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# Immunization Coverage in Grade 6 Students

## 2013-2023

March 2024

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## Abbreviations

### Health Authorities

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

### Health Service Delivery Areas

EK	East Kootenay	VAN	Vancouver
KB	Kootenay Boundary	NSCG	North Shore / Coast Garibaldi
OK	Okanagan	SVI	South Vancouver Island
TCS	Thompson Cariboo Shuswap	CVI	Central Vancouver Island
FE	Fraser East	NVI	North Vancouver Island
FN	Fraser North	NW	Northwest
FS	Fraser South	NI	Northern Interior
RICH	Richmond	NE	Northeast

### Additional abbreviations

BC	British Columbia	MyEdBC	MyEducation BC
HPV	Human papillomavirus	PIR	Provincial Immunization Registry
MoE	Ministry of Education		

For an explanation of BC Health Authorities, please visit [this website](#).

The BCCDC Immunization Coverage Dashboard is available online [here](#).

## Executive Summary

The 2013-2023 grade 6 report contains coverage information for students who were enrolled in grade 6 in British Columbia (BC) for three antigens: hepatitis B, varicella, and human papillomavirus (HPV). In 2023, data reflects coverage as of the 2022-2023 school year. The hepatitis B and varicella vaccine series are based on completion of a primary series in early childhood and any missing doses may be re-offered in grade 6. The HPV series is routinely initiated and completed in grade 6.

Overall, provincial coverage was highest for hepatitis B (88.8%), followed by varicella (86.4%), and HPV (58.8%). As hepatitis B and varicella series are usually completed at birth or during infancy students would have had more time to receive these immunizations, compared to the HPV series which is normally initiated and completed in grade 6. In comparison to 2022, coverage for each of the three antigens decreased by up to 1.3% in 2023. Coverage for hepatitis B and varicella remained comparable to pre-pandemic years, although coverage for HPV was approximately 6% lower for females and males compared to 2018 & 2019.

Reasons for non-immunization (i.e., documented refusals, exemptions, or contraindications) were also assessed among partially immunized and unimmunized students for all three antigens. Partially immunized students are defined as those who have received one or more vaccines in a series, but are not up-to-date (see [Notes](#) and Table A1 in the [Appendix](#) for further details). A notable trend seen in 2022 as well as 2023 is that many students were partially immunized or unimmunized with no documented refusals or contraindications (i.e., their reason for non-immunization was unknown). These unknown groups can include children who have missed the immunization clinics, those who deferred, or those who have not had their refusal, contraindication, or immunization doses recorded. Improving documentation of immunization doses, refusals, and contraindications may provide better estimates of the proportion of grade 6 students in BC with protection against hepatitis B, varicella, and HPV and indicate where to focus catch-up efforts.

### Limitations

All calculations are based on vaccine doses recorded in the provincial or regional immunization registry and enrolment records maintained by regional HAs using electronic enrolment records from the Ministry of Education (MoE), or records received directly from schools. Doses administered by providers other than public health, including doses administered outside of BC to newly arrived students whose records have not yet been received by public health, may not be reported in the registry. Students attending First Nations schools may be under-represented in this dataset because some First Nations schools are not registered with the BC MoE and are therefore not captured in the provincial list of schools. Immunization records may be incomplete for international students, so coverage is likely underestimated for this population. Data from 2018 onwards are not comparable to historical data due to data source changes. Categorization of reasons for non-immunization as refusal or contraindication is likely to be incomplete for Fraser Health (FH) due to lack of supplemental data transfer between the FH regional and the provincial immunization registry. There may be lag times in data entry.

Please refer to the [Notes](#) for additional information.

## Grade 6 students with up-to-date immunizations: Hepatitis B

Although most grade 6 students complete their hepatitis B series in infancy, the school program aims to catch-up any remaining students. In 2023, which is representative of data for the 2022/2023 school year, hepatitis B immunization coverage for grade 6 students in BC was 88.8% provincially (**Table 1** and **Figure 1**). This is a similar rate to the 2020 report (2019/2020 school year), but 1% lower than 2022 (2021/2022 school year) and 4.6% higher than 2021 (2020/2021 school year). Compared to 2022, hepatitis B coverage rates were lower in all HAs, except for Interior Health (IH), which had a 0.1% increase. Rates and trends varied by HSDA and ranged from 81.7% in Kootenay Boundary to 97.4% in Richmond (**Table 1**).

In the 2022/2023 school year, only 2% of BC grade 6 students were unimmunized with a documented refusal, while 3% and 5% were partially immunized and unimmunized for unknown reasons (**Table 2** and **Figure 2**). The highest reported refusal rate of 9% was in Kootenay Boundary.

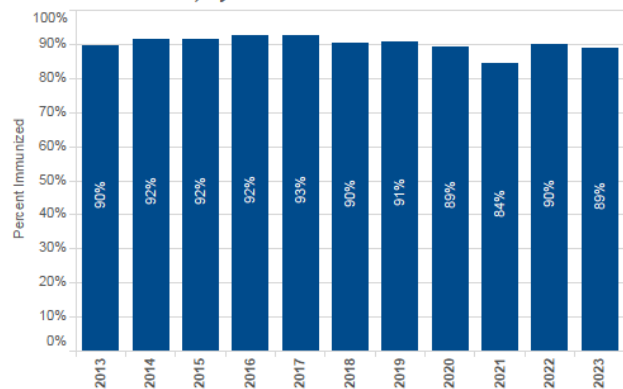
**Table 1. Percent of Grade 6 students with up-to-date immunizations: Hepatitis B**

HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	YEAR										
	2013	2014*	2015*	2016*	2017*	2018*	2019*	2020*	2021*	2022*	2023*
<b>INTERIOR *</b>	<b>89.4%</b>	<b>90.5%</b>	<b>89.2%</b>	<b>89.9%</b>	<b>89.3%</b>	<b>90.2%</b>	<b>90.5%</b>	<b>88.3%</b>	<b>85.1%</b>	<b>88.1%</b>	<b>88.2%</b>
East Kootenay	91.4%	91.4%	89.0%	91.2%	85.8%	90.5%	90.2%	88.8%	83.1%	88.7%	87.8%
Kootenay Boundary	80.9%	82.9%	82.4%	80.5%	82.8%	80.2%	80.4%	73.7%	75.0%	79.8%	81.7%
Okanagan	88.2%	89.1%	89.3%	89.7%	88.9%	89.9%	90.7%	89.5%	85.3%	88.0%	87.6%
Thompson Cariboo Shuswap	93.5%	94.8%	91.3%	93.2%	93.5%	94.2%	93.9%	91.4%	88.9%	90.9%	91.6%
<b>FRASER *</b>	<b>87.5%</b>	<b>89.0%</b>	<b>89.0%</b>	<b>90.6%</b>	<b>91.8%</b>	<b>88.3%</b>	<b>89.0%</b>	<b>88.8%</b>	<b>80.6%</b>	<b>89.0%</b>	<b>88.1%</b>
Fraser East	86.9%	89.0%	86.9%	87.2%	90.5%	90.8%	89.9%	89.7%	85.6%	90.5%	88.6%
Fraser North	82.9%	86.5%	86.3%	90.1%	91.5%	87.7%	88.0%	88.2%	78.6%	88.2%	88.5%
Fraser South	91.0%	90.7%	91.7%	92.3%	92.5%	87.7%	89.3%	88.9%	80.1%	89.0%	87.6%
<b>VANCOUVER COASTAL</b>	<b>92.4%</b>	<b>93.0%</b>	<b>93.2%</b>	<b>94.2%</b>	<b>93.6%</b>	<b>93.7%</b>	<b>93.4%</b>	<b>90.4%</b>	<b>86.1%</b>	<b>92.1%</b>	<b>90.1%</b>
Richmond	97.3%	96.9%	96.9%	98.5%	96.8%	97.8%	97.7%	95.7%	91.4%	97.2%	97.4%
Vancouver	92.8%	93.4%	93.8%	94.0%	94.3%	94.6%	94.4%	90.9%	87.7%	91.0%	89.2%
North Shore / Coast Garibaldi	88.8%	90.0%	90.1%	91.8%	90.6%	90.1%	89.2%	86.8%	80.6%	91.0%	87.6%
<b>ISLAND *</b>	<b>90.5%</b>	<b>95.9%</b>	<b>97.9%</b>	<b>97.5%</b>	<b>98.5%</b>	<b>91.4%</b>	<b>91.1%</b>	<b>88.9%</b>	<b>88.9%</b>	<b>90.6%</b>	<b>89.9%</b>
South Vancouver Island	92.2%	93.2%	98.5%	97.0%	97.9%	92.5%	91.2%	89.9%	90.2%	91.7%	90.5%
Central Vancouver Island	89.6%	98.4%	96.2%	99.0%	97.9%	91.3%	91.4%	88.0%	88.7%	91.1%	90.3%
North Vancouver Island	88.0%	98.1%	99.6%	96.0%	100.0%	88.6%	90.5%	87.9%	86.4%	87.0%	87.6%
<b>NORTHERN *</b>	<b>93.4%</b>	<b>94.4%</b>	<b>92.7%</b>	<b>92.9%</b>	<b>91.5%</b>	<b>91.5%</b>	<b>91.1%</b>	<b>89.8%</b>	<b>87.1%</b>	<b>90.0%</b>	<b>88.1%</b>
Northwest	93.1%	95.2%	92.5%	94.4%	93.5%	90.6%	89.7%	86.9%	81.9%	88.6%	87.8%
Northern Interior	94.3%	95.5%	94.4%	94.8%	92.5%	94.3%	92.7%	91.0%	91.3%	92.9%	90.5%
Northeast	92.0%	91.2%	89.5%	88.0%	87.7%	86.7%	89.4%	90.2%	84.4%	85.7%	84.1%
<b>BRITISH COLUMBIA *</b>	<b>89.7%</b>	<b>91.5%</b>	<b>91.5%</b>	<b>92.4%</b>	<b>92.8%</b>	<b>90.4%</b>	<b>90.6%</b>	<b>89.1%</b>	<b>84.2%</b>	<b>89.8%</b>	<b>88.8%</b>

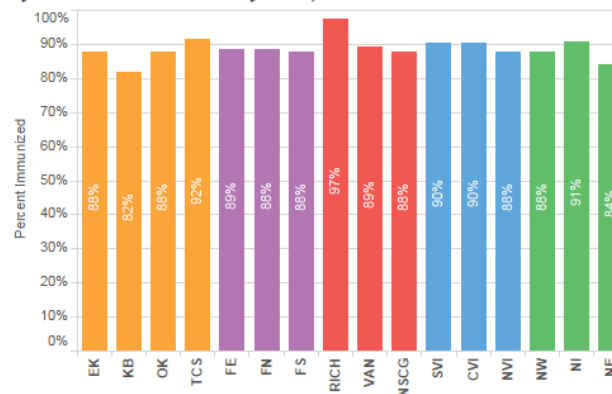
\* From 2014 onwards estimates for BC and some of the health authorities are not directly comparable to previous years. Immunization coverage rates approaching 100% in ISLH in 2014-2017 are likely over-estimates resulting from the use of different data sources for numerators and denominators. See [Notes](#).

### Grade 6 Students Immunized Hepatitis B Vaccine, British Columbia

All British Columbia, by Year



By Health Service Delivery Area, 2023



By Health Authority and Year

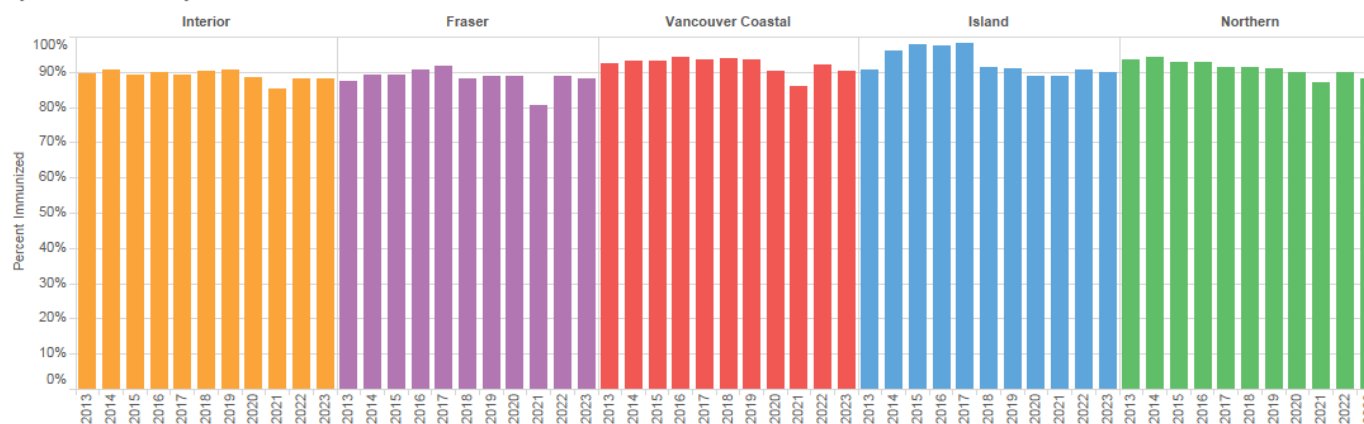


Figure 1. Percent of Grade 6 students with up-to-date immunizations: Hepatitis B

**Table 2. Reasons for non-immunization for Grade 6 students: Hepatitis B, 2023**

Region	Population	Count				Percent			
		Partially Immunized		Unimmunized		Partially Immunized		Unimmunized	
		Refusal	Unknown <sup>a</sup>	Refusal	Unknown <sup>a</sup>	Refusal	Unknown <sup>a</sup>	Refusal	Unknown <sup>a</sup>
<b>British Columbia</b>	<b>49,977</b>	<b>325</b>	<b>1,425</b>	<b>1,125</b>	<b>2,720</b>	<b>1%</b>	<b>3%</b>	<b>2%</b>	<b>5%</b>
<b>Interior</b>	<b>7,955</b>	76	172	368	325	1%	2%	5%	4%
East Kootenay	864	10	26	37	32	1%	3%	4%	4%
Kootenay Boundary	876	7	22	78	53	1%	2%	9%	6%
Okanagan	3,810	30	83	181	179	1%	2%	5%	5%
Thompson Cariboo Shuswap	2,405	29	41	72	61	1%	2%	3%	2%
<b>Fraser<sup>b</sup></b>	<b>20,733</b>	<b>43</b>	<b>813</b>	<b>192</b>	<b>1,421</b>	<b>0%</b>	<b>4%</b>	<b>1%</b>	<b>7%</b>
Fraser East	3,827	18	113	85	219	0%	3%	2%	6%
Fraser North	6,582	3	281	42	431	0%	4%	1%	6%
Fraser South	10,324	22	419	65	771	0%	4%	1%	8%
<b>Vancouver Coastal</b>	<b>10,281</b>	<b>65</b>	<b>189</b>	<b>239</b>	<b>521</b>	<b>1%</b>	<b>2%</b>	<b>2%</b>	<b>5%</b>
Richmond	1,849	3	19	6	20	0%	1%	0%	1%
Vancouver	5,153	32	103	90	333	1%	2%	2%	6%
North Shore/Coast Garibaldi	3,279	30	67	143	168	1%	2%	4%	5%
<b>Island</b>	<b>7,714</b>	<b>112</b>	<b>154</b>	<b>225</b>	<b>289</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>
South Vancouver Island	3,552	37	74	90	137	1%	2%	2%	4%
Central Vancouver Island	2,702	45	45	85	86	2%	2%	3%	3%
North Vancouver Island	1,460	30	35	50	66	2%	2%	3%	4%
<b>Northern</b>	<b>3,294</b>	<b>29</b>	<b>97</b>	<b>101</b>	<b>164</b>	<b>1%</b>	<b>3%</b>	<b>3%</b>	<b>5%</b>
Northwest	780	7	24	21	43	1%	3%	3%	6%
Northern Interior	1,608	12	40	41	59	1%	2%	2%	4%
Northeast	906	10	33	39	62	1%	4%	4%	7%

**Notes:** a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization doses recorded.

b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH. Therefore, the proportion of partially immunized and unimmunized students with an unknown reason for non-immunization is likely to be overestimated, see [Note #11](#).



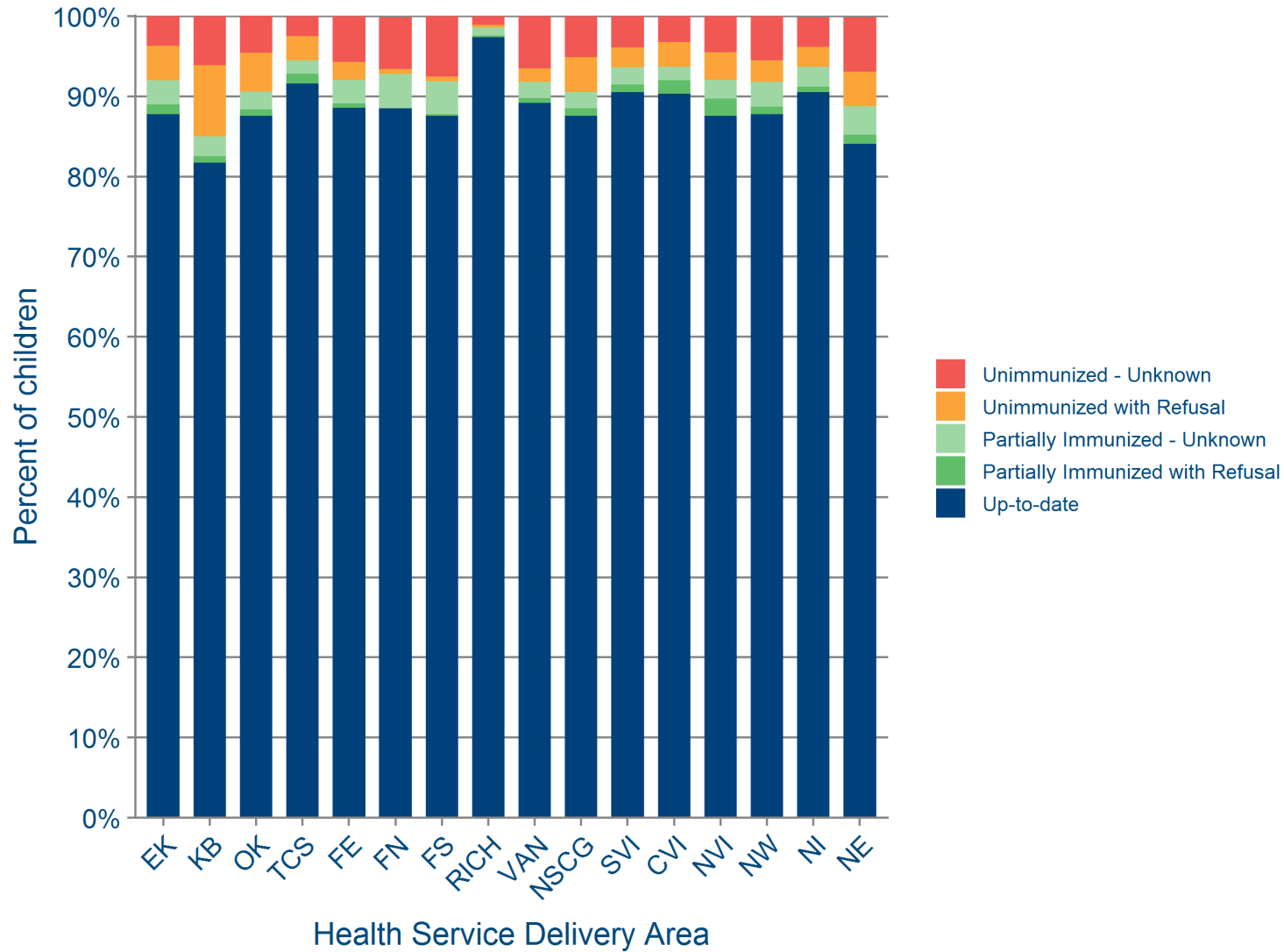


Figure 2. Reasons for non-immunization for Grade 6 students: Hepatitis B, 2023

## Grade 6 students with up-to-date protection: Varicella

The provincial coverage rate for varicella in grade 6 students slightly decreased from 87.5% in 2022 to 86.4% in 2023 (**Table 3** and **Figure 3**). The proportion of children who either had lab evidence or a self-report of previous varicella disease has decreased from 26.2% in 2013 to 0.8% in 2023, as fewer children are exposed to wild-type varicella (**Figure 4**). From 2022 to 2023, varicella coverage declined in all HAs, except for Island Health (ISLH), which had a 0.1% increase. Rates varied by HSDA, ranging from 77.2% in Kootenay Boundary to 95.3% in Richmond (**Table 3**).

In the 2022/2023 school year, only 3% of BC grade 6 students were unimmunized with a documented refusal (range 0 – 10% among HSDAs), while 4% and 6% were partially immunized and unimmunized for unknown reasons (**Table 4**). Less than 1% of students were partially immunized or unimmunized and had a reported contraindication. There may be an underestimate of the proportion of children who have protection from previous disease in FH due to lack of supplemental data transfer between the FH regional and the provincial immunization registry. See [Notes](#) for further information.

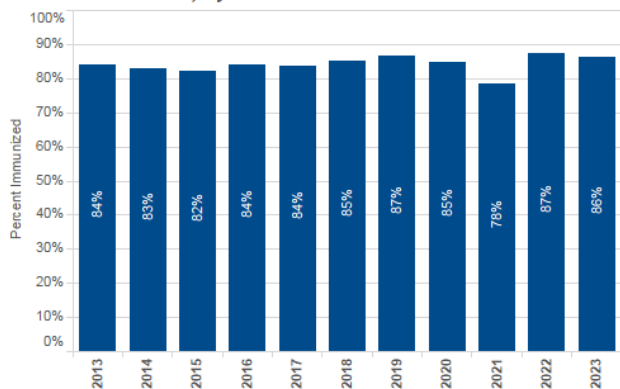
Table 3. Percent of Grade 6 students with up-to-date protection: Varicella

HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	YEAR										
	2013	2014*	2015*	2016*	2017*	2018*	2019*	2020*	2021*	2022*	2023*
<b>INTERIOR *</b>	<b>85.7%</b>	<b>84.7%</b>	<b>82.2%</b>	<b>83.4%</b>	<b>82.5%</b>	<b>87.4%</b>	<b>86.2%</b>	<b>85.4%</b>	<b>84.1%</b>	<b>85.8%</b>	<b>85.3%</b>
East Kootenay	88.0%	90.0%	85.4%	82.8%	82.4%	88.9%	86.5%	87.0%	85.2%	88.3%	86.9%
Kootenay Boundary	74.6%	74.3%	78.4%	76.7%	78.5%	86.8%	74.2%	72.3%	75.3%	78.3%	77.2%
Okanagan	83.9%	82.5%	80.6%	82.6%	80.9%	85.8%	86.1%	86.4%	83.6%	84.9%	84.4%
Thompson Cariboo Shuswap	91.6%	89.4%	84.9%	87.3%	86.5%	89.6%	90.4%	87.8%	87.3%	88.5%	89.3%
<b>FRASER *</b>	<b>82.6%</b>	<b>82.6%</b>	<b>81.9%</b>	<b>82.8%</b>	<b>83.4%</b>	<b>81.4%</b>	<b>84.0%</b>	<b>82.9%</b>	<b>71.1%</b>	<b>87.0%</b>	<b>85.8%</b>
Fraser East	80.9%	80.1%	80.6%	79.3%	79.8%	84.8%	84.3%	83.9%	76.8%	87.4%	84.8%
Fraser North	80.0%	81.1%	79.0%	80.2%	80.9%	81.5%	83.3%	82.3%	70.1%	86.1%	85.6%
Fraser South	85.1%	84.6%	84.3%	85.9%	86.2%	80.0%	84.4%	83.0%	69.6%	87.6%	86.3%
<b>VANCOUVER COASTAL</b>	<b>85.0%</b>	<b>85.8%</b>	<b>85.6%</b>	<b>87.0%</b>	<b>85.9%</b>	<b>88.0%</b>	<b>91.7%</b>	<b>88.7%</b>	<b>80.4%</b>	<b>89.6%</b>	<b>87.2%</b>
Richmond	92.0%	90.1%	91.8%	93.4%	86.8%	94.1%	96.0%	94.7%	86.0%	96.0%	95.3%
Vancouver	84.5%	85.0%	84.8%	84.9%	86.8%	88.5%	92.2%	88.7%	81.2%	88.1%	86.2%
North Shore/Coast Garibaldi	81.5%	84.6%	83.3%	86.6%	83.7%	84.0%	88.5%	85.6%	76.1%	88.3%	84.3%
<b>ISLAND *</b>	<b>82.5%</b>	<b>76.1%</b>	<b>78.0%</b>	<b>84.8%</b>	<b>82.3%</b>	<b>88.4%</b>	<b>86.9%</b>	<b>86.0%</b>	<b>86.8%</b>	<b>88.6%</b>	<b>88.7%</b>
South Vancouver Island	82.6%	72.0%	78.0%	84.9%	81.8%	91.6%	87.3%	87.3%	88.4%	89.8%	89.8%
Central Vancouver Island	81.7%	80.1%	78.5%	86.5%	82.7%	87.4%	86.9%	84.9%	86.4%	89.7%	88.7%
North Vancouver Island	83.6%	79.2%	76.9%	81.3%	83.2%	81.8%	85.7%	84.6%	83.6%	83.7%	86.4%
<b>NORTHERN *</b>	<b>87.7%</b>	<b>86.1%</b>	<b>84.2%</b>	<b>84.6%</b>	<b>83.1%</b>	<b>85.3%</b>	<b>87.5%</b>	<b>81.8%</b>	<b>82.3%</b>	<b>85.0%</b>	<b>84.2%</b>
Northwest	90.4%	87.9%	87.7%	84.5%	84.9%	85.1%	87.3%	80.9%	77.8%	84.1%	86.3%
Northern Interior	86.8%	86.5%	83.8%	87.7%	86.1%	88.0%	90.1%	82.3%	87.0%	87.9%	86.6%
Northeast	86.6%	83.7%	81.3%	78.7%	75.8%	80.4%	83.0%	81.6%	77.9%	80.2%	78.3%
<b>BRITISH COLUMBIA *</b>	<b>83.9%</b>	<b>82.9%</b>	<b>82.3%</b>	<b>84.2%</b>	<b>83.6%</b>	<b>85.0%</b>	<b>86.6%</b>	<b>84.9%</b>	<b>78.4%</b>	<b>87.5%</b>	<b>86.4%</b>

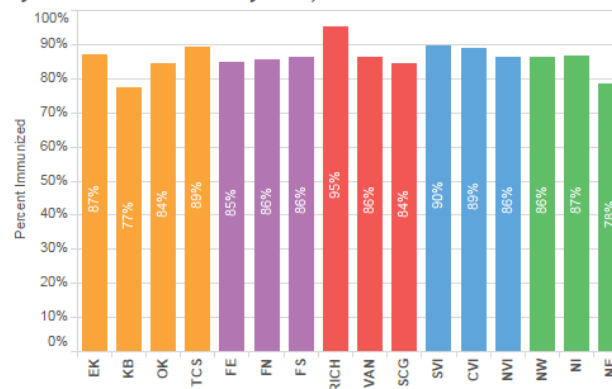
\* From 2014 onwards estimates for BC and some of the health authorities are not directly comparable to previous years. The evidence required to record a previous history of varicella disease or shingles became more stringent as of the 2004 birth cohort (in grade 6 in the 2015/2016 school year). See [Notes](#).

### Grade 6 Students Immunized Varicella Vaccine, British Columbia

All British Columbia, by Year



By Health Service Delivery Area, 2023



By Health Authority and Year

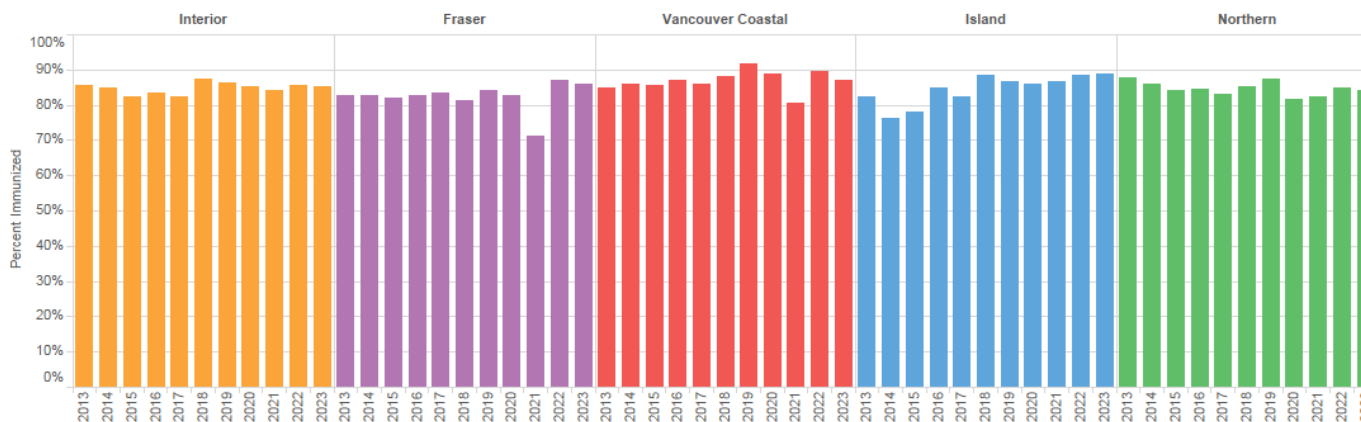
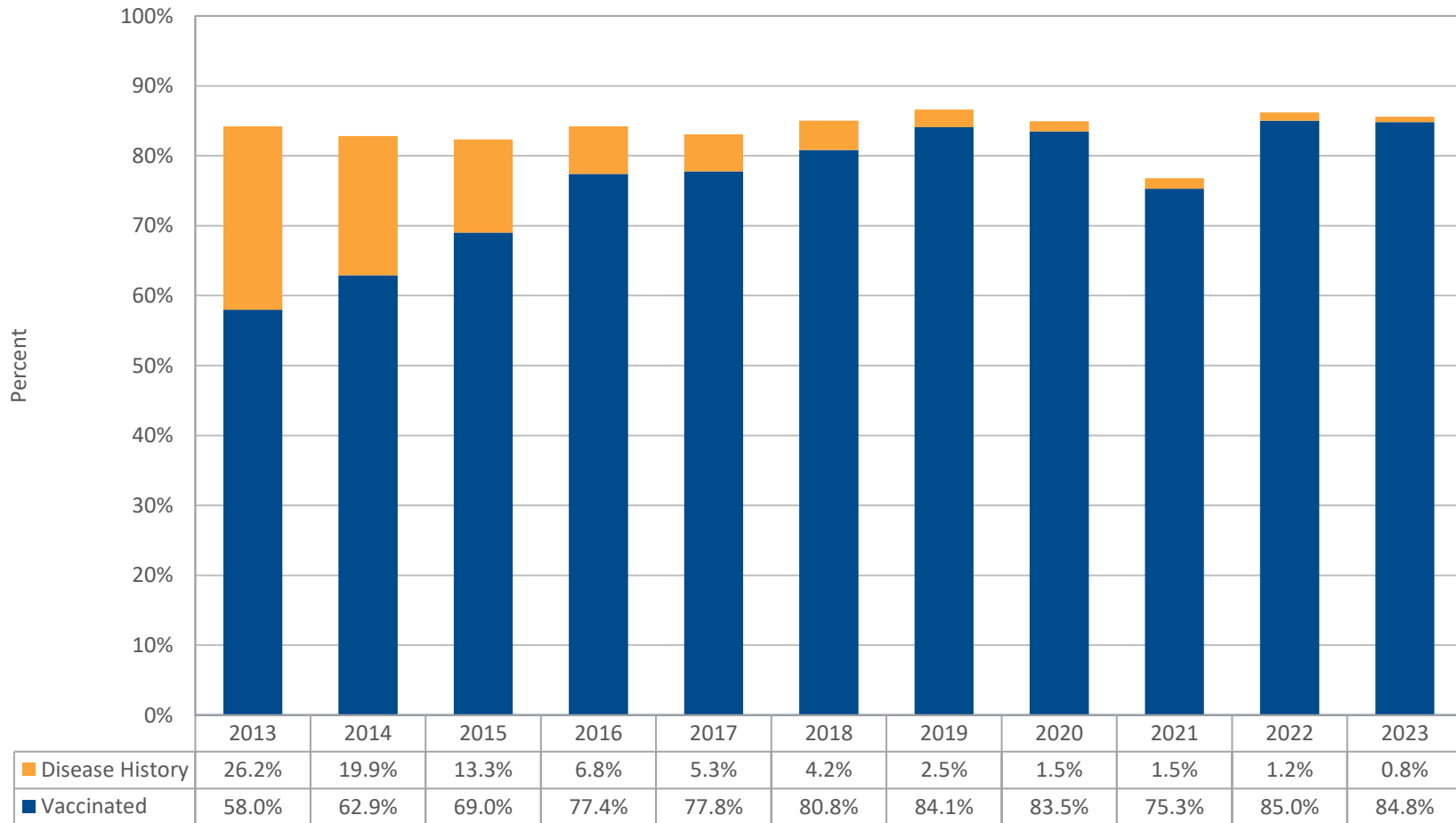


Figure 3. Percent of Grade 6 students with up-to-date protection: Varicella

## Grade 6 Students Immunized Varicella Vaccine and Disease History, British Columbia



**Figure 4. Grade 6 students – Varicella vaccine and disease history\*, British Columbia**

\*Disease history includes children with self-reported or lab evidence of previous disease. See [Note #2](#).

**Table 4. Reasons for non-immunization for Grade 6 students: Varicella, 2023**

Region	Population	Count							
		Immune: Previous Disease	Immune: Lab Evidence	Partially Immunized			Unimmunized		
				Refusal	Contraindication	Unknown <sup>a</sup>	Refusal	Contraindication	Unknown <sup>a</sup>
<b>British Columbia</b>	<b>49,977</b>	<b>346</b>	<b>55</b>	<b>583</b>	<b>10</b>	<b>1,846</b>	<b>1,431</b>	<b>4</b>	<b>2,939</b>
<b>Interior</b>	<b>7,955</b>	49	13	180	1	224	434	0	328
East Kootenay	864	8	1	20	0	22	37	0	34
Kootenay Boundary	876	14	4	32	0	25	92	0	51
Okanagan	3,810	18	4	86	1	119	207	0	183
Thompson Cariboo Shuswap	2,405	9	4	42	0	58	98	0	60
<b>Fraser<sup>b</sup></b>	<b>20,733</b>	<b>91</b>	<b>25</b>	<b>76</b>	<b>5</b>	<b>998</b>	<b>250</b>	<b>0</b>	<b>1,615</b>
Fraser East	3,827	25	0	31	1	183	110	0	257
Fraser North	6,582	29	11	14	3	364	52	0	514
Fraser South	10,324	37	14	31	1	451	88	0	844
<b>Vancouver Coastal</b>	<b>10,281</b>	<b>130</b>	<b>0</b>	<b>155</b>	<b>2</b>	<b>304</b>	<b>290</b>	<b>4</b>	<b>558</b>
Richmond	1,849	15	0	3	0	48	8	1	27
Vancouver	5,153	70	0	75	1	167	109	3	357
North Shore/Coast Garibaldi	3,279	45	0	77	1	89	173	0	174
<b>Island</b>	<b>7,714</b>	<b>49</b>	<b>17</b>	<b>118</b>	<b>1</b>	<b>186</b>	<b>296</b>	<b>0</b>	<b>268</b>
South Vancouver Island	3,552	25	13	34	0	93	110	0	127
Central Vancouver Island	2,702	15	2	54	1	52	120	0	79
North Vancouver Island	1,460	9	2	30	0	41	66	0	62
<b>Northern</b>	<b>3,294</b>	<b>27</b>	<b>0</b>	<b>54</b>	<b>1</b>	<b>134</b>	<b>161</b>	<b>0</b>	<b>170</b>
Northwest	780	10	0	9	0	27	34	0	37
Northern Interior	1,608	9	0	23	1	58	67	0	67
Northeast	906	8	0	22	0	49	60	0	66

Table continued on next page

Region	Population	Percent							
		Immune: Previous Disease	Immune: Lab Evidence	Partially Immunized			Unimmunized		
				Refusal	Contraindication	Unknown <sup>a</sup>	Refusal	Contraindication	Unknown <sup>a</sup>
<b>British Columbia</b>	<b>49,977</b>	<b>1%</b>	<b>0%</b>	<b>1%</b>	<b>0%</b>	<b>4%</b>	<b>3%</b>	<b>0%</b>	<b>6%</b>
<b>Interior</b>	<b>7,955</b>	1%	0%	2%	0%	3%	5%	0%	4%
East Kootenay	864	1%	0%	2%	0%	2%	4%	0%	4%
Kootenay Boundary	876	2%	0%	4%	0%	3%	10%	0%	6%
Okanagan	3,810	0%	0%	2%	0%	3%	5%	0%	5%
Thompson Cariboo Shuswap	2,405	0%	0%	2%	0%	2%	4%	0%	2%
<b>Fraser<sup>b</sup></b>	<b>20,733</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>5%</b>	<b>1%</b>	<b>0%</b>	<b>8%</b>
Fraser East	3,827	1%	0%	1%	0%	5%	3%	0%	7%
Fraser North	6,582	0%	0%	0%	0%	6%	1%	0%	8%
Fraser South	10,324	0%	0%	0%	0%	4%	1%	0%	8%
<b>Vancouver Coastal</b>	<b>10,281</b>	<b>1%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>3%</b>	<b>3%</b>	<b>0%</b>	<b>5%</b>
Richmond	1,849	1%	0%	0%	0%	3%	0%	0%	2%
Vancouver	5,153	1%	0%	2%	0%	3%	2%	0%	7%
North Shore/Coast Garibaldi	3,279	1%	0%	2%	0%	3%	5%	0%	5%
<b>Island</b>	<b>7,714</b>	<b>1%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>2%</b>	<b>4%</b>	<b>0%</b>	<b>3%</b>
South Vancouver Island	3,552	1%	0%	1%	0%	3%	3%	0%	4%
Central Vancouver Island	2,702	1%	0%	2%	0%	2%	4%	0%	3%
North Vancouver Island	1,460	1%	0%	2%	0%	3%	4%	0%	4%
<b>Northern</b>	<b>3,294</b>	<b>1%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>4%</b>	<b>5%</b>	<b>0%</b>	<b>5%</b>
Northwest	780	1%	0%	1%	0%	4%	4%	0%	5%
Northern Interior	1,608	1%	0%	1%	0%	4%	4%	0%	4%
Northeast	906	1%	0%	2%	0%	5%	7%	0%	7%

**Notes:** a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization doses recorded.  
b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH. Therefore, the proportion of partially immunized and unimmunized students with an unknown reason for non-immunization is likely to be overestimated, see [Note #11](#).

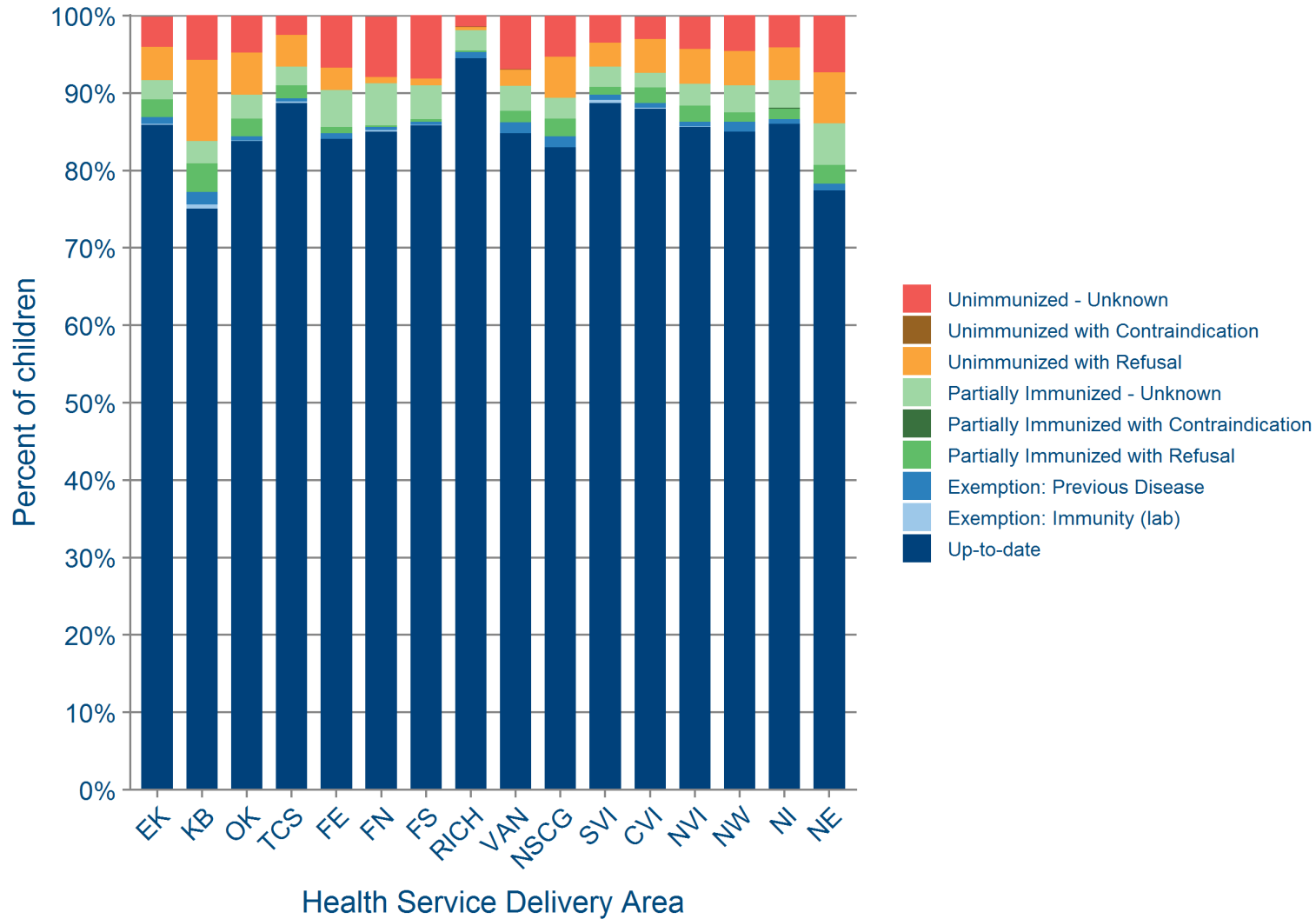


Figure 5. Reasons for non-immunization for Grade 6 students: Varicella, 2023



## Grade 6 students with up-to-date immunizations: Human Papillomavirus (HPV)

The HPV adolescent immunization program has had several iterations in BC. The first cohort to receive HPV vaccination in grade 6 was females in 2008/2009, which was a three-dose series. Starting in 2010 (2010/2011 school year), the grade 6 program required two doses in grade 6 and a third dose in grade 11 (until 2013) or grade 9 (until 2014). Since 2014, females receiving 2 doses at least 150 days apart, with the first dose given before 15 years old, are considered complete. Starting in the 2017/2018 school year, HPV vaccine was extended to include males in grade 6. For more information on the history of the HPV program see [History of Immunization in BC](#).

In 2023 (2022/2023 school year), 60.0% of female and 57.7% of male students received two doses of HPV vaccine, a slight decline compared to the previous year (**Table 5, Figure 6 and Figure 7**). This trend was consistent across all HAs, except for females in IH, and females and males in Northern Health (NH), where there were increases in the percentage of grade 6 students who had received two doses of HPV. Rates varied by HSDA. In 2023, HPV coverage rates in females by HSDA ranged from 37.9% in Northeast to 73.8% in Richmond and coverage rates in males ranged from 38.0% in Northeast to 68.9% in Richmond (**Table 5**).

In 2023, 15.5% of female students and 15.9% of male students in grade 6 in BC initiated, but did not complete, an HPV immunization series (**Table 6**). HPV series initiation was similar across most HSDAs (**Figure 8**). All HSDAs had between 11% and 22% of female and male students initiate, but not complete, their HPV series. When combining series initiation and completion, 75.5% of female students and 73.6% of male students received at least one dose of HPV vaccine.

In the 2022/2023 school year, only 6% of BC grade 6 students were unimmunized with a documented refusal (**Tables 7 – 9 and Figures 9 – 11**). By HSDA, 0 to 1% of students were partially immunized with a documented refusal, and 0% to 19% of students were unimmunized with a documented refusal (**Table 7**). There were large proportions of partially immunized and unimmunized students with an unknown reason for non-immunization ( $\geq 10\%$  for all HSDAs), particularly in NH and FH.

Table 5. Percent of Grade 6 students with up-to-date immunizations: HPV, by sex

HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	YEAR											
	2018*		2019*		2020*		2021*		2022*		2023*	
	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males
<b>INTERIOR *</b>	<b>64.7%</b>	<b>63.2%</b>	<b>65.2%</b>	<b>63.7%</b>	<b>42.1%</b>	<b>39.4%</b>	<b>13.9%</b>	<b>11.8%</b>	<b>53.3%</b>	<b>54.2%</b>	<b>53.9%</b>	<b>53.4%</b>
East Kootenay	62.6%	58.5%	61.7%	64.2%	42.0%	45.6%	2.9%	1.3%	60.8%	61.9%	54.8%	47.6%
Kootenay Boundary	55.5%	49.9%	51.6%	48.3%	26.0%	25.3%	34.1%	32.3%	42.3%	44.9%	47.6%	46.0%
Okanagan	64.7%	63.0%	65.0%	64.3%	52.8%	48.5%	14.9%	13.0%	56.1%	57.7%	54.7%	56.4%
Thompson Cariboo Shuswap	69.3%	69.3%	71.1%	68.2%	30.4%	27.0%	10.0%	7.1%	49.5%	48.6%	54.6%	53.5%
<b>FRASER *</b>	<b>69.3%</b>	<b>66.0%</b>	<b>65.2%</b>	<b>62.1%</b>	<b>25.3%</b>	<b>24.7%</b>	<b>0.4%</b>	<b>0.3%</b>	<b>63.1%</b>	<b>60.5%</b>	<b>62.7%</b>	<b>59.9%</b>
Fraser East	59.6%	55.0%	58.3%	53.9%	17.8%	15.8%	0.5%	0.6%	51.4%	49.6%	49.1%	44.6%
Fraser North	70.7%	66.3%	65.3%	63.0%	19.7%	20.7%	0.3%	0.2%	64.4%	62.3%	65.0%	63.7%
Fraser South	72.0%	70.0%	67.8%	64.6%	31.7%	30.5%	0.3%	0.3%	66.4%	63.5%	66.2%	63.2%
<b>VANCOUVER COASTAL</b>	<b>68.6%</b>	<b>65.8%</b>	<b>71.8%</b>	<b>68.8%</b>	<b>15.9%</b>	<b>14.3%</b>	<b>1.1%</b>	<b>1.3%</b>	<b>66.7%</b>	<b>64.1%</b>	<b>63.7%</b>	<b>60.9%</b>
Richmond	75.3%	72.7%	78.0%	73.6%	60.2%	56.4%	3.0%	3.1%	75.6%	73.5%	73.8%	68.9%
Vancouver	70.9%	65.6%	74.2%	70.6%	1.7%	0.8%	0.4%	1.0%	64.1%	62.2%	64.5%	60.4%
North Shore / Coast Garibaldi	61.1%	62.3%	64.1%	63.1%	12.9%	13.1%	1.2%	1.0%	66.2%	61.8%	56.7%	57.4%
<b>ISLAND *</b>	<b>62.6%</b>	<b>61.9%</b>	<b>64.0%</b>	<b>61.9%</b>	<b>35.3%</b>	<b>34.8%</b>	<b>50.4%</b>	<b>50.2%</b>	<b>60.7%</b>	<b>60.3%</b>	<b>57.8%</b>	<b>55.9%</b>
South Vancouver Island	69.0%	65.7%	68.7%	66.5%	37.3%	34.3%	57.8%	56.7%	69.5%	68.4%	65.1%	62.8%
Central Vancouver Island	59.3%	61.2%	63.1%	59.4%	37.6%	39.9%	42.8%	42.3%	56.0%	57.8%	53.9%	53.1%
North Vancouver Island	52.6%	52.6%	53.3%	55.0%	25.4%	26.5%	46.6%	48.2%	46.4%	45.2%	47.0%	44.4%
<b>NORTHERN</b>	<b>62.1%</b>	<b>61.0%</b>	<b>61.6%</b>	<b>59.3%</b>	<b>31.3%</b>	<b>29.1%</b>	<b>40.4%</b>	<b>38.5%</b>	<b>44.8%</b>	<b>42.3%</b>	<b>51.0%</b>	<b>48.8%</b>
Northwest	66.0%	57.3%	61.2%	58.3%	33.4%	24.4%	48.2%	44.3%	55.6%	48.9%	60.6%	56.9%
Northern Interior	66.8%	65.5%	66.2%	60.7%	24.7%	23.6%	53.3%	52.7%	52.7%	53.0%	54.2%	50.7%
Northeast	48.2%	56.0%	53.5%	57.6%	41.8%	43.0%	6.8%	8.6%	15.1%	16.4%	37.9%	38.0%
<b>BRITISH COLUMBIA *</b>	<b>66.9%</b>	<b>64.6%</b>	<b>66.1%</b>	<b>63.5%</b>	<b>28.1%</b>	<b>26.8%</b>	<b>13.2%</b>	<b>12.7%</b>	<b>60.6%</b>	<b>59.0%</b>	<b>60.0%</b>	<b>57.7%</b>

\* From 2014 onwards estimates for BC and some of the health authorities are not directly comparable to previous years. See [Notes](#).

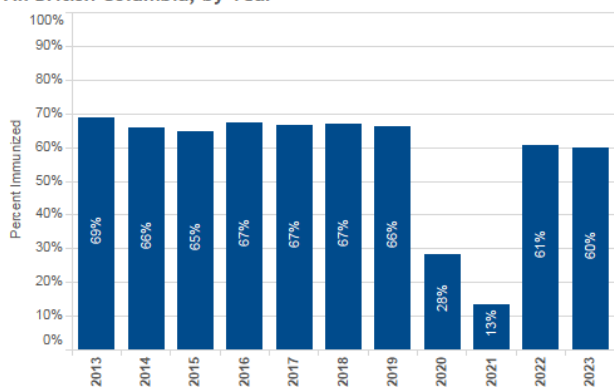
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HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	YEAR				
	2013	2014*	2015*	2016*	2017*
	Females	Females	Females	Females	Females
<b>INTERIOR *</b>	<b>67.8%</b>	<b>68.1%</b>	<b>63.4%</b>	<b>64.6%</b>	<b>63.4%</b>
East Kootenay	69.2%	65.6%	60.7%	57.1%	59.5%
Kootenay Boundary	53.5%	55.9%	46.5%	56.3%	52.1%
Okanagan	66.6%	66.6%	64.0%	64.3%	61.9%
Thompson Cariboo Shuswap	74.3%	74.9%	69.8%	70.6%	71.4%
<b>FRASER *</b>	<b>71.0%</b>	<b>69.9%</b>	<b>69.1%</b>	<b>69.6%</b>	<b>70.1%</b>
Fraser East	63.6%	61.6%	57.5%	57.1%	58.2%
Fraser North	70.9%	68.2%	65.7%	68.8%	68.6%
Fraser South	74.0%	73.9%	75.4%	75.1%	75.5%
<b>VANCOUVER COASTAL</b>	<b>66.2%</b>	<b>64.5%</b>	<b>66.4%</b>	<b>66.4%</b>	<b>66.7%</b>
Richmond	71.7%	61.4%	74.8%	74.4%	68.4%
Vancouver	66.1%	64.4%	64.3%	65.9%	67.7%
North Shore / Coast Garibaldi	62.8%	66.2%	65.2%	62.7%	64.2%
<b>ISLAND *</b>	<b>67.4%</b>	<b>54.3%</b>	<b>54.3%</b>	<b>65.6%</b>	<b>60.8%</b>
South Vancouver Island	67.3%	51.2%	55.6%	67.5%	63.1%
Central Vancouver Island	68.4%	57.2%	52.9%	65.2%	57.4%
North Vancouver Island	65.2%	56.8%	53.5%	60.9%	61.5%
<b>NORTHERN</b>	<b>68.5%</b>	<b>66.2%</b>	<b>61.1%</b>	<b>62.8%</b>	<b>63.9%</b>
Northwest	<b>69.7%</b>	<b>67.7%</b>	<b>67.3%</b>	<b>65.5%</b>	<b>67.6%</b>
Northern Interior	69.1%	67.7%	58.9%	65.4%	68.4%
Northeast	66.2%	62.0%	59.2%	55.4%	52.3%
<b>BRITISH COLUMBIA *</b>	<b>68.8%</b>	<b>65.8%</b>	<b>64.8%</b>	<b>67.1%</b>	<b>66.5%</b>

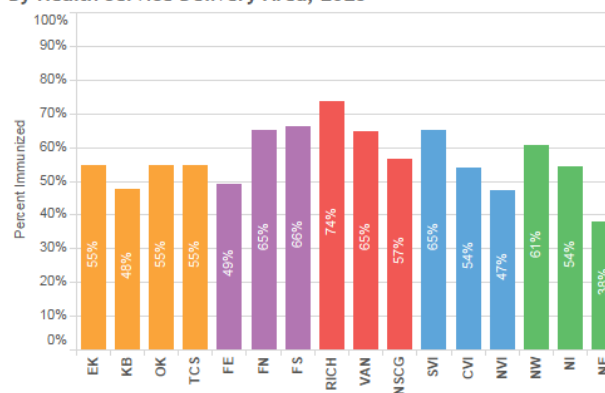
\* From 2014 onwards estimates for BC and some of the health authorities are not directly comparable to previous years. See [Notes](#).

### Grade 6 Female Students Immunized Human Papillomavirus (HPV) Vaccine, British Columbia

All British Columbia, by Year



By Health Service Delivery Area, 2023



By Health Authority and Year

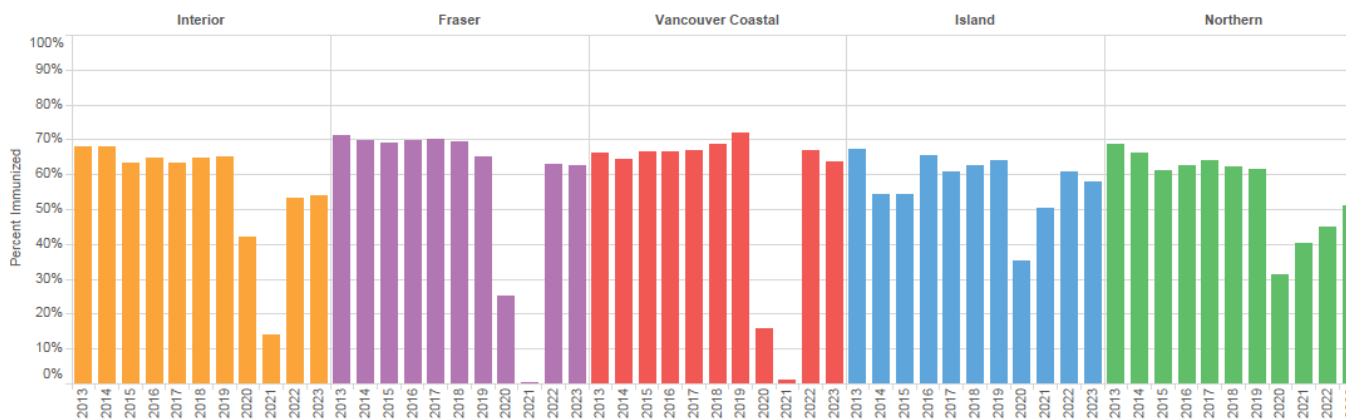
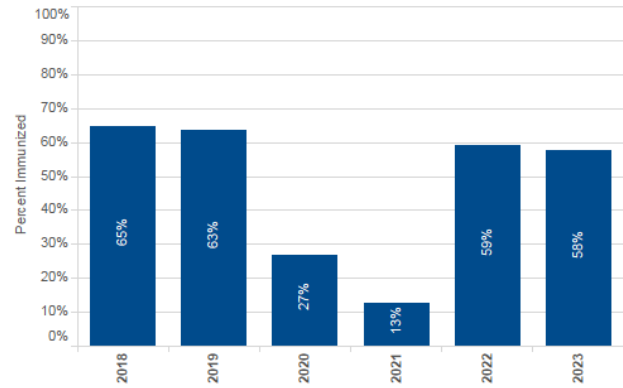


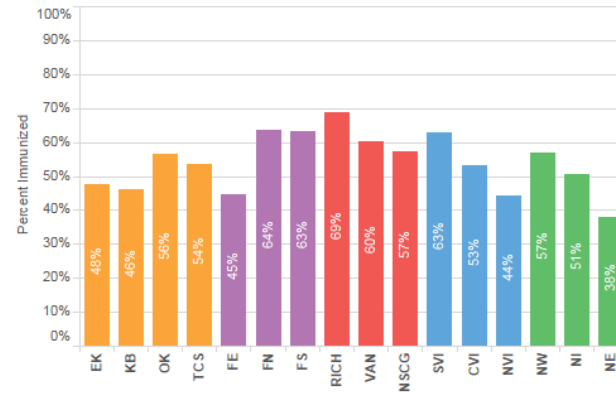
Figure 6. Percent of Grade 6 students with up-to-date immunizations: HPV, females

### Grade 6 Male Students Immunized Human Papillomavirus (HPV) Vaccine, British Columbia

All British Columbia, by Year



By Health Service Delivery Area, 2023



By Health Authority and Year

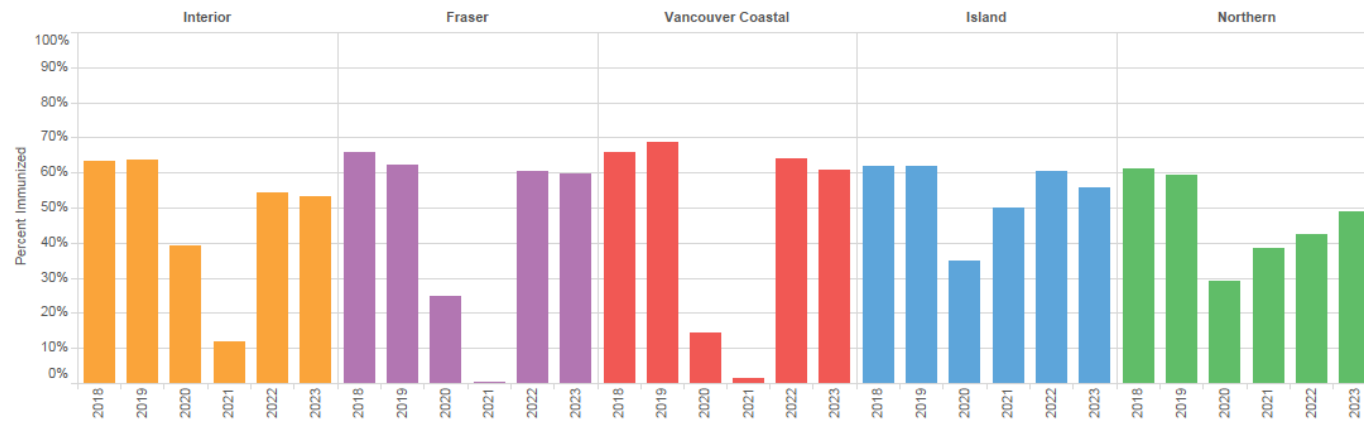


Figure 7. Percent of Grade 6 students with up-to-date immunizations: HPV, males

**Table 6. Percent of Grade 6 students who initiated, but did not complete, a HPV vaccine series, by sex**

HEALTH AUTHORITY / HEALTH SERVICE DELIVERY AREA	YEAR											
	2018		2019		2020		2021		2022		2023	
	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males
<b>INTERIOR</b>	<b>7.2%</b>	<b>7.3%</b>	<b>8.6%</b>	<b>9.2%</b>	<b>31.8%</b>	<b>32.8%</b>	<b>54.8%</b>	<b>55.2%</b>	<b>16.4%</b>	<b>15.1%</b>	<b>14.0%</b>	<b>14.4%</b>
East Kootenay	6.5%	5.7%	9.7%	12.1%	31.6%	28.4%	68.6%	71.9%	13.5%	12.5%	16.2%	19.3%
Kootenay Boundary	6.8%	7.8%	9.7%	12.1%	28.7%	32.7%	20.6%	21.1%	14.2%	11.0%	12.9%	14.1%
Okanagan	7.3%	7.6%	8.1%	7.5%	22.5%	24.3%	54.0%	56.2%	14.2%	12.4%	11.3%	10.8%
Thompson Cariboo Shuswap	7.5%	7.3%	8.8%	9.4%	48.4%	48.3%	61.9%	58.8%	21.9%	21.7%	18.0%	18.3%
<b>FRASER</b>	<b>6.6%</b>	<b>6.6%</b>	<b>11.9%</b>	<b>12.1%</b>	<b>52.7%</b>	<b>50.8%</b>	<b>1.9%</b>	<b>1.6%</b>	<b>16.9%</b>	<b>17.8%</b>	<b>15.3%</b>	<b>16.0%</b>
Fraser East	8.5%	9.6%	10.8%	11.6%	52.8%	54.5%	1.8%	1.4%	21.2%	22.5%	17.9%	19.9%
Fraser North	7.3%	6.6%	12.0%	11.8%	59.5%	55.6%	0.9%	0.9%	16.4%	16.6%	15.8%	15.6%
Fraser South	5.4%	5.5%	12.3%	12.6%	48.2%	46.4%	2.6%	2.1%	15.7%	16.8%	14.1%	14.9%
<b>VANCOUVER COASTAL</b>	<b>12.6%</b>	<b>13.4%</b>	<b>11.9%</b>	<b>12.3%</b>	<b>65.4%</b>	<b>64.0%</b>	<b>11.4%</b>	<b>11.4%</b>	<b>14.9%</b>	<b>15.9%</b>	<b>15.2%</b>	<b>15.8%</b>
Richmond	11.6%	12.3%	10.1%	10.5%	26.9%	27.8%	10.4%	8.7%	11.3%	12.2%	13.7%	15.2%
Vancouver	11.9%	13.4%	11.3%	11.9%	79.3%	77.1%	9.1%	9.1%	15.4%	16.3%	15.0%	16.1%
North Shore / Coast Garibaldi	14.2%	13.9%	13.9%	13.8%	65.9%	63.0%	15.8%	16.5%	16.0%	17.3%	16.5%	15.6%
<b>ISLAND</b>	<b>10.1%</b>	<b>11.0%</b>	<b>10.9%</b>	<b>11.8%</b>	<b>40.1%</b>	<b>40.5%</b>	<b>22.2%</b>	<b>21.6%</b>	<b>15.6%</b>	<b>14.8%</b>	<b>17.4%</b>	<b>17.6%</b>
South Vancouver Island	7.6%	9.6%	8.4%	9.2%	42.8%	43.5%	18.9%	18.2%	11.9%	11.1%	13.8%	14.8%
Central Vancouver Island	11.8%	11.2%	12.7%	15.0%	34.2%	34.7%	28.2%	27.9%	19.6%	18.2%	21.6%	20.5%
North Vancouver Island	12.9%	14.3%	13.8%	12.0%	44.6%	43.6%	18.5%	18.3%	18.0%	17.1%	18.8%	19.0%
<b>NORTHERN</b>	<b>12.6%</b>	<b>11.7%</b>	<b>14.1%</b>	<b>14.8%</b>	<b>39.7%</b>	<b>41.6%</b>	<b>25.0%</b>	<b>24.6%</b>	<b>20.7%</b>	<b>19.9%</b>	<b>16.7%</b>	<b>15.3%</b>
Northwest	12.8%	12.0%	13.9%	15.1%	37.8%	44.4%	14.7%	20.7%	13.3%	15.8%	20.5%	16.0%
Northern Interior	14.4%	13.3%	17.0%	18.1%	49.6%	50.3%	17.1%	14.9%	16.4%	15.4%	14.8%	15.7%
Northeast	9.0%	8.3%	9.2%	8.5%	22.8%	23.7%	51.4%	45.1%	38.7%	32.1%	16.6%	13.9%
<b>BRITISH COLUMBIA</b>	<b>8.9%</b>	<b>9.1%</b>	<b>11.4%</b>	<b>11.8%</b>	<b>49.0%</b>	<b>48.4%</b>	<b>17.5%</b>	<b>17.1%</b>	<b>16.4%</b>	<b>16.6%</b>	<b>15.5%</b>	<b>15.9%</b>

### Grade 6 Students Immunized HPV Series Initiation and Series Completion by Gender, British Columbia, 2023

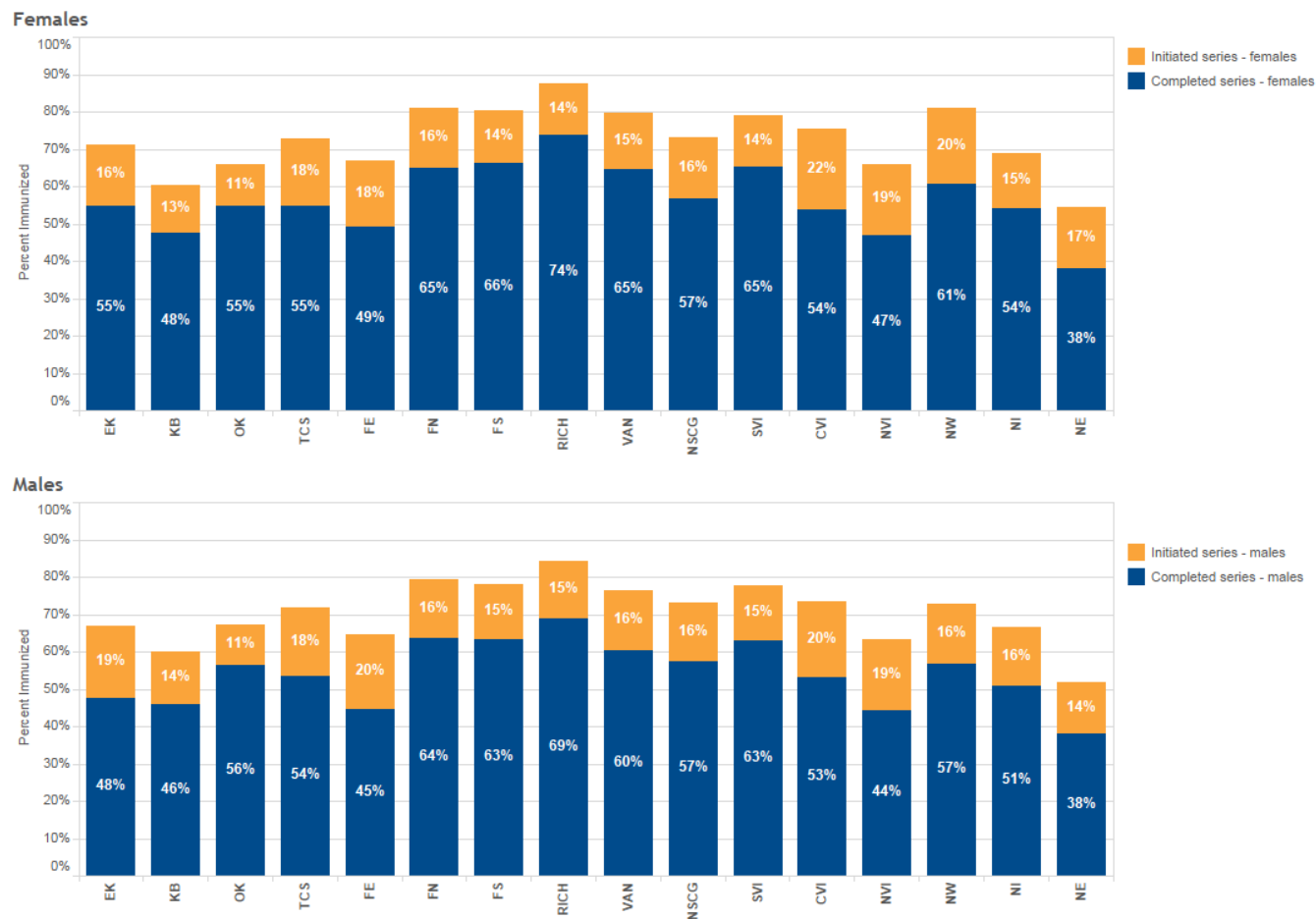


Figure 8. Percent of Grade 6 students who initiated, but did not complete, a HPV vaccine series

**Table 7. Reasons for non-immunization for Grade 6 students: HPV, 2023**

Region	Population	Count					
		Partially Immunized			Unimmunized		
		Refusal	Contraindication	Unknown <sup>a</sup>	Refusal	Contraindication	Unknown <sup>a</sup>
<b>British Columbia</b>	<b>49,977</b>	<b>208</b>	<b>1</b>	<b>7,645</b>	<b>3,190</b>	<b>1</b>	<b>9,539</b>
<b>Interior</b>	<b>7,955</b>	49	1	1,079	1,269	0	1,290
East Kootenay	864	6	1	147	121	0	148
Kootenay Boundary	876	11	0	107	169	0	179
Okanagan	3,810	21	0	399	622	0	652
Thompson Cariboo Shuswap	2,405	11	0	426	357	0	311
<b>Fraser<sup>b</sup></b>	<b>20,733</b>	<b>16</b>	<b>0</b>	<b>3,236</b>	<b>192</b>	<b>0</b>	<b>4,590</b>
Fraser East	3,827	6	0	718	101	0	1,214
Fraser North	6,582	2	0	1,030	28	0	1,287
Fraser South	10,324	8	0	1,488	63	0	2,089
<b>Vancouver Coastal</b>	<b>10,281</b>	<b>67</b>	<b>0</b>	<b>1,527</b>	<b>821</b>	<b>0</b>	<b>1,464</b>
Richmond	1,849	0	0	267	18	0	245
Vancouver	5,153	38	0	765	374	0	764
North Shore / Coast Garibaldi	3,279	29	0	495	429	0	455
<b>Island</b>	<b>7,714</b>	<b>67</b>	<b>0</b>	<b>1,286</b>	<b>804</b>	<b>0</b>	<b>1,175</b>
South Vancouver Island	3,552	21	0	488	300	0	473
Central Vancouver Island	2,702	36	0	532	324	0	365
North Vancouver Island	1,460	10	0	266	180	0	337
<b>Northern</b>	<b>3,294</b>	<b>9</b>	<b>0</b>	<b>517</b>	<b>104</b>	<b>1</b>	<b>1,020</b>
Northwest	780	2	0	140	18	1	161
Northern Interior	1,608	3	0	243	45	0	476
Northeast	906	4	0	134	41	0	383

Table continued on next page



Region	Population	Percent					
		Partially Immunized			Unimmunized		
		Refusal	Contraindication	Unknown <sup>a</sup>	Refusal	Contraindication	Unknown <sup>a</sup>
<b>British Columbia</b>	<b>49,977</b>	<b>0%</b>	<b>0%</b>	<b>15%</b>	<b>6%</b>	<b>0%</b>	<b>19%</b>
<b>Interior</b>	<b>7,955</b>	1%	0%	14%	16%	0%	16%
East Kootenay	864	1%	0%	17%	14%	0%	17%
Kootenay Boundary	876	1%	0%	12%	19%	0%	20%
Okanagan	3,810	1%	0%	10%	16%	0%	17%
Thompson Cariboo Shuswap	2,405	0%	0%	18%	15%	0%	13%
<b>Fraser<sup>b</sup></b>	<b>20,733</b>	<b>0%</b>	<b>0%</b>	<b>16%</b>	<b>1%</b>	<b>0%</b>	<b>22%</b>
Fraser East	3,827	0%	0%	19%	3%	0%	32%
Fraser North	6,582	0%	0%	16%	0%	0%	20%
Fraser South	10,324	0%	0%	14%	1%	0%	20%
<b>Vancouver Coastal</b>	<b>10,281</b>	<b>1%</b>	<b>0%</b>	<b>15%</b>	<b>8%</b>	<b>0%</b>	<b>14%</b>
Richmond	1,849	0%	0%	14%	1%	0%	13%
Vancouver	5,153	1%	0%	15%	7%	0%	15%
North Shore / Coast Garibaldi	3,279	1%	0%	15%	13%	0%	14%
<b>Island</b>	<b>7,714</b>	<b>1%</b>	<b>0%</b>	<b>17%</b>	<b>10%</b>	<b>0%</b>	<b>15%</b>
South Vancouver Island	3,552	1%	0%	14%	8%	0%	13%
Central Vancouver Island	2,702	1%	0%	20%	12%	0%	14%
North Vancouver Island	1,460	1%	0%	18%	12%	0%	23%
<b>Northern</b>	<b>3,294</b>	<b>0%</b>	<b>0%</b>	<b>16%</b>	<b>3%</b>	<b>0%</b>	<b>31%</b>
Northwest	780	0%	0%	18%	2%	0%	21%
Northern Interior	1,608	0%	0%	15%	3%	0%	30%
Northeast	906	0%	0%	15%	4%	0%	42%

**Notes:** a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization doses recorded.

b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH. Therefore, the proportion of partially immunized and unimmunized students with an unknown reason for non-immunization is likely to be overestimated, see [Note #11](#).

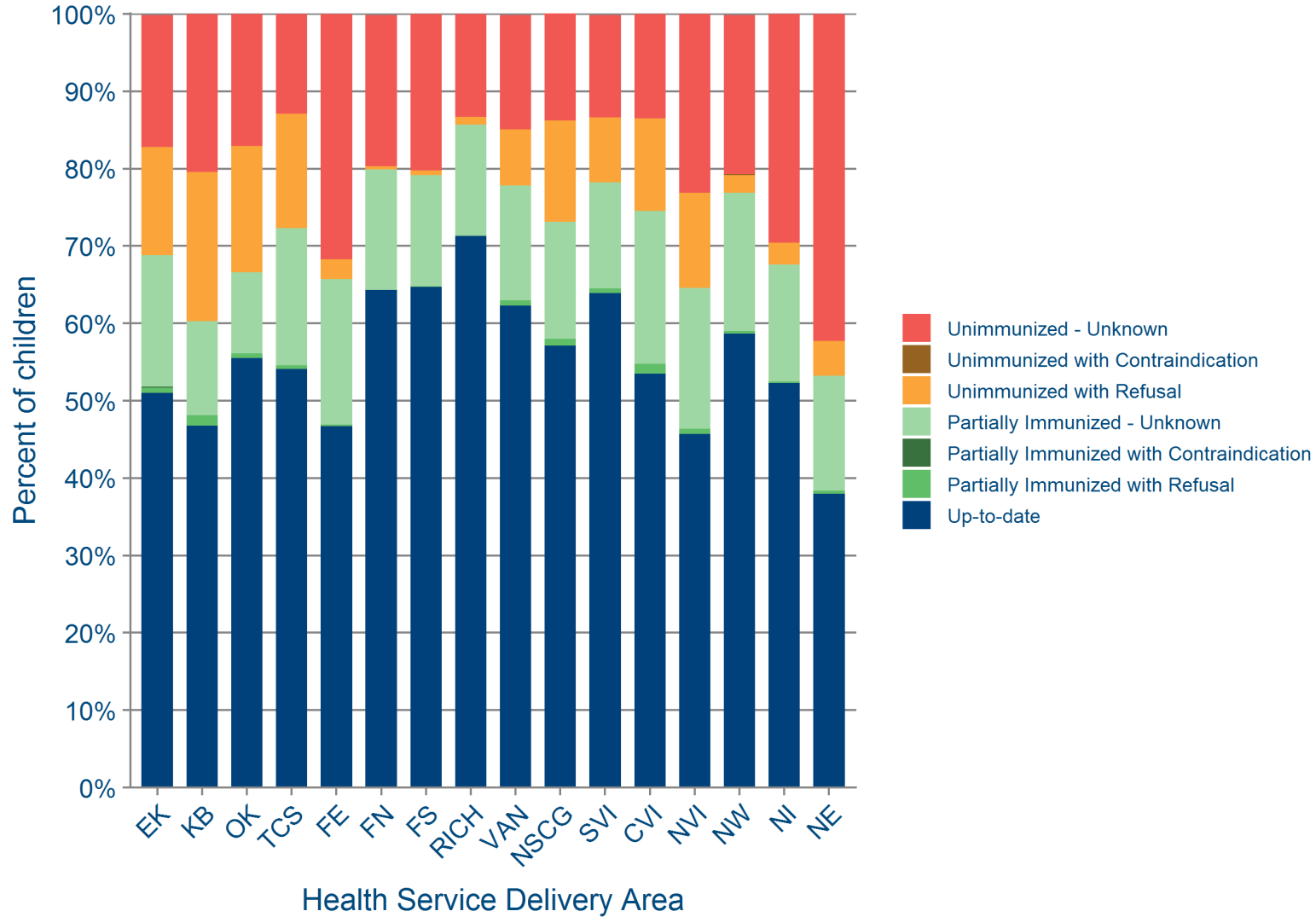


Figure 9. Reasons for non-immunization for Grade 6 students: HPV, 2023

**Table 8. Reasons for non-immunization for Grade 6 students: HPV – females, 2023**

Region	Population	Count				
		Partially Immunized		Unimmunized		
		Refusal	Unknown <sup>a</sup>	Refusal	Contraindication	Unknown <sup>a</sup>
<b>British Columbia</b>	<b>24,180</b>	<b>100</b>	<b>3,649</b>	<b>1,603</b>	<b>1</b>	<b>4,325</b>
<b>Interior</b>	<b>3,872</b>	<b>25</b>	<b>516</b>	<b>636</b>	<b>0</b>	<b>608</b>
East Kootenay	414	3	64	53	0	67
Kootenay Boundary	435	8	48	84	0	88
Okanagan	1,881	9	203	336	0	304
Thompson Cariboo Shuswap	1,142	5	201	163	0	149
<b>Fraser<sup>b</sup></b>	<b>9,986</b>	<b>7</b>	<b>1,521</b>	<b>100</b>	<b>0</b>	<b>2,095</b>
Fraser East	1,825	2	324	50	0	553
Fraser North	3,166	1	499	16	0	591
Fraser South	4,995	4	698	34	0	951
<b>Vancouver Coastal</b>	<b>4,927</b>	<b>42</b>	<b>709</b>	<b>419</b>	<b>0</b>	<b>617</b>
Richmond	908	0	124	11	0	103
Vancouver	2,440	21	346	185	0	313
North Shore / Coast Garibaldi	1,579	21	239	223	0	201
<b>Island</b>	<b>3,806</b>	<b>22</b>	<b>642</b>	<b>393</b>	<b>0</b>	<b>548</b>
South Vancouver Island	1,767	9	235	155	0	217
Central Vancouver Island	1,331	10	277	156	0	171
North Vancouver Island	708	3	130	82	0	160
<b>Northern</b>	<b>1,589</b>	<b>4</b>	<b>261</b>	<b>55</b>	<b>1</b>	<b>457</b>
Northwest	386	1	78	7	1	65
Northern Interior	744	1	109	23	0	208
Northeast	459	2	74	25	0	184

Table continued on next page

Region	Population	Percent				
		Partially Immunized		Unimmunized		
		Refusal	Unknown <sup>a</sup>	Refusal	Contraindication	Unknown <sup>a</sup>
<b>British Columbia</b>	<b>24,180</b>	<b>0%</b>	<b>15%</b>	<b>7%</b>	<b>0%</b>	<b>18%</b>
<b>Interior</b>	<b>3,872</b>	1%	13%	16%	0%	16%
East Kootenay	414	1%	16%	13%	0%	16%
Kootenay Boundary	435	2%	11%	19%	0%	20%
Okanagan	1,881	0%	11%	18%	0%	16%
Thompson Cariboo Shuswap	1,142	0%	18%	14%	0%	13%
<b>Fraser<sup>b</sup></b>	<b>9,986</b>	<b>0%</b>	<b>15%</b>	<b>1%</b>	<b>0%</b>	<b>21%</b>
Fraser East	1,825	0%	18%	3%	0%	30%
Fraser North	3,166	0%	16%	0%	0%	19%
Fraser South	4,995	0%	14%	1%	0%	19%
<b>Vancouver Coastal</b>	<b>4,927</b>	<b>1%</b>	<b>14%</b>	<b>8%</b>	<b>0%</b>	<b>13%</b>
Richmond	908	0%	14%	1%	0%	11%
Vancouver	2,440	1%	14%	8%	0%	13%
North Shore / Coast Garibaldi	1,579	1%	15%	14%	0%	13%
<b>Island</b>	<b>3,806</b>	<b>1%</b>	<b>17%</b>	<b>10%</b>	<b>0%</b>	<b>14%</b>
South Vancouver Island	1,767	0%	13%	9%	0%	12%
Central Vancouver Island	1,331	1%	21%	12%	0%	13%
North Vancouver Island	708	0%	18%	12%	0%	23%
<b>Northern</b>	<b>1,589</b>	<b>0%</b>	<b>16%</b>	<b>3%</b>	<b>0%</b>	<b>29%</b>
Northwest	386	0%	20%	2%	0%	17%
Northern Interior	744	0%	15%	3%	0%	28%
Northeast	459	0%	16%	5%	0%	40%

**Notes:** a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization doses recorded.  
b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH. Therefore, the proportion of partially immunized and unimmunized students with an unknown reason for non-immunization is likely to be overestimated, see [Note #11](#).

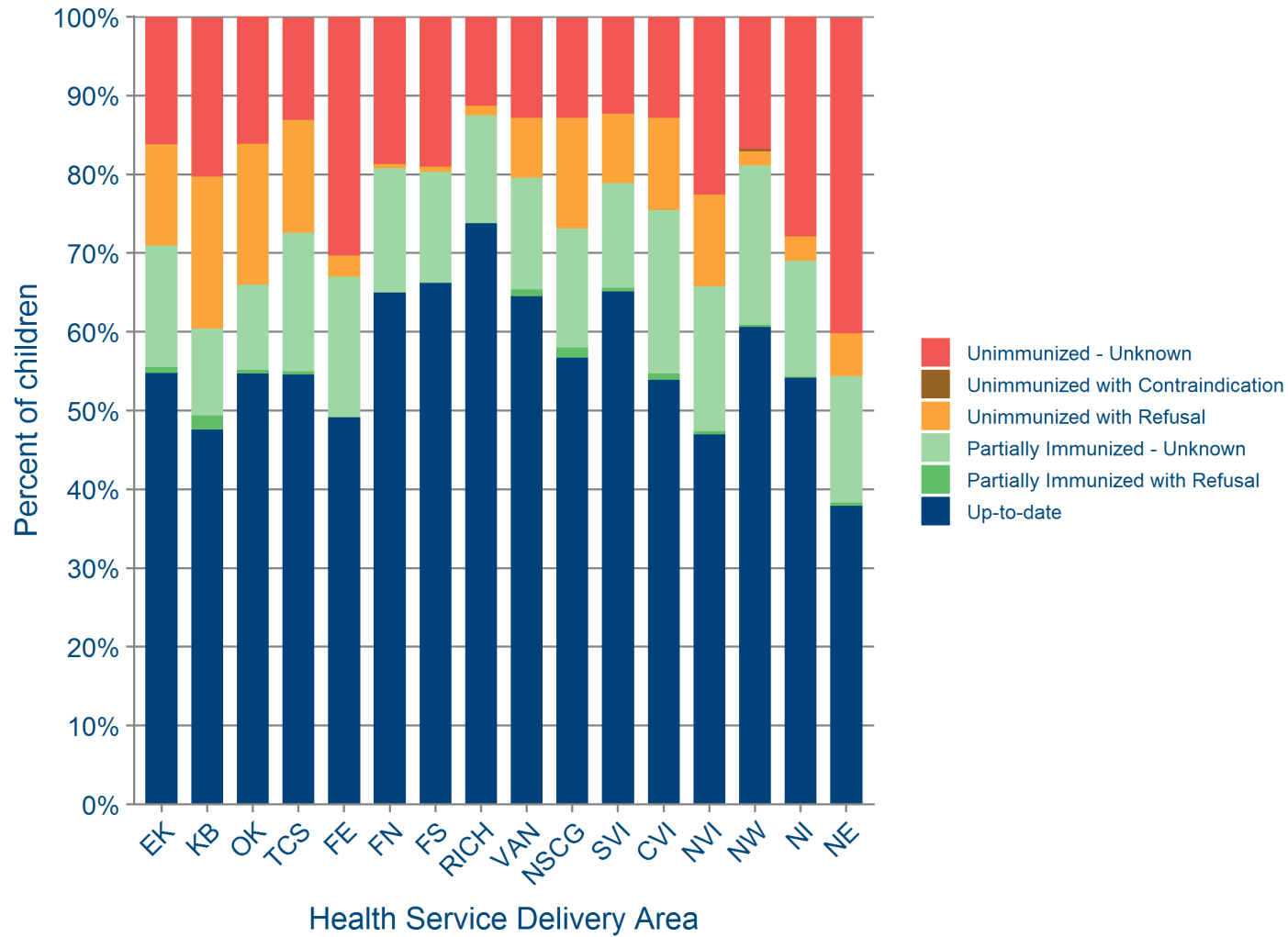


Figure 10. Reasons for non-immunization for Grade 6 students: HPV – females, 2023

**Table 9. Reasons for non-immunization for Grade 6 students: HPV – males, 2023**

Region	Population	Count				
		Partially Immunized			Unimmunized	
		Refusal	Contraindication	Unknown <sup>a</sup>	Refusal	Unknown <sup>a</sup>
<b>British Columbia</b>	<b>25,778</b>	<b>108</b>	<b>1</b>	<b>3,995</b>	<b>1,584</b>	<b>5,208</b>
<b>Interior</b>	<b>4,083</b>	24	1	563	633	682
East Kootenay	450	3	1	83	68	81
Kootenay Boundary	441	3	0	59	85	91
Okanagan	1,929	12	0	196	286	348
Thompson Cariboo Shuswap	1,263	6	0	225	194	162
<b>Fraser<sup>b</sup></b>	<b>10,746</b>	<b>9</b>	<b>0</b>	<b>1,715</b>	<b>92</b>	<b>2,495</b>
Fraser East	2,002	4	0	394	51	661
Fraser North	3,415	1	0	531	12	696
Fraser South	5,329	4	0	790	29	1,138
<b>Vancouver Coastal</b>	<b>5,342</b>	<b>25</b>	<b>0</b>	<b>818</b>	<b>401</b>	<b>843</b>
Richmond	940	0	0	143	7	142
Vancouver	2,708	17	0	419	189	448
North Shore / Coast Garibaldi	1,694	8	0	256	205	253
<b>Island</b>	<b>3,902</b>	<b>45</b>	<b>0</b>	<b>643</b>	<b>409</b>	<b>625</b>
South Vancouver Island	1,779	12	0	252	143	254
Central Vancouver Island	1,371	26	0	255	168	194
North Vancouver Island	752	7	0	136	98	177
<b>Northern</b>	<b>1,705</b>	<b>5</b>	<b>0</b>	<b>256</b>	<b>49</b>	<b>563</b>
Northwest	394	1	0	62	11	96
Northern Interior	864	2	0	134	22	268
Northeast	447	2	0	60	16	199

Table continued on next page

Region	Population	Percent				
		Partially Immunized			Unimmunized	
		Refusal	Contraindication	Unknown <sup>a</sup>	Refusal	Unknown <sup>a</sup>
<b>British Columbia</b>	<b>25,778</b>	<b>0%</b>	<b>0%</b>	<b>16%</b>	<b>6%</b>	<b>20%</b>
<b>Interior</b>	<b>4,083</b>	1%	0%	14%	16%	17%
East Kootenay	450	1%	0%	18%	15%	18%
Kootenay Boundary	441	1%	0%	13%	19%	21%
Okanagan	1,929	1%	0%	10%	15%	18%
Thompson Cariboo Shuswap	1,263	0%	0%	18%	15%	13%
<b>Fraser<sup>b</sup></b>	<b>10,746</b>	<b>0%</b>	<b>0%</b>	<b>16%</b>	<b>1%</b>	<b>23%</b>
Fraser East	2,002	0%	0%	20%	2%	33%
Fraser North	3,415	0%	0%	16%	0%	20%
Fraser South	5,329	0%	0%	15%	0%	21%
<b>Vancouver Coastal</b>	<b>5,342</b>	<b>0%</b>	<b>0%</b>	<b>15%</b>	<b>8%</b>	<b>16%</b>
Richmond	940	0%	0%	15%	1%	15%
Vancouver	2,708	1%	0%	16%	7%	16%
North Shore / Coast Garibaldi	1,694	0%	0%	15%	12%	15%
<b>Island</b>	<b>3,902</b>	<b>1%</b>	<b>0%</b>	<b>16%</b>	<b>10%</b>	<b>16%</b>
South Vancouver Island	1,779	1%	0%	14%	8%	14%
Central Vancouver Island	1,371	2%	0%	19%	12%	14%
North Vancouver Island	752	1%	0%	18%	13%	24%
<b>Northern</b>	<b>1,705</b>	<b>0%</b>	<b>0%</b>	<b>15%</b>	<b>3%</b>	<b>33%</b>
Northwest	394	0%	0%	16%	3%	24%
Northern Interior	864	0%	0%	16%	2%	31%
Northeast	447	0%	0%	13%	4%	44%

**Notes:** a. "Unknown" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not had their refusal, contraindication, or immunization doses recorded.

b. PIR does not contain complete supplementary information on reasons for non-immunization (i.e., exemptions, refusals and contraindications) for FH. Therefore, the proportion of partially immunized and unimmunized students with an unknown reason for non-immunization is likely to be overestimated, see [Note #11](#).

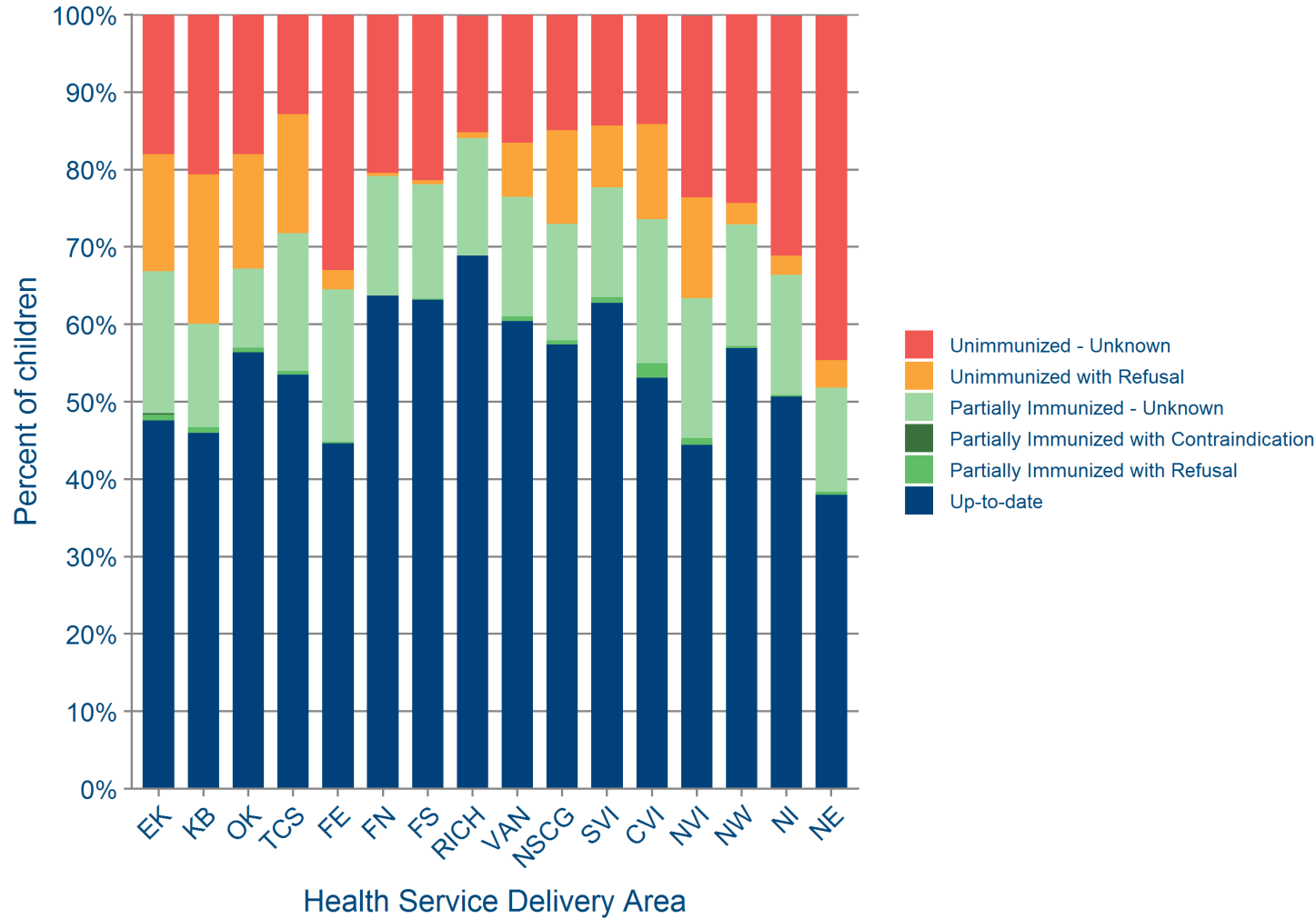


Figure 11. Reasons for non-immunization for Grade 6 students: HPV – males, 2023



## Notes

### 1. Data Sources

Provincial immunization registry (PIR) data based on the grade cohort defined as students whose records indicated they attended school within the region's service area based on MoE enrolment data as recorded in the online MyEdBC system and on student records obtained from schools not participating in MyEdBC. All doses are recorded in the provincial immunization registry 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 the provincial immunization registry.

Coverage reported for any given year reflects doses recorded as administered up to June 30 of that year (e.g., 2023 coverage is for students completing a grade by June 30, 2023).

Coverage presented in this report is based on data entry to PIR (including transmission from regional registry systems) to July 31, 2023.

### 2. Up-to-date for Age Definitions

**Hepatitis B** The proportion of students enrolled in grade 6 as of June 30 who ever completed a series of hepatitis B vaccine (3 doses if series was started before grade 6; 2 doses if series was started in Grade 6) by June 30.

**Varicella** The proportion of students enrolled in grade 6 as of June 30 who reported a previous history of varicella disease or shingles or who received two valid doses of varicella vaccine by June 30. These children are only considered up-to-date if immunization occurred on or after the first birthday.

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 reliability for those born in 2004 or later. Most children born in 2004 were in grade 6 during the 2015/2016 school year. Since June 2018, a varicella susceptible person is defined as one without a history of lab confirmed varicella or shingles and without a history of age-appropriate varicella vaccination. As such, the current definition requires lab evidence of prior disease on or after age 1 year for proof of immunity. However, due to lack of information about the age at which disease occurred, all recorded varicella exemptions are currently counted.

Prior to 2013, only one dose of varicella vaccine (on or after the first birthday) was required in order to be considered up-to-date for varicella vaccine. This change in definition reflects a change in immunization policy that was implemented during the 2012/2013 school year, when a second dose of varicella vaccine was offered to susceptible students in grade 6.

**HPV (up-to-date/series completion)** The proportion of female and male students enrolled in grade 6 as of June 30 who were up-to-date for age for HPV based on age at commencement of series.

Starting in the 2017/2018 school year, HPV vaccine was routinely offered to males in grade 6; previously, it was only offered to females.

Starting in the 2010/2011 school year, the HPV immunization schedule in grade 6 changed from requiring 3 doses of HPV vaccine (with at least 4 weeks between doses 1 and 2 and at least 12 weeks between doses 2 and 3) to requiring 2 doses of HPV vaccine in grade 6 (with at least 6 months between doses until 2013/2014, with a minimum acceptable interval of 5 months between doses from 2014/2015 onwards).

HPV (series initiation, but not completion) The proportion of female or male students enrolled in grade 6 as of June 30 who received at least one dose of HPV vaccine, but did not complete a 2-dose or a 3-dose series.

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, or at a time interval equal to or greater than the shortest recommended interval.

See: [Minimum Intervals Between Doses](#)

For HPV, data are shown for series completion, and series initiation but not completion; these categories are mutually exclusive.

### 3. Changes in Data Sources

The data sources used for each of the HAs have changed over time as follows:

Health Authority	Year										
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
IH	Health Authority Summary Reports*					Pan-Grade*					
FH	Health Authority Summary Reports					Pan-Grade					
VCH	Health Authority Summary Reports										
ISLH	Health Authority Summary Reports	Pan-Year/MoE				Pan-Grade					
NH	Health Authority Summary Reports							Pan-Grade			

**Health Authority Summary Reports:** HAs provided summary reports including the number of students in grade 6 and, of those, the numbers up-to-date for each measure. These were usually based on class lists provided by schools and HA records of immunizations given.

**Pan-Grade:** The PIR records were included for children with active records that indicated they were in grade 6 as of June 30 of the school year of interest.

**Pan-Year/MoE:** The numerator was the number of children in the birth cohort for which the majority of children attended grade 6 during the school year of interest with active records in PIR who were up-to-date for the specified agent. The denominator was the number of children in the birth cohort of interest attending grade 6 in schools within the HA, based on estimates derived from BC MoE enrolment statistics.

\* In 2017, the Rutland Branch in the Okanagan HSDA used Pan-Grade, while the rest of IH used Health Authority Summary Reports.

- The numerator used to calculate percent uptake was the number of students enrolled in grade 6 as of June 30 of the specified year who were up-to-date for age for the vaccine in question (per up-to-date for age definitions).
- Unless otherwise indicated, the denominator used to calculate percent uptake was the number of students enrolled in grade 6 as of June 30 of the specified year, according to class lists in PIR or PARIS (for VCH). For HPV coverage stratified by gender, only the number of female or male students enrolled in grade 6 as of June 30 was used.
- Students were included in the numerator and denominator if they had a value of 'Grade 6', 'Home Schooled', or 'Elementary ungraded' in the Grade variable in PIR, and met the required birth date range. For the 2023 report, students born between January 1, 2010 and December 31, 2012 were included.
- Ideally, numerators and denominators should be taken from the same data source. Using different data sources for numerators and denominators can result in inaccurate results, including coverage calculations

exceeding 100%. Immunization coverage rates approaching 100% in ISLH in 2014-2017 are likely over-estimates resulting from the use of different data sources for numerators and denominators.

8. Due to a difference in methods used for enumerating the numerator and denominator, the ISLH results, and corresponding provincial data for 2014 to 2017 are not directly comparable to previous or later years. Related to implementation of the new public health information system (called Panorama) in July 2013, ISLH was unable to reconcile all records of students enrolled in schools; therefore coverage was calculated using numerator data from Panorama on active records for those born in 2002 (for 2014), 2003 (for 2015), 2004 (for 2016) and 2005 (for 2017) without the ability to confirm school/grade 6 enrolment; denominators were aggregate data from the BC MoE's data on enrolment in grade 6 to attempt to account for those who have moved out of ISLH. This change led to inaccurate ascertainment of coverage rates, which may be artefactually higher or lower than true coverage rates depending on the antigen.
9. Due to the difference in methods used to calculate coverage in the Rutland branch in the Okanagan HSDA in 2017, the Okanagan and IH results, and corresponding provincial data for 2017 are not directly comparable to previous years.
10. Due to the changes in data sources used to calculate coverage in IH, ISLH, and FH from 2018, and NH from 2020, the FH, ISLH, IH, and NH corresponding provincial data are not directly comparable to previous years.
11. Due to ongoing development of the interfaces between the FH information system and the 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 grade 6 students with an unknown reason for non-immunization is likely to be overestimated for this HA. The proportion of children partially immunized or unimmunized due to refusals or contraindications, as well as the proportion of students with protection against varicella due to previous infection and/or lab evidence of immunity is likely to be underestimated.
12. In the 2020/2021 school year, ongoing prioritization of the COVID-19 pandemic response affected some of the public health resources available for school-based immunization programs. This was most significant in FH, which did not complete any school-based clinics in the 2020/2021 school year.  
In the 2021/2022 school year, school-based clinics were offered in all HAs including some providing catch-ups for grade 7 students to receive the grade 6 milestone vaccines. Ongoing catch-up will be offered for subsequent years, as required. In instances when coverage did not return to pre-pandemic levels it may reflect some ongoing operational impacts of the COVID-19 response (e.g., increases in absenteeism among schoolchildren due to illness, lack of staffing resources in remote and rural areas, or competing priorities in public health departments) or changes in data sources between pre- and post-pandemic periods.
13. The COVID-19 pandemic was declared in March 2020. This pandemic initially resulted in a province-wide shut down, which impacted the provision of public health services including routine immunization services. As a result, some coverage rates were lower in 2020 than previous years, particularly for the doses scheduled to be received in the last few months of the 2019/2020 school year.
14. Starting in 2018 for IH, ISLH, and FH, and 2020 for NH, school and grade information is attached to students' records in the PIR in two ways:
  - a. For schools using either the MyEdBC or the CIMS information system and who have signed a letter of agreement, information is uploaded from a MoE extract into PIR using a tool called STIX. As of September 2023 and for the 2022/2023 school year, this process included 95% of students in schools registered with the BC MoE. HA staff reconcile the school information against the PIR record when discrepancies occur.
  - b. For schools using other information systems, HA staff may manually enter or upload the school and grade information. The process of adding enrolment details may not be completed for all HAs and grades. Most HAs prioritize milestone grades for enrolment data entry (kindergarten, Grade 6 and Grade 9). A small number of schools may not provide class lists.
15. Coverage results by HA and HSDA are reported based on the location of the school.

16. The following school types are included in the PIR: Alternate, Distance, Distance Learning, Independent, Long Term Program, Self-Directed, Short Term Program, and Standard.
17. The Gender variable in the PIR contains the following values: Male, Female, Undifferentiated, Unknown. For the purpose of this report, only coverage for males and females were reported in the tables stratified by gender as the proportion of those in the Undifferentiated and Unknown categories comprise <0.01% of the total population. Those in the Undifferentiated and Unknown categories are included in the tables that report coverage values for the total population.
18. In 2015, three schools with grade 6 students in the Kootenay Boundary HSDA did not provide public health with class lists. As the children attending these schools could not be identified, they could not be included in the immunization coverage analysis. Based on information posted on the BC MoE's website, these schools accounted for approximately 3% of grade 6 students in Kootenay Boundary.
19. While all grade 6 students attending BC schools are intended to be included in this report, records for some students may be incomplete. Examples may include those who attend schools that do not receive services from regional public health, including some schools serviced by First Nations Health Services Organizations, some distance/distributed learning schools and schools refusing any contact with public health due to religious or philosophical reasons.
20. International students who attend school in BC are classified into two categories in the provincial immunization registry based on their length of stay: 1) short stay (<6 months) and 2) long stay (≥6 months). HAs attempt to collect immunization records for all long stay students in the province, however the length of stay is unknown for the majority of international students in the registry. Thus, immunization records may be incomplete for international students and coverage is likely underestimated for this population. As international students are included in the overall BC coverage may be slightly underestimated.
21. Data may not be comparable by HSDA from year to year due to ongoing changes in data collection methods and changes in geographic health area boundaries. However, assuming consistency in reporting practices, overall trends in immunization coverage can be assessed by examining these data.

## Acknowledgements

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## Appendix

**Table A1. Reasons for non-immunization definitions**

Measure	Definition
Exemption: Lab Evidence of Immunity	<i>For varicella, measles and rubella only.</i> Does not meet criteria for Up-to-Date AND Type of Special Consideration = Exemption AND Reason for Special Consideration = Immunity - Lab Evidence AND Special Consideration Effective From Date <= June 30 AND Special Consideration Effective To Date > June 30 OR <blank>
Exemption: Previous Disease (varicella)	<i>For varicella only.</i> Does not meet any of the previous definitions AND Type of Special Consideration = Exemption AND Reason for Special Consideration = Immunity - Previous Disease AND Special Consideration Effective From Date <= June 30 AND Special Consideration Effective To Date > June 30 OR <blank>
Partially Immunized with Contraindication	<i>For agents/antigens requiring more than one dose.</i> Does not meet any of the previous definitions AND Received at least one valid dose of the agent/antigen of interest AND Type of Special Consideration = Contraindication AND Reason for Special Consideration is valid for the agent/antigen of interest AND Special Consideration Effective From Date <= June 30 AND Special Consideration Effective To Date > June 30 OR <blank>
Partially Immunized with Refusal	<i>For agents/antigens requiring more than one dose.</i> Does not meet any of the previous definitions AND Received at least one valid dose of the agent/antigen of interest AND Type of Special Consideration = Exemption Reason for Special Consideration = Client Refusal OR Parental/Guardian Refusal Special Consideration Effective From Date <= June 30
Partially Immunized - Unknown	<i>For agents/antigens requiring more than one dose.</i> Does not meet any of the previous definitions AND Received at least one valid dose of the agent/antigen of interest <b>Note:</b> This category will include children with at least one valid dose of the agent/antigen of interest. These children may have any of the following: invalid doses recorded; invalid refusals, exemptions, or contraindications for the agent/antigen of interest; valid 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.

Measure	Definition
Unimmunized with Contraindication	Does not meet any of the previous definitions AND Has no recorded valid dose(s) of the agent/antigen of interest AND Type of Special Consideration = Contraindication AND Reason for Special Consideration is valid for the agent/antigen of interest AND Special Consideration Effective From Date <= June 30 AND Special Consideration Effective To Date > June 30 OR <blank>
Unimmunized with Refusal	Does not meet any of the previous definitions AND Has no recorded valid dose(s) of the agent/antigen of interest AND Type of Special Consideration = Exemption Reason for Special Consideration = Client Refusal OR Parental/Guardian Refusal Special Consideration Effective From Date <= June 30
Unimmunized - Unknown	Does not meet any of the previous definitions AND Has no recorded valid dose(s) of the agent/antigen of interest <b>Note:</b> This category will include children with no recorded valid dose(s) of the agent/antigen of interest. These children may have any of the following: invalid doses recorded; invalid refusals, exemptions, or contraindications for the agent/antigen of interest; valid 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.

**Table A2. Minimum Intervals Between Doses**

Antigen/Agent	Minimum Age or Minimum Time Interval Between Doses		
	Dose 1 <sup>A</sup>	Dose 2	Dose 3
Hepatitis B			
Series started at any age:			
Received 3rd dose before June 2007	0 days	28 days	28 days
Received 3rd dose between June 2007 and May 2014	0 days	28 days	56 days <sup>B</sup>
Received 3rd dose in June 2014 or later	0 days	28 days	56 days <sup>B,C</sup>
Series started on or after 10 years and 8 months of age	10 years + 8 months	16 weeks <sup>D</sup>	
Varicella <sup>E</sup>	12 months	28 days	
HPV			
2 Dose schedule (for dose 1 given age 9 to 14)	9 years	150 days	
3 Dose schedule (for dose 1 given age 15+)	15 years	28 days	12 weeks <sup>F</sup>

- A. Dose 1 refers to the earliest age a child can receive the initial dose.
- B. Dose 3 must be given at least 16 weeks (112 days) after dose 1.
- C. Dose 3 must be given on or after 24 weeks of age.
- D. Dose 2 must be given at least 24 weeks after dose 1 if either dose 1 or dose 2 is Engerix<sup>®</sup>-B.
- E. To be counted as valid, varicella vaccine must be administered on or after 12 months of age. Guidelines also state that children with a history of varicella disease should only be considered protected if the illness occurred on or after 12 months of age. The date of varicella disease onset is not systematically entered into the PIR. 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.
- F. Dose 3 must be given at least 24 weeks after dose 1.