

## USER GUIDE

# Immunization Data Tool

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## Introduction

The [Immunization Data Tool](#) provides immunization program surveillance data by integrating data on immunization coverage and vaccine safety in Ontario. This user guide describes the content of this interactive report, how it is organized, and the functionality available to visualize the content.

This interactive report is organized into separate sections:

- **Immunization coverage:** contains information on the immunization status for routine infant and childhood immunizations, as well as school-based immunizations. This section contains six tabs for exploring different aspects of immunization coverage:
  - Overview
  - Trends over time
  - Comparison of coverage across public health unit geographies
  - Coverage across ages
  - Comparison of coverage by disease antigen
  - Number of doses received
- **Vaccine safety:** contains information collected from Adverse Events Following Immunization (AEFI) reports in Ontario. This section contains six tabs for exploring the number and rate of AEFI's in Ontario:
  - Overview
  - Trends over time
  - AEFI's by age and sex
  - Comparison of AEFI's across public health unit geographies
  - AEFI's by vaccine
  - Type of adverse events

Each tab within the immunization coverage and vaccine safety sections contains different selection criteria and controls for users to view the data across several stratifiers. A final section allows users to download the data. Specific details on what is contained in all the sections and tabs are outlined throughout this document.

# Using the Immunization Data Tool

## Overview

Generally, the functionality is similar in both the immunization coverage and vaccine safety sections including the tabs contained within each section. The available selection areas of the tool are numbered and summarized below.

The screenshot displays the 'Vaccine safety' section of the Immunization Data Tool. It features a navigation bar with tabs for Overview, Trends, Age and sex, Geography, Vaccine, and Adverse event. The Geography tab is selected. Below the navigation bar, there are filter options for Measure (Number of AEFI reports), Geography (Ontario), Serious AEFIs (All AEFIs), and Sex (Multiple selections). The 'Group data by' section has 'Age group' selected, and the 'Time period' is set to 2023. A bar chart titled 'Number of AEFI reports by age group and sex, all AEFIs, Ontario, 2023' shows the number of reports for different age groups and sexes. A tooltip for the 'All ages' group shows 500 reports for females. A notes section at the bottom provides additional context about the data.

**1** Immunization coverage **Vaccine safety** Download data

**2** Overview Trends Age and sex **Geography** Vaccine Adverse event

Filter data by:

**3** Measure: Number of AEFI reports Geography: Ontario Serious AEFIs: All AEFIs Sex: Multiple selections

Group data by: Age group (selected) Years **3a** Time period: 2023 2023 **3b**

**4**

Number of AEFI reports by age group and sex, all AEFIs, Ontario, 2023

Age group (years)	All sexes	Female	Male
All ages	~750	500	~250
<1	~50	~20	~30
1 to 3	~100	~50	~50
4 to 10	~80	~30	~50
11 to 17	~150	~80	~70
18 to 64	~250	~180	~70
65+	~200	~150	~50

**5**

Age group (years) All ages  
Sex Female  
Number of AEFI reports 500

**6** Notes:

- Due to the impact of the COVID-19 pandemic on the public health and health care sectors, there may be limitations with the 2020-2022 data presented in this tool. The COVID-19 pandemic posed significant challenges to health care, including to the delivery of routine, non-COVID immunization programs, resulting in lower AEFI reports during the pandemic (2020-2022) compared to previous years. Trends should be interpreted with caution.
- This tool does not include AEFIs associated with COVID-19 vaccines. For more information on COVID-19 vaccine safety see the [COVID-19 AEFI in Ontario](#).
- See Technical Notes for the definition of a serious AEFI.

1. **Navigation banner:** This top navigation banner is used to move between the immunization coverage section, the vaccine safety section, and a list of downloadable datasets. The section being viewed is indicated by the purple underline.
2. **Navigation bar:** The blue navigation bar is used to change between tabs containing different figures, stratifiers, and filters used to visualize immunization data in Ontario. The content of each tab varies depending on the focus of a particular tab. The current selection is indicated in white, while the other tabs remain solid blue.
3. **Filters, toggle buttons, and sliders:** Filters are used to break down the data within each section by selecting the drop down arrow. The filter will either allow for a single selection or multi-selection depending on the chosen filter.
  - Toggle buttons are single-selection switches to control content or figure type. The current toggle button selection is indicated in purple.
  - The 'time period' slider available in some tabs is used to aggregate several years of data together by dragging the slider below the year selection. Users can also type the desired years in the slides boxes.
4. **Download data from the graph:** When hovering over a graph, a context menu (denoted by three dots) will appear at the top right. Once selected, users can choose to export the data in the graph or view the data in the graph as a table. To capture an image of the graph, users can use the Snipping tool built into Microsoft Windows (Windows logo key + Shift + S) or macOS (Command + Shift + 5).
5. **Tooltips:** When hovering over any data point on a graph, a tooltip will appear with related information about that data point.
6. **Notes:** Beneath the visualization in each tab are brief notes describing important considerations for data interpretation. Further details can be found in the [technical notes](#).

## Immunization Coverage Section

This section contains information on immunization coverage for the routine infant and childhood immunization and school-based immunization programs.

**Immunization coverage** Vaccine safety [Download data](#)

Overview **Trends** Geography Age Antigen Dose

### Immunization coverage in Ontario

Achieving and maintaining high immunization coverage is essential for effective prevention and control of vaccine preventable diseases.


**Immunization coverage** refers to the proportion of a population that is appropriately immunized against a vaccine preventable disease (VPD) at a specific point in time. Immunization coverage is calculated at the level of **antigen**, which is the active ingredient in all vaccines that produces immunity to a specific VPD.

This tool provides up-to-date immunization coverage estimates for Ontario's publicly-funded routine childhood and school-based immunization programs using data entered in the Digital Health Immunization Repository (DHIR) – Ontario's provincial immunization repository. Coverage estimates are dependent on the information recorded in the provincial immunization repository. Not all immunizations given to children are captured in this system, which may result in underestimates of coverage.


**Let's take a look at the numbers for the 2023-24 school year:**

**70%** Only seven in 10 children age 7-year old were reported to be fully immunized against measles in 2023-24. This represents a large decline compared to before the COVID-19 pandemic. Similar declines have been observed for other routine childhood immunization programs.

[See trend data](#)

 Immunization coverage by public health units (PHUs) varied greatly across the province among all age cohorts and antigens.

[See PHU data](#)

 Immunization coverage for vaccines delivered in schools in grade 7 (HPV, Hepatitis B and quadrivalent meningococcal vaccines) also declined during the COVID-19 pandemic but have improved in recent years. Catch-up programs have increased the proportion of students who were up-to-date as of August 31st, 2024.

[See antigen data](#)

This section contains six tabs:

### Overview Tab

This section showcases key messages about the data being reported in the other immunization coverage tabs. Clicking on the white and purple buttons will take users to the relevant tab to further explore the data.

## Trends Tab

This tab contains a multi-line graph displaying trends in coverage rates over time for selected antigens and age milestones by school-year. Users can filter the data by geography (Ontario or one of the 34 PHUs in the province), antigen, and age milestone. A toggle button enables users to switch between viewing routine childhood or school-based immunization program-specific antigens and age milestones. Hovering over the ⓘ icon provides a description of the term “antigen.”

## Geography Tab

This tab contains a multi-line trend graph showing immunization coverage rates for selected antigens and age milestones across public health units. Users can change the antigen and age milestone using the dropdown menu. Clicking ‘Show national targets’ displays a dashed line indicating the national Canadian immunization target for a given age milestone and antigen. A toggle button enables users to switch between routine childhood or school-based immunization program-specific antigens and age milestones. This tab also contains a three-way toggle button which enables users to view a bar graph showing the distribution of immunization coverage rates across public health units for selected school-years, or display a shaded map of Ontario immunization coverage by public health unit for the most recent school-year. Hovering over the ⓘ icon provides a description of the term “antigen.”

## Age Tab

This tab contains a bar graph displaying coverage rates for single years by age, allowing users to compare how age impacts immunization coverage. Users can filter the data by geography (Ontario or one of the 34 PHUs in the province), and antigen. A toggle button enables users to switch between routine childhood or school-based immunization program-specific antigens and age milestones. Hovering over the ⓘ icon provides a description of the term “antigen.”

## Antigen Tab

This tab contains a bar graph displaying coverage rates across disease antigen. Users can filter the data by geography (Ontario or one of the 34 PHUs in the province), age milestone and school-year. A toggle button enables users to switch between routine childhood or school-based immunization program-specific antigens and age milestones. Clicking ‘Show national targets’ displays blue markers indicating the national Canadian immunization target for a given age milestone and disease antigen, where available. Hovering over the ⓘ icon provides a description of the term “antigen.”

## Doses Tab

This tab contains a stacked bar graph displaying the proportion of the population receiving vaccines by number of doses received across school-years, allowing users to compare doses received over time. Users can filter the data by geography (Ontario or one of the 34 PHUs in the province), and select antigen and age milestone. Hovering over the ⓘ icon provides a description of the term “antigen.”

## Vaccine Safety Section

This section contains information on adverse events following immunization (AEFIs) reported in Ontario.

Immunization coverage **Vaccine safety** Download data

Overview Trends Age and sex Geography Vaccine Adverse event

### Vaccine safety in Ontario

Vaccines are very safe. As a key component of vaccine safety, Ontario ensures ongoing monitoring of vaccine safety data in collaboration with local, provincial, territorial, and national partners.

Adverse events following immunization (AEFIs) are rare. In 2023, 0.009% of doses distributed were associated with an AEFI.

**Let's take a look at the numbers for 2023:**

Overall numbers	Most commonly reported adverse events	Vaccines with highest AEFI reporting rates
<b>8.4 million</b> Number of publicly-funded doses distributed	<b>Pain, redness, swelling at the injection site</b> 35% of all AEFI reports	<b>Quadrivalent conjugate meningococcal (Men-C-ACWY)</b> 40.6 per 100,000 doses distributed
<b>751</b> Total number of AEFIs reported	<b>Rash</b> 21% of all AEFI reports	<b>Recombinant zoster vaccine (RZV)</b> 37.4 per 100,000 doses distributed
<b>28</b> Number of AEFIs meeting the serious definition	<b>Allergic skin reaction</b> 19% of all AEFI reports	<b>Human papillomavirus (HPV9)</b> 29.4 per 100,000 doses distributed

[See trend data](#) [See adverse event data](#) [See vaccine data](#)

Additional information on vaccines presented in this tool can be found on Public Health Agency of Canada's [list of approved vaccines in Canada](#) and the [National Vaccine Catalogue](#). The [Canadian Immunization Guide](#) is also a comprehensive resource on immunization and the diseases prevented by vaccines.

This section contains six tabs:

### Overview Tab

This section showcases key statistics about vaccine safety in Ontario. Clicking on the white and purple buttons will take users to the relevant tabs to further explore the data.

## Trends Tab

This tab contains a bar and line graph displaying trends in AEFI reports over time. Users can filter the data by geography (Ontario or one of the 34 PHUs in the province), age group, sex, and by severity.

## Age and Sex Tab

This tab contains a clustered bar graph showing AEFI report data by age group (<1 year, 1-3 years, 4-10 years, 11-17 years, 18-64 years, 65+ years) and sex. A measure filter provides the option to display the data as cases or rates. Users can also filter the data by geography (Ontario or one of the 34 PHUs in the province), sex, and AEFI report severity (non-serious or serious). A time slider can be used to aggregate data for the selected years. A toggle button enables users to switch the view to displaying a multi-line graph showing age-specific trends in AEFI reports for the selected measure (cases or rates) over time.

## Geography Tab

This tab contains a multi-line trend graph showing AEFI reporting rate for selected vaccine type across selected public health units. Users can change the vaccine type using the filter. This tab contains a three-way toggle button which will switch the view to display a bar graph showing the distribution of AEFI reporting rate for selected vaccine type and year, or display a shaded provincial map of AEFI reports by public health unit for the most recent year.

## Vaccines Tab

This tab contains a horizontal stacked bar graph showing AEFI report data by vaccine and AEFI severity (non-serious and serious). A measure provides the option to display the data as cases or rates. Users can also filter the data by geography (Ontario or one of the 34 PHUs in the province), time period, and adverse event category. A toggle button switches the view to display AEFI reports by aggregate vaccine category rather than individual vaccines.

## Adverse Events Tab

This tab contains a horizontal bar graph showing AEFI report data by adverse event. A measure filter allows users to display the data as cases or rates. Users can also filter the data by geography (Ontario or one of the 34 PHUs in the province), vaccine, and adverse event category. The number of non-severe and severe AEFI reports is available in the hover-over tooltip. A time slider can be used to aggregate data for the selected years. A toggle button switches the view to display AEFI reports by aggregate adverse event category rather than individual events.

## Download Data Section

This section contains a list of datasets available for download, with information about the contents of each. Clicking the purple “Download .csv” button initiates the download process.

Immunization coverage

Vaccine safety

[Download data](#)

### Download immunization data

#### Immunization coverage data

##### Immunization coverage for age milestones

[Download .csv](#)

- Immunization coverage for routine childhood and school-based immunizations, by year, antigen, public health unit and age milestone
- Date range: 2013-14 to 2023-24 school year
- Data last updated: October 2024

##### Immunization coverage by age

[Download .csv](#)

- Immunization coverage for routine childhood and school-based immunizations, by year, antigen, public health unit and age
- Date range: 2023-24 school year
- Data last updated: October 2024

##### Immunization coverage by dose

[Download .csv](#)

- Immunization coverage for measles, HPV, and Hep B by year, public health unit and number of doses
- Date range: 2013-14 to 2023-24 school year
- Data last updated: October 2024

#### Vaccine safety data

##### AEFI data by age, sex and PHU

[Download .csv](#)

- AEFI counts and population denominators across year, public health unit, age, sex, and serious/non-serious
- Date range: 2012 to 2023
- Data last updated: August 2024

##### AEFI reports by event type

[Download .csv](#)

- Number of AEFI reports by adverse event, vaccine, serious/non-serious, year, and public health unit
- Date range: 2012 to 2023
- Data last updated: August 2024

##### AEFI reports by event category

[Download .csv](#)

- Number of AEFI reports by event category, vaccine, serious/non-serious, year, and public health unit
- Date range: 2012 to 2023
- Data last updated: August 2024

##### AEFI reports by vaccine

[Download .csv](#)

- Number of AEFI reports and number of doses distributed by vaccine, serious/non-serious, year, and public health unit
- Date range: 2012 to 2023
- Data last updated: August 2024

##### AEFI reports by map categories

[Download .csv](#)

- Number of AEFI reports and population denominators by vaccine type, serious/non-serious, year, and public health unit
- Date range: 2012 to 2023
- Data last updated: August 2024



## Citation

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## Disclaimer

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