Journal of the American Medical Association*^e using BORN Information System data explored outcomes for over 97,500 pregnant individuals (23% of whom had received at least one dose of COVID-19 vaccine) who gave birth between December 14, 2020 to September 30, 2021, and their newborns following **COVID-19 vaccination during pregnancy**. Vaccinated individuals had ***no increased risk*** of postpartum hemorrhage, chorioamnionitis, cesarean delivery, and their babies ***did not have*** higher rates of admission to neonatal intensive care unit and low newborn 5-minute Apgar score compared with those who were not vaccinated during pregnancy. See infographic at this [link](#)^d.
2. A study published in the *British Medical Journal*^e using BORN Information System data explored the risk of preterm birth, small-for-gestational-age at birth, and stillbirth, following **COVID-19 vaccination during pregnancy**, for over 85,000 pregnant individuals (51% of whom had received at least one dose of COVID-19 vaccine) who gave birth from May 1 to December 31, 2021. Individuals who had been vaccinated **during pregnancy** had ***no increased risk*** of preterm birth before 37 weeks (overall or spontaneous preterm birth), very preterm birth (<32 weeks), small-for-gestational-age at birth (<10th percentile), or stillbirth (fetal death at ≥20 weeks) compared with those who were not vaccinated during pregnancy. See infographic at this [link](#)^f.

COVID-19 VACCINATION DURING AND AFTER PREGNANCY

Data from the BORN Information System were used in two studies to describe COVID-19 vaccination in the pregnant population:

1. A study explored COVID-19 **vaccine coverage (≥1 dose before or during pregnancy)** and evaluated factors associated with **vaccine series initiation (receiving dose 1 during pregnancy)**. Among more than 200,000 individuals who were pregnant between December 14, 2020 and December 31, 2021, coverage with at least one dose increased to 71% by the end of the study period, which was more than 16 percentage points lower than in the general female population of reproductive age in Ontario (approximately 88% by the end of 2021^g). Vaccine series initiation during pregnancy was significantly lower among younger individuals, who reported smoking or substance use during pregnancy, who did not have their first prenatal care visit in the first trimester, and who resided in a rural area or a neighbourhood with lower income and higher material deprivation. *The study is currently under review with a journal.*
2. A study explored COVID-19 **vaccine series initiation in recently pregnant people (≥ 1 dose after the date of delivery)** who gave birth between January 1 and December 31, 2021 and were not yet vaccinated at the time of giving birth. Among more than 87,000 individuals who were unvaccinated at the time of giving birth, 65% initiated COVID-19 vaccination by the end of June 2022, which was lower than vaccine coverage in the general female population of reproductive age in Ontario (approximately 92% by early July 2022^h). Factors associated with lower likelihood of COVID-19 vaccine series initiation after pregnancy included younger and older maternal age, smoking and substance use during pregnancy, rural residence, lower neighbourhood income, higher material deprivation and social dependency, and exclusive breastfeeding at time of discharge from hospital/birth centre. *The study is currently under review with a journal.*

References:

- a) Public Health Ontario: COVID-19 vaccine uptake in Ontario: December 14, 2020 to September 25, 2022. Toronto, ON
 b) https://www.bornontario.ca/en/whats-happening/resources/Documents/BORN-COVID-19-Vaccination-during-pregnancy-in-Ontario_Report3.pdf
 c) JAMA 2022;327(15):1478-1487. <https://jamanetwork.com/journals/jama/fullarticle/2790607>
 d) https://www.bornontario.ca/en/news/Outcomes_of_COVID-19_Vaccination_during_Pregnancy_New_JAMA_Study.aspx

- e) BMJ 2022;378:e071416. <https://www.bmj.com/content/378/bmj-2022-071416>
 f) <https://www.bornontario.ca/en/news/no-link-between-covid19-vaccination-in-pregnancy-and-higher-risk-of-preterm-birth-or-stillbirth.aspx>
 g) Public Health Ontario: COVID-19 vaccine uptake in Ontario: December 14, 2020 to January 3, 2022. Toronto, ON
 h) Public Health Ontario: COVID-19 vaccine uptake in Ontario: December 14, 2020 to July 4, 2022. Toronto, ON