Public Health Ontario | Santé publique Ontario

SURVEILLANCE REPORT

COVID-19 Vaccine Uptake in Ontario: December 14, 2020 to April 23, 2023

This report describes vaccine uptake using data extracted from the Ontario Ministry of Health's COVaxON application. Data in this report includes the most current information extracted from COVaxON as of April 24, 2023 at approximately 7:00 a.m., and describes vaccinations reported up to April 23, 2023.

Please visit the interactive Ontario COVID-19 Data Tool to explore COVID-19 vaccination uptake data by public health unit, age group and trends over time.

As of February 3, 2023, PHO moved to monthly reporting of COVID-19 vaccine information. This report is updated **every four weeks**.

Background

The COVID-19 vaccination program began in Ontario on December 14, 2020. Currently, all individuals in the province 6 months of age and older are eligible for a complete series of a Health Canada (HC) authorized COVID-19 vaccine, and all individuals 5 years of age and older are eligible for at least one booster dose.[1] Bivalent COVID-19 vaccine products became available on September 12, 2022 and are recommended as a booster dose at a 6 month interval for individuals 5 years of age and older who have not yet received a booster dose (monovalent or bivalent) since September 1, 2022.[1] As of April 6, 2023, high-risk individuals are further recommended to receive an additional booster dose of a bivalent COVID-19 vaccine product as part of Ontario's spring booster program.[1]

Definition of Terms

As vaccine program eligibility varies by age, the following defintions are used to describe vaccine uptake among individuals **5 years of age and older** (eligible for a bivalent booster):

- **Completed primary series and any booster dose over 12 months ago** refers to individuals that have completed their primary series and have received any number of booster doses (e.g. first booster, second booster) of HC-authorized COVID-19 vaccine over 12 months ago.
- **Completed primary series and any booster dose 6 to less than 12 months ago** refers to individuals that have completed their primary series and have received any number of booster doses (e.g. first booster, second booster) of HC-authorized COVID-19 vaccine 6 to less than 12 months ago.
- **Completed primary series and any booster dose within the previous 6 months** refers to individuals that have completed their primary series and have received any number of booster doses (e.g. first booster, second booster) of HC-authorized COVID-19 vaccine within the previous 6 months.

The definitions used to describe vaccine uptake among individuals **under 5 years of age** are described in the Technical Notes.

Highlights

- To date in Ontario, 1,252,390 doses of the Moderna Spikevax Bivalent BA.1 COVID-19 vaccine have been administered among individuals 6 years of age and older, 1,937,890 doses of the Pfizer-BioNTech Comirnaty Bivalent BA.4/5 COVID-19 vaccine have been administered among individuals 5 years of age and older, and 21,884 doses of the Moderna Spikevax Bivalent BA.4/5 COVID-19 vaccine have been administered among individuals 18 years of age and older (Figure 2, Table 1).

- 14.0% of individuals 5 years of age and older who completed their primary series have received any booster dose in the previous 6 months (Figure 3, Table 2).

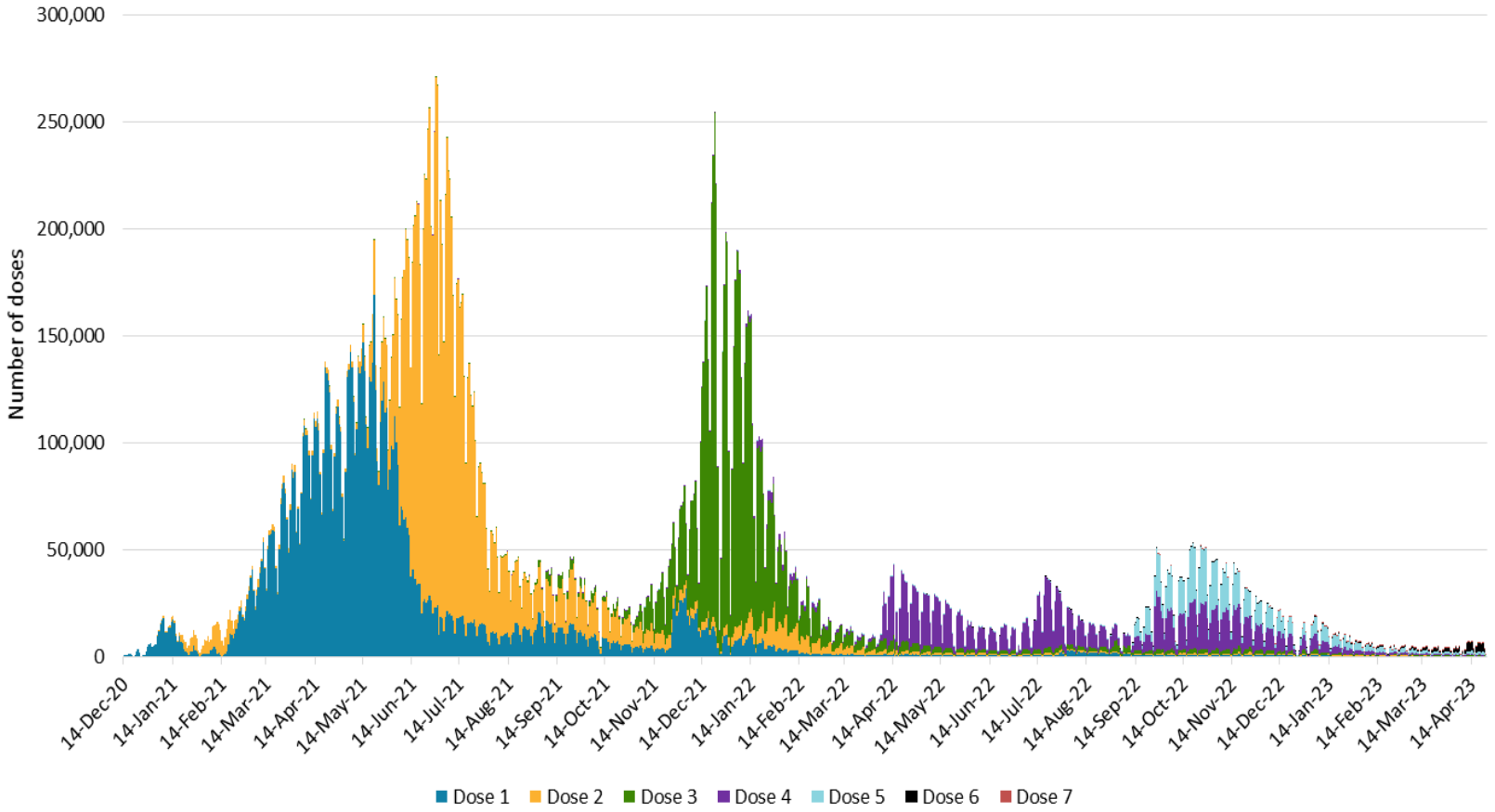
    - The proportion of individuals that completed their primary series and received any booster dose in the previous 6 months increases with age. Over 30% of adults 70 years of age and older received any booster dose in the previous 6 months.

- 13.5% of individuals 5 years of age and older who completed their primary series received any booster dose 6 to less than 12 months ago. While 26.0% of individuals 5 years of age and older received any booster dose over 12 months ago and 31.1% of individuals 5 years of age and older completed their primary series but have received no booster doses.

- To date, 5.2% of children under 5 years of age have completed their primary series (Figure 4, Table 3).

Doses Administered Over Time

Figure 1. Number of COVID-19 vaccine doses administered by dose number and date of dose administration: Ontario



Note:

1. Individuals with seventh doses include immunocompromised individuals who have received an extended 3-dose primary series and a fourth booster (i.e. dose 7).

Figure 2. Number of COVID-19 vaccine doses administered by vaccine product and date of dose administration: Ontario

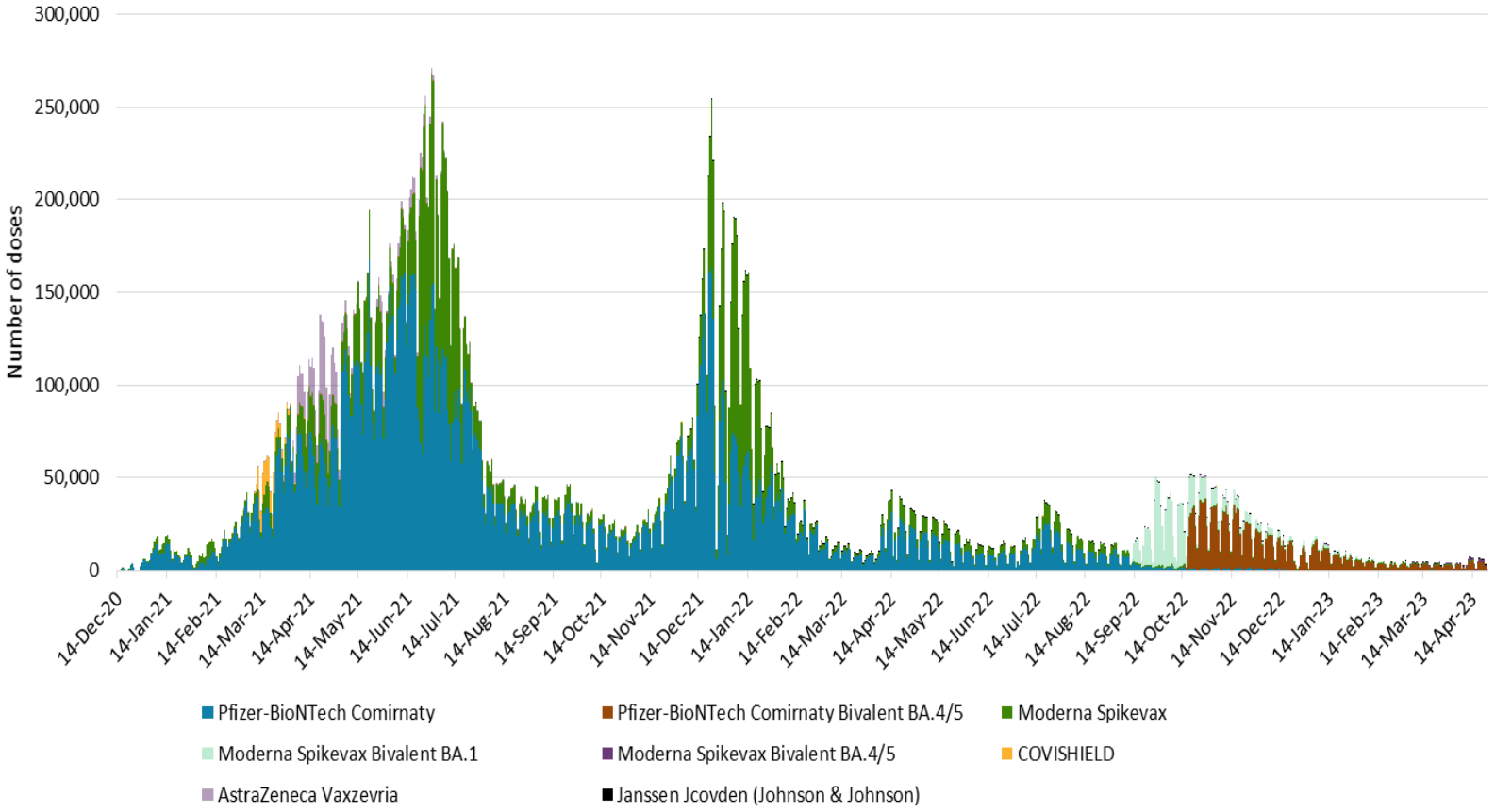


Table 1. Number of bivalent COVID-19 vaccine doses administered by dose number and product among individuals 5 years of age and older: Ontario, September 12, 2022 to April 23, 2023

Bivalent COVID-19 vaccine product	Age (years)	Dose 1	Dose 2	Dose 3	Dose 4	Dose 5	Dose 6	Dose 7
Moderna Spikevax Bivalent BA.1	**6-11**	0	1	22	2	2	0	0
	12-17	31	8	197	360	26	0	0
	18-29	1,722	458	6,718	43,350	3,286	45	3
	30-39	1,590	440	6,679	81,837	10,839	190	3
	40-49	847	279	5,105	94,817	13,153	259	11
	50-59	885	286	5,963	147,134	27,357	474	18
	60-69	1,237	406	6,362	117,558	168,459	2,763	57
	70-79	867	367	4,207	69,619	219,897	4,077	39
	80+	402	253	2,463	36,295	160,208	2,446	11
	Total: 6+	**7,581**	**2,498**	**37,716**	**590,972**	**603,227**	**10,254**	**142**
Pfizer-BioNTech Comirnaty Bivalent BA.4/5	**5-11**	196	150	16,123	4,059	17	0	0
	12-17	735	288	24,754	49,047	809	11	0
	18-29	5,744	1,376	20,043	96,965	21,931	463	23
	30-39	4,038	1,014	15,367	112,589	36,519	1,032	36
	40-49	2,246	608	11,372	125,263	42,628	1,478	63

Bivalent COVID-19 vaccine product	Age (years)	Dose 1	Dose 2	Dose 3	Dose 4	Dose 5	Dose 6	Dose 7
	50-59	2,485	638	11,904	188,236	80,776	2,598	101
	60-69	2,709	893	10,218	153,031	268,862	18,279	284
	70-79	1,586	554	5,118	82,668	274,213	32,422	333
	80+	588	263	2,383	39,327	142,806	17,476	152
	Total: 5+	**20,327**	**5,784**	**117,282**	**851,185**	**868,561**	**73,759**	**992**
Moderna Spikevax Bivalent BA.4/5	**18-29**	31	9	149	156	167	26	1
	30-39	35	8	93	310	577	121	5
	40-49	17	5	60	253	579	151	8
	50-59	12	8	56	377	951	345	12
	60-69	25	13	63	329	1,416	3,131	30
	70-79	12	7	37	208	1,088	5,644	47
	80+	2	6	32	167	886	4,208	11
	Total: 18+	**134**	**56**	**490**	**1,800**	**5,664**	**13,626**	**114**

Notes:

1. Bivalent COVID-19 vaccine products are authorized and recommended as booster doses. These products are not typically expected to be administered as a primary series, and may represent data errors or missing/incomplete data.
2. Individuals 5-11 years of age are only recommended to receive the pediatric product of Pfizer-BioNTech Comirnaty Bivalent BA.4/5 COVID-19 vaccine as a booster dose. Individuals 6-11 years of age are only recommended to receive the pediatric dose of Moderna Spikevax Bivalent BA.1 COVID-19 vaccine as a booster dose.

Table 1b. Number of bivalent COVID-19 vaccine doses administered by dose number and product among individuals 5 years of age and older who already received at least one bivalent COVID-19 vaccine dose (e.g., spring high risk program): Ontario, April 6, 2023 to April 23, 2023

Bivalent COVID-19 vaccine product	Age (years)	Dose 2	Dose 3	Dose 4	Dose 5	Dose 6	Dose 7
Moderna Spikevax Bivalent BA.1	**6-11**	0	0	0	0	0	0
	12-17	0	0	0	2	0	0
	18-29	0	0	1	2	3	0
	30-39	1	0	1	12	12	0
	40-49	0	0	0	13	10	0
	50-59	1	0	0	46	30	0
	60-69	0	0	2	69	331	5
	70-79	0	0	7	70	617	3
	80+	1	0	4	60	410	0
	Total: 6+	**3**	**0**	**15**	**274**	**1,413**	**8**
Pfizer-BioNTech Comirnaty Bivalent BA.4/5	**5-11**	1	0	2	0	0	0
	12-17	0	0	9	99	0	0
	18-29	11	3	10	211	123	5
	30-39	9	4	8	372	230	7
	40-49	1	2	6	394	328	12

Bivalent COVID-19 vaccine product	Age (years)	Dose 2	Dose 3	Dose 4	Dose 5	Dose 6	Dose 7
	50-59	6	3	13	803	727	20
	60-69	9	4	32	844	7,465	65
	70-79	10	5	41	822	14,735	77
	80+	6	4	23	455	8,273	45
	Total: 5+	**53**	**25**	**144**	**4,000**	**31,881**	**231**
Moderna Spikevax Bivalent BA.4/5	**18-29**	2	0	5	63	16	1
	30-39	4	0	2	151	93	4
	40-49	1	1	2	165	111	3
	50-59	1	0	5	294	262	6
	60-69	5	3	7	334	2,482	22
	70-79	1	2	20	307	4,588	31
	80+	1	3	21	286	3,521	6
	Total: 18+	**15**	**9**	**62**	**1,600**	**11,073**	**73**

Notes:

1. Bivalent COVID-19 vaccine products are authorized and recommended as booster doses. These products are not typically expected to be administered as a primary series, and may represent data errors or missing/incomplete data.
2. Individuals 5-11 years of age are only recommended to receive the pediatric product of Pfizer-BioNTech Comirnaty Bivalent BA.4/5 COVID-19 vaccine as a booster dose. Individuals 6-11 years of age are only recommended to receive the pediatric dose of Moderna Spikevax Bivalent BA.1 COVID-19 vaccine as a booster dose.
3. Individuals recommended for the spring booster program include: individuals 65 years of age and older, individuals residing in congregate living settings for seniors or congregate care settings for people with complex medical care needs, pregnant individuals, immunocompromised individuals 18 years of age and older, and individuals 55 years of age and older who identify as First Nations, Inuit or Metis (as well as their household members 55 years of age and older). [1]

Vaccination coverage

Individuals 5 years of age and older (i.e., eligible for bivalent booster)

Figure 3. Provincial coverage estimates among individuals 5 years of age and older by age group: Ontario, December 14, 2020 to April 23, 2023

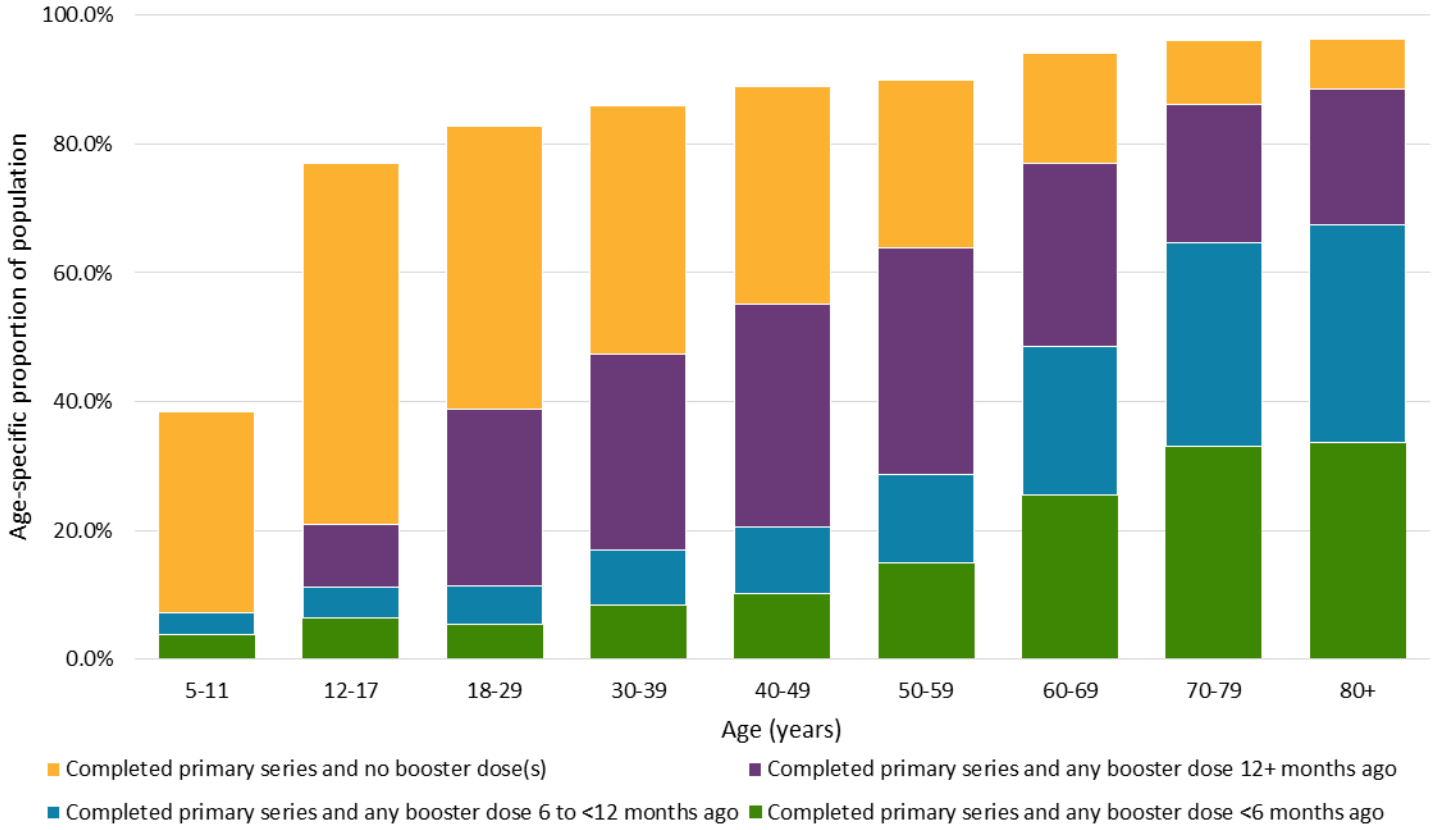
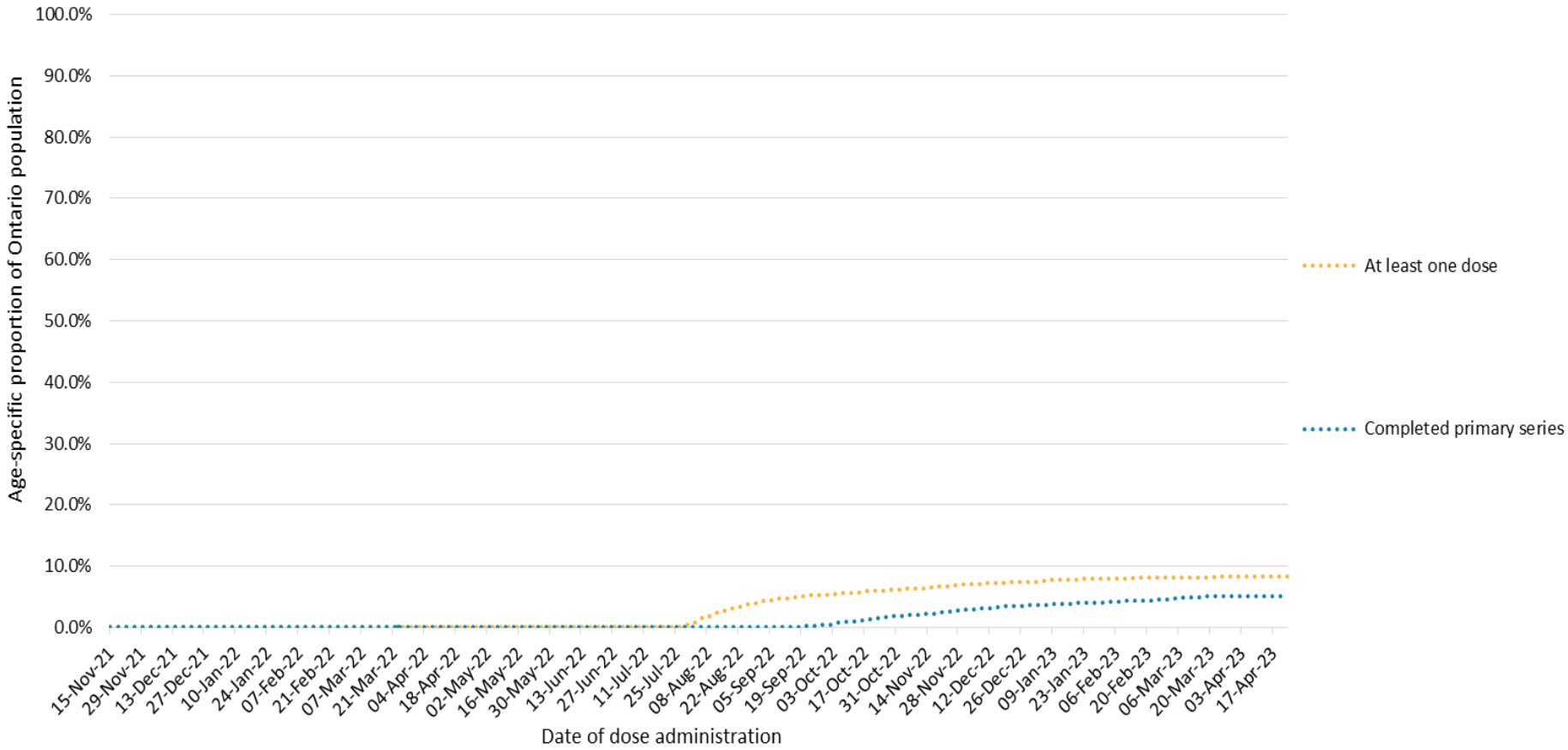


Table 2. Number of individuals 5 years of age and older who completed their primary COVID-19 vaccine series and coverage estimates by booster dose status and age group: Ontario, December 14, 2020 to April 23, 2023

Age (years)	Number of individuals: No booster dose(s)	Number of individuals: Any booster dose 12+ months ago	Number of individuals: Any booster dose 6 to <12 months ago	Number of individuals: Any booster dose <6 months ago	Coverage (%): No booster dose(s)	Coverage (%): Any booster dose 12+ months ago	Coverage (%): Any booster dose 6 to <12 months ago	Coverage (%): Any booster dose <6 months
5-11	338,771	61	35,082	42,243	31.3	<0.1	3.2	3.9
12-17	550,391	94,961	47,058	63,230	56.1	9.7	4.8	6.4
18-29	1,116,260	699,137	153,383	138,507	43.9	27.5	6.0	5.4
30-39	828,473	650,232	183,938	177,738	38.7	30.4	8.6	8.3
40-49	634,240	649,157	193,577	191,906	33.9	34.6	10.3	10.2
50-59	519,567	702,261	275,262	297,800	26.1	35.2	13.8	14.9
60-69	318,289	533,701	431,331	473,471	17.1	28.6	23.1	25.4
70-79	122,977	263,716	386,870	404,507	10.0	21.5	31.6	33.1
80+	53,941	145,756	233,563	232,287	7.8	21.1	33.8	33.6
Total: 5+	**4,482,909**	**3,738,982**	**1,940,064**	**2,021,689**	**31.1**	**26.0**	**13.5**	**14.0**

Individuals under 5 years of age

Figure 4. Provincial COVID-19 vaccine coverage estimates among individuals under 5 years of age: Ontario



Note:

1. Children 0-6 months of age are included in denominators used to calculate coverage estimates, but are not eligible for COVID-19 vaccination.

Table 3. Number of individuals who received a COVID-19 vaccine and coverage estimates among individuals under 5 years of age: Ontario, December 14, 2020 to April 23, 2023

Age (years)	Number of individuals: Initiated primary series	Number of individuals: Completed primary series	Coverage (%): At least one dose	Coverage (%): Completed primary series
<5	23,826	37,700	8.4	5.2

Notes:

1. Children 0-6 months of age are included in denominators used for calculate coverage estimates, but are not eligible for COVID-19 vaccination.

Technical Notes

Definition of Terms

Vaccine series refers to the number of vaccine doses that are needed to complete a primary series. COVID-19 vaccine products currently approved by Health Canada have a two-dose (i.e. Moderna Spikevax, Pfizer-BioNTech Comirnaty, AstraZeneca Vaxzevria/COVISHIELD, and Novavax Nuvaxovid, or one-dose (i.e. Janssen Jcovden) schedule. For children under 5 years of age, Health Canada has also approved a Pfizer-BioNTech Comirnaty three-dose schedule.

Interval refers to the period of time (e.g. number of days) between doses. For all available COVID-19 vaccines, there is a recommended minimum number of days that an individual must wait between doses of a primary series or between booster dose(s).

Initiated primary series refers to individuals that have received only one dose of a two-dose COVID-19 vaccine series whether it is Health Canada (HC) authorized or not, or two doses of a non-HC authorized vaccine. For some children under 5 years of age, this refers to individuals that have received only one or two doses of a three-dose Pfizer-BioNTech Comirnaty vaccine series.

Completed primary series refers to individuals that have received:

- One dose of a one-dose HC-authorized vaccine (i.e. dose one of one),
- Both doses of a two-dose HC-authorized vaccine series (i.e. dose two of two) including mixed series with HC-authorized vaccine products,
- One dose of non-HC authorized vaccine and one dose of HC-authorized vaccine (regardless of the order),
- Three doses of non-HC authorized vaccines,
- Or one dose of HC-authorized vaccine and two doses of non-HC authorized vaccines (regardless of the order).
- For some children under 5 years of age, this refers to individuals that have received three doses of a three-dose Pfizer-BioNTech Comirnaty vaccine series.

Completed primary series and one booster dose refers to individuals that have completed their primary series (as per the definition above) and have received a booster dose of a HC-authorized vaccine. Note: a dose of non-HC authorized vaccine is not considered a booster dose.

Coverage estimate (at least one dose) refers to the proportion of the population that has received at least one dose of any COVID-19 vaccine, whether it is HC-authorized or not.

Coverage estimate (completed primary series) refers to the proportion of the population that has completed their primary series, as per the definition above.

Coverage estimate (completed primary series and one booster dose) refers to the proportion of the population that has completed their primary series (as per the above definition) and received a booster dose of a HC-authorized vaccine.

Data Sources

- COVID-19 vaccination data were based on information successfully extracted from the Ontario Ministry of Health's COVaxON application as of **April 24, 2023 at approximately 7:00 a.m**.

- Ontario population estimate data were sourced from the Ministry of Finance.[2]

Data Caveats

- Data presented may differ from other sources for various reasons, including differing extract times and methodologies for processing COVaxON data.

- COVaxON is a dynamic reporting system, which allows ongoing updates to data previously entered. As a result, data extracted from COVaxON represents a snapshot at the time of extraction and may differ from previous or subsequent reports.

- The data represent vaccination information reported in COVaxON. As a result, all counts may be subject to varying degrees of underreporting due to a variety of factors.

- Due to the expanding vaccine program, which now includes single-dose primary series and booster dose options, vaccine terminology has been updated (e.g. "fully vaccinated" has been updated to "completed primary series") and may not align with other sources. For certain populations (e.g. immunocompromised individuals) three doses are recommended to complete the primary series. Due to challenges in identifying these individuals in the COVaxON data, it was not possible to account for some three-dose primary series in the analysis, and these individuals are classified as per the definitions above.

    - Individuals with seventh doses are likely immunocompromised individuals that received an extended 3-dose primary series and a fourth booster (i.e. a seventh dose)

- Counts reported for doses administered will not align with the number of individuals vaccinated for the following reasons:

    - Counts for the number of doses administered in Ontario exclude doses administered out of province and from non-Ontario stock. However, individuals that received a vaccination out of province or from non-Ontario stock are included in coverage estimates

    - Counts for the number of individuals vaccinated and coverage estimates exclude individuals reported as deceased. However, doses administered to individuals later reported as deceased are included in dose counts.

    - Methods for calculating age differ when reporting on doses administered in the province and vaccinated individuals/coverage estimates. For doses administered, the date of dose administration is used to calculate age and age is interpreted as the age at the time of each dose administration. For individuals vaccinated and coverage estimates the date of data extraction is used to calculate age and age is interpreted as the individual's current age.

- Children 0-6 months of age are included in denominators used to calculate coverage estimates for the <5 age group. However, children 0-6 months of age not eligible for COVID-19 vaccination and therefore are not included in the numerator.

Vaccination Data Processing

- Data includes clients with a dose administration record recorded in COVaxON, which captures a small number of client records with a residential postal code outside of Ontario who may be eligible for vaccination on the basis of working in a high-risk setting (e.g. long-term care home) in Ontario.

- Non-valid dose records are excluded. Non-valid records include doses where the status is reported as 'entered in error', 'invalid', or other similar variations, as well as doses where the status is valid (e.g. 'administered') but that are identified as non-valid client records (e.g. client first and last name were reported as 'test', 'do not use', 'error', 'ignore', or other similar variations).

- For missing dose administration dates and dose administration dates prior to December 14, 2020, the date the administration record was created is used as a proxy.

- Duplicate dose administration records (i.e. clients with multiple dose administration records with the same date) are identified and excluded using personal identifiers, such as health card number, name, date of birth, and postal code, where available, as well as dose administration date.

- After removing duplicate dose administration records, dose number is assigned based on the dose administration dates reported. Dose administration date is also used to determine the dose interval.

    - For clients with multiple doses reported with different administration dates, the first chronological dose is considered the first dose.

    - To determine a date for the second dose, the first subsequent dose administered on or after the product-specific recommended minimum interval of the first dose product, with a 4-day grace period, is used. Doses administered prior to the product-specific recommended minimum interval, with a 4-day grace period, are not considered valid. For example, if there are two subsequent doses that were 7 days and 21 days from a Moderna Spikevax COVID-19 vaccine first dose, respectively, then the dose that is 21 days from the first dose is used as the second dose. Similarly, if there are two subsequent doses that are 10 days and 12 days from the first dose, respectively, then neither dose is used and the individual is not assigned a second dose. The recommended product specific minimum intervals, with a 4-day grace period, as outlined by the National Advisory Committee on Immunization (NACI) are as follows (there is currently no maximum interval for second doses, i.e., no recommendation to restart a vaccine series regardless of the length of delay of the second dose):

        - Pfizer-BioNTech Comirnaty COVID-19 vaccine: 15 days (19 days with a 4-day grace period).[3]

        - Moderna Spikevax COVID-19 vaccine: 17 days (21 days with a 4-day grace period).[3]

        - AstraZeneca Vaxzevria/COVISHIELD COVID-19 vaccine: 24 days (28 days with a 4-day grace period).[3]

        - Novavax Nuvaxovid COVID-19 vaccine: 17 days (21 days with a 4-day grace period).[3]

        - Janssen Jcovden, Moderna Spikevax Bivalent BA.1, Moderna Spikevax Bivalent BA.4/5, Pfizer-BioNTech Comirnaty Bivalent BA.4/5, non-HC authorized vaccine products or unspecified/missing products: 17 days (21 days with a 4-day grace period).

    - To determine a date for the third dose, the first subsequent dose administered 28 days or more after the second dose is used, regardless of the HC-authorized vaccine product administered for the second dose (i.e. the dose 3 interval is not product-specific). If multiple doses 28 days or more after the second dose are reported, then the first chronological dose after the second dose is used.

    - To determine dates for the fourth to seventh doses, the first subsequent date 56 days or more after the date of the previous dose is used, regardless of the HC-authorized vaccine product administered for the previous dose (i.e. the minimum interval is not product-specific). If multiple doses 56 days or more after the previous dose are reported, then the first chronological dose after the previous dose is used.

- A maximum of seven doses are assigned for an individual.

- Only HC-authorised vaccine products are considered for booster doses.

- Age at the time of dose administration and age at the time of data extraction are calculated using the client date of birth and the date of dose administration or date of data extraction, respectively. Ages reported as >=120 years, <0 years, or where date of birth is missing are considered unknown. In Canada, the Pfizer-BioNTech Comirnaty and Moderna Spikevax COVID-19 vaccines are authorized for use in individuals aged 6 months of age and older.[4] The AstraZeneca Vaxzevria/COVISHIELD and Janssen Jcovden, COVID-19 vaccines are authorized for use in individuals aged 18 years and older.[4] The Novavax Nuvaxovid COVID-19 vaccine is authorized for use in individuals aged 12 years and older.[4] The Moderna Spikevax Bivalent BA.1 COVID-19 vaccine is authorized for use as a booster in individuals 6 years and older.[3-4] The Pfizer-BioNTech Comirnaty Bivalent BA.4/5 COVID-19 vaccine is authorized for use as a booster in individuals 5 years of age and older.[3] The Moderna Spikevax Bivalent BA.4/5 COVID-19 vaccine is authorized as a booster dose for individuals 18 years and older.[3] Individuals 5-11 years of age are only recommended to receive the pediatric product of Pfizer-BioNTech Comirnaty Bivalent BA.4/5 COVID-19 vaccine as a booster dose, and individuals 6-11 years of age are only recommended to receive the pediatric dose of Moderna Spikevax Bivalent BA.1 COVID-19 vaccine as a booster dose.[3] Based on expected vaccine product use as per NACI and product monographs, clients under 6 months of age that received the Pfizer-BioNTech Comirnaty and Moderna Spikevax COVID-19 vaccines, clients under 18 years of age that received the AstraZeneca Vaxzevria/COVISHIELD, Janssen Jcovden, and Moderna Spikevax Bivalent BA.4/5 COVID-19 vaccines, clients under 12 that received the Novavax Nuvaxovid COVID-19 vaccine, clients under 6 years of age that received the Moderna Spikevax Bivalent BA.1 vaccine, and clients under 5 years of age that received the Pfizer-BioNTech Comirnaty Bivalent BA.4/5 COVID-19 vaccine are considered to have unknown age.

- Clients reporting a gender of 'Non-binary/third gender' and 'Other' are combined into an 'Other' category. 'Unknown' gender included clients where gender is reported as 'Prefer not to say', 'Unknown', or where gender was missing.

Vaccination Data Analysis and Reporting

- Out of province dose administration records well as doses administered from non-Ontario stock (e.g. doses from federal stock for populations such as the Armed Forces) are included in coverage estimates. However, out of province and non-Ontario stock dose administration records are not included in dose counts.

- Dose numbers are maintained in doses administered counts. For example, if an individual received doses 1 and 2 out of province and a third dose in Ontario, the third dose is counted as a dose 3 administered in Ontario and the first two doses are not counted as they were administered out of province.

- Clients reported as deceased are excluded when describing the number of individuals vaccinated and in coverage estimates, but are included when describing doses administered in the province.

- Age at the time of dose administration (e.g. age at dose 1, age at dose 2, etc.) is used when describing doses administered in Ontario.

- Age at the time of data extraction is used when describing the number of individuals vaccinated and in coverage estimates.

- Clients with unknown age/gender are excluded for age/gender specific analyses, but are included in provincial totals.

- Dose records where the product is reported as other/unknown/missing are excluded from product-specific analysis, but are included in provincial totals.

- Pfizer-BioNTech Comirnaty vaccine product counts and Moderna Spikevax COVID-19 vaccine product counts include infant (<5 years of age), pediatric (5-11 years of age), and 12+ years of age doses. Pfizer-BioNTech Comirnaty Bivalent BA.4/5 vaccine product counts include pediatric and 12+ years of age doses. Moderna Spikevax Bivalent BA.1 vaccine product counts include pediatric and 12+ years of age doses.

- 180 days is used as the 6-month interval and 360 days is used as the 12-month interval for booster dose status.

- Coverage estimates shown as 100% may represent estimates of 100% or more. Coverage estimates may be over 100% due to limitations in the vaccination data (numerator) or Ontario population estimates (denominator).

- Data are shown using the date of dose one administration for coverage estimates for at least one dose; the date the primary series was completed for completed primary series counts and coverage estimates; and the date the first booster dose was received for completed primary series and one booster counts and coverage estimates.

References

1. Ontario. Ministry of Health. COVID-19 vaccines [Internet]. Toronto, ON: King's Printer for Ontario; 2022 [modified 2023 Apr 18; cited 2023 Apr 24]. Available from: https://ontario.ca/page/covid-19-vaccines

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3. Public Health Agency of Canada; National Advisory Committee on Immunization. Part 4 - Active vaccines In: Canadian immunization guide [Internet]. Evergreen ed. Ottawa, ON: Government of Canada; 2022 [modified 2022 Dec 22; cited 2023 Jan 13]. Table 1: Immunization schedule for a primary series, by COVID-19 vaccine. Available from: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-26-covid-19-vaccine.html

4. Health Canada. Approved COVID-19 vaccines [Internet]. Ottawa, ON: Government of Canada; 2022 [modified 2022 Aug 05; cited 2023 Jan 13]. Available from: https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/drugs-vaccines-treatments/vaccines.html

Citation

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Public Health Ontario

Public Health Ontario is an agency of the Government of Ontario dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world.

For more information, email ivpd@oahpp.ca.

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