BC Centre for Disease Control
Provincial Health Services Authority

Immunization Programs
and Vaccine Preventable
Diseases Service

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Immunization Coverage in Children by the Second Birthday

2015-2024

October 2025

Provincial Health Services Authority
Province-wide solutions. Better health.

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A research and teaching centre affiliated with UBC

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Acknowledgements

We gratefully acknowledge the residents of BC whose data were integrated in the information presented here and all BC health authorities for the contribution of information for this report.

We acknowledge the Title and Rights of BC First Nations who have cared for and nurtured the lands, air and waters for all time, including the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh Úxwumixw (Squamish Nation), and səl̓ílwətaʔ (Tsleil-Waututh Nation) on whose unceded, occupied, and ancestral territory BCCDC is located. As a provincial organization, we also recognize and acknowledge the inherent Title and Rights of BC First Nations whose territories stretch to every inch of the lands colonially known as “British Columbia”.

BC is also home to many First Nations, Métis, and Inuit people from homelands elsewhere in Canada. We recognize the distinct rights of First Nations, Inuit, and Métis people and BCCDC is beginning its work to uphold a distinctions-based approach to Indigenous data sovereignty and self-determination. All Indigenous Peoples who live in BC have rights to self-determination, health and wellness, and respectful use of their data in alignment with Indigenous data governance principles, including but not limited to OCAP®.

BCCDC is working to address the consequences of settler-colonial policies, which continue to have effects on all Indigenous Peoples living in the province. Consistent with the Coast Salish teaching of Thee eat (truth) gifted to PHSA by Coast Salish Knowledge Keeper Sulksun, we recognize that ongoing settler colonial harms and ideology in BC undermine the inherent rights of Indigenous Peoples who live in BC and significantly contributes to health inequities and data gaps. For further information, please see “In Plain Sight: Addressing Indigenous-specific Racism and Discrimination in B.C. Health Care”. We also recognize the direct impact of colonial policies, which led to violations of patient autonomy and consent, resulting in vaccine hesitancy and mistrust among Indigenous Peoples in Canada:

- TB vaccine experimentation in Saskatchewan in the 1930s and 1940s
- Medical experimentation and the roots of COVID-19 vaccine hesitancy among Indigenous Peoples in Canada
- Vaccine mistrust: A legacy of colonialism

While the data shown in this report represent BC residents, there is no stratification by Indigeneity and as such, the results are not reflective of the situation for First Nations, Métis and Inuit Peoples and communities. First Nations children may also be disproportionately under-represented in the immunization registry data. Please see the Limitations section of the Data Notes for further information.

Abbreviations

Health Authorities

IH	Interior Health	ISLH	Island Health
FH	Fraser Health	NH	Northern Health
VCH	Vancouver Coastal Health		

Additional abbreviations

BC	British Columbia	DTaP	Diphtheria, tetanus, acellular pertussis
HA	Health Authority	DTaP-IPV	Diphtheria, tetanus, acellular pertussis, polio
HSDA	Health Service Delivery Area	DTaP-IPV-Hib	Diphtheria, tetanus, acellular pertussis, polio, *Haemophilus influenzae* type b
PIR	Provincial Immunization Registry	MMR	Measles, mumps, rubella

For an explanation of BC Health Authorities, please visit this website.

Executive Summary

Infants in BC are currently recommended to receive thirteen doses of seven different vaccines that protect against thirteen diseases: diphtheria, tetanus, pertussis, polio, *Haemophilus influenzae* type b (Hib), hepatitis B, measles, mumps, rubella, varicella, pneumococcal disease, meningococcal serogroup C disease, and rotavirus. For most doses, the recommended age milestones for receipt are 2, 4, 6, or 12 months with a booster dose of DTaP-IPV-Hib at 18 months.

Childhood immunization coverage is routinely assessed at milestone ages in BC. This report outlines coverage among two-year-olds from 2015 to 2024 including indicators of whether infants received specific antigens/agents by the second birthday, all routine immunizations (excluding rotavirus) by the second birthday, and all routine immunizations (excluding rotavirus) except the 18-month booster dose by the second birthday. The report also includes an assessment of two-year-olds with no documented immunizations or who have documented refusals. Due to different methodology, Vancouver Coastal Health (VCH) data are excluded from provincial coverage estimates, and VCH coverage is reported separately in the appendix. As a signatory to Vaccination Coverage Goals and Vaccine Preventable Disease Reduction Targets by 2025, BC aims to achieve 95% vaccination coverage by two years for the following vaccines: diphtheria, tetanus, pertussis and Hib, polio, hepatitis B, MMR, varicella, pneumococcal conjugate, and meningococcal C conjugate.

In BC, the proportion of two-year-olds who were up-to-date for age was relatively stable from 2016 to 2020, ranging between 73.0-74.3%, before declining to 70.2% in 2021 and then remaining steady through to 69.5% in 2024. For two-year-olds who are up-to-date excluding the 18-month booster, coverage peaked at 83.5% in 2019 before declining over the past four consecutive years to 76.8% in 2023 and 76.2% in 2024. Provincially, in 2024, the gap between the proportion of two-year-olds up-to-date for age and up-to-date for age excluding the booster was 6.7%.

The declines in coverage starting in 2021 (2019 birth cohort) coincide with the COVID-19 pandemic, which impacted the provision of public health services and in-person clinical services by physician providers. These impacts continued through 2022 and routine childhood immunizations may have been affected in some regions due to rescheduled appointments or longer wait times. This may have contributed to the lack of rebound to pre-pandemic coverage rates still seen in 2024 (2022 birth cohort).

Across health authorities (excluding VCH), up-to-date for age coverage in 2024 was lowest in Northern Health (NH) (53.8%), followed by Interior Health (IH) (69.0%), Fraser Health (FH) (70.8%), and Island Health (ISLH) (73.8%). Coverage has remained relatively stable across IH, FH, and ISLH from 2021 to 2024, and were within 0-1.3% of 2023 levels. In contrast, up-to-date for age coverage in NH has decreased from 65.3% in 2021 to 53.8% in 2024, with the largest single year decrease occurring from 2023 to 2024 (5.6% decrease). Coverage estimates in 2024 for two-year-olds who were up-to-date excluding the 18-month booster were also lowest in NH (63.5%), followed by IH (76.0%), FH (76.8%) and ISLH (80.9%). From 2021 to 2024, up-to-date minus the booster coverage has been relatively stable in ISLH (0.2% decrease), and although gradually decreasing in IH (2.9% decrease since 2021) and FH (2.2% decrease since 2021), coverage estimates in 2024 were within 0-0.6% of 2023. A more rapid decrease has occurred in NH (11.3% decrease since 2021), with the largest single year decrease also occurring between 2023 and 2024 (5.6% decrease). In 2024, the gap between the proportion of two-year-olds up-to-date for age and up-to-date for age excluding the booster ranged from 6.0-9.7% across health authorities.

Provincial coverage estimates in 2024 (excluding VCH) for all antigens/agents, except rotavirus, were within 1.0% of 2023 levels, while rotavirus coverage had the largest change from 2023, decreasing by 1.7%. In 2024, coverage rates were lowest for DTaP-IPV-Hib (72.0%) and DTaP-IPV (72.1%), and highest for meningococcal C conjugate (80.8%), measles/mumps/rubella (MMR) (80.8%) and hepatitis B (81.5%). Across FH, IH, and ISLH, coverage estimates for all antigens/agents in 2024 were within 2.0% of 2023 estimates. In NH, coverage rates for Hib and meningococcal C conjugate were within 1.0% of 2023, while all other antigens/agents decreased by 2.4-6.2%. The greatest decrease in NH was in rotavirus, which decreased by 6.2% from 2023 to 2024.

In VCH, infant immunization coverage is assessed through periodic surveys. In the most recent survey, conducted for the 2020 birth cohort who were two years old in 2022, up-to-date for age coverage was 70.6% and up-to-date for age minus the booster coverage was 71.0%. Coverage estimates of antigens/agents in VCH for the 2020 birth cohort ranged from a low of 75.7% for rotavirus and a high of 84.5% for MMR. All coverage estimates for the 2020 birth cohort in VCH, including both up-to-date for age and at the antigen-level, decreased from the prior survey (2015 birth cohort) by 4.1-16.7%, with the greatest decrease in rotavirus coverage. The COVID-19 pandemic may have contributed to these declines.

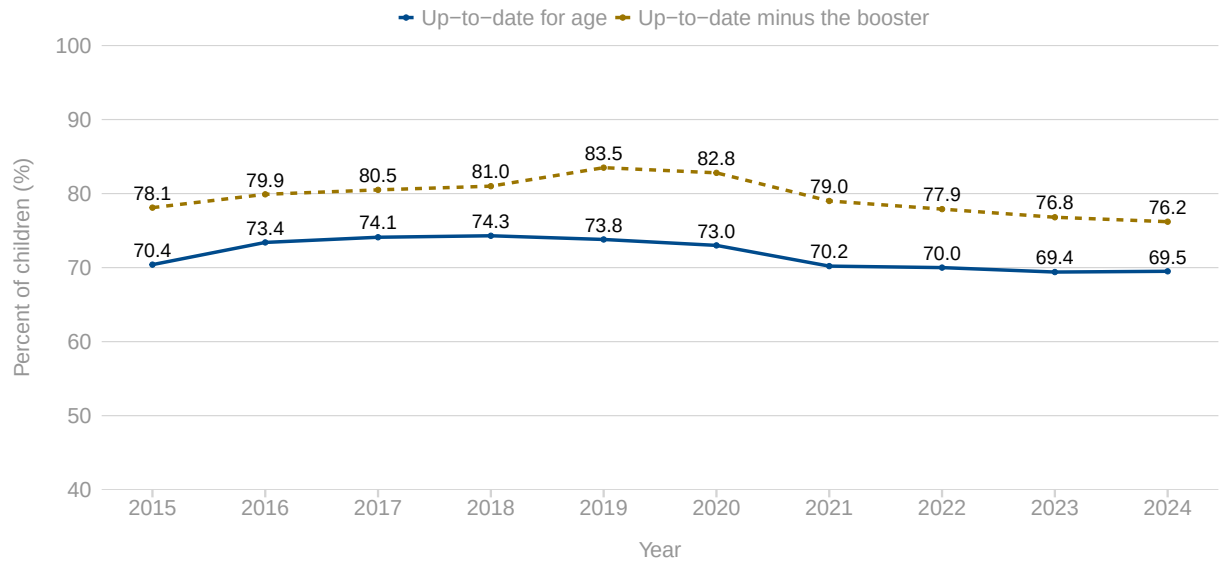
The proportion of two-year-olds in BC (excluding VCH) who have no recorded immunizations for the included antigens prior to their second birthday increased from 10.2% in 2023 to 11.4% in 2024, after having remained comparable between 2022 and 2023. Across health authorities, the proportion of children with no immunizations recorded has been steadily increasing since 2019, and in 2024 ranged from 8.8% in ISLH to 16.2% in NH. Provincially, 0.8% of children had both documented refusals and no recorded immunizations for the included antigens prior to their second birthday, an increase from 0.4% in 2023. Within health authorities, the proportion of two-year-olds with documented refusals and no recorded immunizations was low and stable in FH and NH, but increased in IH to 1.8% (0.7% increase from 2023) and in ISLH to 2.1% (0.9% increase from 2023) in 2024.

Please refer to the data notes for additional information and data limitations. Data tables used to create the figures in this report can be downloaded here.

Immunization coverage in BC

Up-to-date for age

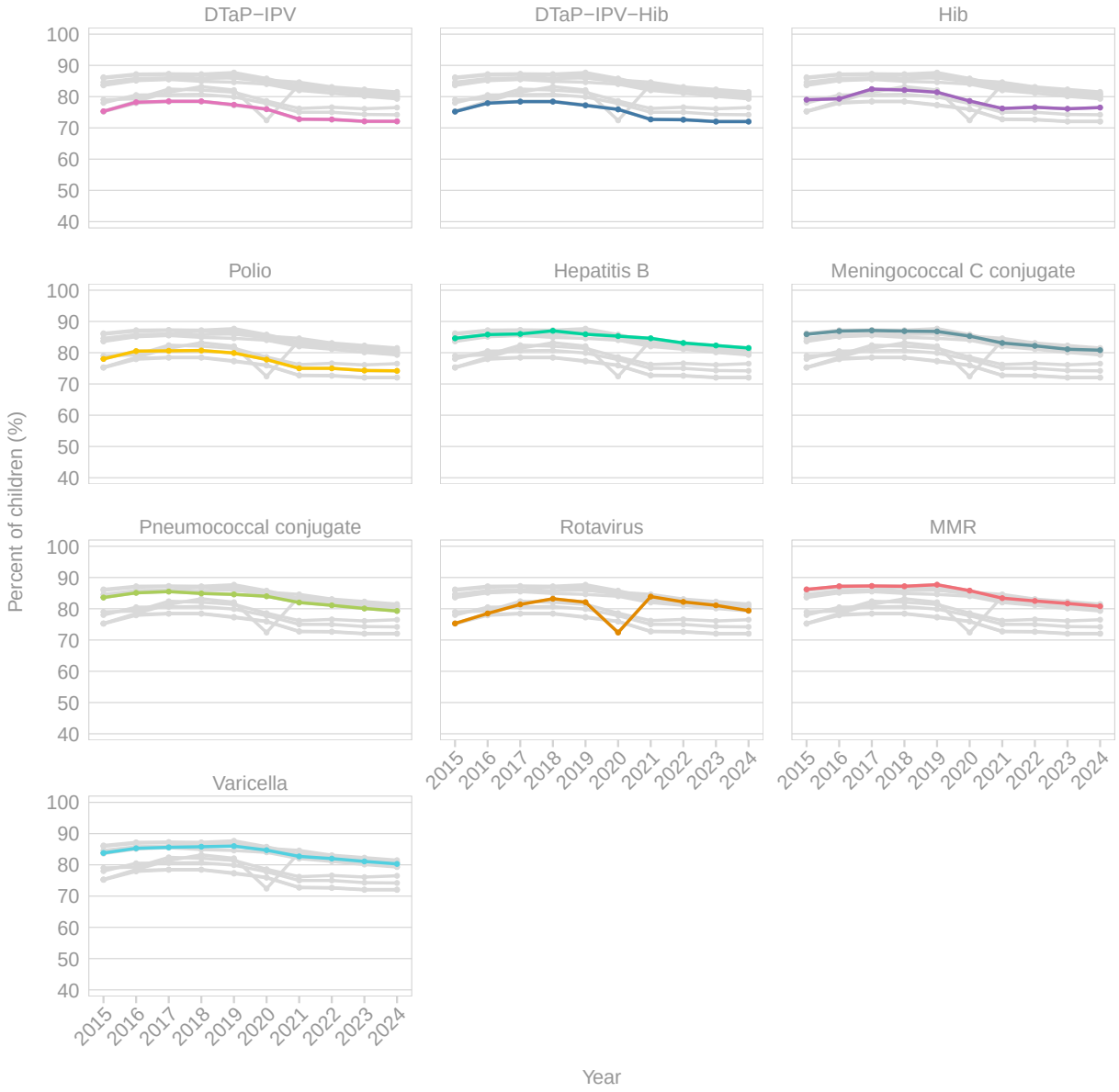
Children who are up-to-date for age meet the up-to-date definitions for DTaP-IPV-Hib, hepatitis B, meningococcal C conjugate, pneumococcal conjugate, MMR, and varicella, while those up-to-date minus the booster have received the primary series for these antigens but not the DTaP-IPV-Hib booster recommended at 18 months of age. Rotavirus is excluded from the up-to-date definition as the last dose must be administered by 8 months, and there is therefore no opportunity for catchup after this age. See Up-to-date for age definitions for further information.



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 1. Up-to-date and up-to-date minus the booster coverage by year, 2-year-olds, British Columbia

Coverage by antigen

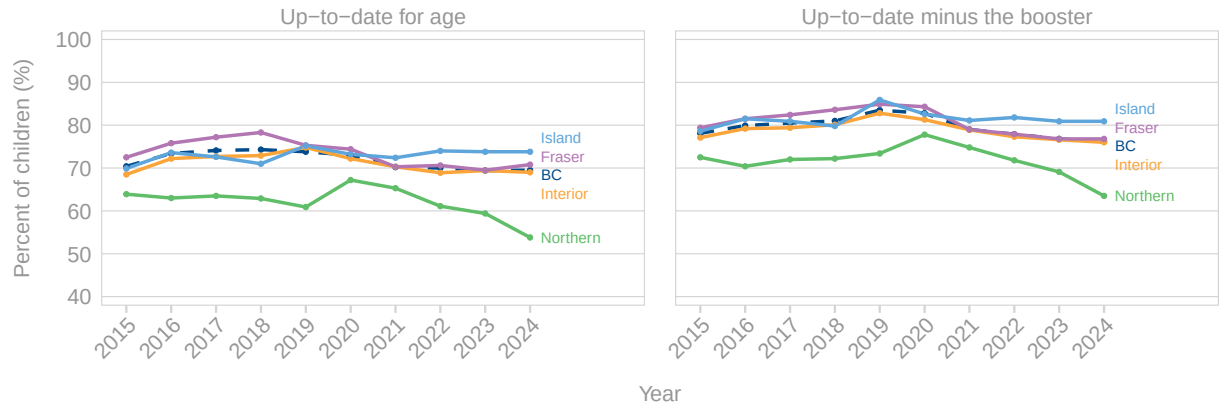


Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 2. Coverage by year and antigen, 2-year-olds, British Columbia

Immunization Coverage by Regional Health Authority

Summary



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 3. Up-to-date for age and up-to-date minus the booster coverage by year and health authority, 2-year-olds, British Columbia

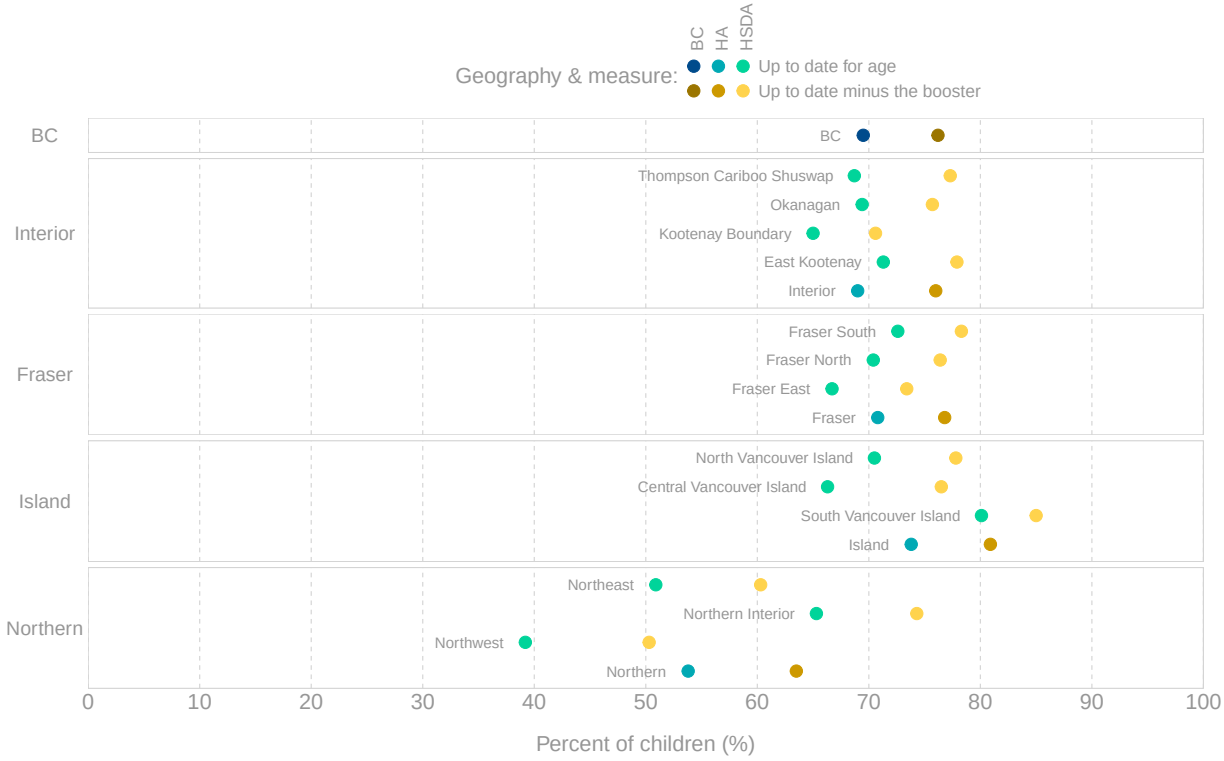
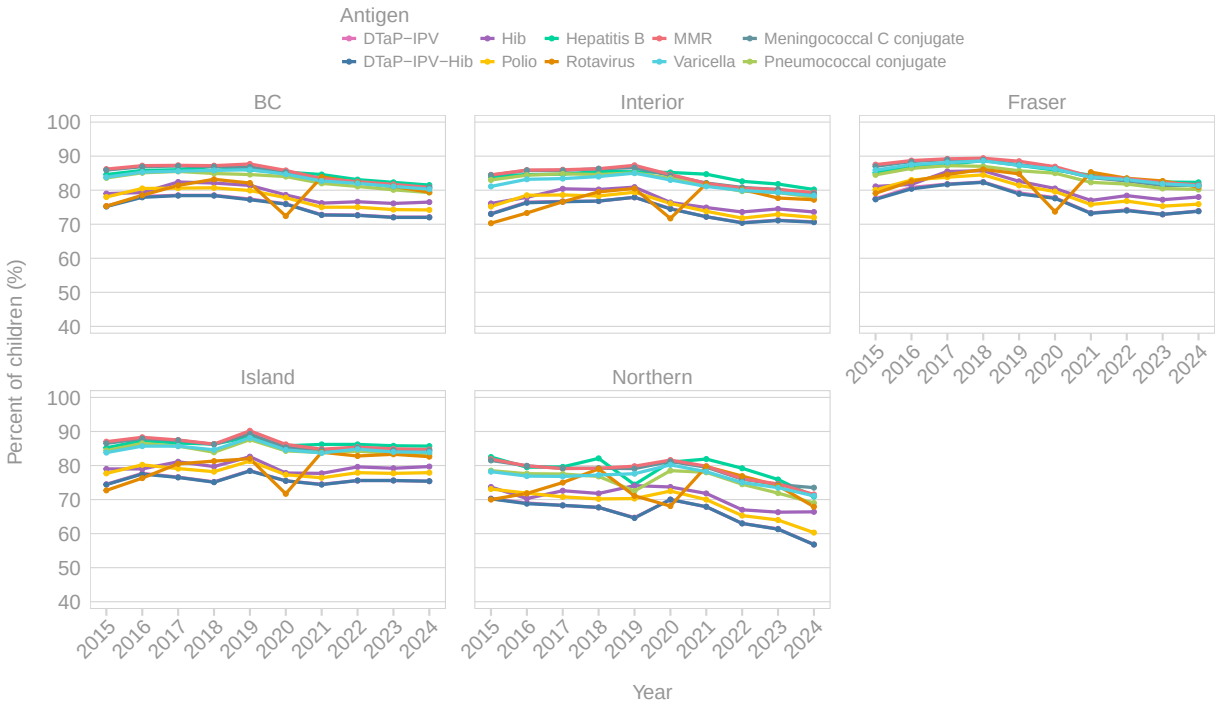


Figure 4. Up-to-date for age or up-to-date minus the booster coverage by geographic region, 2-year-olds, British Columbia, 2024

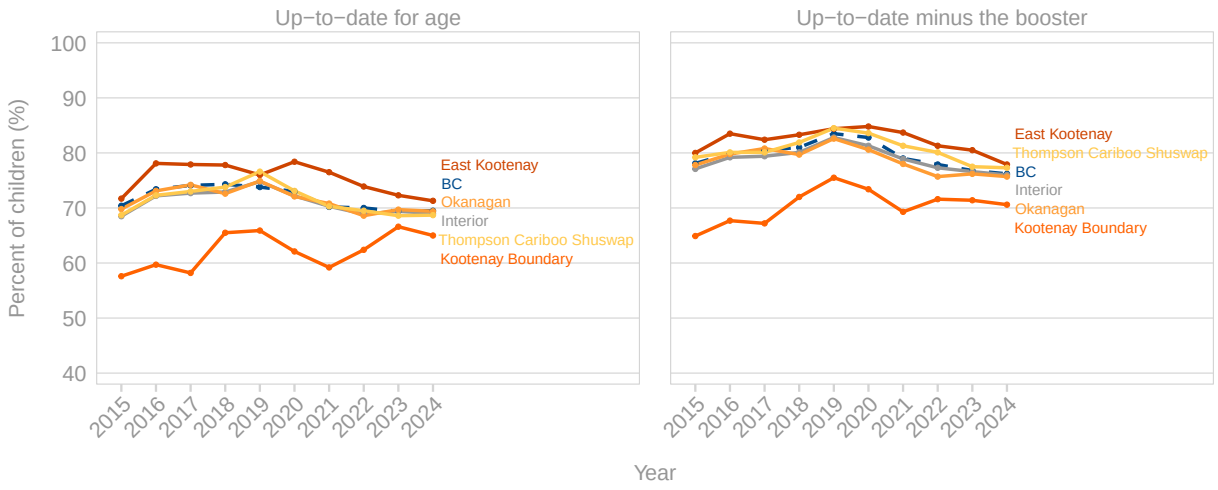


Note: The y−axis for this figure starts at 40% for clearer data visualization. Coverage estimates may overlap for DTaP−IPV and DTaP−IPV−Hib, for polio and Hib, and for hepatitis B, MMR, meningococcal C conjugate, pneumococcal C conjugate, and varicella, and the individual antigens may be difficult to differentiate.

Figure 5. Antigen coverage by year and health authority, 2-year-olds, British Columbia

Interior Health

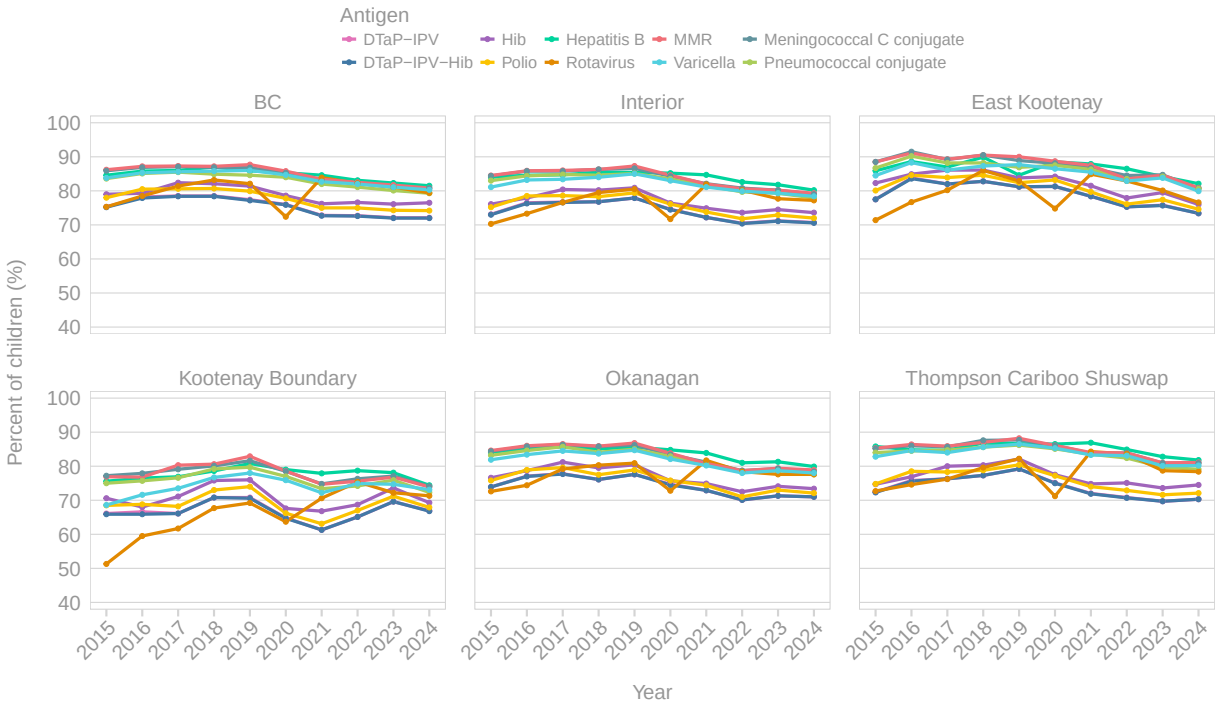
Up-to-date for age



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 6. Up-to-date for age and up-to-date minus the booster coverage by year and health service delivery area, 2-year-olds, Interior Health

Coverage by antigen

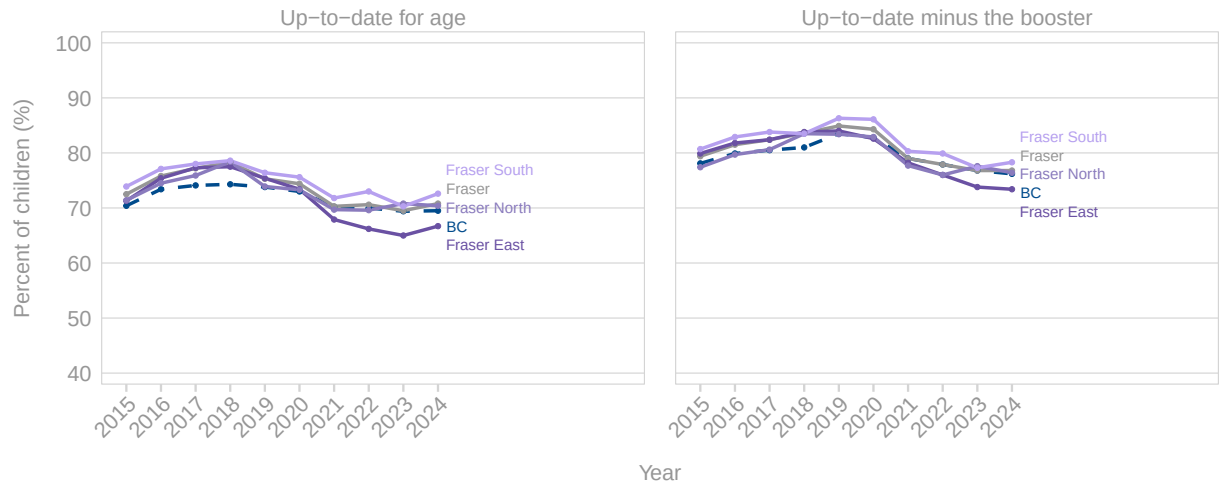


Note: The y−axis for this figure starts at 40% for clearer data visualization. Coverage estimates may overlap for DTaP−IPV and DTaP−IPV−Hib, for polio and Hib, and for hepatitis B, MMR, meningococcal C conjugate, pneumococcal C conjugate, and varicella, and the individual antigens may be difficult to differentiate.

Figure 7. Antigen coverage by year and health service delivery area, 2-year-olds, Interior Health

Fraser Health

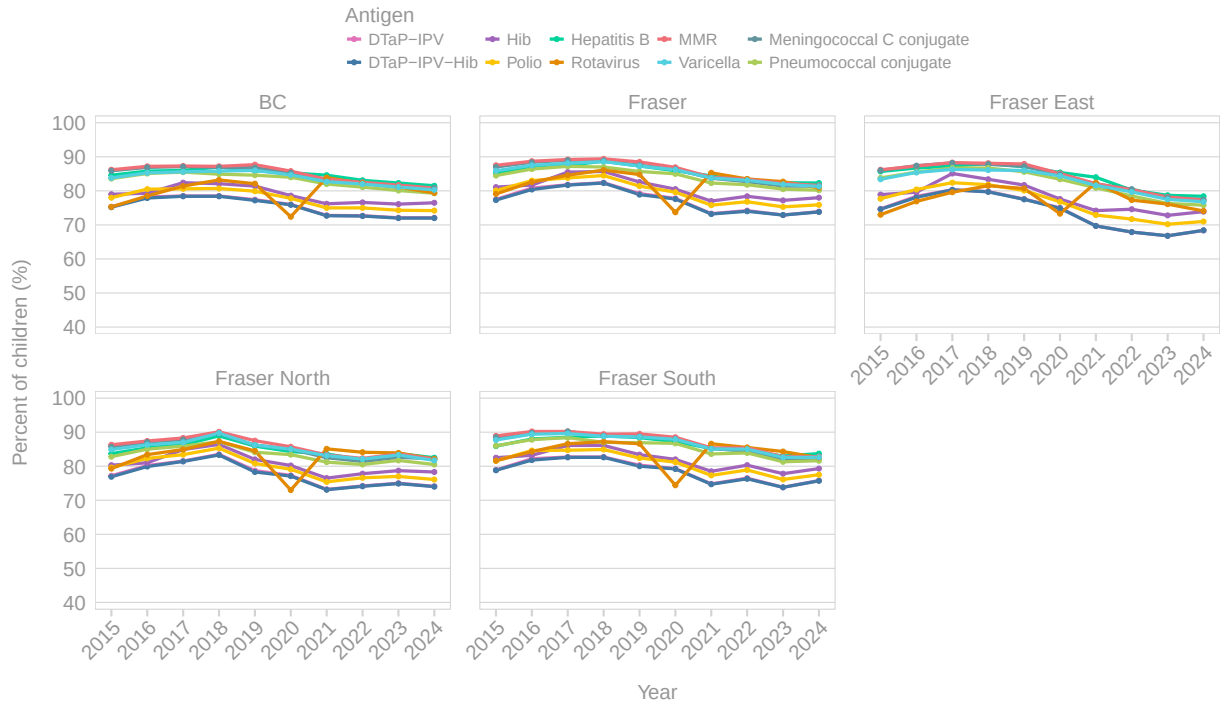
Up-to-date for age



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 8. Up-to-date for age and up-to-date minus the booster coverage by year and health service delivery area, 2-year-olds, Fraser Health

Coverage by antigen

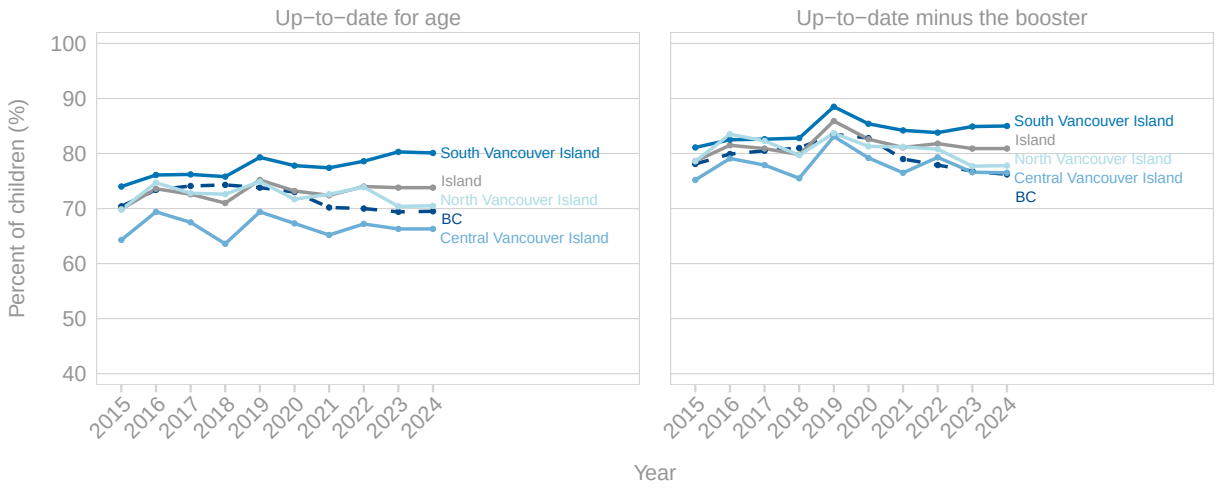


Note: The y−axis for this figure starts at 40% for clearer data visualization. Coverage estimates may overlap for DTaP−IPV and DTaP−IPV−Hib, for polio and Hib, and for hepatitis B, MMR, meningococcal C conjugate, pneumococcal C conjugate, and varicella, and the individual antigens may be difficult to differentiate.

Figure 9. Antigen coverage by year and health service delivery area, 2-year-olds, Fraser Health

Island Health

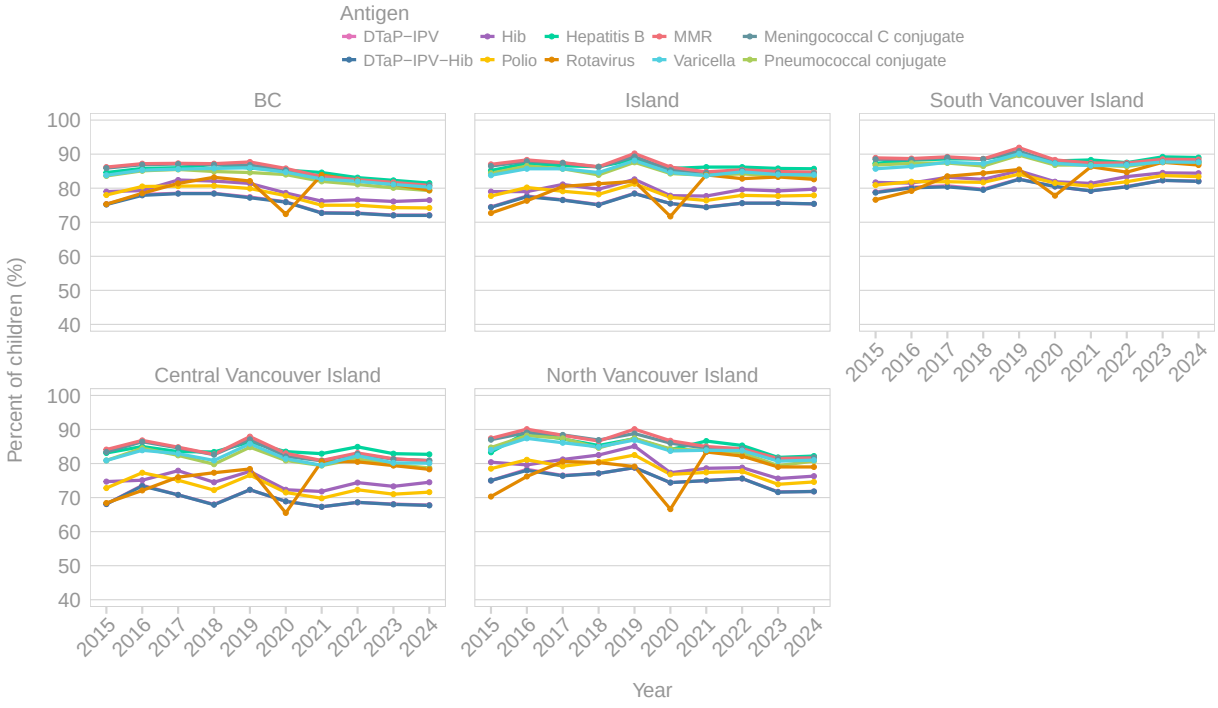
Up-to-date for age



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 10. Up-to-date for age and up-to-date minus the booster coverage by year and health service delivery area, 2-year-olds, Island Health

Coverage by antigen

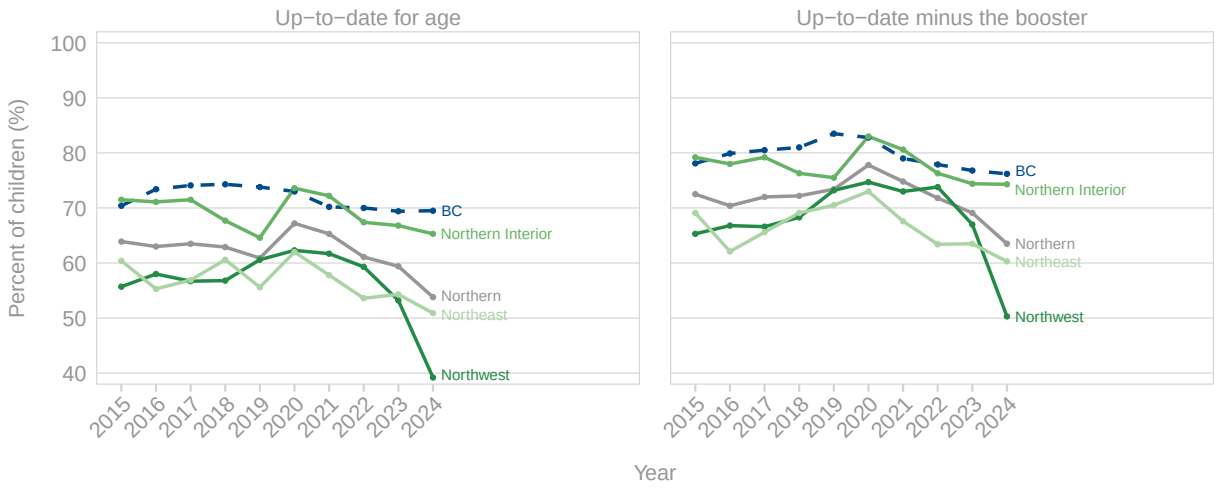


Note: The y−axis for this figure starts at 40% for clearer data visualization. Coverage estimates may overlap for DTaP−IPV and DTaP−IPV−Hib, for polio and Hib, and for hepatitis B, MMR, meningococcal C conjugate, pneumococcal C conjugate, and varicella, and the individual antigens may be difficult to differentiate.

Figure 11. Antigen coverage by year and health service delivery area, 2-year-olds, Island Health

Northern Health

Up-to-date for age



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 12. Up-to-date for age and up-to-date minus the booster coverage by year and health service delivery area, 2-year-olds, Northern Health

Coverage by antigen

Note: The y−axis for this figure starts at 40% for clearer data visualization. Coverage estimates may overlap for DTaP−IPV and DTaP−IPV−Hib, for polio and Hib, and for hepatitis B, MMR, meningococcal C conjugate, pneumococcal C conjugate, and varicella, and the individual antigens may be difficult to differentiate.

Figure 13. Antigen coverage by year and health service delivery area, 2-year-olds, Northern Health

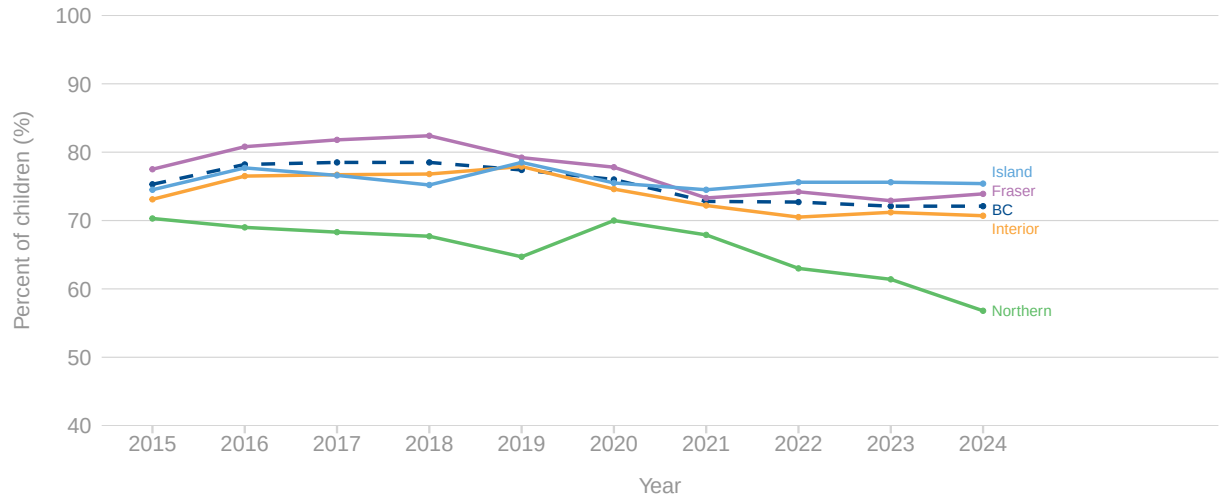
Immunization coverage by Antigen

In the following coverage by antigen sections, the 'Unknown' subcategories of partially immunized and unimmunized includes all children who do not have a documented refusal or contraindication for the antigen/agent of interest and were therefore partially immunized or unimmunized for a reason not recorded ("unknown").

The 'Unimmunized - Unknown' subcategory further divides those who are unimmunized for the antigen/agent of interest without a known reason into two additional categories: 'Immunization Record' for those who have any records (documented immunization, refusal, contraindication and/or exemption) for routine infant immunizations, and 'No Immunization Record' for those that have no documented records for any routine infant immunization. See data notes for further information.

Diphtheria, Tetanus, Pertussis, and Polio (DTaP-IPV)

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 14. DTaP-IPV coverage by year and health authority, 2-year-olds, British Columbia

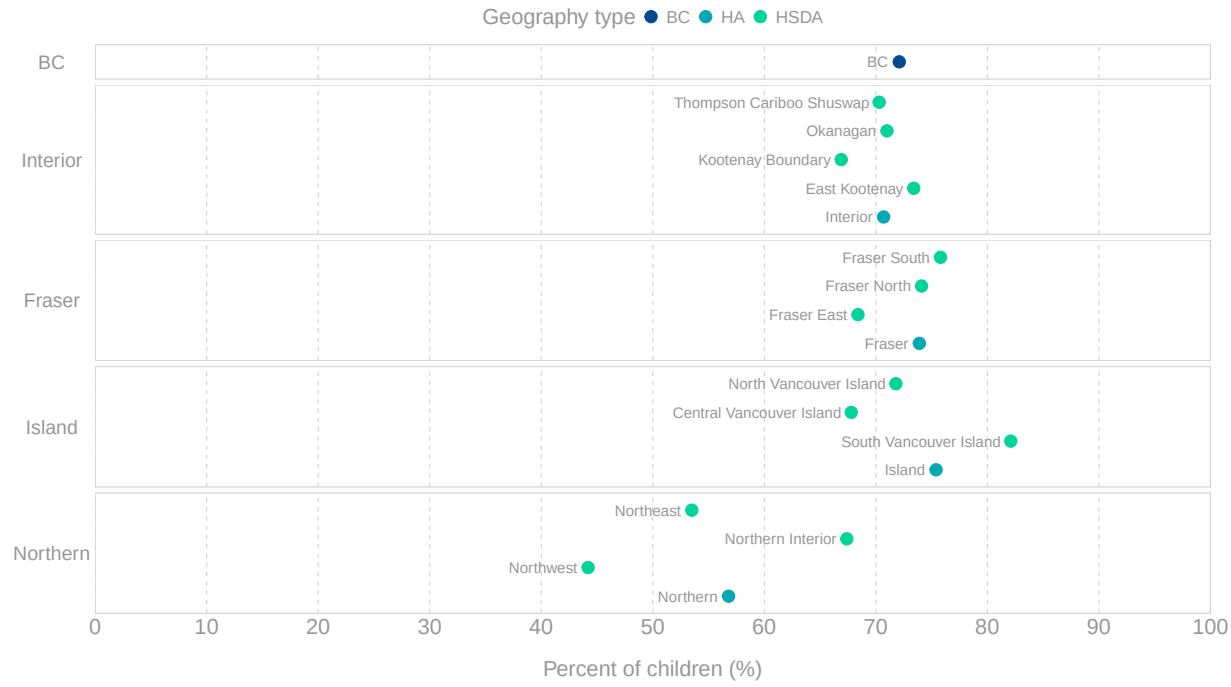
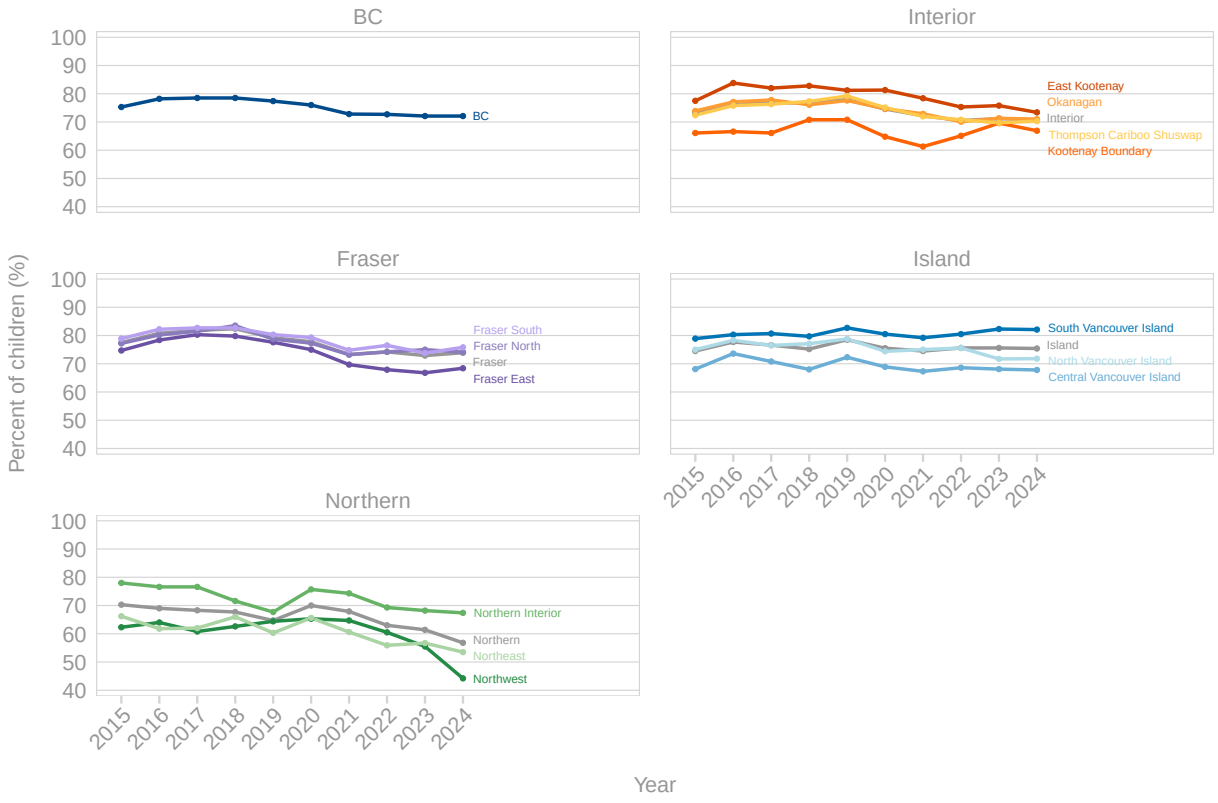


Figure 15. DTaP-IPV coverage by geographic region, 2-year-olds, British Columbia, 2024



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 16. DTaP-IPV coverage by year and geographic region, 2-year-olds, British Columbia

Reasons for non-immunization (DTaP only)

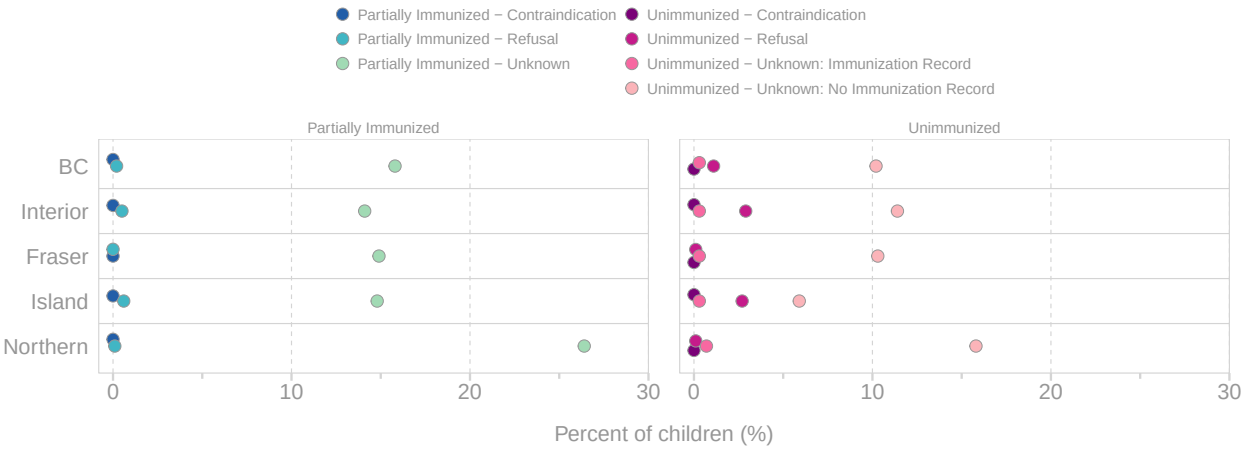
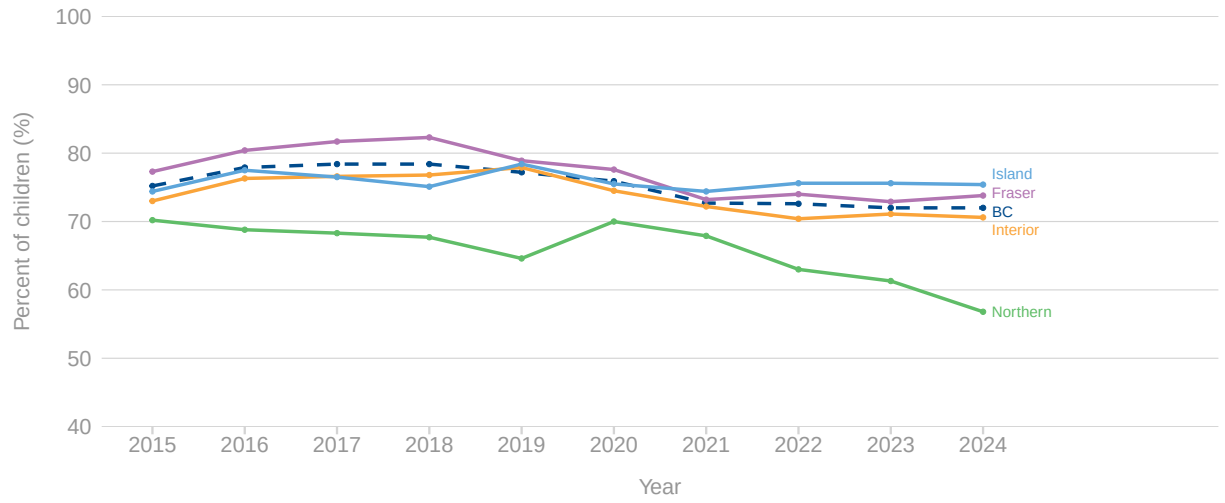


Figure 17. Reasons for non-immunization by health authority, DTaP, 2-year-olds, British Columbia, 2024

Figure 18. Reasons for non-immunization by health service delivery area, DTaP, 2-year-olds, British Columbia, 2024

Diphtheria, Tetanus, Pertussis, Polio, *Haemophilus influenzae* type b (DTaP-IPV-Hib)

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 19. DTaP-IPV-Hib coverage by year and health authority, 2-year-olds, British Columbia

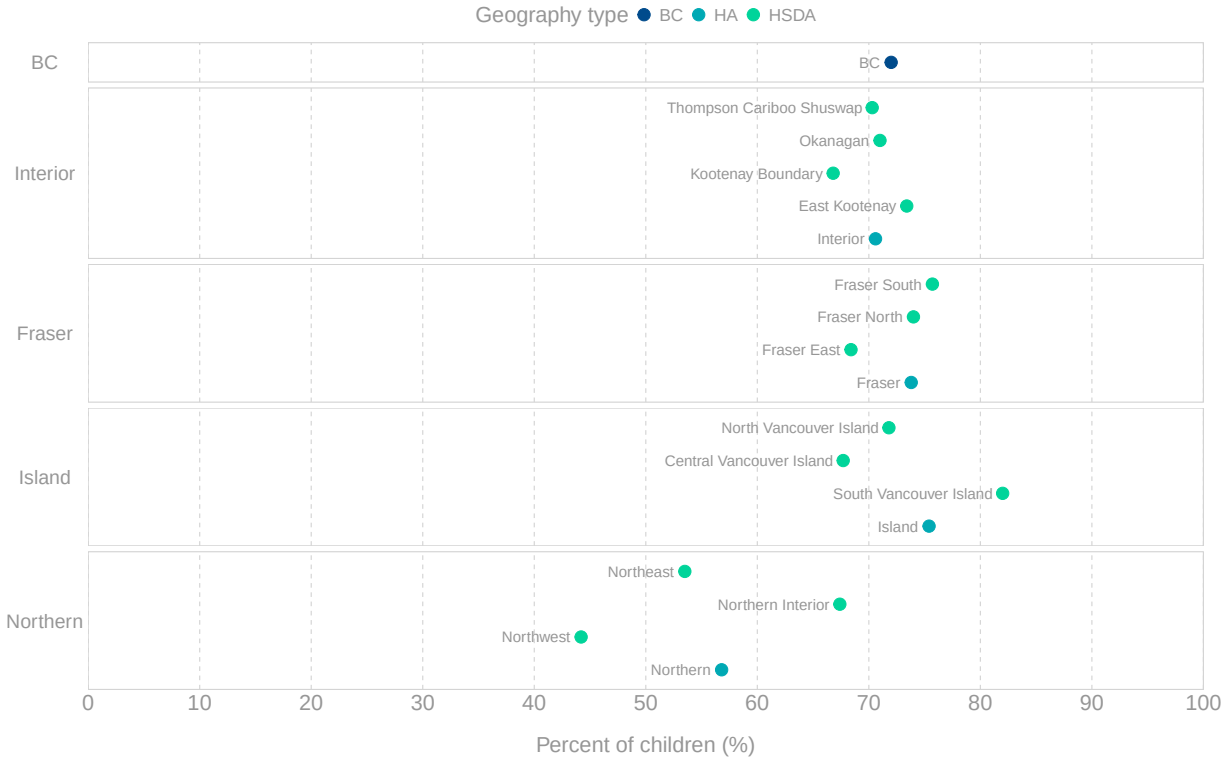
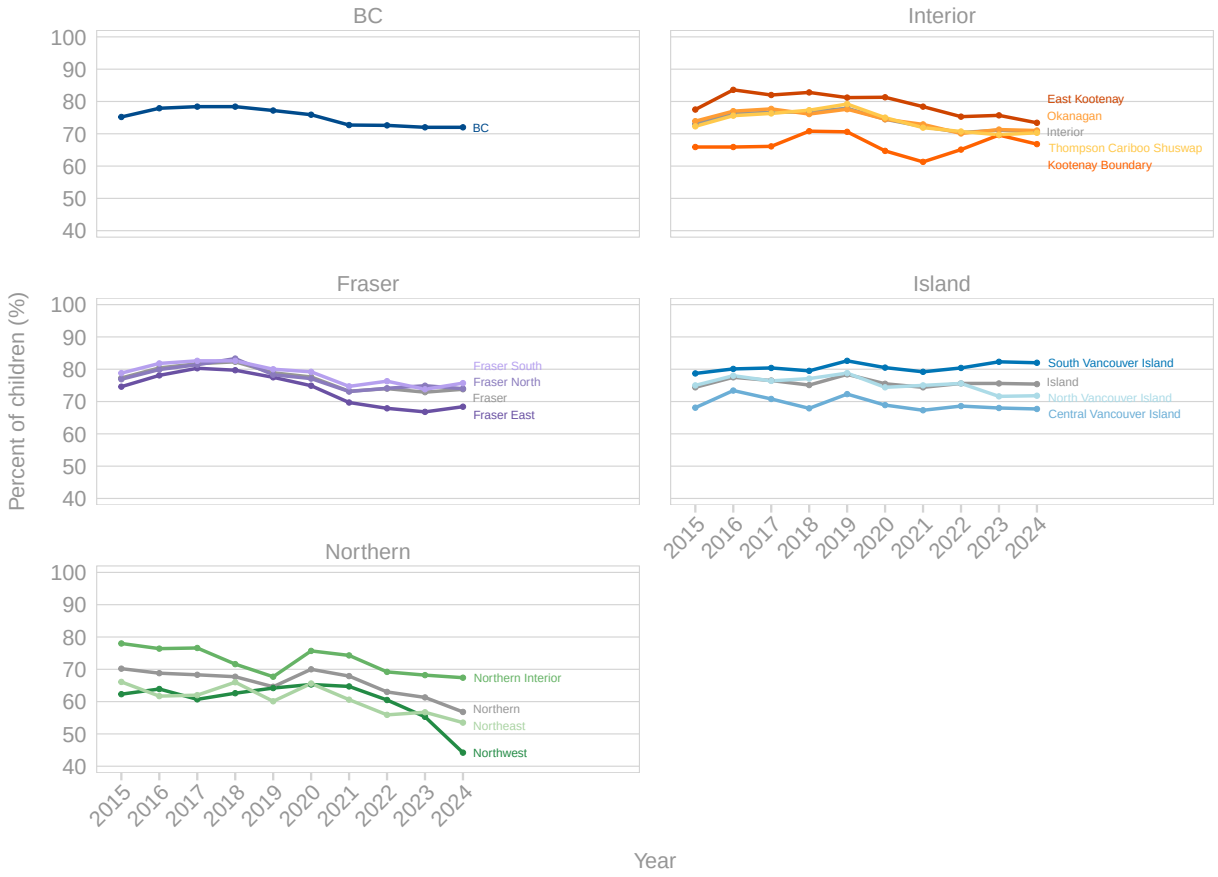


Figure 20. DTaP-IPV-Hib coverage by geographic region, 2-year-olds, British Columbia, 2024

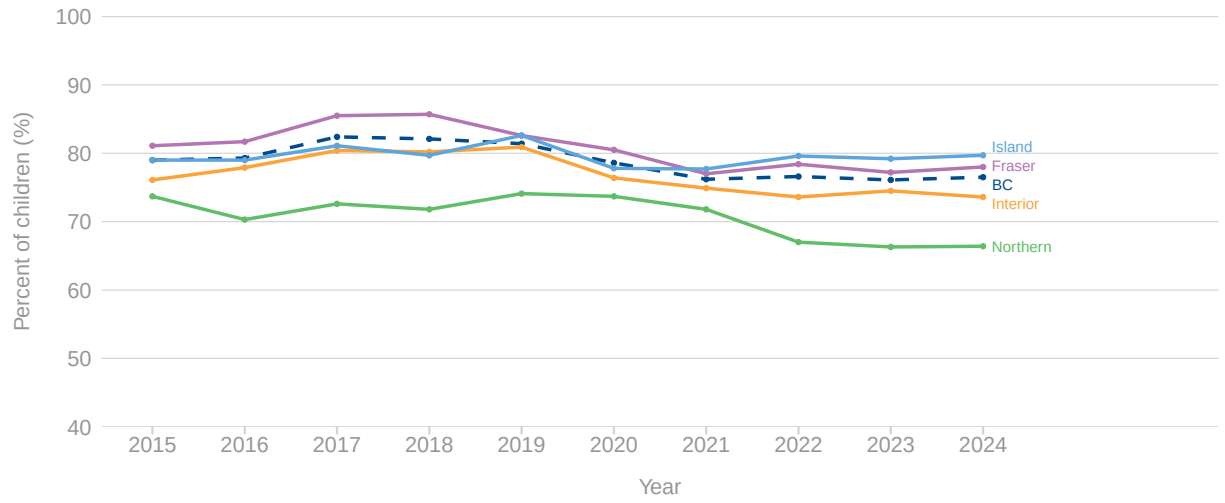


Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 21. DTaP-IPV-Hib coverage by year and geographic region, 2-year-olds, British Columbia

Haemophilus influenzae type b (Hib)

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 22. Hib coverage by year and health authority, 2-year-olds, British Columbia

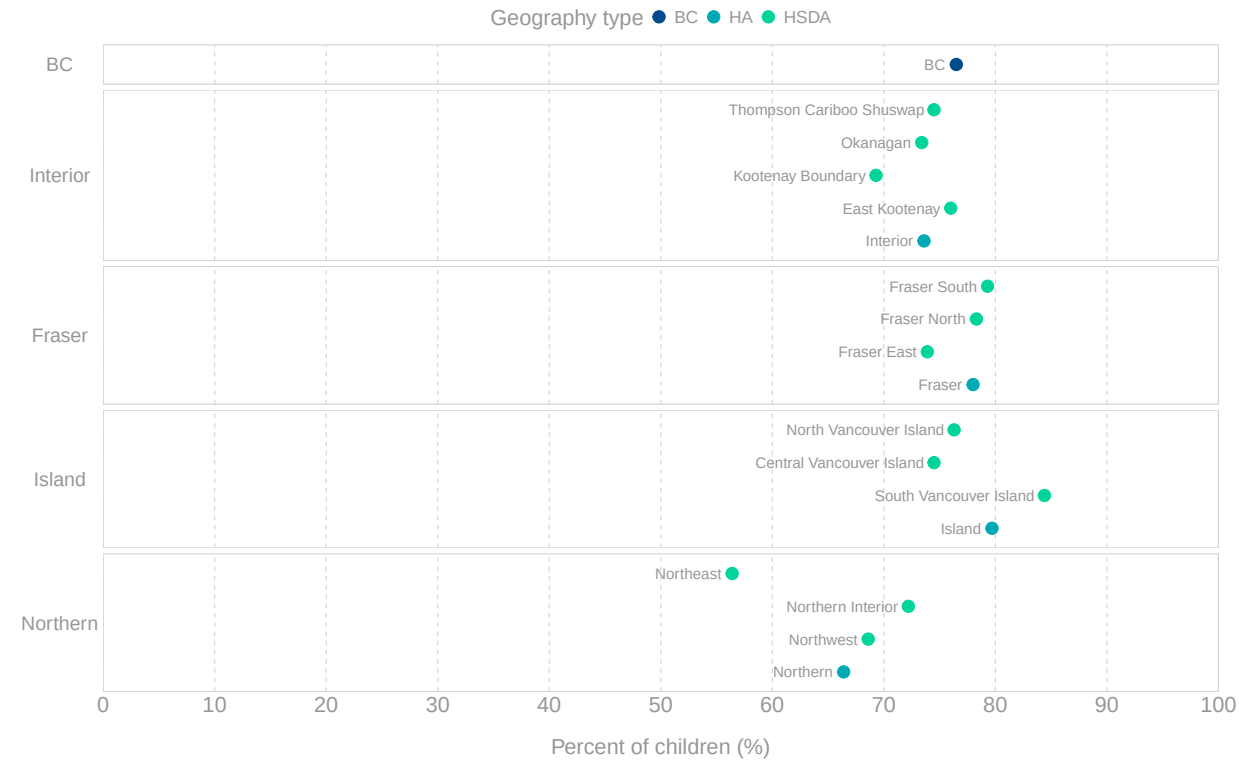
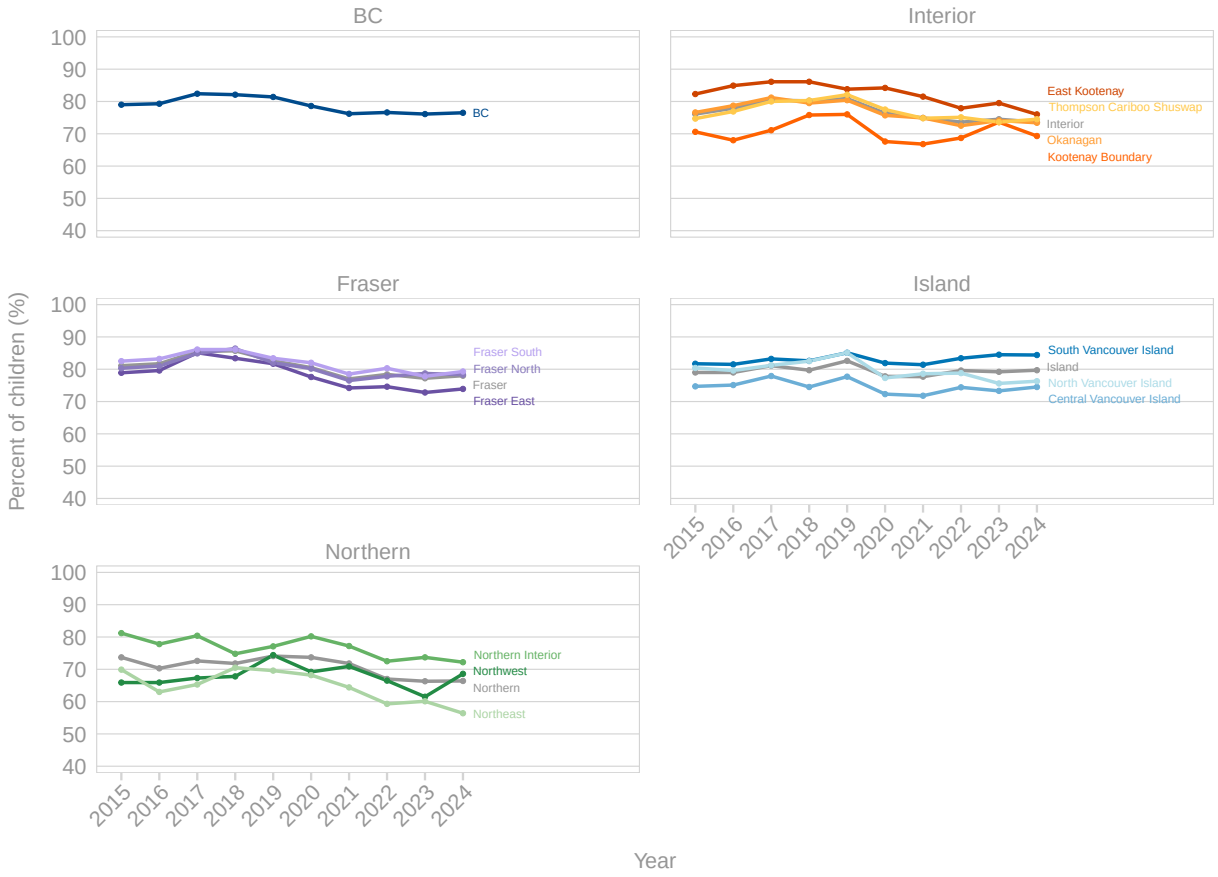


Figure 23. Hib coverage by geographic region, 2-year-olds, British Columbia, 2024



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 24. Hib coverage by year and geographic region, 2-year-olds, British Columbia

Reasons for non-immunization

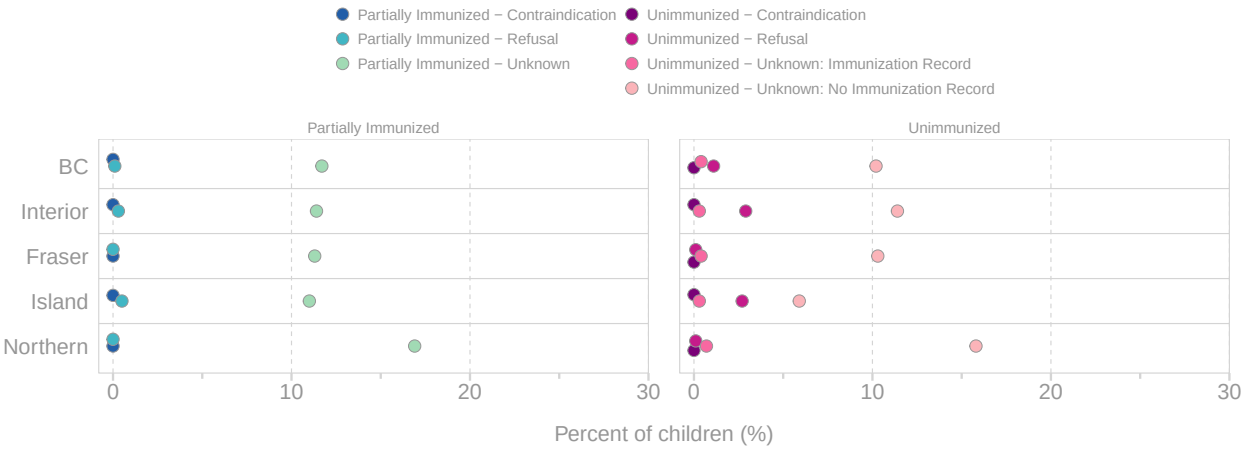
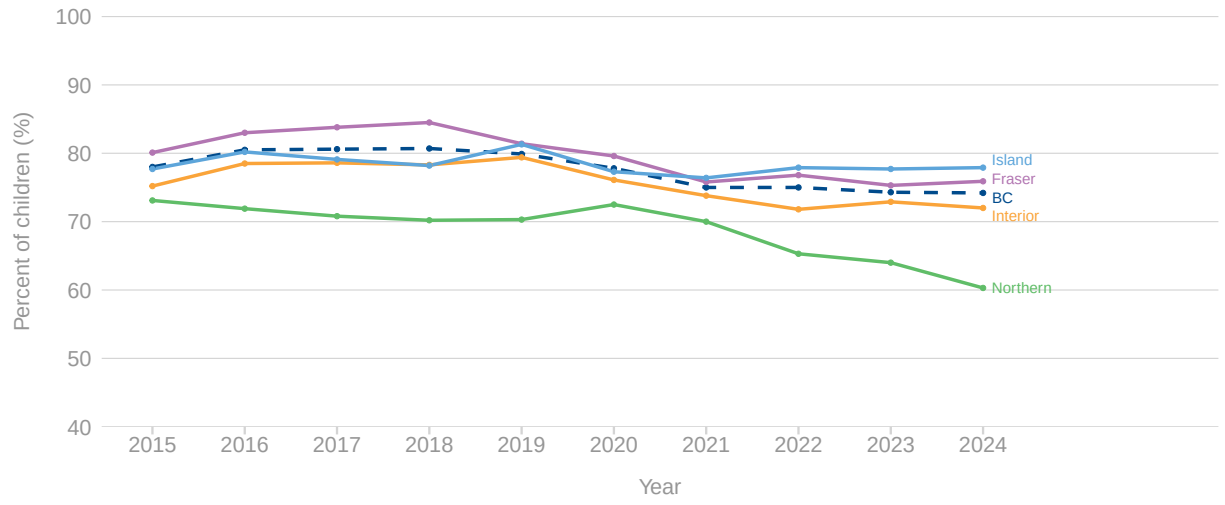


Figure 25. Reasons for non-immunization by health authority, Hib, 2-year-olds, British Columbia, 2024

Figure 26. Reasons for non-immunization by health service delivery area, Hib, 2-year-olds, British Columbia, 2024

Polio

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 27. Polio coverage by year and health authority, 2-year-olds, British Columbia

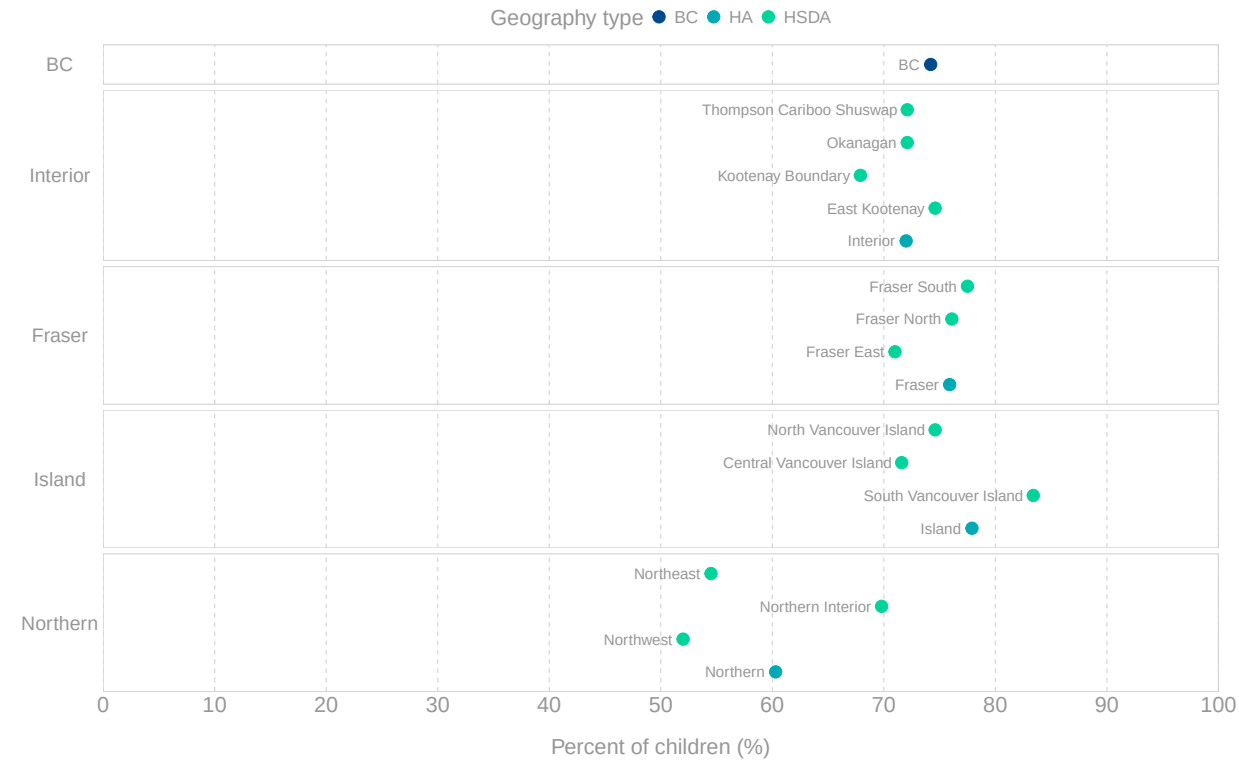
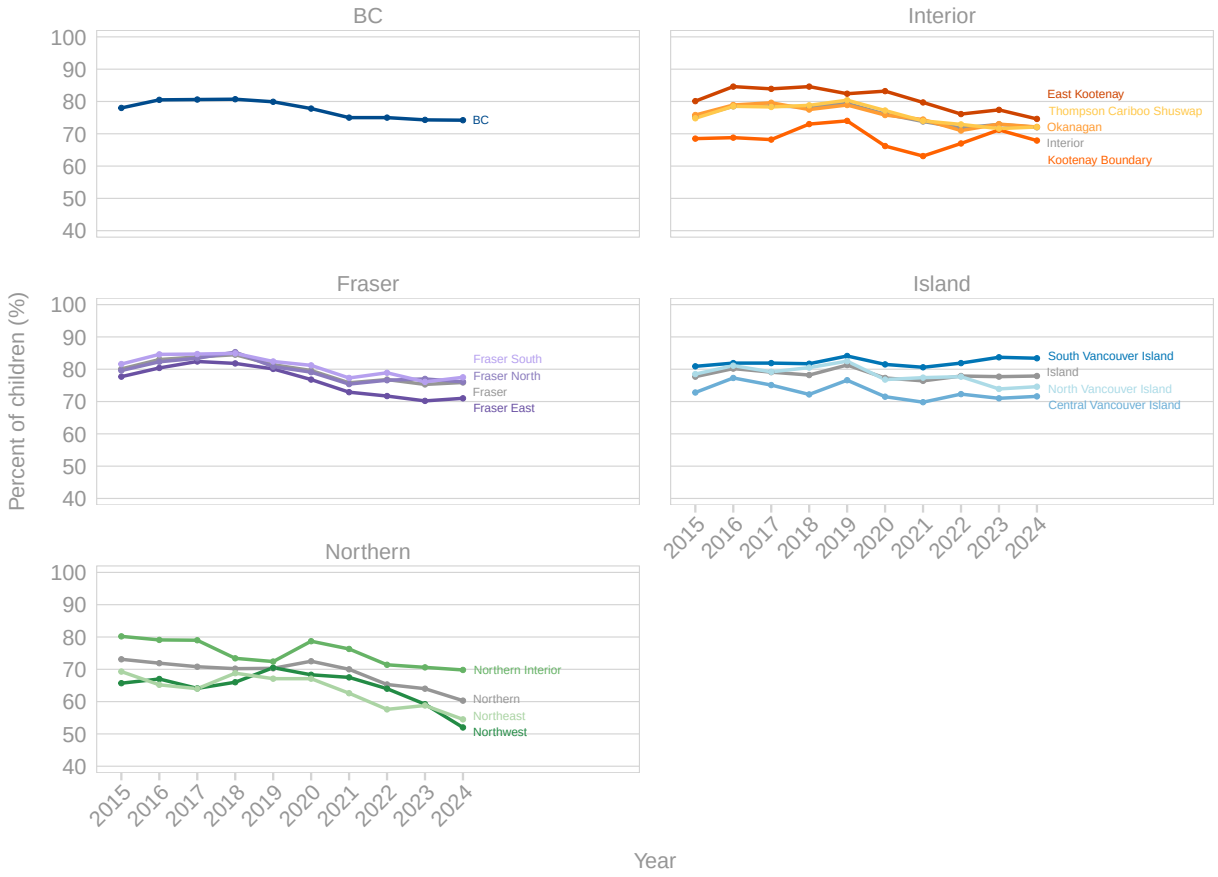


Figure 28. Polio coverage by geographic region, 2-year-olds, British Columbia, 2024



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 29. Polio coverage by year and geographic region, 2-year-olds, British Columbia

Reasons for non-immunization

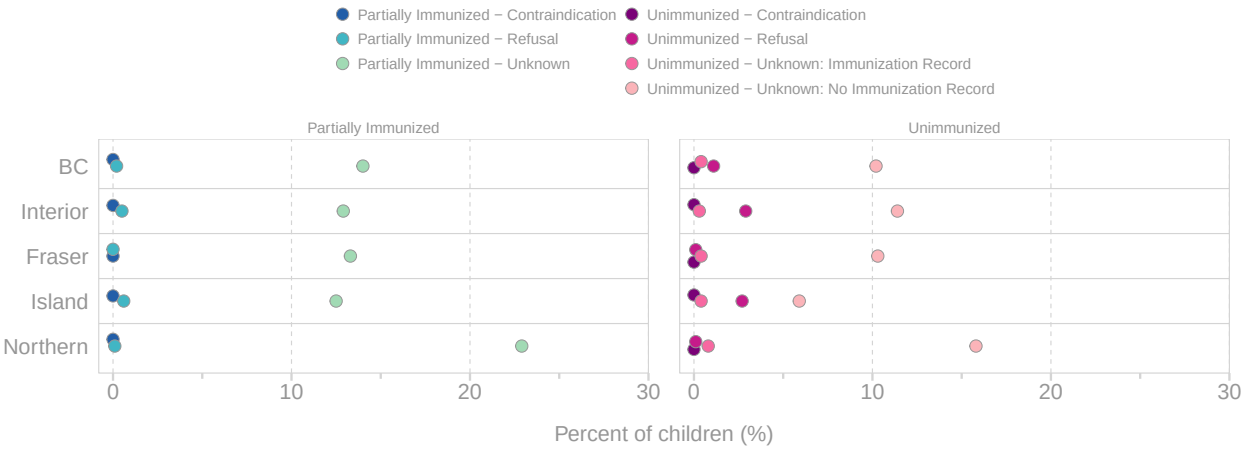
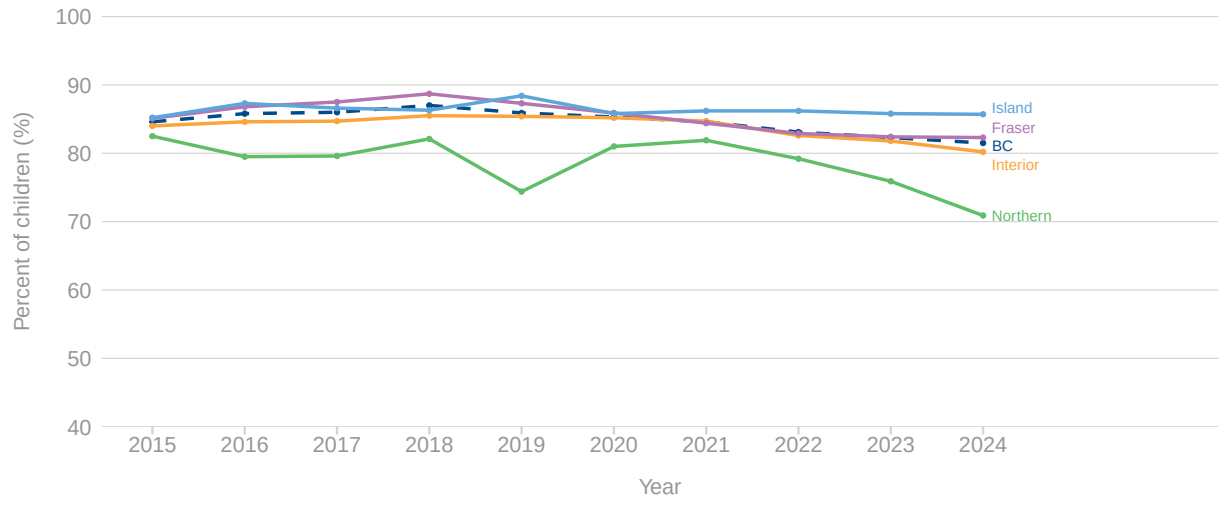


Figure 30. Reasons for non-immunization by health authority, Polio, 2-year-olds, British Columbia, 2024

Figure 31. Reasons for non-immunization by health service delivery area, Polio, 2-year-olds, British Columbia, 2024

Hepatitis B

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 32. Hepatitis B coverage by year and health authority, 2-year-olds, British Columbia

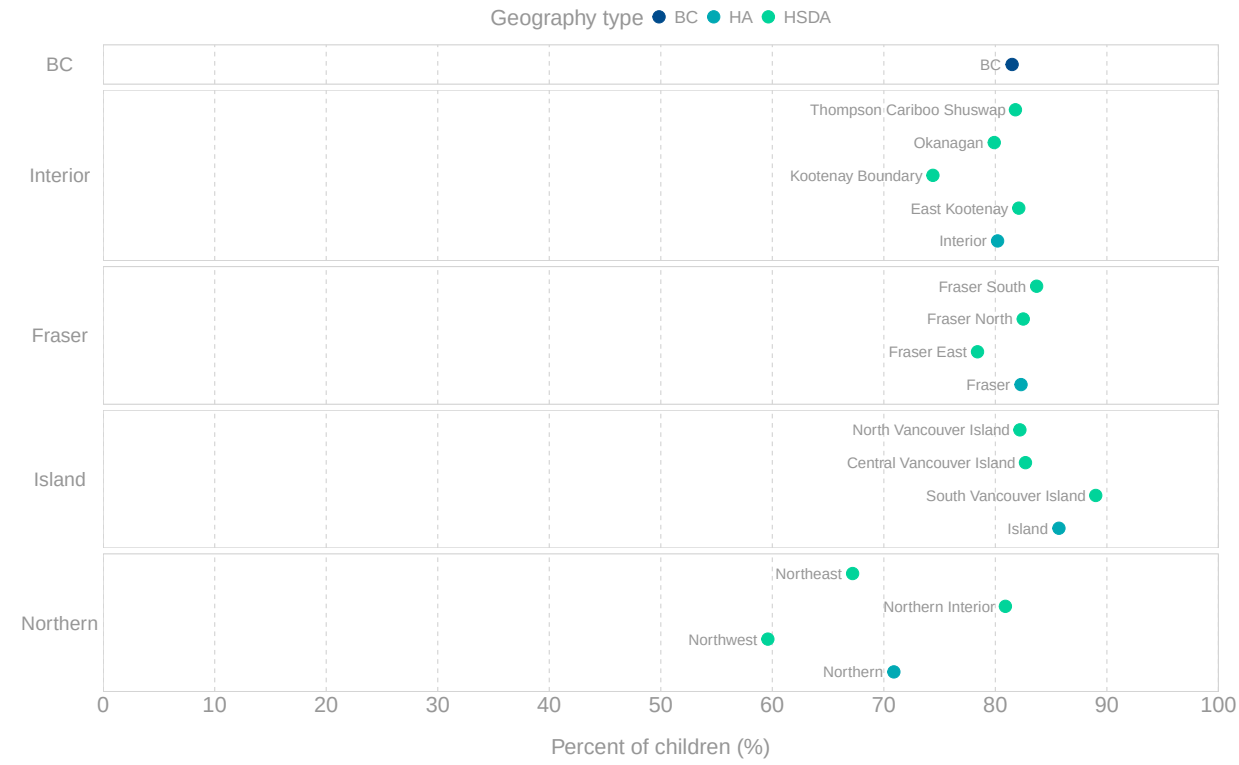
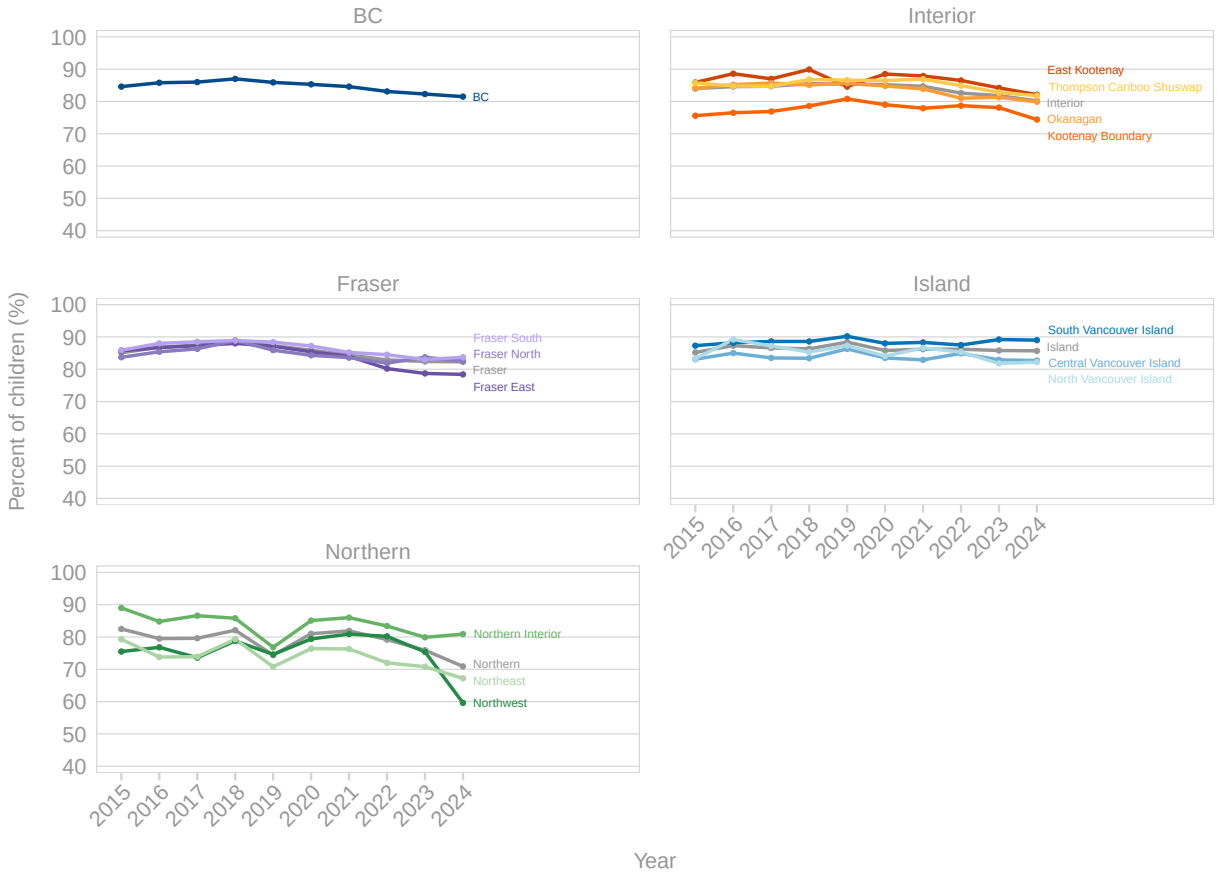


Figure 33. Hepatitis B coverage by geographic region, 2-year-olds, British Columbia, 2024



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 34. Hepatitis B coverage by year and geographic region, 2-year-olds, British Columbia

Reasons for non-immunization

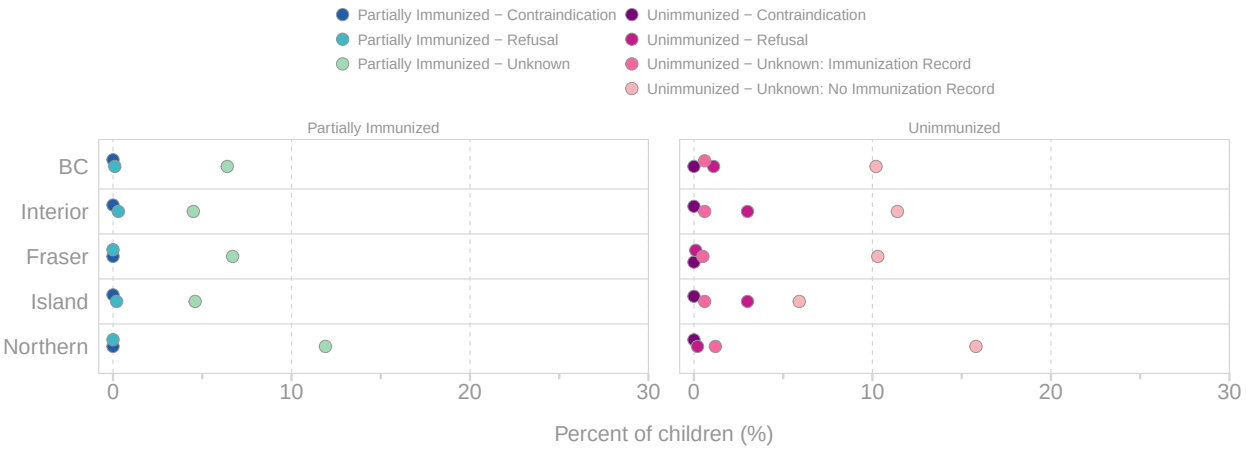
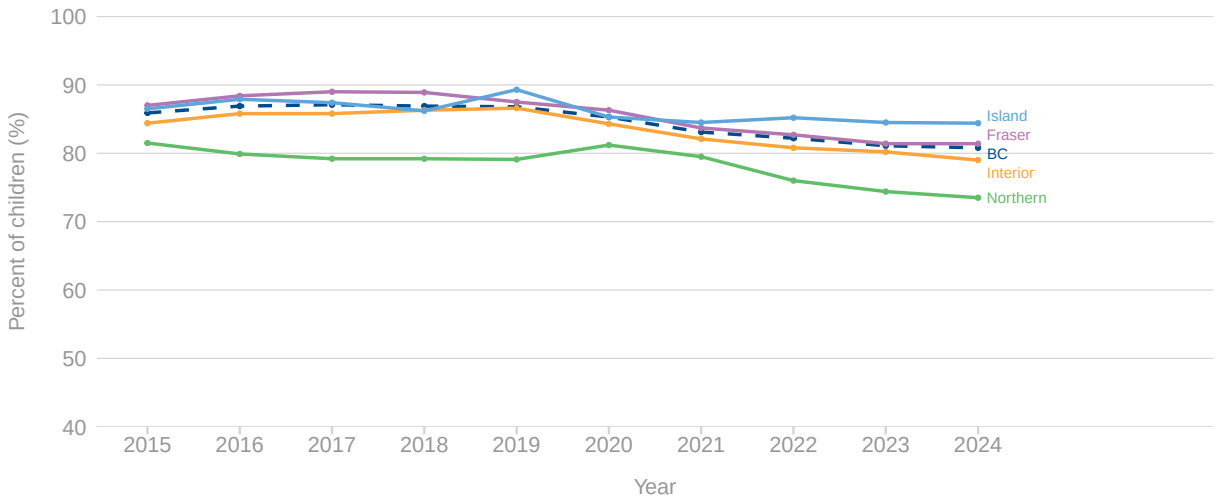


Figure 35. Reasons for non-immunization by health authority, Hepatitis B, 2-year-olds, British Columbia, 2024

Figure 36. Reasons for non-immunization by health service delivery area, Hepatitis B, 2-year-olds, British Columbia, 2024

Meningococcal C Conjugate

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 37. Meningococcal C conjugate coverage by year and health authority, 2-year-olds, British Columbia

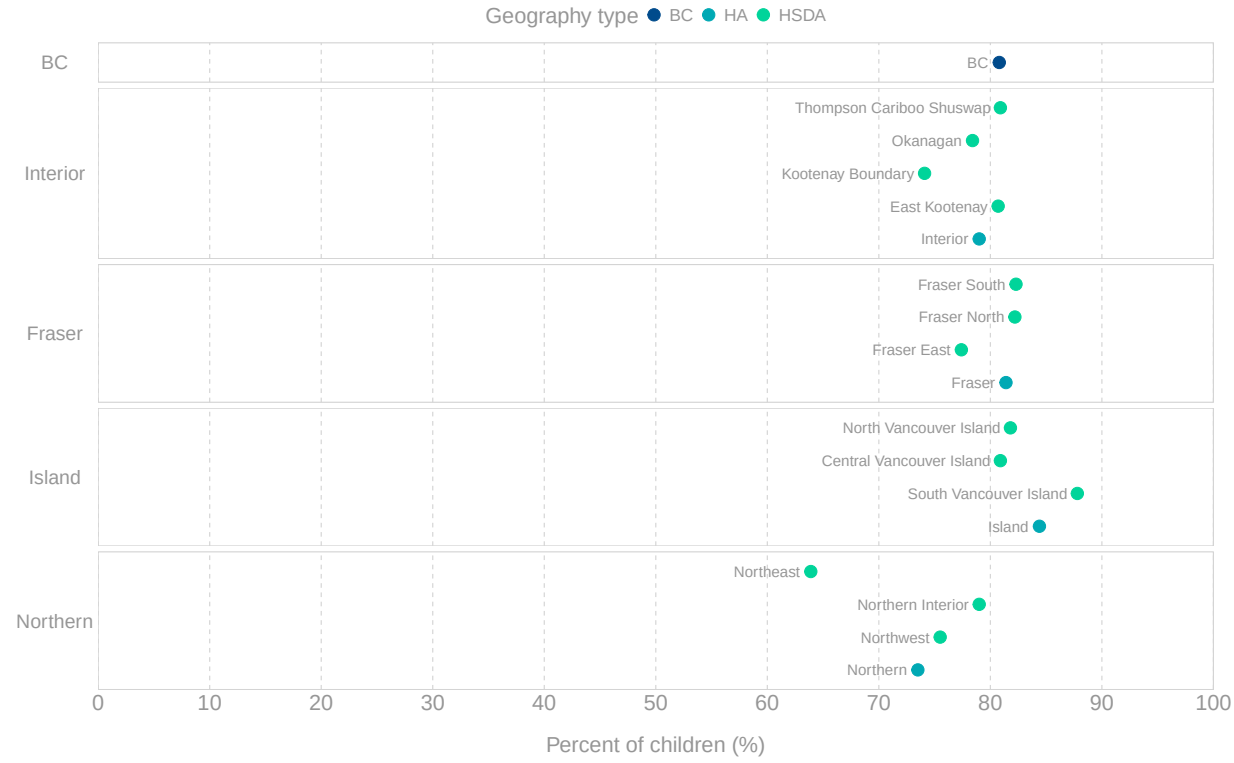
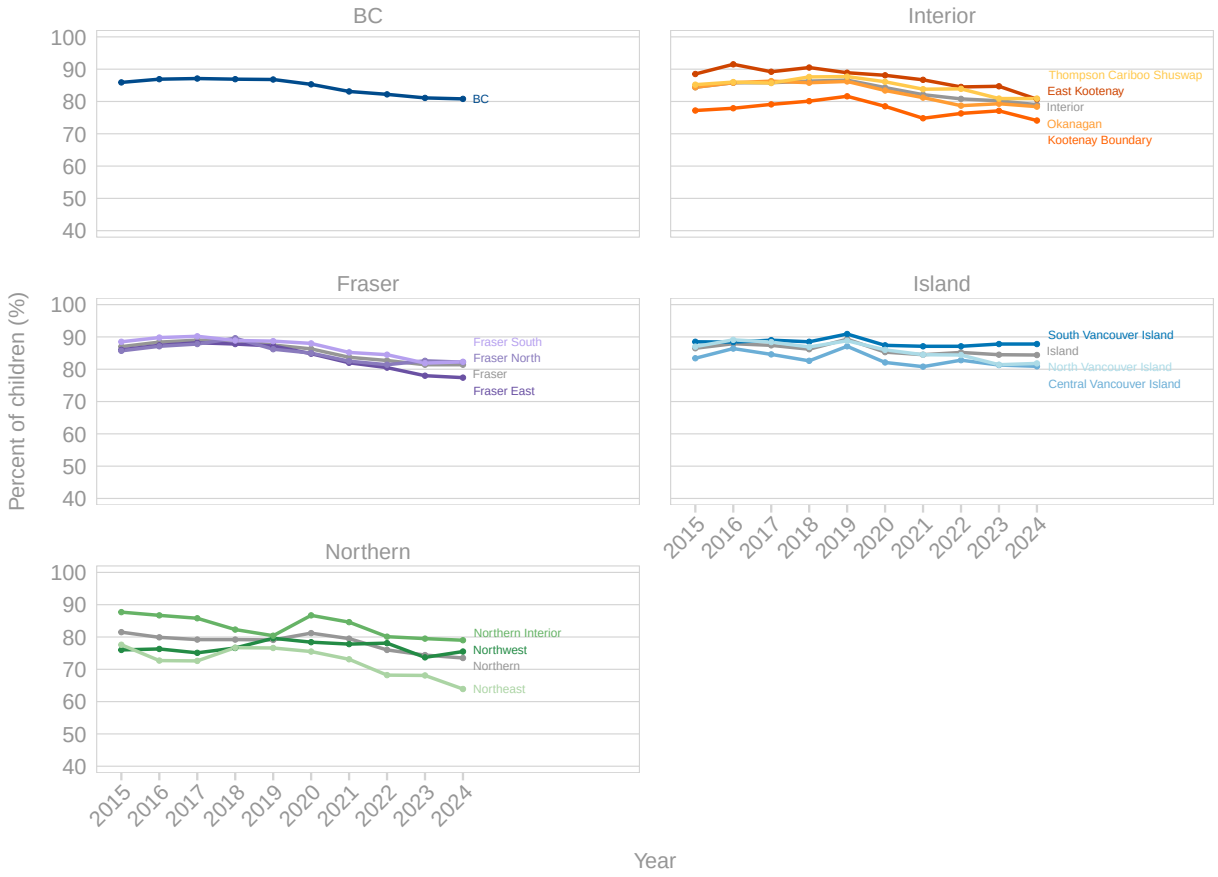


Figure 38. Meningococcal C conjugate coverage by geographic region, 2-year-olds, British Columbia, 2024



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 39. Meningococcal C conjugate coverage by year and geographic region, 2-year-olds, British Columbia

Reasons for non-immunization

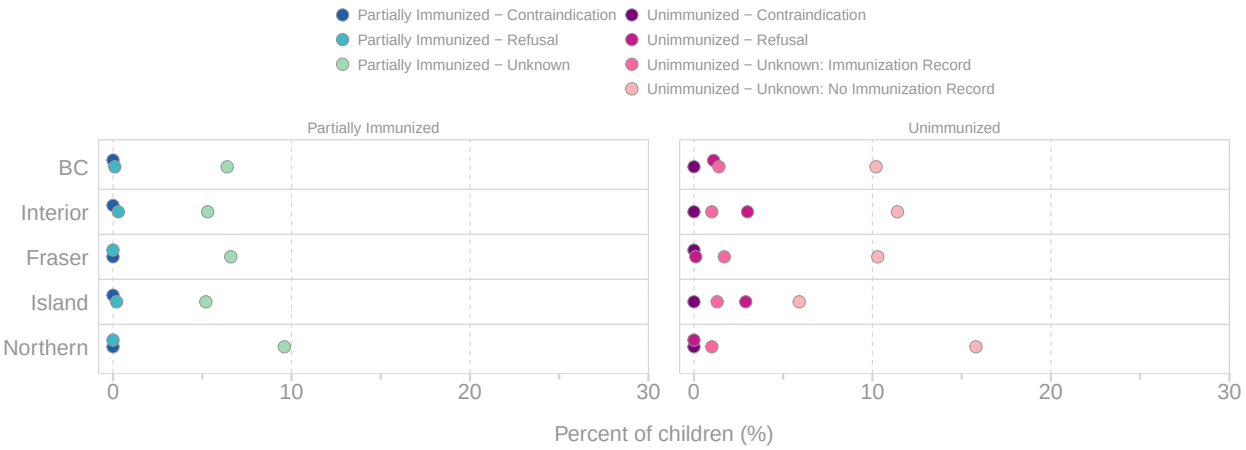
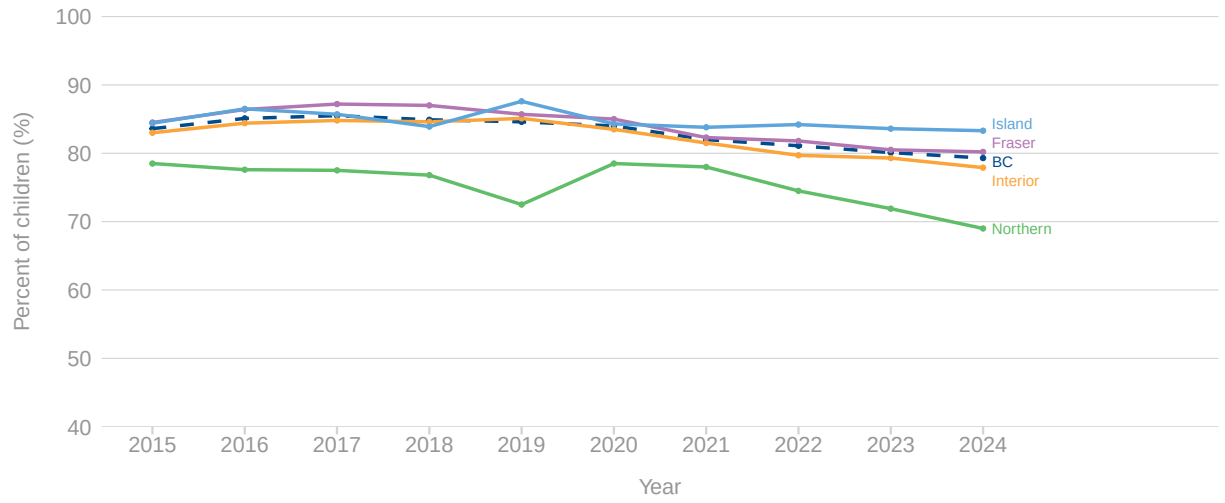


Figure 40. Reasons for non-immunization by health authority, Meningococcal C conjugate, 2-year-olds, British Columbia, 2024

Figure 41. Reasons for non-immunization by health service delivery area, Meningococcal C conjugate, 2-year-olds, British Columbia, 2024

Pneumococcal Conjugate

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 42. Pneumococcal conjugate coverage by year and health authority, 2-year-olds, British Columbia

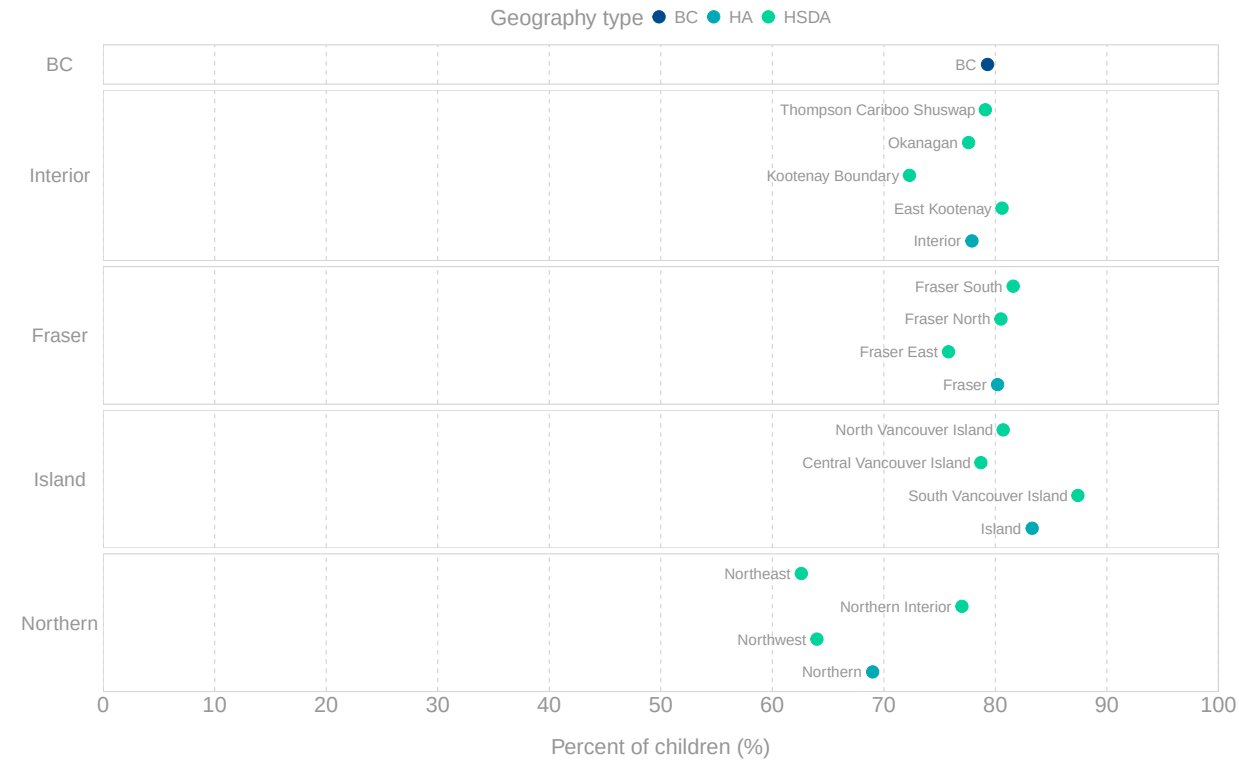
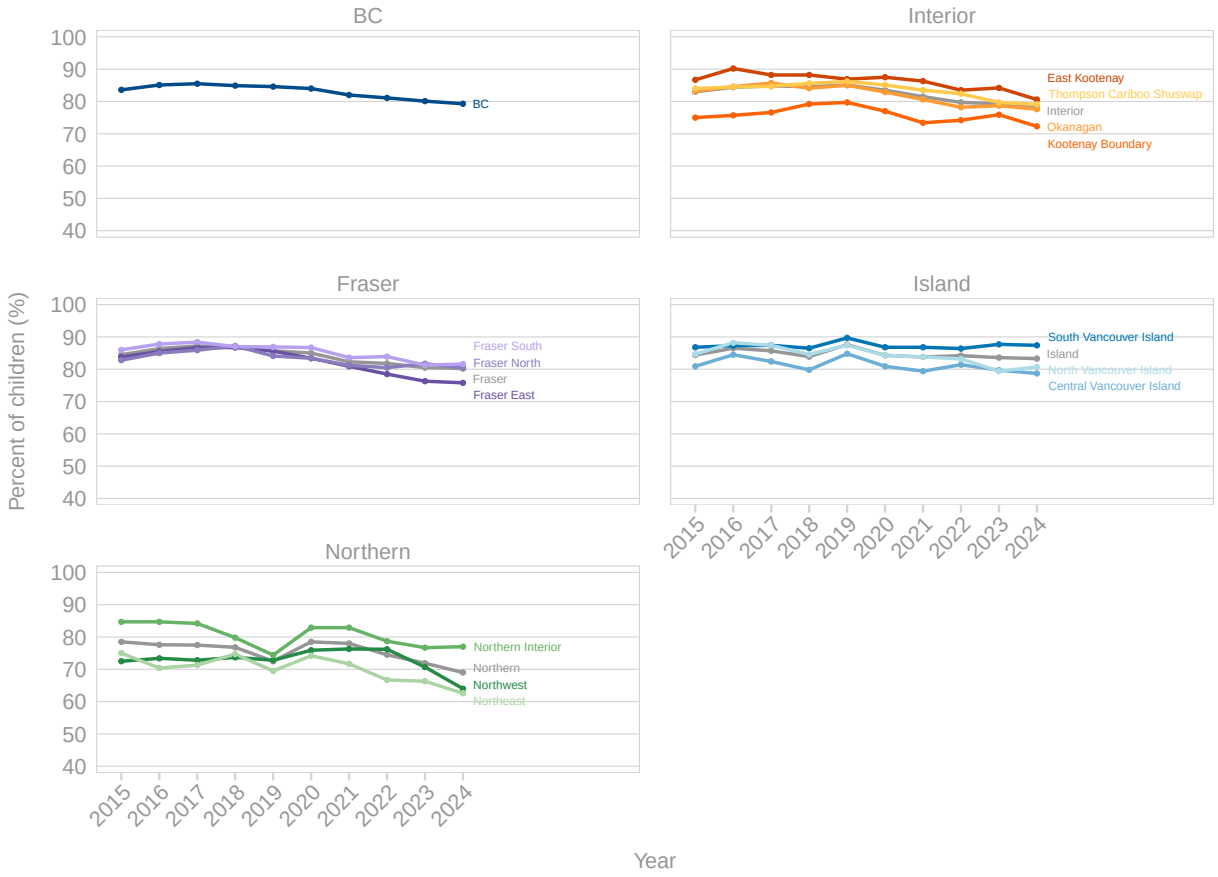


Figure 43. Pneumococcal conjugate coverage by geographic region, 2-year-olds, British Columbia, 2024



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 44. Pneumococcal conjugate coverage by year and geographic region, 2-year-olds, British Columbia

Reasons for non-immunization

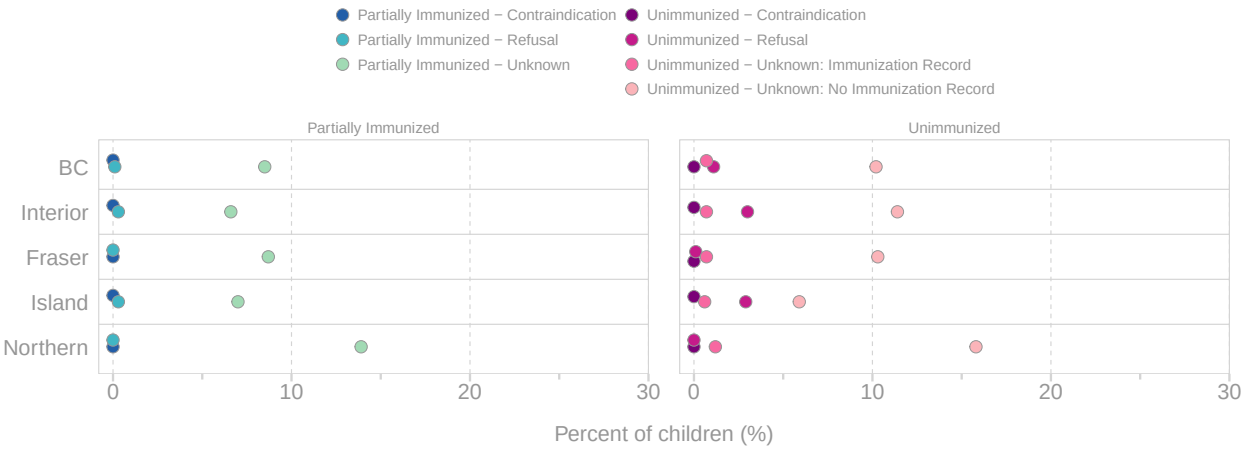
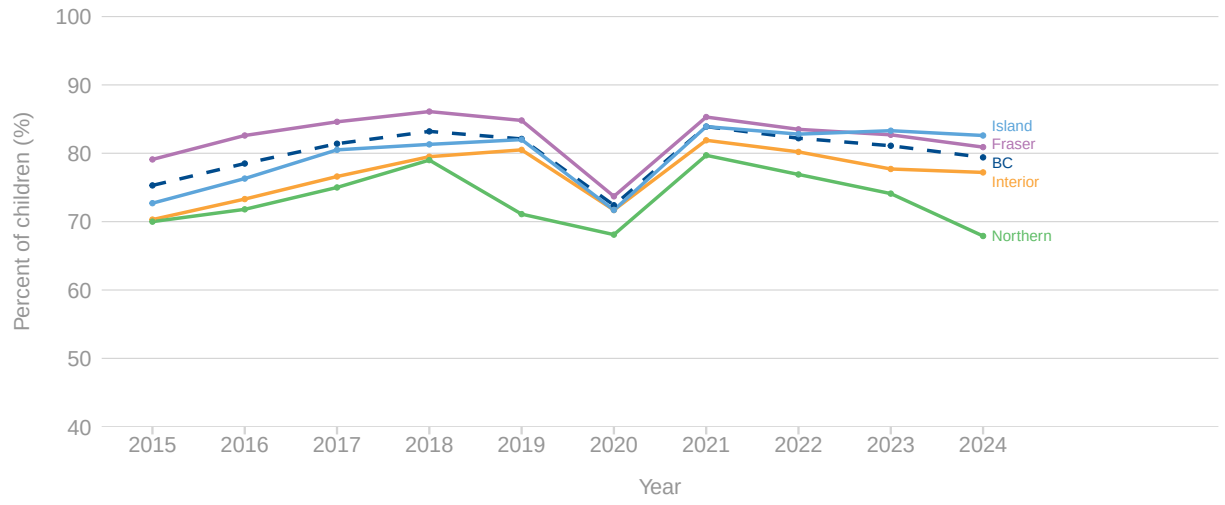


Figure 45. Reasons for non-immunization by health authority, Pneumococcal conjugate, 2-year-olds, British Columbia, 2024

Figure 46. Reasons for non-immunization by health service delivery area, Pneumococcal conjugate, 2-year-olds, British Columbia, 2024

Rotavirus

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 47. Rotavirus coverage by year and health authority, 2-year-olds, British Columbia

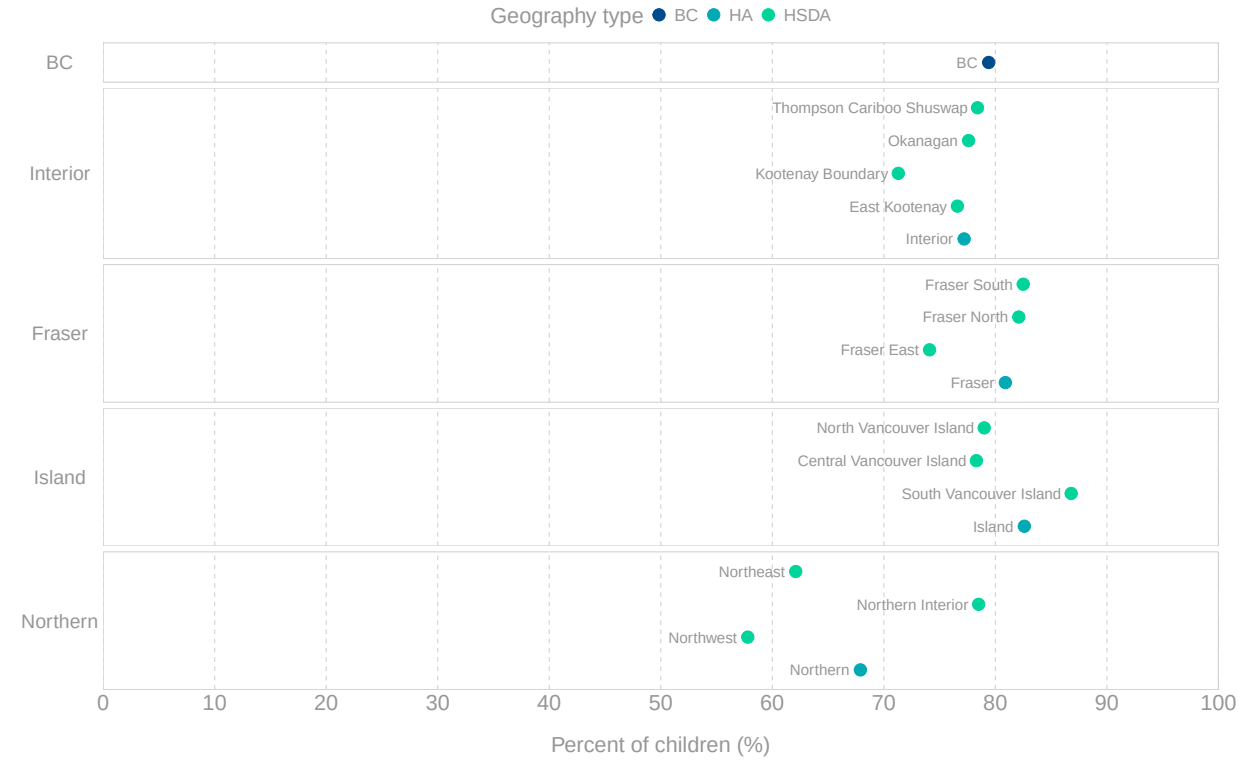
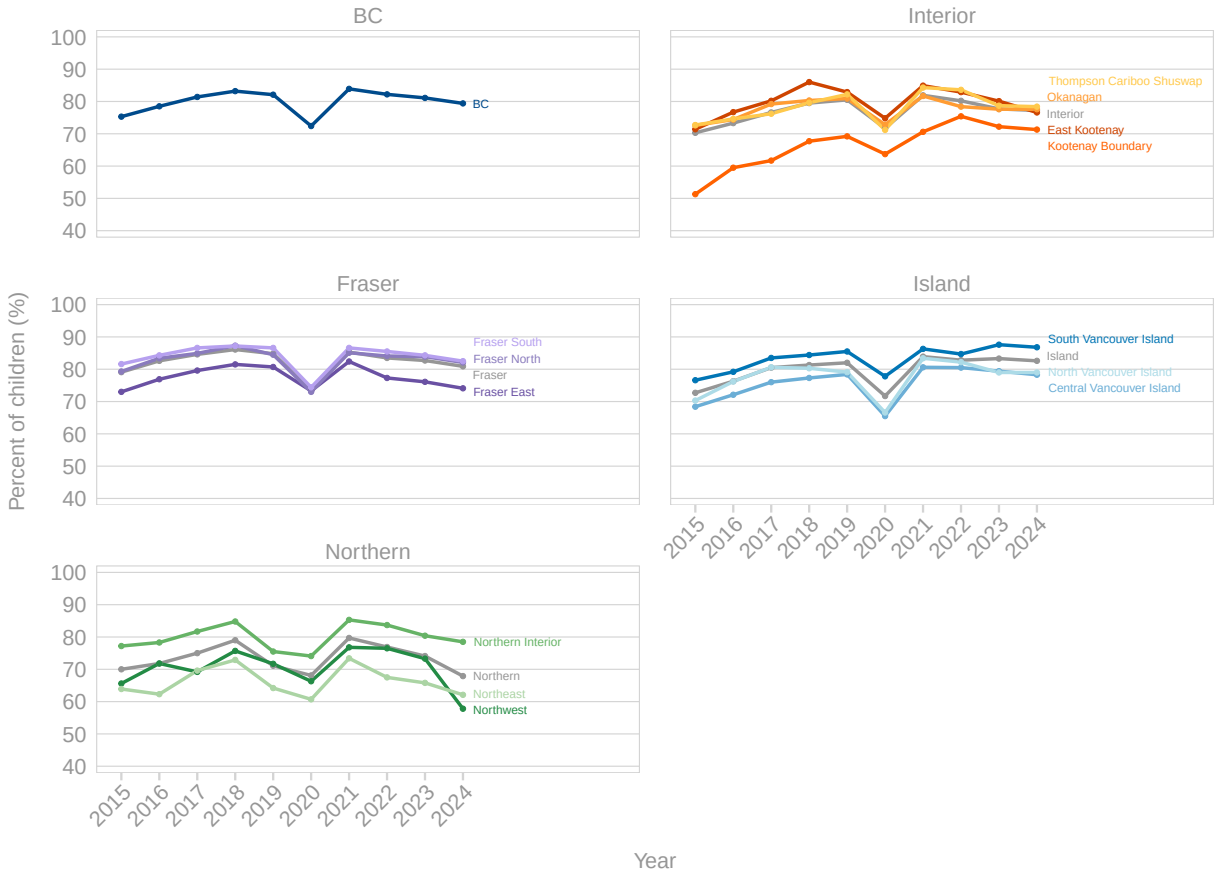


Figure 48. Rotavirus coverage by geographic region, 2-year-olds, British Columbia, 2024



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 49. Rotavirus coverage by year and geographic region, 2-year-olds, British Columbia

Reasons for non-immunization

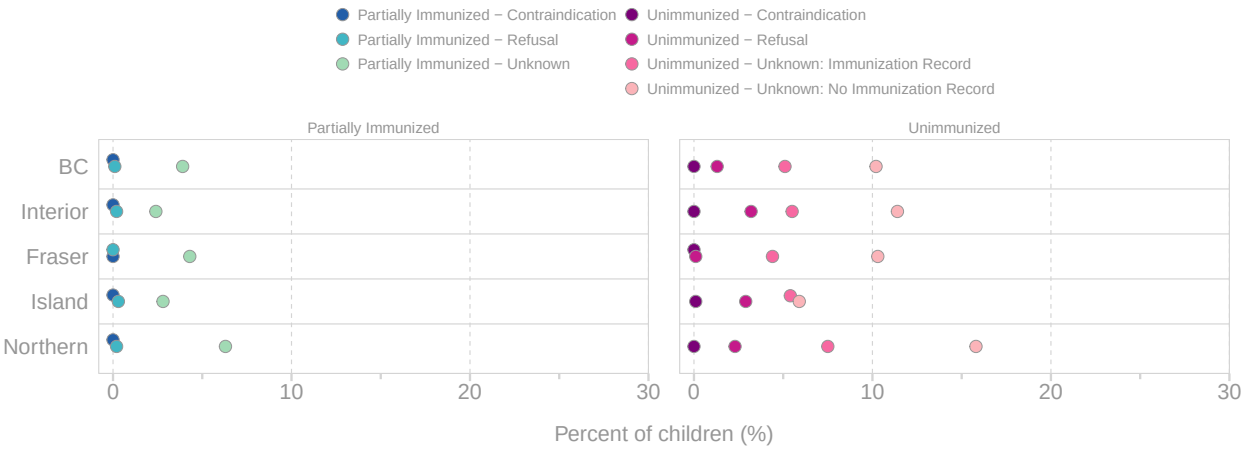
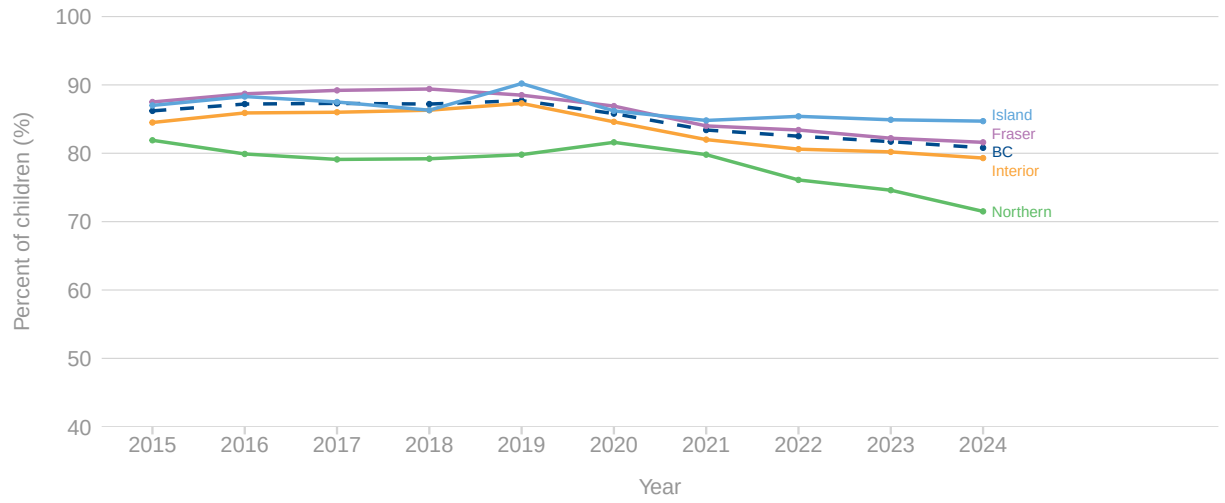


Figure 50. Reasons for non-immunization by health authority, Rotavirus, 2-year-olds, British Columbia, 2024

Figure 51. Reasons for non-immunization by health service delivery area, Rotavirus, 2-year-olds, British Columbia, 2024

Measles, Mumps, and Rubella (MMR)

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 52. MMR coverage by year and health authority, 2-year-olds, British Columbia

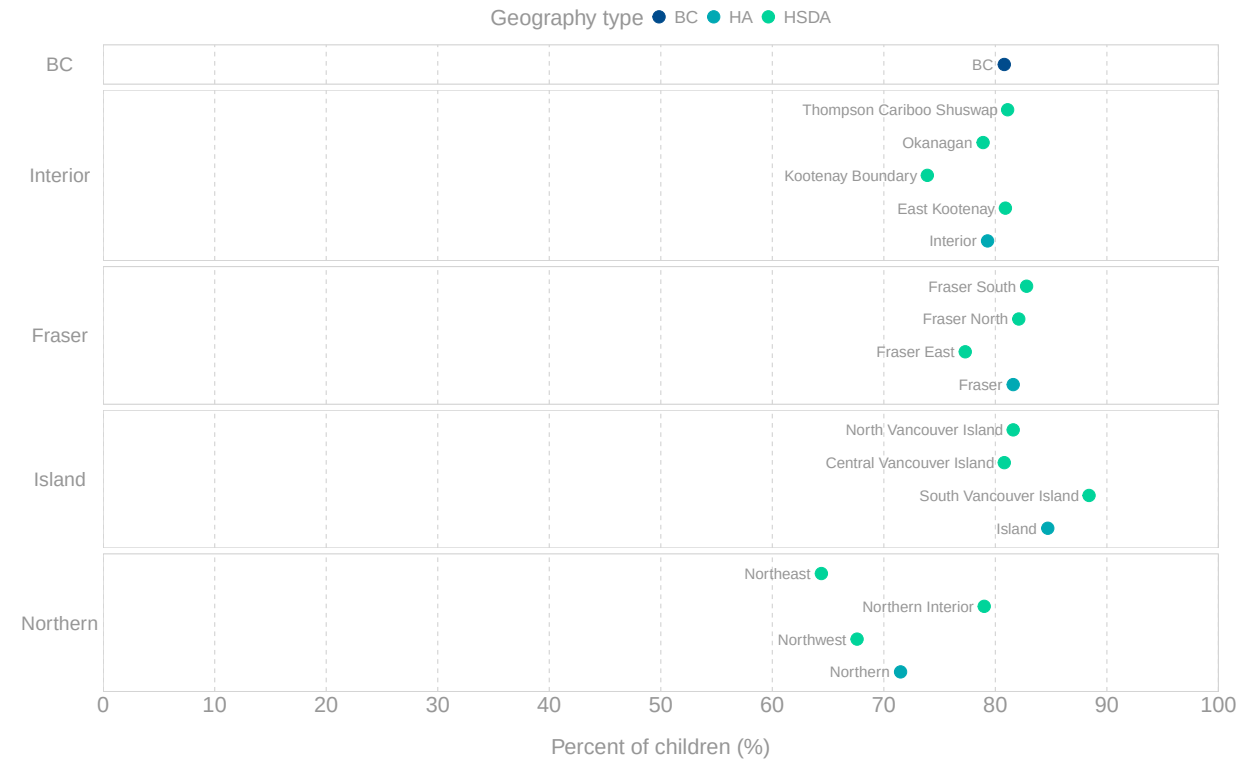
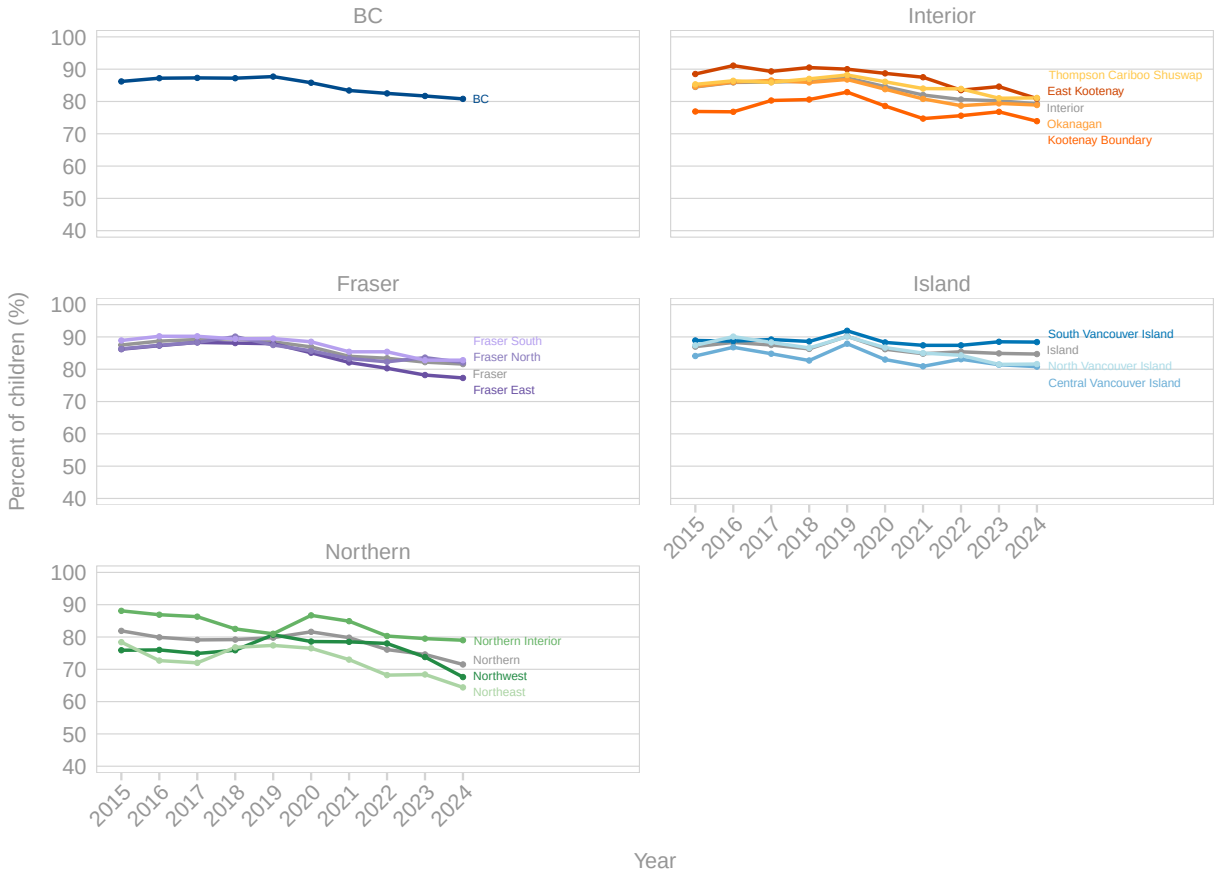


Figure 53. MMR coverage by geographic region, 2-year-olds, British Columbia, 2024



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 54. MMR coverage by year and geographic region, 2-year-olds, British Columbia

Reasons for non-immunization

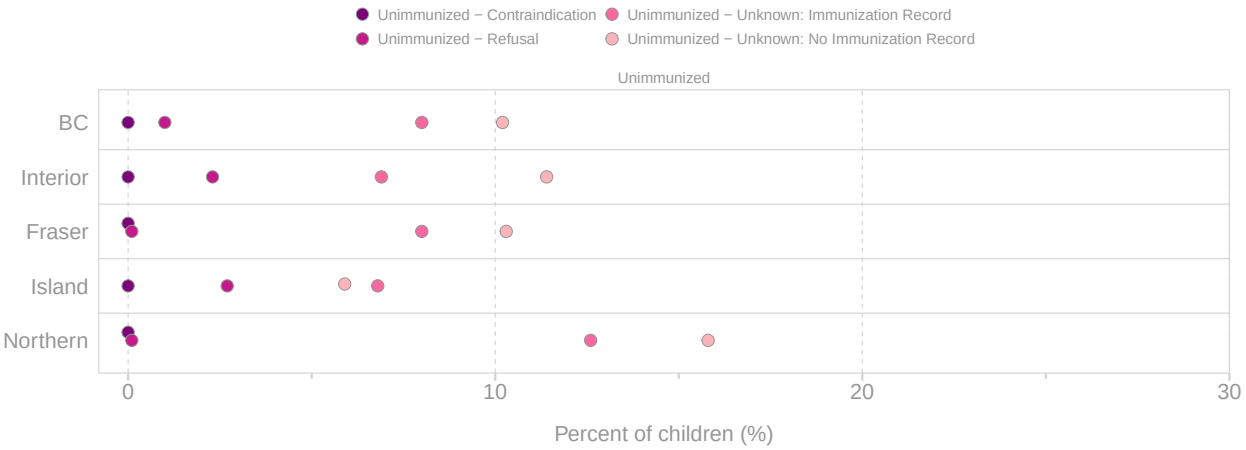


Figure 55. Reasons for non-immunization by health authority, MMR, 2-year-olds, British Columbia, 2024

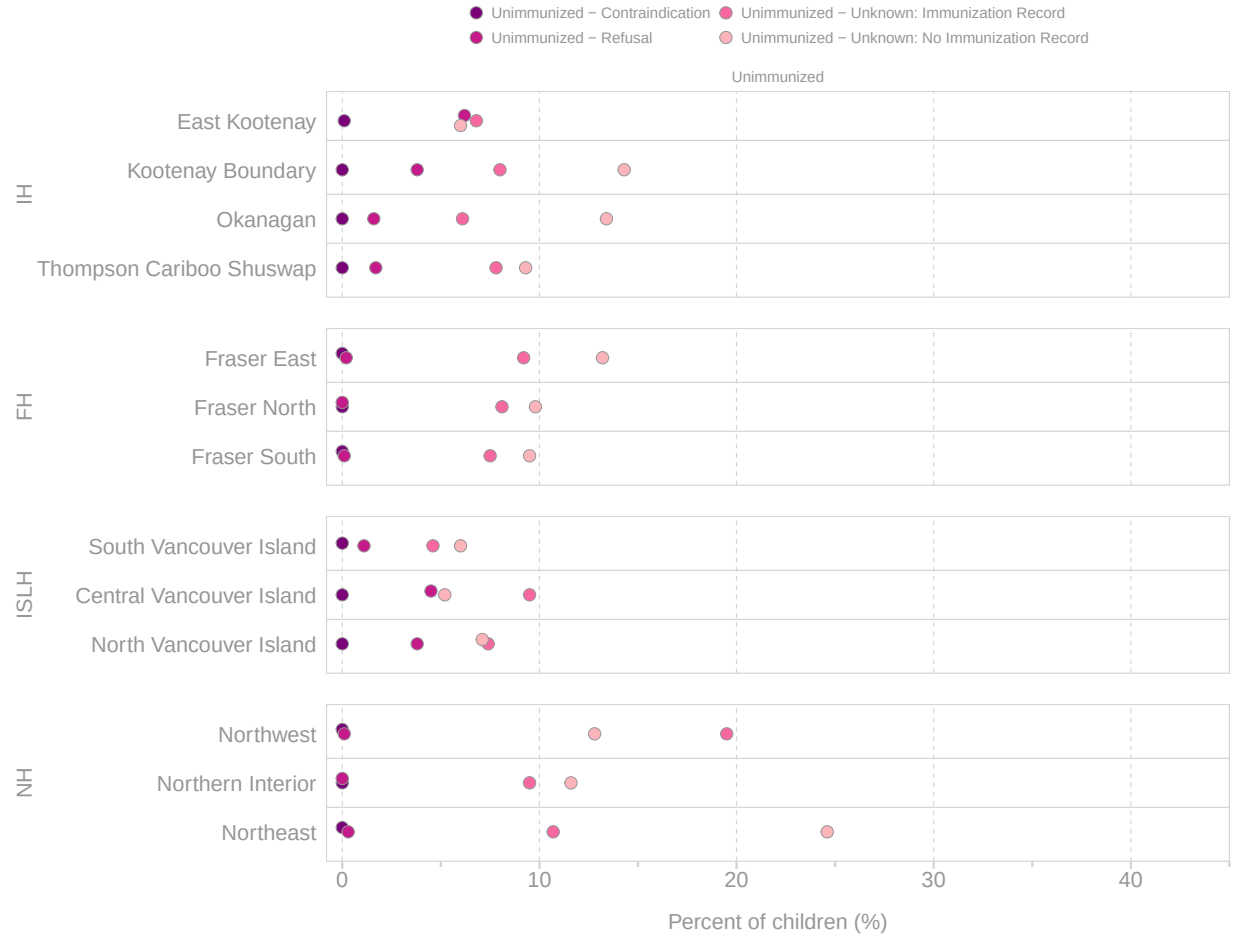
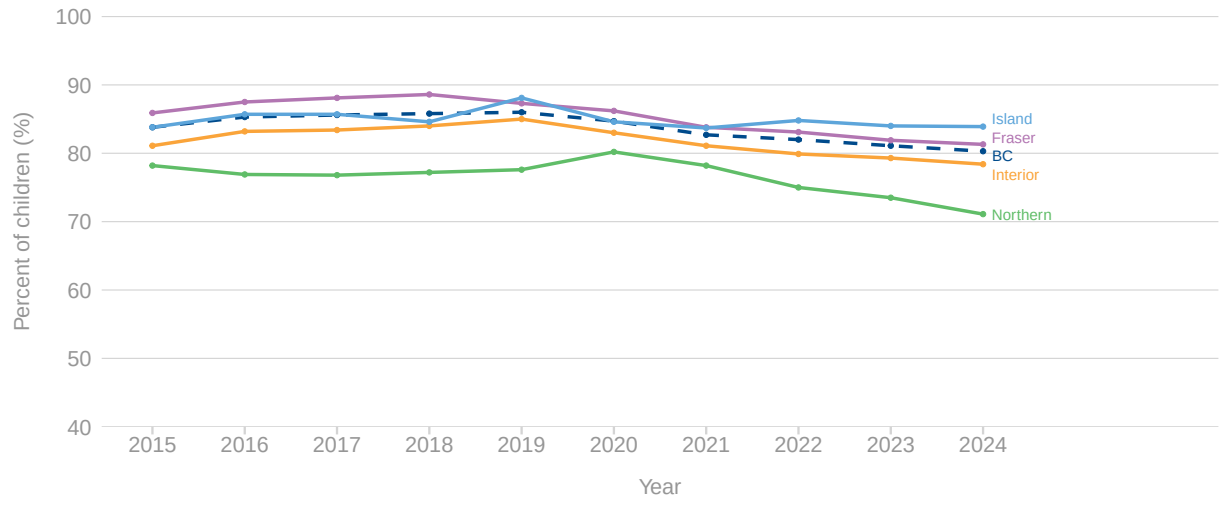


Figure 56. Reasons for non-immunization by health service delivery area, MMR, 2-year-olds, British Columbia, 2024

Varicella

Immunization coverage



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 57. Varicella coverage by year and health authority, 2-year-olds, British Columbia

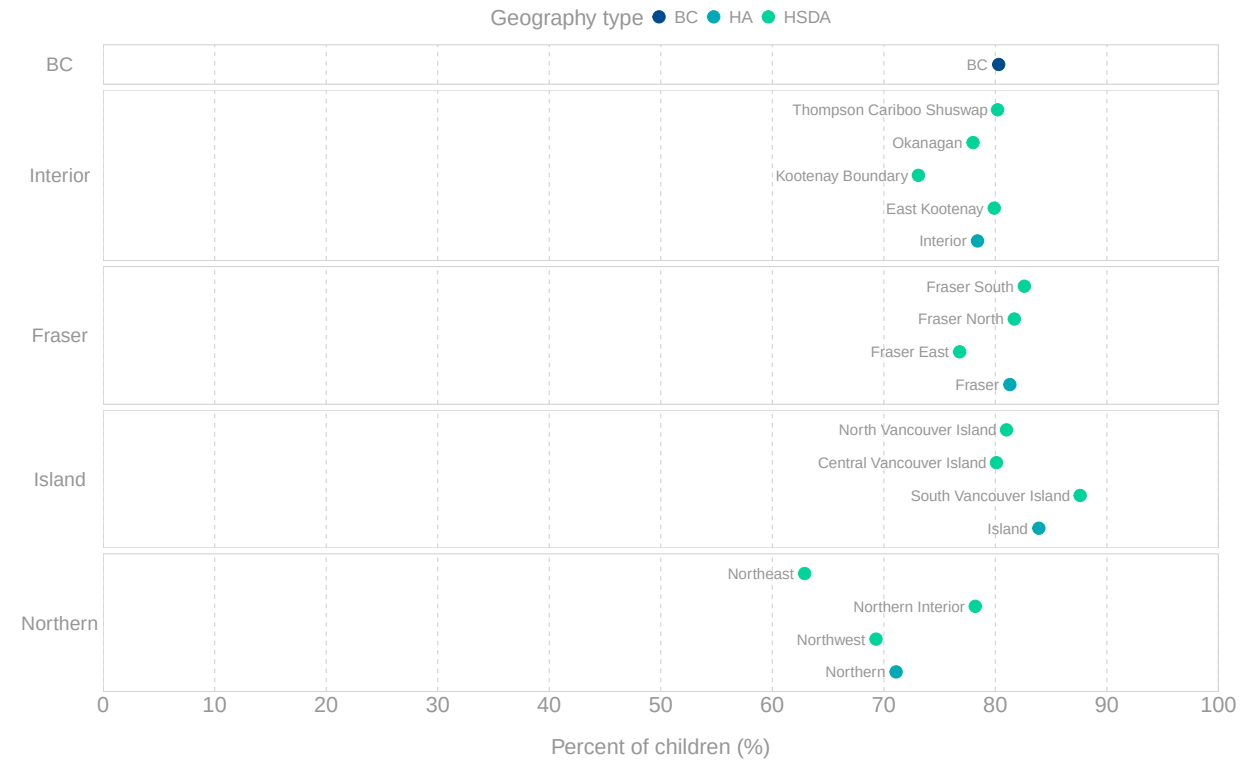
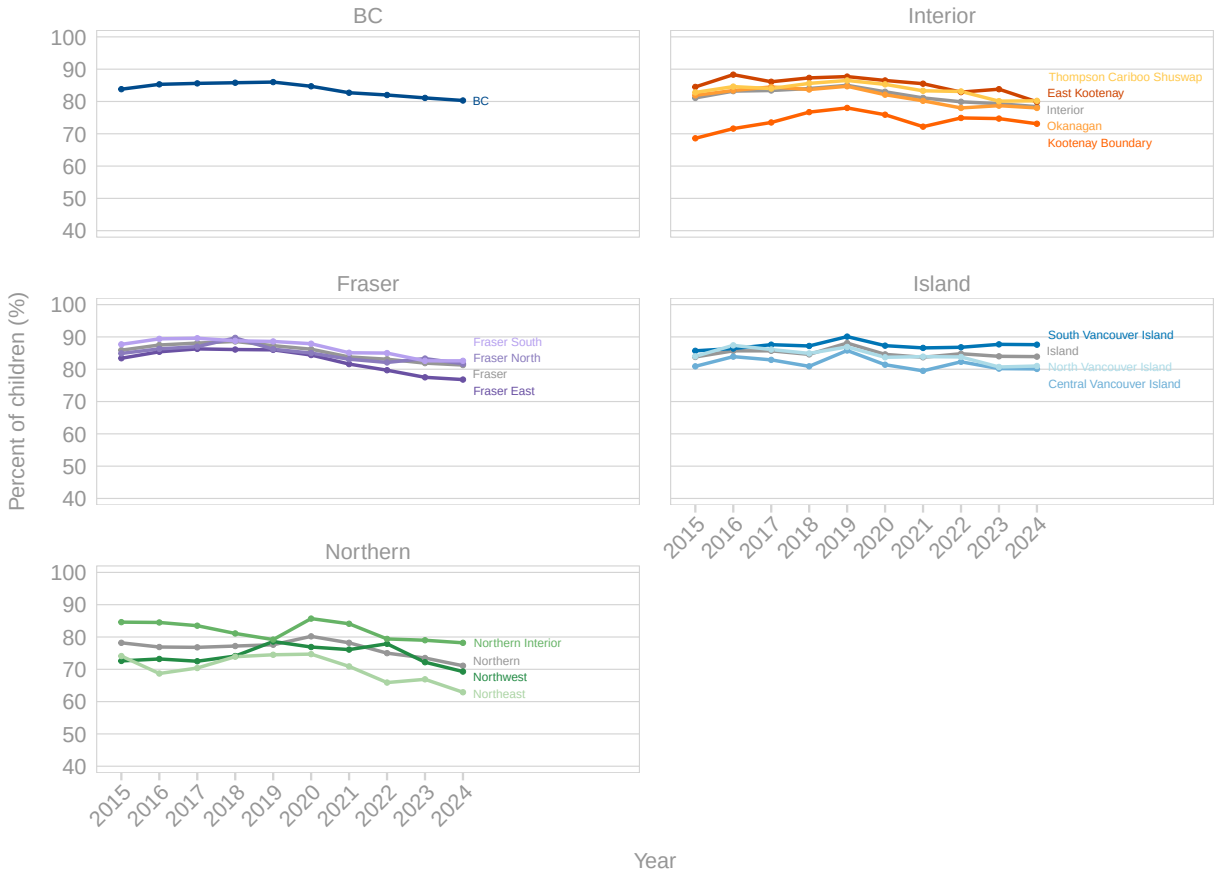


Figure 58. Varicella coverage by geographic region, 2-year-olds, British Columbia, 2024



Note: The y−axis for this figure starts at 40% for clearer data visualization.

Figure 59. Varicella coverage by year and geographic region, 2-year-olds, British Columbia

Reasons for non-immunization

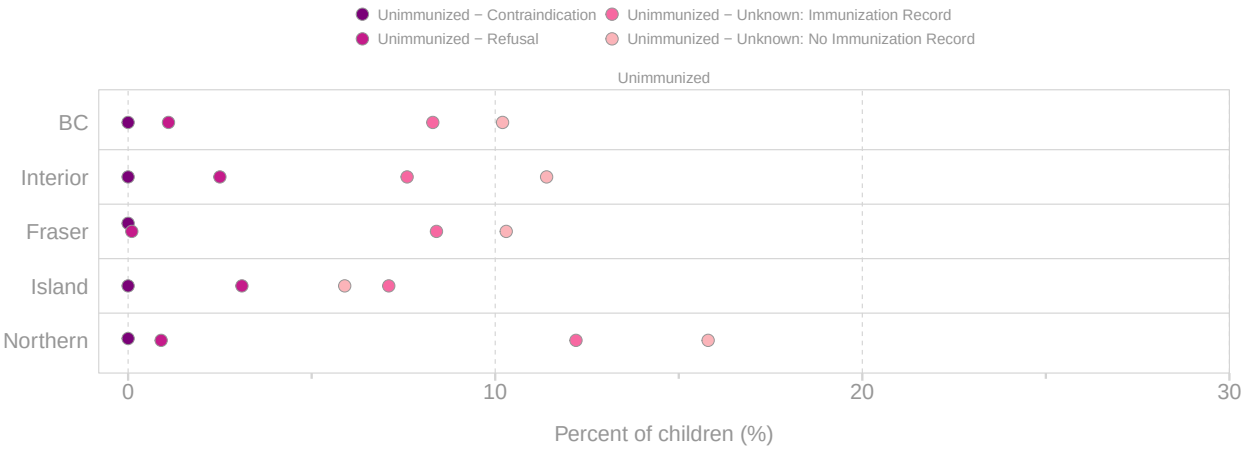


Figure 60. Reasons for non-immunization by health authority, Varicella, 2-year-olds, British Columbia, 2024

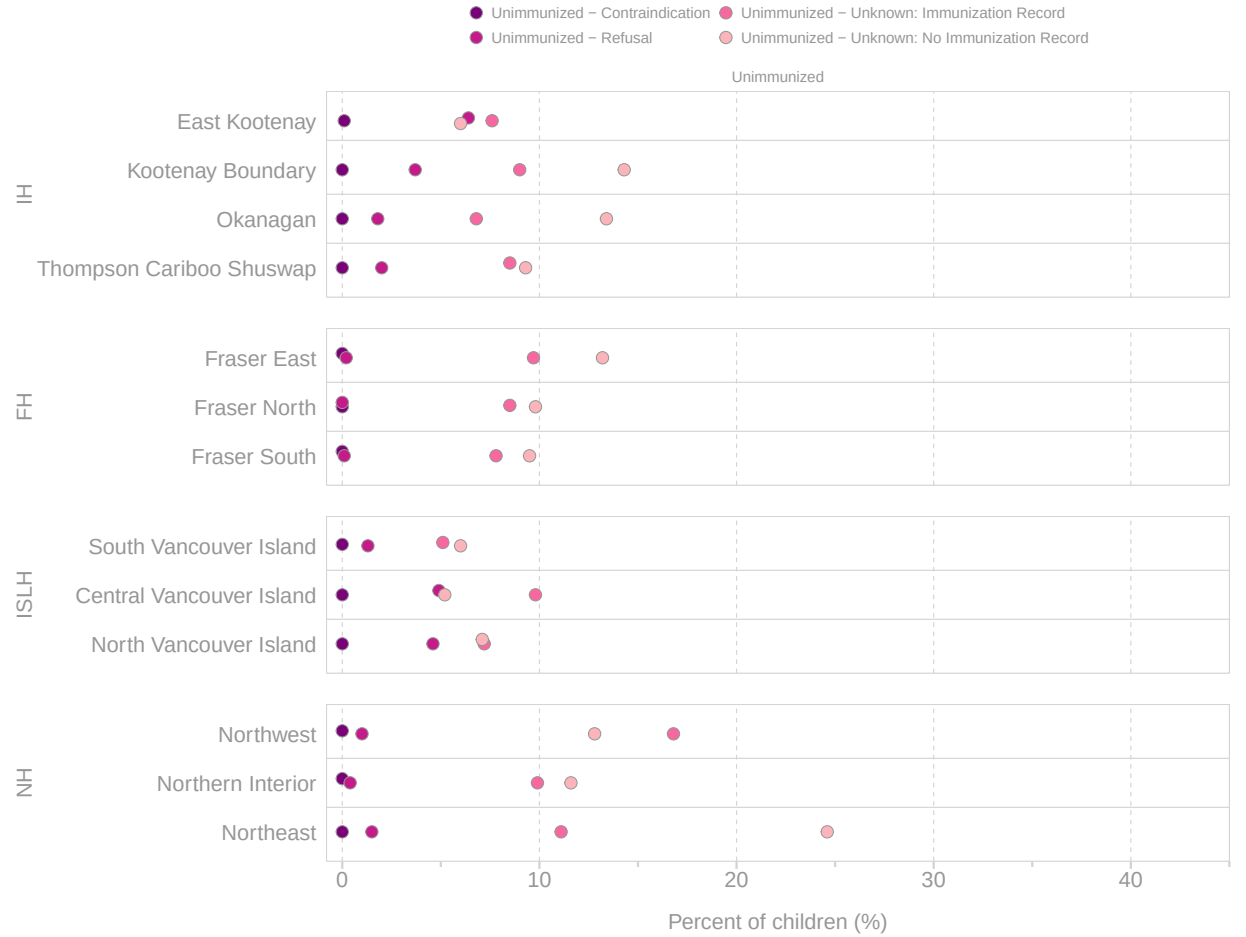


Figure 61. Reasons for non-immunization by health service delivery area, Varicella, 2-year-olds, British Columbia, 2024

No Immunizations and Vaccine Refusals

In 2024, two-year-old children who meet the ‘No immunizations recorded’ definition have no recorded immunizations for DTaP-IPV-Hib, hepatitis B, meningococcal C conjugate, pneumococcal conjugate, MMR, and varicella prior to their second birthday (prior to 2024, rotavirus immunizations were also considered here). Children who meet the ‘Refusal to all vaccines’ definition have documented refusals for the same immunizations included in the ‘No immunizations recorded’ definition, and no recorded immunizations (and are therefore a subset of ‘No immunizations recorded’). See data notes for further information.

No Immunizations

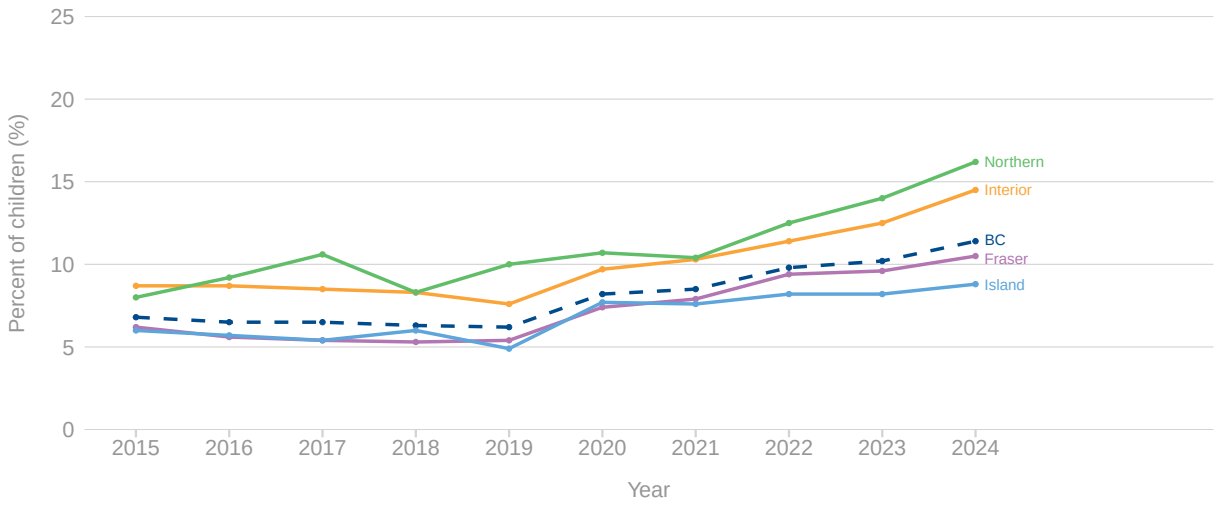


Figure 62. No immunizations recorded by year and health authority, 2-year-olds, British Columbia

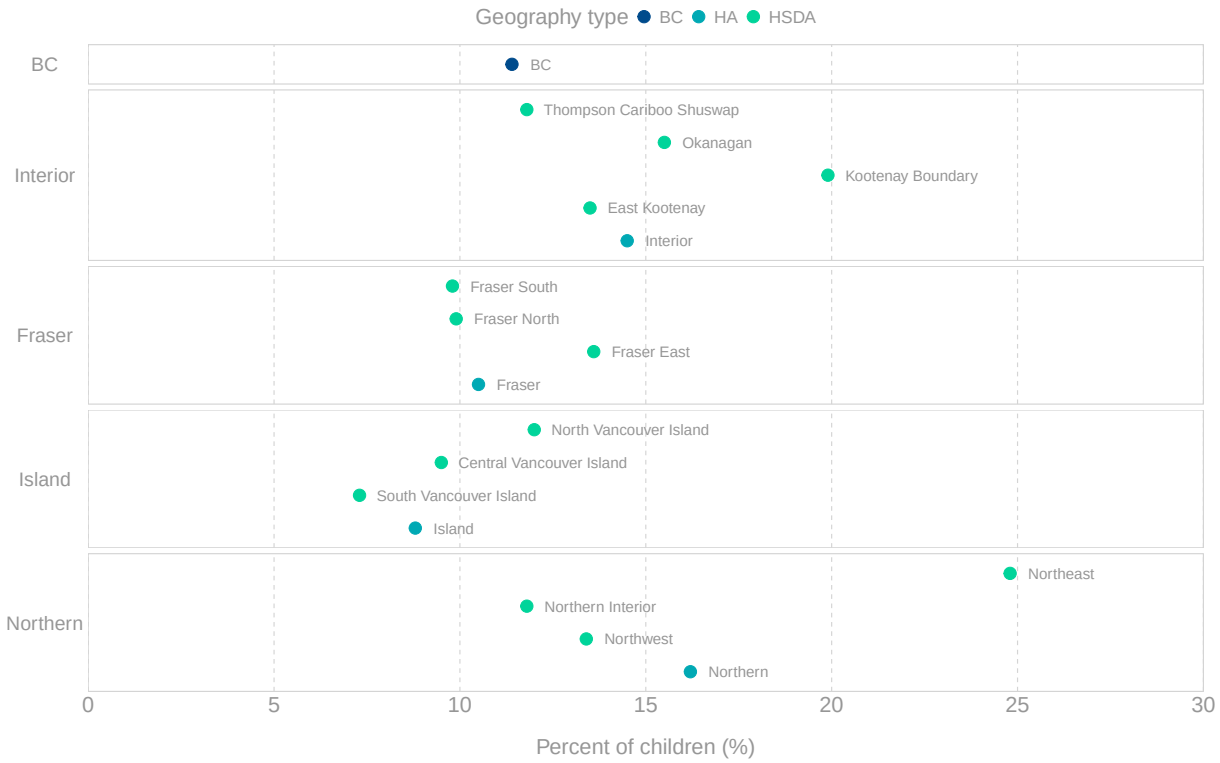
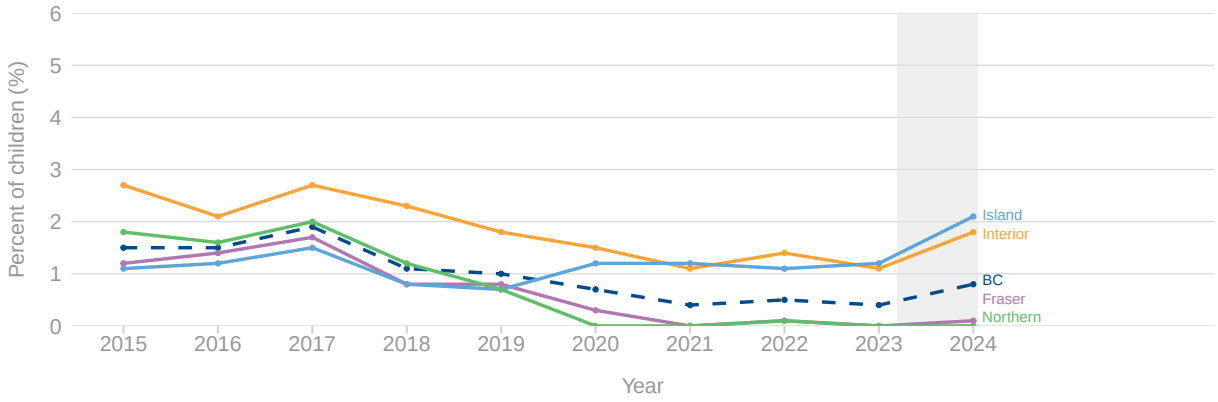


Figure 63. No immunizations recorded by geographic region, 2-year-olds, British Columbia, 2024

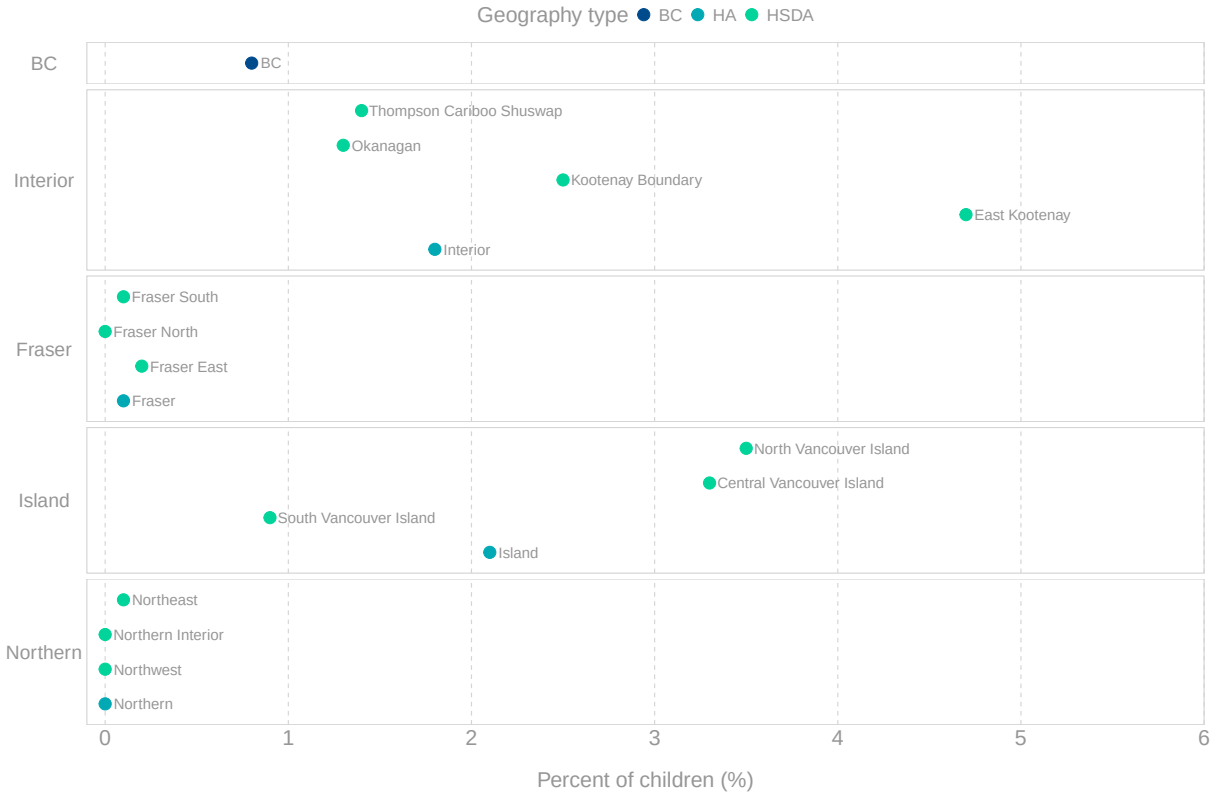
Figure 64. No immunizations recorded by year and geographic region, 2-year-olds, British Columbia

Vaccine Refusals



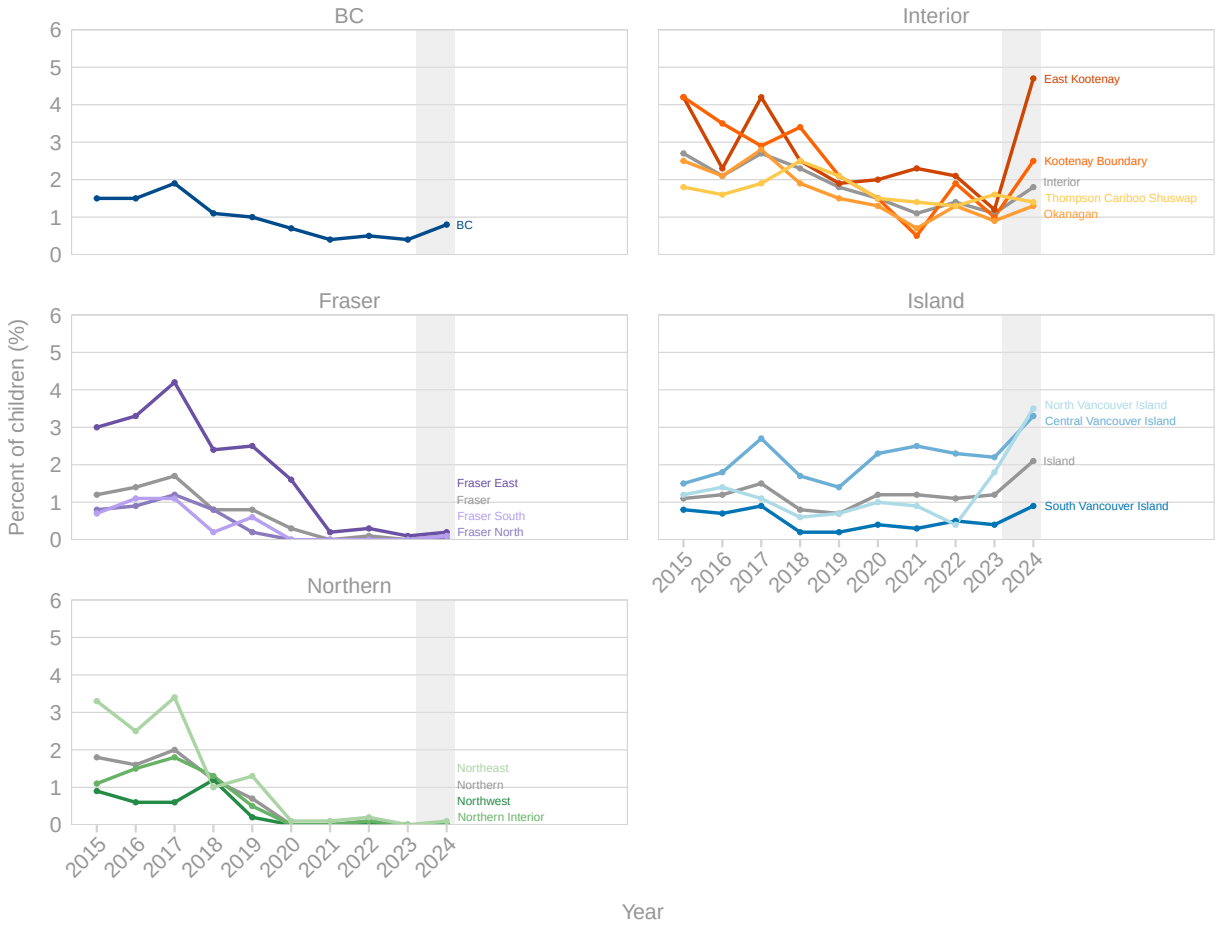
Note: Children who meet the 'Refusal to all vaccines' definition have documented refusals to all included routine childhood immunizations. The grey shaded area highlighting 2024 indicates when rotavirus was excluded from the vaccine refusal definition. Caution should be used in comparing these estimates to prior years. Low rates of vaccine refusals in Northern Health and Fraser Health may be a result of documentation or data flow issues and may not be reflective of true decreases. See data notes for more information.

Figure 65. Refusal to all vaccines by year and health authority, 2-year-olds, British Columbia



Note: Children who meet the 'Refusal to all vaccines' definition have documented refusals to all included routine childhood immunizations. Caution should be used in comparing these estimates to prior years. Low rates of vaccine refusals in Northern Health and Fraser Health may be a result of documentation or data flow issues and may not be reflective of true decreases. See data notes for more information.

Figure 66. Refusal to all vaccines by geographic region, 2-year-olds, British Columbia, 2024



Note: Children who meet the 'Refusal to all vaccines' definition have documented refusals to all included routine childhood immunizations. The grey shaded area highlighting 2024 indicates when rotavirus was excluded from the vaccine refusal definition. Caution should be used in comparing these estimates to prior years. Low rates of vaccine refusals in Northern Health and Fraser Health may be a result of documentation or data flow issues and may not be reflective of true decreases. See data notes for more information.

Figure 67. Refusal to all vaccines by year and geographic region, 2-year-olds, British Columbia

Data Notes

Data Sources

In 2024, coverage estimates for IH, FH, ISLH and NH are based on records extracted from the Provincial Immunization Registry (PIR) (including records transmitted from regional clinical systems) on January 15, 2025.

All doses are recorded in PIR if administered by public health, reported by a parent/guardian to public health (e.g., for children arriving from outside of BC), or if reported by a primary care provider to public health. Additionally, doses administered by pharmacists and entered in PharmaNet are also recorded in PIR.

In VCH, two-year-old coverage estimates are assessed through periodic coverage studies. The most recent study was conducted for the 2020 birth cohort (Appendix: VCH two-year-old coverage estimates). See other data notes for additional information on the coverage assessment methodology used in VCH.

Cohort

Coverage reported for any given year reflects uptake among children who turned two years old during that calendar year (i.e., 2024 results are for children born in 2022 and who turned two years old in 2024).

Calculations

All analyses were conducted using business rules which calculated ages and time intervals at receipt of immunization. Each dose was counted as a valid dose only if given at or after the earliest eligible age and/or at a time interval greater than or equal to the shortest acceptable interval. Only doses given prior to the second birthday are included in this assessment.

Numerators: Number of children with active records in PIR who turned two in the year reported and are up-to-date for the specified agent(s) by age two in IH, ISLH, FH, and NH.

Denominators: Number of children with active records in PIR who turned two in the year reported in IH, ISLH, FH, and NH.

Coverage results are reported by the health authority and HSDA of residence of the child. In each cohort, there is generally a small number of children with PIR records indicating that they lived in BC but did not have a specific health region assigned (i.e., the client health region was missing). These children are excluded from the analysis.

Limitations

Data included in this report need to be interpreted with caution for the following reasons:

IH, ISLH, FH, and NH:

- All calculations are based on vaccine doses recorded in the Provincial Immunization Registry (PIR) or regional clinical systems. To be considered up-to-date for age, documentation of every dose in PIR or a clinical system (PARIS) is required. Doses administered by providers other than public health and not reported to public health or PIR, may not be documented in the PIR and therefore not included in this report. All regions make their best efforts to obtain vaccination records pertaining to immunizations given by providers other than public health.
- There can be a delay in obtaining immunization records, which can result in delay of data entry.

- Data completeness with respect to children residing in each health authority may vary. Some regions enter all children born in their region into the registry while other regions only enter children that present for service into the system.
- First Nations children and immunizations provided to First Nations children may not all be documented in the PIR, as on-reserve birth records and immunizations may not be reported to the regional health authorities.

VCH:

- Due to different methodology, VCH data is excluded from provincial coverage estimates and their coverage is reported separately (see other data notes and appendix: Vancouver Coastal Health two-year-old immunization coverage estimates).

Definitions

Up-to-date for age

Measure	Definition
Up-to-date for age	Meets the up-to-date definitions for DTaP-IPV-Hib, hepatitis B, meningococcal C, MMR, pneumococcal conjugate, and varicella outlined below. Rotavirus is excluded from the up-to-date definition as the last dose must be administered by 8 months of age, therefore there is no opportunity for catchup after this age.
Up-to-date for age minus the booster	Meets the up-to-date definitions for hepatitis B, meningococcal C, MMR, pneumococcal conjugate, and varicella outlined below; and 3 doses diphtheria/tetanus/pertussis, 2 doses polio, at least 1 dose of *Haemophilus influenzae* type b (Hib)
DTaP-IPV	4 doses diphtheria/tetanus/pertussis-containing vaccine and 3 doses polio-containing vaccine
DTaP-IPV-Hib	4 doses diphtheria/tetanus/pertussis-containing vaccine, 3 doses polio-containing vaccine, and up-to-date for *Haemophilus influenzae* type b (Hib) as defined below
Haemophilus influenzae type b (Hib)	If dose 1 before 15 months of age: at least 2 doses of *Haemophilus influenzae* type b (Hib) vaccine with last dose on or after 12 months of age. If dose 1 on or after 15 months of age: 1 dose of Hib vaccine.
Polio	3 doses polio-containing vaccine
Hepatitis B	3 doses hepatitis B vaccine with 3rd dose on or after 24 weeks of age
Meningococcal C conjugate	At least 1 dose of meningococcal C conjugate vaccine on or after 12 months of age. For children who receive quadrivalent meningococcal conjugate vaccine, 1-2 doses on or after 12 months of age depending on age at first dose. See Minimum Intervals and Ages Between Doses for further information.
Pneumococcal conjugate	If dose 1 before 12 months of age: 3 doses pneumococcal conjugate vaccine with 3rd dose on or after 12 months of age. If dose 1 between 12 and 23 months of age: 2 doses pneumococcal conjugate vaccine
Rotavirus	2 doses of rotavirus vaccine (Note: 2018 birth cohort (2020 report) required 3 doses)

Measles, mumps, rubella (MMR)	1 dose measles/mumps/rubella-containing vaccine
Varicella	1 dose of varicella vaccine on or after 12 months of age or recorded exemption for varicella due to previous disease or protective antibody levels.
No immunizations recorded	No record of doses administered prior to two years of age for all of the following antigens: diphtheria, tetanus, pertussis, *Haemophilus influenzae* type b, hepatitis B, measles, meningococcal C conjugate, mumps, pneumococcal conjugate, polio, rubella, and varicella. As of 2024, rotavirus is excluded from this measure.
Refusal to all vaccines	Documented refusals to all of the following antigens: diphtheria, tetanus, pertussis, *Haemophilus influenzae* type b, hepatitis B, measles, meningococcal C conjugate, mumps, pneumococcal conjugate, polio, rubella, and varicella. As of 2024, rotavirus is excluded from this measure. Refusals effective any time on or before the 2nd birthday are counted, regardless of a documented end date. As of 2018, only children with documented refusals and no immunizations recorded, as defined above, are counted.

Reasons for non-immunization

Measure	Definition
Exemption: Lab Evidence of Immunity	*For varicella only.* For the agent/antigen of interest, does not meet the criteria for up-to-date and has an active exemption due to lab evidence of immunity/disease recorded prior to the milestone birthday.
Exemption: Previous Disease	*For varicella only* Does not meet any of the previous definitions and has an active exemption due to previous disease for varicella recorded prior to the milestone birthday.
Partially Immunized with Contraindication	*For agents/antigens requiring more than one dose.* For the agent/antigen of interest, does not meet any of the previous definitions and has received at least one valid dose and has an active contraindication recorded prior to the milestone birthday.
Partially Immunized with Refusal	*For agents/antigens requiring more than one dose.* For the agent/antigen of interest, does not meet any of the previous definitions and has received at least one valid dose and has an active or inactive refusal recorded prior to the milestone birthday.

Partially Immunized - Unknown	*For agents/antigens requiring more than one dose.* For the agent/antigen of interest, does not meet any of the previous definitions and has received at least one valid dose. **Note:** These children may have invalid doses or inactive refusals, exemptions, or contraindications for the agent/antigen of interest. They may also have valid/invalid doses or active or inactive refusals, exemptions, or contraindications that do not apply to the agent/antigen of interest, or no recorded refusals, exemptions, or contraindications for any agent/antigen.
Unimmunized with Contraindication	For the agent/antigen of interest, does not meet any of the previous definitions and has no recorded valid dose(s) and has an active contraindication recorded prior to the milestone birthday.
Unimmunized with Refusal	For the agent/antigen of interest, does not meet any of the previous definitions and has no recorded valid dose(s) and has an active or inactive refusal recorded prior to the milestone birthday.
Unimmunized - Unknown	For the agent/antigen of interest, does not meet any of the previous definitions and has no recorded valid dose(s) at any time up to/including the data extract date. **Note:** These children may have invalid doses or inactive contraindications or exemptions for the agent/antigen of interest. They may also have valid/invalid doses or active/inactive refusals, exemptions, or contraindications that do not apply to the agent/antigen of interest, or no recorded doses refusals, exemptions, or contraindications for any agent/antigen.
2024 report:	
Unimmunized – Unknown: Immunization Record	Meets the 'Unimmunized - Unknown' definition and has recorded invalid doses or inactive contraindications or exemptions for the agent/antigen of interest or has recorded valid/invalid doses, active or inactive refusals, contraindications or exemptions that do not apply to the agent/antigen of interest at any time up to/including the data extract date. The antigens considered include diphtheria, tetanus, pertussis, *Haemophilus influenzae* type b, hepatitis B, measles, meningococcal C conjugate, mumps, pneumococcal conjugate, polio, rotavirus, rubella, and varicella.
Unimmunized – Unknown: No Immunization Record	Meets the 'Unimmunized - Unknown' definition and has no recorded valid or invalid doses or active or inactive refusals, exemptions, or contraindications for any of diphtheria, tetanus, pertussis, *Haemophilus influenzae* type b, hepatitis B, measles, meningococcal C conjugate, mumps, pneumococcal conjugate, polio, rotavirus, rubella, and varicella.

Minimum Intervals and Ages Between Doses

Antigen/Agent	Minimum Age or Minimum Time Interval Between Eligible Doses			
	Dose 1[A]	Dose 2	Dose 3	Dose 4
Diphtheria, tetanus, acellular pertussis (DTaP or Tdap)	42 days	28 days	28 days	24 weeks
Polio[B]	42 days	28 days	24 weeks	
Hepatitis B				
received 3rd dose between June 2007 and May 2014	0 days	28 days	56 days[C]	
received 3rd dose in June 2014 or later	0 days	28 days	56 days[C,D]	
Measles, Mumps, Rubella	12 months			
Varicella	12 months			
Meningococcal-C Conjugate				
Meningococcal-C conjugate vaccine[E] or quadrivalent meningococcal vaccine (Nimenrix®) initial dose before 12 months of age	8 weeks	8 weeks[F]		
Meningococcal-C conjugate vaccine[E] or quadrivalent meningococcal vaccine (Nimenrix®) initial dose on or after 12 months of age	12 months			
Quadrivalent meningococcal vaccine (Menveo®), initial dose before 12 months of age	8 weeks	8 weeks	8 weeks[F]	
Quadrivalent meningococcal vaccine (Menveo®), initial dose on of after 12 months of age	12 months	8 weeks		
Haemophilus influenzae, type b				
Initial dose before 15 months of age	42 days	8 weeks[G]		
Initial dose on of after 15 months of age	15 months			
Pneumococcal Conjugate				
Initial dose before 12 months of age	42 days	28 days	56 days[F]	
Initial dose between 12 and 23 months of age	12-23 months	56 days		
Rotavirus	42 days	28 days		

A. Dose 1 refers to the earliest age a child can receive the initial dose.
B. Schedule for DTaP should be followed when polio provided in combination vaccine.
C. Dose 3 must be given at least 16 weeks after dose 1 and 8 weeks after dose 2.
D. Dose 3 must be given on or after 24 weeks of age.
E. Dose must be given at least 8 weeks after any previous meningococcal C conjugate dose (if previous dose given).
F. Dose must be given on or after 12 months of age.
G. The booster dose may be given as early as 12 months of age

Other data notes

New changes to the 2024 two-year-old immunization coverage report:

- In 2024, rotavirus vaccine coverage was excluded from the 'No immunizations recorded' and 'Refusal to all vaccines' definitions. Previously, rotavirus was excluded from the 'Up-to-date for age' definition as the last dose of rotavirus vaccine must be administered by 8 months of age, and there is therefore no opportunity for catchup after this age. This change standardizes the antigens included across these three measures. Inclusion or exclusion of rotavirus had minimal impact on the proportion of children with no recorded immunizations in 2024 (0-0.1% difference across health authorities). However, exclusion of rotavirus increases the proportion of children who have recorded refusals to all antigens and no recorded immunizations, by 0-0.9% across health authorities, therefore, caution should be used in comparing 2024 'Refusal to all vaccines' estimates to prior years.

Historical changes to the two-year-old immunization coverage report:

- In 2018, meeting the 'Refusal to all vaccines' definition changed from only requiring a documented refusal to each included antigen to also requiring no recorded immunizations to the same antigens.

Vancouver Coastal Health (VCH) two-year-old immunization coverage estimates:

- VCH provides their early childhood coverage data through a mechanism that differs from other health authorities:
  - Two-year-old immunization coverage data for VCH have not been included with provincial data because VCH data (based on periodic surveys of a sample of the population) may not be comparable with population-based immunization data obtained from PIR for the rest of the province.
  - Immunization data from PIR are not used for VCH two-year-old estimates as although immunizations provided to infants by public health in VCH are captured in the health authority's electronic information system (called PARIS) and transmitted to the PIR, the majority of VCH infants are immunized by physicians. BC's public health legislation does not require reporting of immunizations administered by physicians to public health; thus, immunizations delivered by physicians are not systematically captured in PARIS.
  - VCH examines early childhood immunization coverage data through periodic coverage studies. Coverage studies have been conducted for the 2003, 2006, 2009, 2012, 2015 and 2020 birth cohorts. This report includes the results of the 2009, 2012, 2015 and 2020 surveys.
  - From 2015 to 2024, VCH represented approximately 21% of BC's two-year-old population (Source: BC Stats Population Estimates and PEOPLE projections).
- See Appendix: Vancouver Coastal Health two-year-old immunization coverage estimates.

Immunization program and coverage assessment rule changes:

Immunization programming:

- In 2019, resources available to early childhood immunization may have been impacted by other public health immunization programs causing decreases to two-year-old coverage estimates. These programs included:
  - Measles catch-up immunization campaign for school-age children,
  - Implementation of the Vaccination Status Reporting Regulation for school-age children,
  - Migration of public health information systems in FH.
- Each health authority has different recall/follow-up practices that may impact coverage in each region at different milestones.

COVID-19 pandemic impacts:

- In March 2020, the COVID-19 pandemic was declared and initially resulted in a province-wide shut down that impacted the provision of public health services including routine immunization services. In particular, this impacted rotavirus immunization coverage in 2020, as these children may have aged out before being able to receive the vaccination or complete the series.
- The impacts of the COVID-19 pandemic on the provision of public health services and in-person clinical services by physician providers continued through 2022 and may have affected provision of routine childhood immunizations.

Northern Health (NH):

- In NH, some communities are not part of the routine immunization record submission process which may result in a delay in immunization records being entered into PIR; this may result in lower coverage rates being reported.
- In 2024, coverage rates declined across most antigens in NH, particularly in the Northwest HSDA. Vaccine refusals for NH have also appeared low since 2020 compared to historical trends. NH is currently investigating the recent declines in coverage and low rates of vaccine refusals to determine the cause (e.g., true declines vs. documentation or data flow issues).
  - In 2023, a significant cold-chain incident in Northwest HSDA impacted certain antigens (diphtheria, tetanus, pertussis, hepatitis B, Hib, pneumococcal conjugate, and varicella) and may have contributed to the 6% decline in up-to-date two year old's seen in 2023. The cold-chain incident also impacted rotavirus vaccine and may have contributed to the 4% decline in rotavirus coverage in 2023. For rotavirus, clients may have aged out before being able to receive revaccination. This cold-chain incident may have also contributed to the further declines in coverage seen in 2024.
- In February 2020, a small number of historical immunization records for NH were added to Panorama. Since only immunizations were added and these children were already included in the population denominator, the coverage rates for certain antigens and overall up-to-date for age proportion for the 2019 report (2017 birth cohort) may have been underestimated.

Errors in prior analyses:

- Two errors in the code used to analyze two-year-old immunization coverage were identified in the spring of 2023. These errors affected the 2019-2022 reports (2017-2020 birth cohorts). The errors were rectified for the 2021 and 2022 reports but have not been corrected in the 2019 or 2020 reports.
  - The term 'up-to-date minus booster' (UTDMB) is defined as a child who is up-to-date for all recommended routine immunizations by age two except for the 18-month booster dose of DTaP-IPV-Hib. The code erroneously assessed some children as 'up-to-date minus booster' even if they were not up-to-date for non-booster antigens (hepatitis B, meningococcal C conjugate, MMR, pneumococcal conjugate, and varicella). However, since most vaccinated children are receiving all recommended vaccines, re-analysis after correcting the error for the 2022 report (2020 birth cohort) found that the UTDMB rate was only 2.4% lower at the provincial level.
  - *Haemophilus influenzae* type b coverage was miscalculated. This vaccine, like pneumococcal conjugate, requires a reduced dose schedule for children previously unvaccinated as they age through the first two years of life. These modifications for delayed commencement, with reduced dosing requirements, were not built into the code and stricter rules based on age at initial dose receipt were applied. Since most children were already considered up-to-date based on receipt of one dose on or after 15 months of age, re-analysis after correcting the error for the 2022 report (2020 birth cohort) found that Hib coverage was 1% higher at the provincial level.

Rotavirus:

- Rotarix® (2-dose series) was the rotavirus vaccine product routinely given to infants from January 2012 until June 2018 when RotaTeq® (3-dose series) replaced it as the routine infant product. In June 2021, BC switched back to Rotarix® as the routine infant product. Since RotaTeq® requires a 3-dose series, the change in product may have led to reduced up-to-date rotavirus coverage for the 2018 birth cohort (2020 report). Starting with the 2019 birth cohort (2021 report) only 2 doses were required to be considered up-to-date for rotavirus, regardless of product given, which likely explains the increase in coverage in 2021. See History of Immunization in BC for further information.

Measles, Mumps, and Rubella (MMR):

- In January 2012, the second dose of MMR vaccine was moved from 18 months to 4-6 years of age (offered as combined MMRV beginning in 2014). The first group of children affected by this change were those born in July 2010, or those receiving their second dose of MMR-containing vaccine in 2012 or later. As a result of this change, MMR coverage for the 2012 report (2010 birth cohort) increased dramatically when compared to previous years. If only one dose of MMR had been required for the 2011 report (2009 birth cohort), MMR coverage would have been 13% higher (89%), the overall percent up-to-date for age would have been 3% higher (71%), and the overall percent up-to-date minus booster would have been 2.6% higher (80%).

Haemophilus influenzae type b (Hib):

- Starting in 2015 (2013 birth cohort), a Hib booster dose is considered valid when given as early as 12 months of age; previously, the minimum age for this dose was 15 months. This change had a very small effect on coverage estimates - at the provincial level, this change resulted in an increase of 0.2% in children up-to-date for Hib.

Meningococcal C:

- Prior to 2017, children who received a single dose of quadrivalent meningococcal vaccine on or after 12 months of age were considered up-to-date for meningococcal C conjugate. Starting in the 2017 report (2015 birth cohort), children who receive quadrivalent meningococcal vaccine are only considered up-to-date for meningococcal C conjugate if they receive 2-3 doses (depending on age at first dose, see minimum ages and intervals between doses) and if the trade name of those doses is recorded as Menveo®. Starting in the 2021 report (2019 birth cohort), children who receive at least one dose of Nimenrix® on or after 12 months of age are also considered up-to-date for meningococcal C conjugate.

Varicella:

- The evidence required to be recorded as having a previous history of varicella disease or shingles has changed over time. Beginning in December 2013, a varicella susceptible person was defined as having no history of varicella disease or shingles after 1 year of age and no history of age-appropriate varicella vaccination. A self-reported history of disease was adequate for those born before 2004, while a health care provider diagnosed history was required for those born in 2004 or later. Since June 2018, a varicella susceptible person is defined as one without a history of lab confirmed varicella or shingles after 1 year of age and without a history of age-appropriate varicella vaccination. As such, the current definition requires lab evidence of prior disease on or after 1 year of age for proof of immunity. The date of varicella disease onset is not systematically entered into PIR therefore, for the purposes of this assessment, any child with a past history of varicella disease recorded in PIR is considered protected, regardless of their age at the time of illness.

PIR notes:

- Due to ongoing development of the interface between the FH clinical system and PIR, supplementary information on reasons for non-immunization (i.e., exemptions, refusals, and contraindications) is not complete. Therefore, the proportion of partially immunized and unimmunized children with unknown reasons for non-immunization is likely to be overestimated. The number of children partially immunized or unimmunized due to refusals or contraindications, as well as the number of children with protection against varicella due to previous infection and/or lab evidence of immunity would be underestimated.
- In spring 2020, PIR was updated to include all clients from the Ministry of Health (MoH) Client Roster. The population is maintained via regular feeds from MoH's Registration and Premium Information Determination (RAPID) system for new clients eligible for Medical Services Plan (MSP) coverage and Enterprise Master Patient Index (EMPI) for births and deaths. This should provide more complete information on the entire BC population in PIR.
  - Client records with no or inadequate immunizations recorded may reflect children who have moved out of the province or died. When public health is not aware of these events, they cannot update the Panorama records to reflect the status of these children. Records reported by provinces with reciprocal agreements with MSP for individuals who have moved out of BC and established health insurance in other Canadian jurisdictions are inactivated through the RAPID system process outlined above.

Appendix

Vancouver Coastal Health two-year-old immunization coverage estimates

Data sources:

Vancouver Coastal Health Authority, Vaccine Evaluation Centre, 2020 Cohort Two-Year-Old Immunization Coverage Survey.
Vancouver Coastal Health Authority, Vaccine Evaluation Centre, 2015 Cohort Two-Year-Old Immunization Coverage Survey.
Vancouver Coastal Health Authority and Fraser Health Authority, 2012 Cohort Two-Year-Old Immunization Coverage Survey.
Vancouver Coastal Health Authority and Fraser Health Authority, 2009 Cohort Two-Year-Old Immunization Coverage Survey.
Prepared by: Vancouver Coastal Health Public Health, October 2012, September 2015, February 2022, and July 2024.

2020 coverage rates: based on respondents from a random sample generated by the Ministry of Health.
2009, 2012, and 2015 coverage rates: based on a random sample from total surveys completed.

Differences in coverage definitions:

In 2020, VCH coverage definitions aligned with those applied for other health authorities, except varicella, where the definition for up-to-date for age is 1 dose of varicella on or after 12 months of age and does not consider exemptions due to previous disease or protective antibody levels.

See Up-to-date for age definitions for further information on the applied coverage rules.

Table 1. Up-to-date for age by birth cohort, 2-year-olds, Vancouver Coastal Health.

Health Authority	Vaccination Details	Year			
		Children born in 2009	Children born in 2012	Children born in 2015	Children born in 2020
Vancouver Coastal	Up-to-date for age	64.9	69.3	74.7	70.6
	Up-to-date for age minus the booster	72.5	70.1	76.8	71.0
	Specific Agents				
	DTaP-IPV	79.7	80.9	84.2	78.5
	DTaP-IPV-Hib	79.5	80.6	84.0	78.3
	Hepatitis B	80.5	84.8	90.4	83.4
	Hib	83.8	84.5	88.3	80.8
	MMR	78.4	93.0	94.9	84.5
	Polio	82.9	83.8	87.9	80.6
	Varicella	86.9	90.0	93.5	84.3
	Pneumococcal conjugate	85.5	87.8	96.5	79.8
	Meningococcal C conjugate	88.8	90.4	93.5	83.2
	Rotavirus	*NA*	84.4	90.8	75.7

Table 2. Up-to-date for age by birth cohort and health service delivery area, 2-year-olds, Vancouver Coastal Health.

HSDA	Vaccination Details	Year			
		Children born in 2009	Children born in 2012	Children born in 2015	Children born in 2020
Richmond	Up-to-date for age	70.9	71.9	76.4	76.8
	Up-to-date for age minus the booster	76.9	71.9	78.4	77.2
	Specific Agents				
	DTaP-IPV	85.4	86.8	85.8	84.8
	DTaP-IPV-Hib	85.4	86.4	85.5	84.4
	Hepatitis B	85.8	86.1	90.2	88.4
	Hib	88.6	89.5	88.5	87.9
	MMR	83.4	93.6	95.6	90.6
	Polio	87.8	88.8	89.2	87.5
	Varicella	91.0	91.9	94.3	90.6
	Pneumococcal conjugate	87.8	87.5	97.0	84.4
	Meningococcal C conjugate	90.6	89.8	93.6	88.4
	Rotavirus	*NA*	88.5	93.9	81.3
Vancouver	Up-to-date for age	63.2	71.9	76.0	61.5
	Up-to-date for age minus the booster	70.1	72.5	78.1	61.5
	Specific Agents				
	DTaP-IPV	82.4	84.0	84.8	68.8
	DTaP-IPV-Hib	82.1	83.4	84.8	68.5
	Hepatitis B	79.2	85.5	90.9	75.1
	Hib	85.7	86.1	90.3	69.1
	MMR	79.2	94.9	94.8	74.1
	Polio	85.7	85.5	88.1	69.7
	Varicella	87.2	90.9	92.4	73.2
	Pneumococcal conjugate	84.3	89.1	96.0	70.0
	Meningococcal C conjugate	89.3	90.3	92.4	72.9
	Rotavirus	*NA*	85.5	90.3	69.4

HSDA	Vaccination Details	Year			
		Children born in 2009	Children born in 2012	Children born in 2015	Children born in 2020
North Shore (Coastal Urban)	Up-to-date for age	60.5	68.7	68.8	68.9
	Up-to-date for age minus the booster	69.7	70.1	70.9	69.4
	Specific Agents				
	DTaP-IPV	76.3	79.9	82.6	81.7
	DTaP-IPV-Hib	75.9	79.6	82.3	81.7
	Hepatitis B	76.3	84.9	87.2	84.0
	Hib	80.0	84.5	86.5	85.8
	MMR	76.3	95.1	95.4	88.1
	Polio	79.6	83.8	86.5	84.9
	Varicella	86.3	91.9	94.3	88.6
	Pneumococcal conjugate	85.8	88.0	96.1	82.2
	Meningococcal C conjugate	88.3	93.3	93.6	86.8
	Rotavirus	*NA*	85.2	92.2	75.3
Coast Garibaldi (Coastal Rural)	Up-to-date for age	65.3	63.6	77.6	85.6
	Up-to-date for age minus the booster	73.5	64.8	80.1	86.4
	Specific Agents				
	DTaP-IPV	73.5	70.9	83.3	86.4
	DTaP-IPV-Hib	73.5	70.9	82.9	86.4
	Hepatitis B	80.9	82.2	93.5	94.4
	Hib	80.0	76.5	87.4	88.8
	MMR	74.0	87.4	93.5	93.6
	Polio	77.2	75.3	87.4	88.0
	Varicella	82.7	84.2	93.1	93.6
	Pneumococcal conjugate	84.1	86.2	97.2	92.0
	Meningococcal C conjugate	86.4	87.9	94.7	93.6
	Rotavirus	*NA*	77.3	86.2	82.4