



The Unmet Value of Vaccines in Canada

Final Report

Prepared for the Adult Vaccine Alliance

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IQVIA Canada, RWS

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Adult Vaccine Alliance

Ensuring equitable access

Disclaimer

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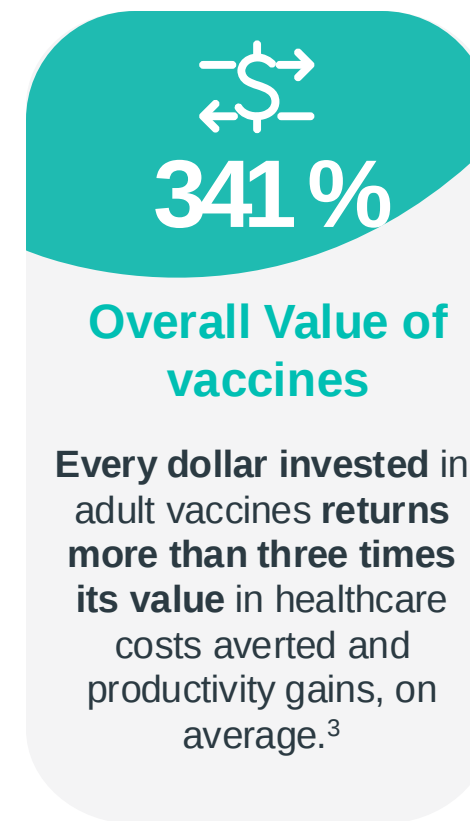
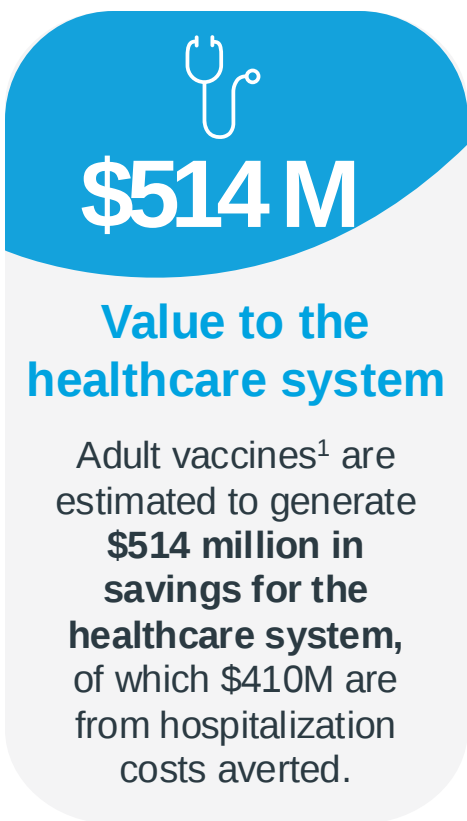




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Executive summary of the value of adult vaccines in Canada



Notes:

¹The six adult vaccines covered in this study are Recombinant zoster vaccine, Respiratory syncytial virus vaccine, Pneumococcal conjugate vaccine, Human papillomavirus vaccine, COVID-19 vaccines, and Influenza vaccines

²The value of vaccines represents the economic impact of these public health interventions, as they not only reduce healthcare costs by preventing diseases but also enhance productivity.

³Value of vaccines are estimated using list prices from IQVIA DeltaPA and additional 30% discount applied.



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The aim of this report is to better understand the value of adult vaccines in Canada

Background

- Vaccines continue to play a crucial role in public health, particularly in Canada where immunization programs have significantly decreased the incidence of vaccine-preventable diseases among children and adults. Vaccines have long been regarded as one of the most cost-effective life-saving medical interventions¹.
- The ongoing advancements in vaccine technology, coupled with broader immunization guidelines for adults, underscores the critical role of vaccines in safeguarding public health and highlights the ongoing commitment to enhancing vaccine efficacy and accessibility for all. The National Advisory Committee on Immunization (NACI) updated guidelines now include recommendations for routine vaccinations against diseases like respiratory syncytial virus (RSV), COVID-19, and herpes zoster (HZ).
- Nonetheless, recent vaccination coverage rates for several adult and childhood vaccines were below the vaccination coverage goals for 2025 set as part of the National Immunization Strategy².
- To better understand the value of the adult vaccines in Canada, the goal of this study was to quantify the return on investment (ROI) for selected vaccines considering both direct healthcare cost savings and broader economic benefits.

Objectives

- To better understand the value of adult vaccines in Canada, this report aimed to:
 1. Estimate the current value of adult vaccines to the Canadian healthcare system and the national economy
 2. Evaluate the value of increased uptake of adult vaccines
 3. Assess the overall value of adult vaccines in Canada

Sources:

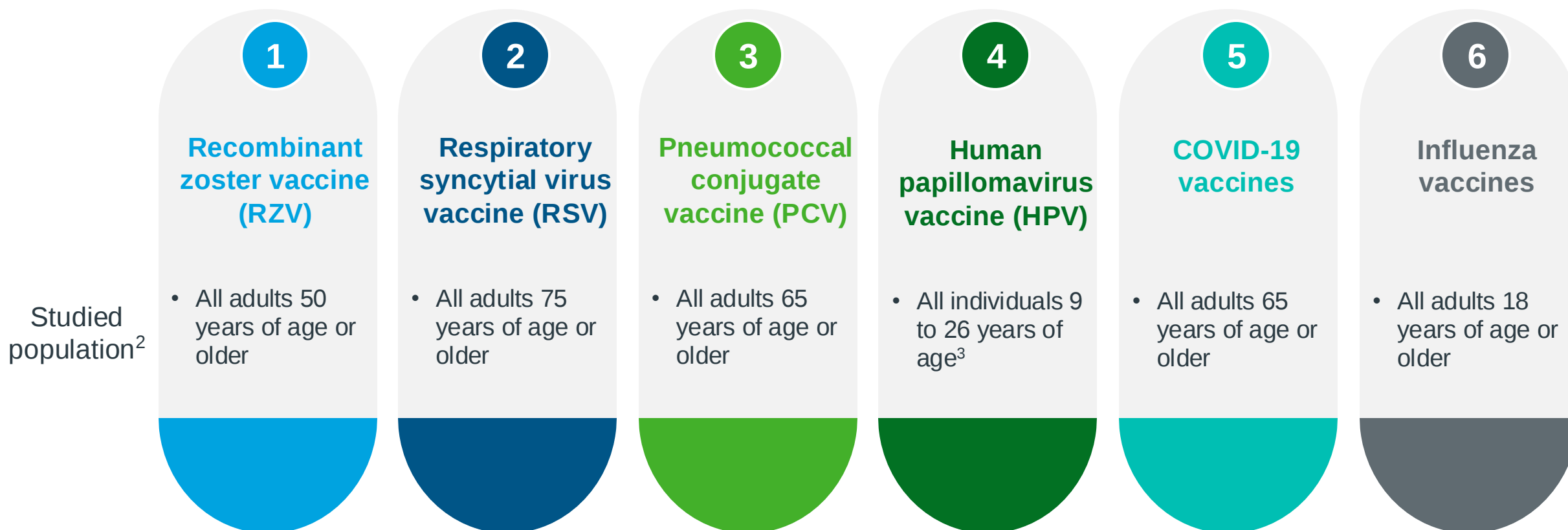
1. Canadian Public Health Association. The value of immunization in the future of Canada's health system. October 2021.
2. Public Health Agency of Canada. Adult national immunization coverage survey (aNICS): 2023 results. January 14, 2024.



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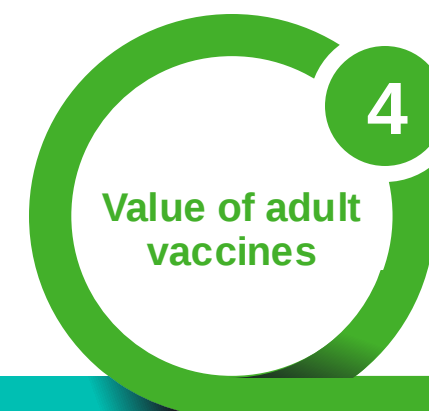
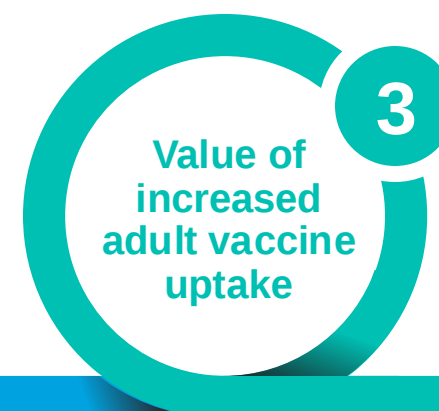
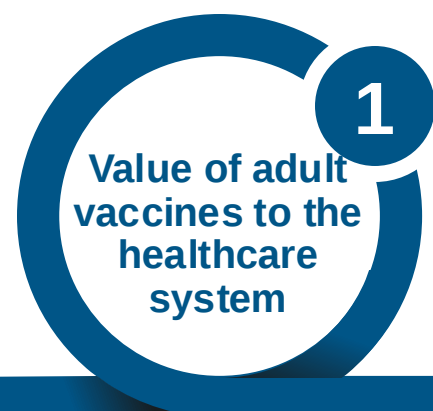
Six key adult vaccines were selected for this report¹



Notes:

1. These six vaccines were selected because they address significant public health concerns and are recommended by the National Advisory Committee on Immunization (NACI) specifically for adults.
2. The study's eligible population was selected to mirror the recommendations of NACI wherever feasible; where applicable, strong NACI recommendations were followed.
3. HPV vaccines were included even though they are recommended for children aged nine to 17, as they address health concerns that arise in adulthood

Secondary research was conducted to identify key parameters to estimate the value of adult vaccines



- Value to the healthcare system, including:
 - Inpatient healthcare
 - Outpatient healthcare
 - Long-term healthcare

- Productivity gains through:
 - Labor productivity
 - Elective care productivity

- Value of increased vaccine uptake on:
 - The Canadian healthcare system
 - The Canadian economy

- For each adult vaccine studied, the total value generated was compared with the total costs

Note:

Additional methodology information and definitions of estimation metrics are available in [Appendix 1](#)

Key parameters used for value estimation was identified from publicly-available resources and proprietary IQVIA data



Regulatory agency & government sources

- National, regional, and local regulatory agency and public health agency websites, and resources (including NACI, PHAC, Health Canada websites)



Whitepapers & peer-reviewed publications

- Relevant whitepapers and scientific journals
- HCP/professional conference websites, newsletters, and journals



News feeds

- Pharma/HC/biotech news feeds, media agency newswires, and bulletins



IQVIA internal experts and propriety data

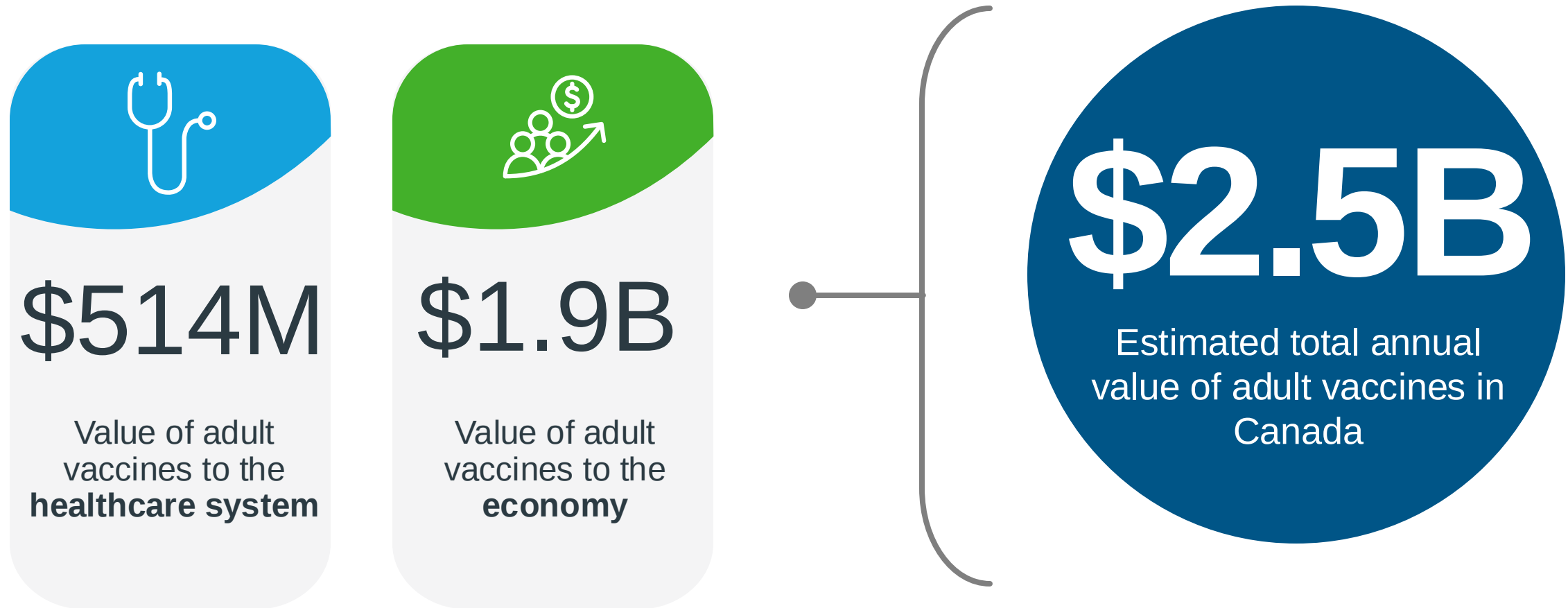
- Members of the IQVIA organization with relevant expertise
- Vaccine list prices from IQVIA DeltaPA
- Pharmacy sales data from IQVIA LRx
- IQVIA Canadian Primary Care EMR Database



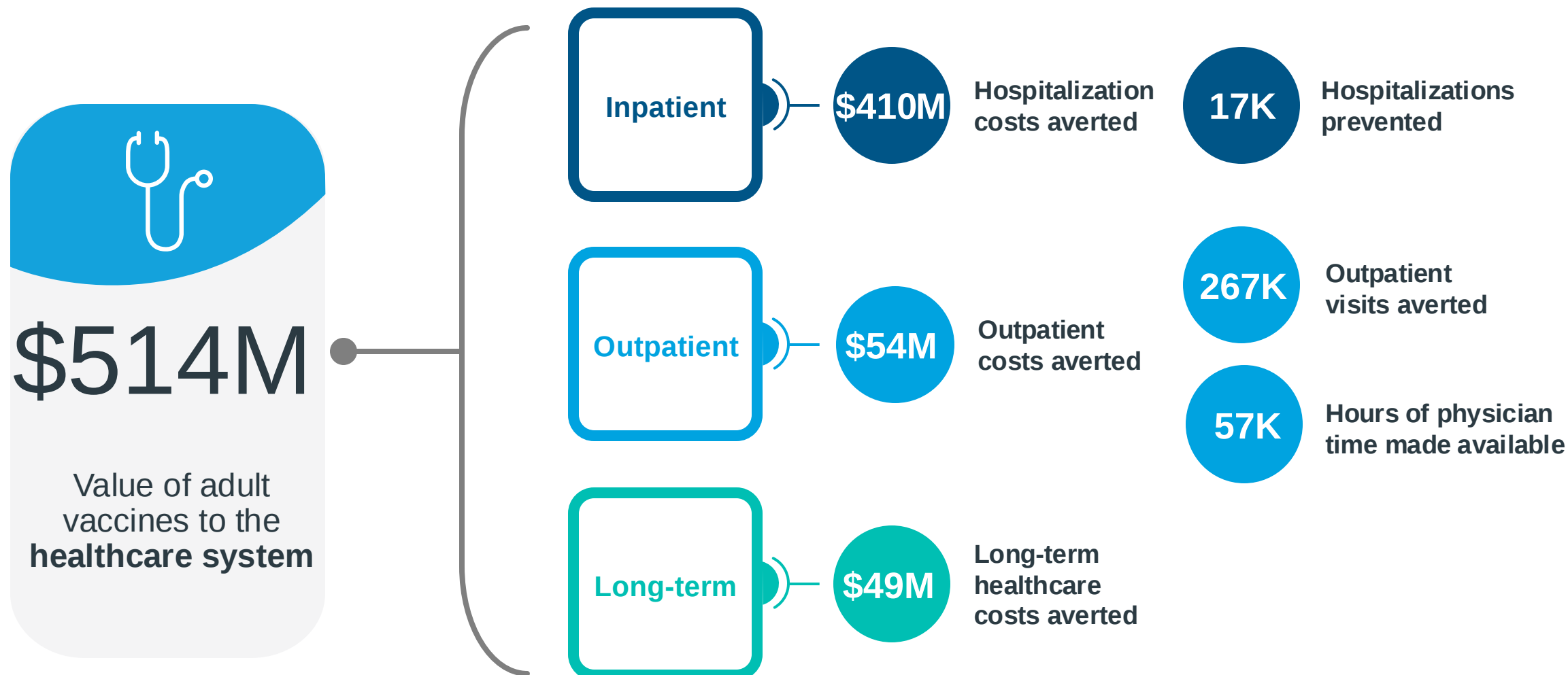
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In total, six adult vaccines are generating an estimated \$2.5 billion in value annually



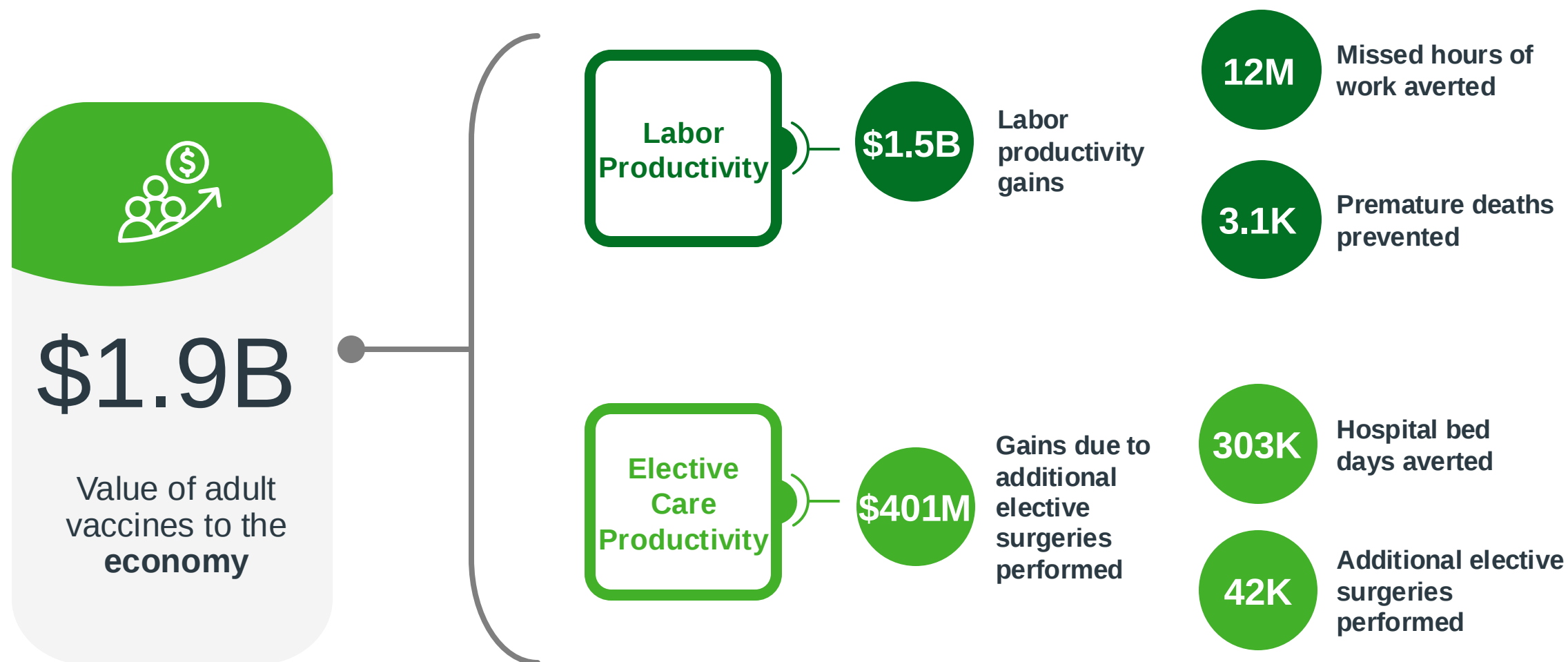
Each year, it is estimated that the six adult vaccines result in **\$514 million** in savings for the healthcare system



Note:

Additional methodology information and definitions of estimation metrics are available in [Appendix 1](#)

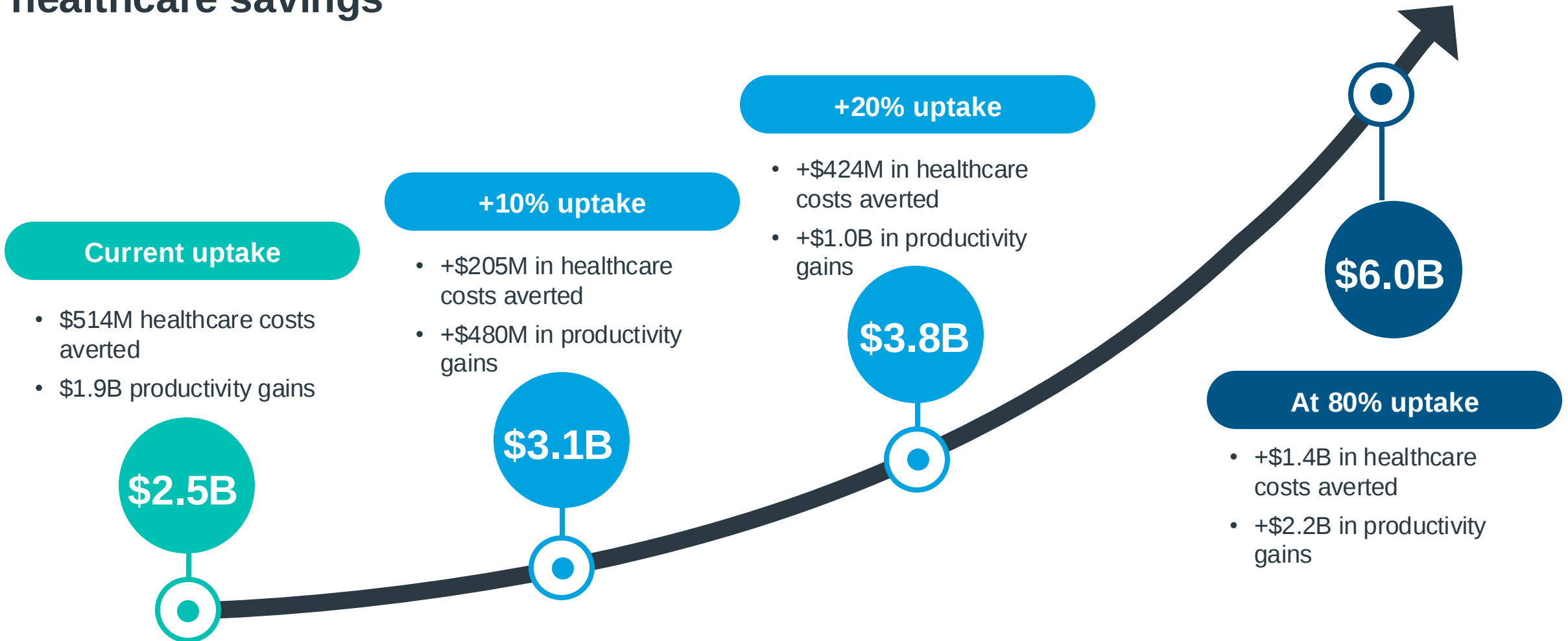
The six adult vaccines are estimated to add \$1.9 billion in value each year to the Canadian economy



Note:

Additional methodology information and definitions of estimation metrics are available in [Appendix 1](#)

Increases in the uptake of adult vaccines would lead to economic and healthcare savings



Note:

The increase in healthcare cost averted and productivity gain with increased uptake are estimations only
The “+” indicates additional healthcare cost averted and productivity gains from current uptake rates

The value was estimated to average \$3.41 for every dollar invested in the six adult vaccines

341%

Value of adult vaccines



Every dollar invested in adult vaccines¹ generates an **estimated \$3.41 on average** in productivity gains and healthcare costs that are averted²

106% Value to the healthcare system

235% Value to the economy

Notes:

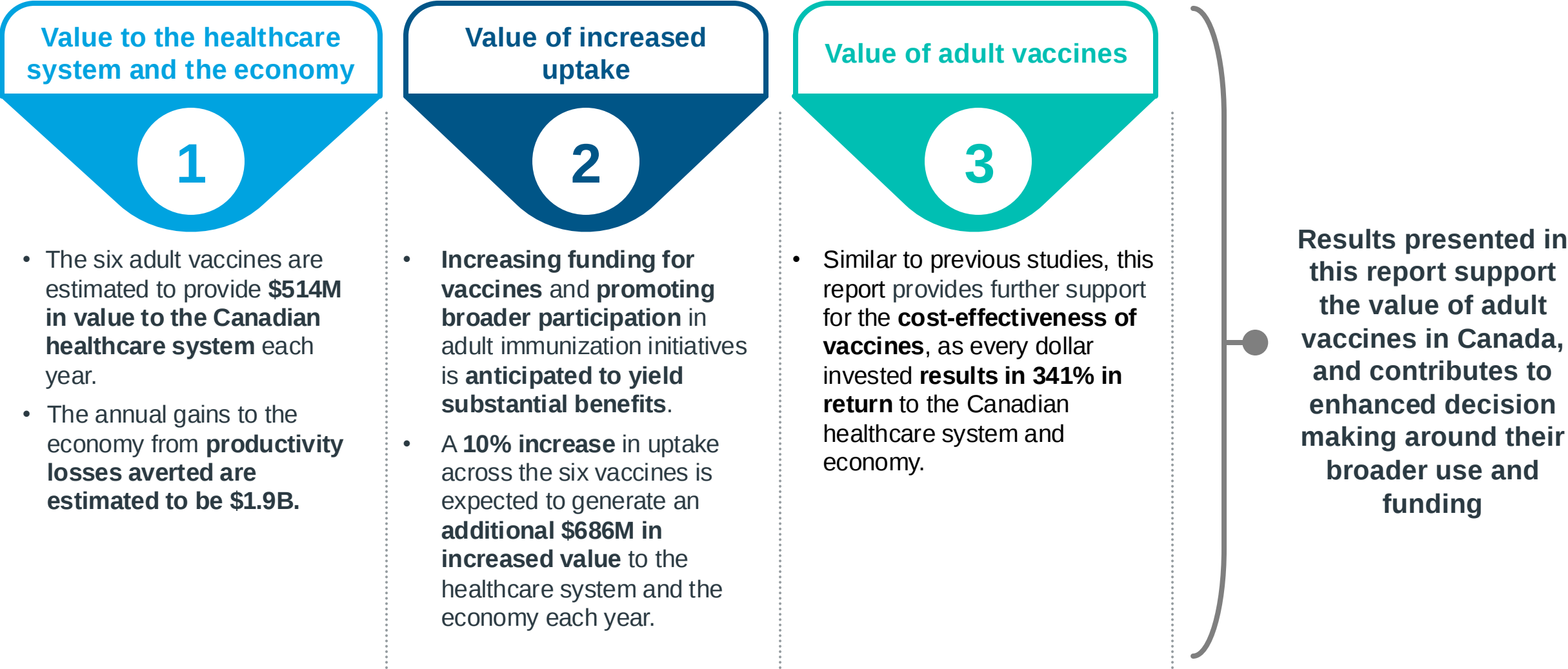
1. Adult vaccines only include Recombinant zoster vaccine, Respiratory syncytial virus vaccine, Pneumococcal conjugate vaccine, Human papillomavirus vaccine, COVID-19 vaccines, and Influenza vaccines
2. Estimates are calculated using list prices from IQVIA DeltaPA and additional 30% discount applied.



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An increase in the uptake of adult vaccinations in Canada is anticipated to lead to greater value for the collective healthcare system and the economy



Appendix 1: Methodology

The value to the healthcare system was estimated by assessing inpatient, outpatient, and long-term healthcare needs prevented by the six adult vaccines

Value of adult vaccines to the healthcare system



Inpatient healthcare

Number of hospitalizations averted

Estimated by multiplying the average annual number of hospitalizations in the absence of vaccine¹ by the current vaccine uptake and vaccine effectiveness.

Number of hospital bed days averted

Estimated by multiplying the number of hospitalizations averted by the average length of stay.

Hospitalization costs averted

Estimated by multiplying the number of hospitalizations averted by the average cost per hospitalization.³



Outpatient healthcare

Number of outpatient visits averted

Estimated by multiplying the average annual number of outpatient visits in the absence of vaccine¹ (including primary care visits and emergency department visits) by the current vaccine uptake and vaccine effectiveness.

Hours of physician time made available

Estimated by dividing the number of outpatient visits averted by the average length of a primary care visit.²

Outpatient costs averted

Estimated by multiplying the number of outpatient visits averted by the average cost of outpatient visits.³



Long-term healthcare

Long-term healthcare costs averted

Estimated by summing the additional costs post acute infection:

- **HZV:** The costs of complications such as postherpetic neuralgia (PNH) were considered
- **RSV:** Hospitalized cases included costs for two years post-discharge and outpatient acute RSV cases included costs from 30 to 365 days post-diagnosis
- **PCV:** The costs of long-term neurologic and auditory sequelae were included
- **HPV:** Long-term care cost, continual care cost and consultation costs were calculated
- **COVID-19:** The costs of post-COVID complications were assessed
- **Influenza:** No long-term complication costs of influenza were included

Notes:

1. For COVID and influenza vaccines, the number of hospitalizations or outpatient visits without the vaccine (counterfactual) are estimated using observed events/(1-coverage*efficacy)
2. The average length of a primary care visit was estimated to be 12.7 minutes using IQVIA's Canadian Primary Care EMR database
3. Costs were adjusted to reflect 2024 values

The value of adult vaccines to the economy was assessed by estimating financial benefits derived from averting productivity losses and reducing the elective care waiting list

Value of Adult Vaccines to the Economy



Labor productivity

- Potential productivity gained due to disease prevented by adult vaccination was estimated using the **human capital approach**.
- **Presenteeism** (reduced productivity while at work due to health issues), **absenteeism** (lost productivity due to not being at work), and the **prevention of premature death** (which preserves the productive capacity of the workforce) were included in the analysis.
- The sum of presenteeism and absenteeism resulted in **missed hours of work averted**.
- The number of **premature deaths prevented** are estimated by multiplying the average annual death in absence of vaccine by the current vaccine uptake and vaccine effectiveness.
- **Labor productivity gains** are calculated by multiplying the hours of work missed that were averted with the Canadian **GDP per hour worked**¹, and number of premature deaths prevented with the expected number of years in the workforce and GDP per year.



Elective care productivity

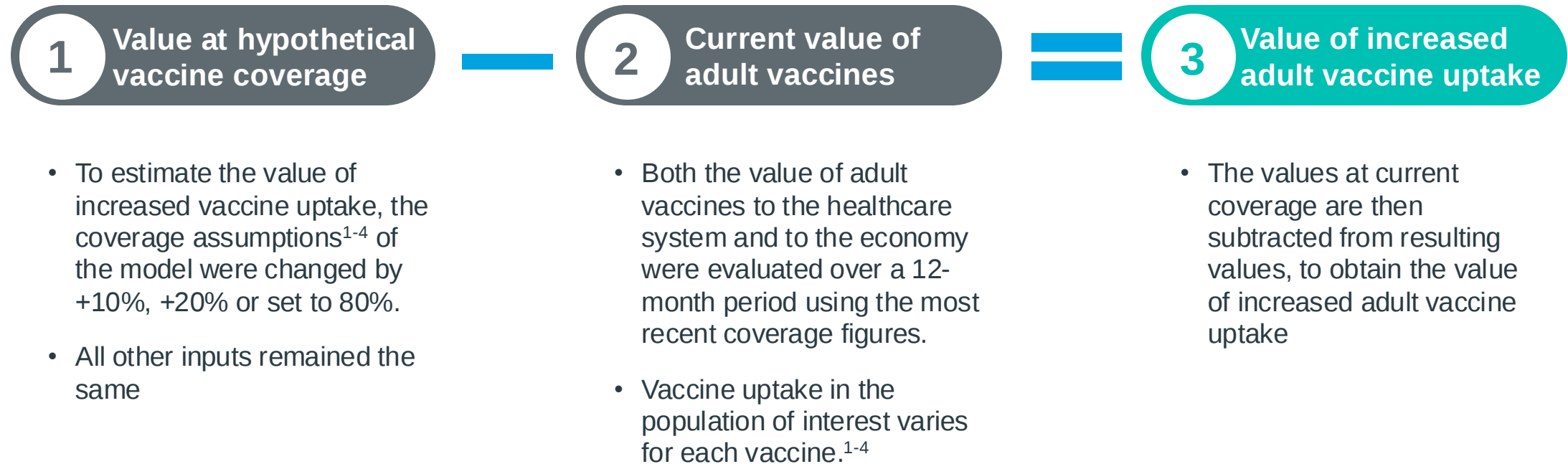
- To estimate the additional economic benefits of reduced healthcare resources used due to vaccination, the potential productivity gained through **additional elective surgeries performed** was estimated.
- This analysis is based on prior work²⁻⁵ where hospital beds are assumed to be the key resource facilitating access to hospital treatment and are subject to excess demand.
- The number of additional elective care surgeries that could be performed was estimated by dividing the total **number of hospital bed days averted** by vaccination by the average **hospital length of stay** per elective care surgery.⁶
- The resulting productivity **gains due to additional elective surgeries performed** was calculated by multiplying the number of additional elective care surgeries that could be performed by the **economic costs associated with excessive wait times** in Canada's medical system.⁷

Notes:

1. The GDP per hour worked was estimated to \$63.60 : Statistics Canada. Table 36-10-0480-01 Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts
2. Office of Health Economics (2024) Value of Vaccines: Health Economic Evidence. OHE Contract Research
3. Sandmann FG, Shallcross L, Adams N, Allen DJ, Coen PG, Jeanes A, Kozlakidis Z, Larkin L, Wurie F, Robotham JV, Jit M, Deeny SR. Estimating the Hospital Burden of Norovirus-Associated Gastroenteritis in England and Its Opportunity Costs for Nonadmitted Patients. Clin Infect Dis. 2018 Aug 16;67(5):693-700.
4. Brassel S, Neri M, Schirmacher H, Steuten L. The Value of Vaccines in Maintaining Health System Capacity in England. Value Health. 2023 Jul;26(7):1067-1072.
5. Neri M, Brassel S, Schirmacher H, Mendes D, Vyse A, Steuten L, Hamson E. Vaccine-Preventable Hospitalisations from Seasonal Respiratory Diseases: What Is Their True Value? Vaccines (Basel). 2023 May 4;11(5):945.
6. The average hospital length of stay per surgery was estimated to 7.3 days : Canadian Institute for Health Information. Hospital stays in Canada, 2022–2023. Accessed August 11, 2024
7. The economic costs associated with excessive wait times was estimated to \$9,890: The Centre for Spatial Economics. The Economic Cost of Wait Times in Canada. Published online June 2006.

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The value of increased adult vaccine uptake is estimated by changing the vaccine coverage assumptions



Notes:

1. Recombinant zoster vaccine (RZV) and Human papillomavirus vaccine (HPV) uptake were estimated using the 2023 Adult National Immunization Coverage Survey (aNICS) : Public Health Agency of Canada. Adult National Immunization Coverage Survey (aNICS): 2023 results. January 17, 2024. Accessed August 11, 2024. <https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/adult-national-immunization-coverage-survey-2023-results.html>
2. Respiratory syncytial virus vaccine (RSV) and Pneumococcal conjugate vaccine (PCV) uptake were estimated using IQVIA's longitudinal prescriptions dataset
3. COVID-19 vaccine uptake was estimated using Public Health Agency of Canada: Canadian COVID-19 vaccination coverage report: COVID-19 vaccination coverage in Canada - Canada.ca. Accessed August 11, 2024. <https://health-infobase.canada.ca/covid-19/vaccination-coverage/#a3>
4. Influenza vaccine uptake was estimated using 2023-2024 Seasonal Influenza (Flu) Vaccination Coverage Survey: Public Health Agency of Canada. Highlights from the 2023-2024 Seasonal Influenza (Flu) Vaccination Coverage Survey. July 2, 2024. Accessed August 11, 2024. <https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/seasonal-influenza-survey-results-2023-2024.html>

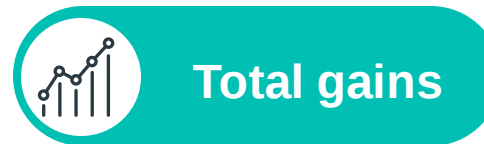
The value was calculated by dividing the estimated gains generated by each adult vaccine with the required costs

%

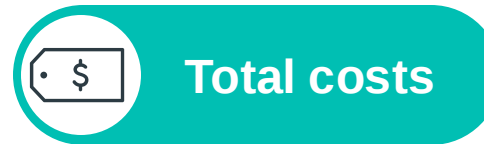
Value of vaccines

Was estimated by dividing the total vaccine gains by the sum of the costs

=



Total gains



Total costs

The vaccine associated healthcare benefits and productivity gains were summed over the estimated duration of vaccine protection. Where applicable, vaccine efficacy decline was included. An annual 3% discount rate was applied.

The number of vaccine doses required were multiplied by the vaccine list price¹ and the estimated cost of vaccine administration and distribution.

Notes:

1. List prices were obtained from IQVIA DeltaPA. An estimated 30% discount was applied
2. Public Health Agency of Canada. Vaccine supply. June 30, 2015. Accessed August 11, 2024. <https://www.canada.ca/en/public-health/services/vaccine-supply.html>



Thank you