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# Immunization Coverage in Children by the Seventh Birthday

## 2012-2020

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## Data Sources and Definitions

### Data Sources

1. Panorama, BC Centre for Disease Control (2014 onward)
2. Integrated Public Health Information System (iPHIS), BC Centre for Disease Control (2012-2013)
3. Primary Access Regional Information System (PARIS), Vancouver Coastal Health Authority (VCHA)
4. BC Ministry of Education (BC MoE), school enrollment data

### Years

2012-2020

Coverage reported for any given year reflects uptake among children who turned 7 years old during the previous calendar year (i.e., 2020 results are for children born in 2012 and who turned 7 years old in 2019).

Results presented in this report are based on reporting to September 30, 2020.

### Up-to-date for Age Definitions

Only doses given prior to the seventh birthday are included in this assessment.

Up to date for age	Children who met the up-to-date requirements for D/T/aP/IPV, hepatitis B, measles, mumps, rubella, varicella, and meningococcal C conjugate, as defined below.
D/T/aP/IPV	4th or 5th dose of diphtheria/acellular pertussis/tetanus and 3rd or 4th dose of polio after the fourth birthday
D/T/aP	4th or 5th dose of diphtheria/acellular pertussis/tetanus after the fourth birthday
Polio	3rd or 4th dose of polio after the fourth birthday
Hepatitis B	3 doses hepatitis B vaccine
Measles	2 doses measles-containing vaccine
Mumps	2 doses mumps-containing vaccine
Rubella	At least 1 dose rubella-containing vaccine
Varicella	1 (to 2014) or 2 (2015 onward) doses of varicella vaccine, or recorded exemption for varicella due to previous disease or protective antibody levels. These children are only considered protected if disease or immunization occurred on or after the first birthday.
Meningococcal C conjugate	At least 1 dose of Meningococcal C conjugate on or after 12 months of age. (Note: assessment of meningococcal-C conjugate uptake was stopped in 2018 and resumed in 2019)
Refusal to all vaccines	None of the agents/antigens listed above have been received plus documented client/parental refusals to all of the listed antigens. For the purpose of this assessment, refusals documented at any time are counted, regardless of a documented end date, as long as the child is unimmunized.

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 Eligible Doses](#).

### Caution

Data in this report should be interpreted with caution. Please refer to the [Notes](#) for additional information.

## Percent of Seven-year-olds with Up-to-date Immunizations

Table 1. Percent of seven-year olds with up-to-date immunizations, British Columbia

Province	Vaccination Details	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
British Columbia BC	Up-to-date for age	70%	71%	72%	63%	66%	68%	70%	69%	69%
	<i>Specific Agents</i>									
	D/T/aP/IPV	79%	79%	78%	77%	76%	76%	77%	76%	76%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	78%	76%	78%
	Hepatitis B	90%	91%	91%	89%	89%	89%	90%	85%	84%
	Measles	89%	91%	90%	90%	90%	88%	82%	78%	80%
	Mumps	89%	91%	90%	90%	90%	88%	82%	78%	80%
	Rubella	95%	96%	95%	96%	95%	95%	95%	91%	91%
	Varicella	89%	91%	92%	69%	72%	74%	76%	75%	77%
	Meningococcal C conjugate	89%	91%	92%	93%	94%	93%	n/a	89%	87%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	77%	78%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.3%	0.5%	

**Table 2. Percent of seven-year olds with up-to-date immunizations by Health Authority**

Health Authority	Vaccination Details	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Interior Health IHA</b>	<b>Up-to-date for age</b>	<b>70%</b>	<b>73%</b>	<b>74%</b>	<b>64%</b>	<b>64%</b>	<b>62%</b>	<b>65%</b>	<b>67%</b>	<b>68%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	79%	81%	82%	76%	73%	68%	71%	74%	74%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	71%	74%	75%
	Hepatitis B	86%	88%	88%	84%	84%	81%	83%	84%	82%
	Measles	89%	89%	89%	86%	87%	80%	76%	75%	78%
	Mumps	89%	89%	89%	86%	87%	80%	76%	75%	78%
	Rubella	92%	93%	93%	90%	91%	86%	87%	90%	90%
	Varicella	88%	89%	89%	69%	69%	66%	71%	72%	74%
	Meningococcal C conjugate	87%	88%	89%	88%	90%	85%	n/a	89%	88%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	74%	75%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.7%	1.2%	
<b>Fraser Health FHA</b>	<b>Up-to-date for age</b>	<b>66%</b>	<b>68%</b>	<b>69%</b>	<b>59%</b>	<b>64%</b>	<b>67%</b>	<b>70%</b>	<b>65%</b>	<b>67%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	75%	77%	76%	76%	75%	75%	77%	72%	74%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	77%	73%	74%
	Hepatitis B	90%	93%	93%	89%	91%	91%	93%	83%	83%
	Measles	89%	91%	90%	91%	91%	90%	83%	75%	77%
	Mumps	89%	91%	90%	91%	91%	90%	83%	74%	77%
	Rubella	96%	97%	97%	98%	97%	98%	97%	88%	89%
	Varicella	89%	92%	93%	66%	71%	73%	75%	72%	74%
	Meningococcal C conjugate	90%	92%	93%	95%	95%	95%	n/a	85%	86%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	73%	75%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.1%	0.3%	
<b>Vancouver Coastal Health VCHA</b>	<b>Up-to-date for age</b>	<b>75%</b>	<b>76%</b>	<b>75%</b>	<b>69%</b>	<b>73%</b>	<b>76%</b>	<b>76%</b>	<b>80%</b>	<b>77%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	82%	81%	80%	80%	82%	84%	82%	85%	86%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	83%	85%	91%
	Hepatitis B	90%	89%	89%	90%	87%	90%	89%	90%	90%
	Measles	88%	90%	88%	89%	89%	90%	86%	87%	87%
	Mumps	87%	89%	87%	88%	89%	89%	86%	87%	87%
	Rubella	94%	93%	93%	93%	93%	94%	94%	95%	94%
	Varicella	88%	90%	90%	73%	79%	82%	82%	85%	84%
	Meningococcal C conjugate	86%	90%	91%	91%	92%	92%	n/a	93%	88%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	86%	87%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.1%	0.2%	

Health Authority	Vaccination Details	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
Vancouver Island Health VIHA	Up-to-date for age	71%	69%	71%	62%	65%	68%	68%	66%	65%
	<i>Specific Agents</i>									
	D/T/aP/IPV	79%	76%	77%	75%	75%	75%	75%	73%	72%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	75%	73%	72%
	Hepatitis B	91%	91%	93%	91%	90%	91%	92%	84%	81%
	Measles	92%	92%	93%	92%	91%	90%	80%	76%	80%
	Mumps	92%	91%	93%	92%	91%	90%	80%	76%	80%
	Rubella	96%	96%	98%	98%	97%	96%	97%	90%	90%
	Varicella	91%	92%	94%	68%	70%	72%	73%	73%	76%
	Meningococcal C conjugate	93%	92%	95%	96%	96%	95%	n/a	89%	88%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	74%	75%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.3%	0.8%	
Northern Health NHA	Up-to-date for age	75%	77%	76%	72%	62%	72%	73%	73%	70%
	<i>Specific Agents</i>									
	D/T/aP/IPV	85%	85%	84%	84%	72%	82%	81%	81%	77%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	81%	81%	78%
	Hepatitis B	92%	94%	92%	92%	92%	93%	94%	96%	85%
	Measles	93%	94%	92%	94%	93%	92%	85%	84%	80%
	Mumps	93%	94%	92%	94%	93%	92%	85%	84%	80%
	Rubella	96%	98%	95%	97%	98%	97%	96%	100%	90%
	Varicella	91%	93%	92%	77%	67%	77%	77%	80%	77%
	Meningococcal C conjugate	92%	95%	93%	96%	97%	96%	n/a	99%	88%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	82%	79%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.5%	0.2%	

**Table 3. Percent of seven-year olds with up-to-date immunizations by Health Service Delivery Area, Interior Health**

Health Service Delivery Area (HSDA)	Vaccination Details	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
East Kootenay EK	<b>Up-to-date for age</b>	<b>66%</b>	<b>74%</b>	<b>73%</b>	<b>63%</b>	<b>69%</b>	<b>68%</b>	<b>72%</b>	<b>68%</b>	<b>71%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	79%	85%	83%	81%	79%	76%	80%	78%	80%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	80%	77%	80%
	Hepatitis B	86%	89%	87%	84%	85%	82%	84%	83%	81%
	Measles	91%	92%	91%	89%	90%	82%	83%	79%	81%
	Mumps	91%	91%	91%	89%	90%	82%	83%	79%	81%
	Rubella	95%	94%	94%	93%	93%	87%	90%	91%	90%
	Varicella	90%	90%	90%	73%	75%	72%	79%	76%	79%
	Meningococcal C conjugate	86%	87%	87%	89%	91%	86%	n/a	89%	89%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	79%	80%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.4%	2.8%	
Kootenay Boundary KB	<b>Up-to-date for age</b>	<b>60%</b>	<b>61%</b>	<b>61%</b>	<b>48%</b>	<b>52%</b>	<b>52%</b>	<b>63%</b>	<b>59%</b>	<b>62%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	73%	71%	70%	66%	67%	63%	72%	69%	72%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	72%	69%	73%
	Hepatitis B	77%	77%	76%	70%	72%	69%	76%	76%	74%
	Measles	80%	79%	80%	76%	77%	71%	75%	71%	75%
	Mumps	80%	79%	80%	76%	77%	71%	75%	70%	75%
	Rubella	84%	83%	83%	82%	84%	76%	83%	83%	85%
	Varicella	75%	77%	78%	56%	57%	58%	69%	65%	69%
	Meningococcal C conjugate	79%	78%	79%	79%	80%	74%	n/a	80%	81%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	70%	73%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.4%	2.7%	
Okanagan OK	<b>Up-to-date for age</b>	<b>69%</b>	<b>72%</b>	<b>74%</b>	<b>63%</b>	<b>64%</b>	<b>60%</b>	<b>62%</b>	<b>64%</b>	<b>65%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	78%	81%	81%	74%	73%	67%	68%	71%	71%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	68%	71%	71%
	Hepatitis B	86%	87%	88%	84%	85%	81%	82%	83%	81%
	Measles	89%	89%	88%	85%	87%	79%	73%	72%	75%
	Mumps	89%	89%	88%	85%	87%	79%	73%	72%	75%
	Rubella	92%	93%	93%	90%	91%	85%	85%	89%	88%
	Varicella	88%	89%	90%	68%	70%	64%	68%	70%	71%
	Meningococcal C conjugate	87%	88%	89%	88%	90%	84%	n/a	88%	86%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	72%	72%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.7%	0.9%	



HSDA	Vaccination Details	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Thompson</b>	<b>Up-to-date for age</b>	<b>76%</b>	<b>80%</b>	<b>81%</b>	<b>70%</b>	<b>67%</b>	<b>65%</b>	<b>68%</b>	<b>72%</b>	<b>73%</b>
<b>Cariboo</b>	<i>Specific Agents</i>									
<b>Shuswap</b>	D/T/aP/IPV	82%	85%	86%	79%	74%	70%	73%	78%	78%
<b>TCS</b>	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	73%	78%	78%
	Hepatitis B	90%	92%	92%	89%	88%	85%	86%	89%	87%
	Measles	91%	93%	93%	89%	89%	83%	78%	79%	83%
	Mumps	91%	93%	93%	89%	89%	83%	78%	79%	83%
	Rubella	94%	95%	95%	92%	92%	89%	90%	94%	93%
	Varicella	91%	93%	92%	73%	70%	68%	73%	77%	78%
	Meningococcal C conjugate	91%	93%	93%	91%	92%	88%	n/a	93%	92%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	78%	79%
	Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.9%	0.7%

**Table 4. Percent of seven-year olds with up-to-date immunizations by Health Service Delivery Area, Fraser Health**

HSDA	Vaccination Details	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
Fraser East FE	<b>Up-to-date for age</b>	<b>72%</b>	<b>75%</b>	<b>75%</b>	<b>71%</b>	<b>72%</b>	<b>76%</b>	<b>75%</b>	<b>71%</b>	<b>73%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	79%	81%	80%	82%	80%	82%	81%	76%	77%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	81%	76%	77%
	Hepatitis B	93%	98%	96%	97%	95%	96%	96%	86%	87%
	Measles	91%	96%	94%	96%	94%	93%	86%	78%	80%
	Mumps	91%	96%	94%	96%	94%	93%	86%	78%	80%
	Rubella	96%	100%	98%	100%	99%	99%	100%	90%	91%
	Varicella	92%	96%	95%	75%	76%	79%	79%	75%	77%
	Meningococcal C conjugate	93%	98%	96%	100%	98%	98%	n/a	88%	89%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	77%	78%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.2%	0.8%	
Fraser North FN	<b>Up-to-date for age</b>	<b>67%</b>	<b>69%</b>	<b>69%</b>	<b>60%</b>	<b>66%</b>	<b>66%</b>	<b>70%</b>	<b>64%</b>	<b>66%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	77%	78%	76%	77%	77%	75%	78%	71%	74%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	78%	72%	74%
	Hepatitis B	95%	95%	96%	90%	96%	93%	96%	82%	82%
	Measles	93%	94%	94%	94%	97%	92%	85%	74%	78%
	Mumps	93%	94%	94%	94%	96%	92%	85%	74%	78%
	Rubella	100%	100%	100%	100%	100%	100%	100%	88%	89%
	Varicella	94%	95%	98%	69%	73%	73%	76%	71%	75%
	Meningococcal C conjugate	94%	95%	96%	98%	100%	96%	n/a	84%	85%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	72%	75%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.2%	0.4%	
Fraser South FS	<b>Up-to-date for age</b>	<b>63%</b>	<b>65%</b>	<b>66%</b>	<b>53%</b>	<b>60%</b>	<b>64%</b>	<b>67%</b>	<b>64%</b>	<b>65%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	73%	75%	74%	73%	72%	73%	76%	71%	73%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	76%	72%	73%
	Hepatitis B	86%	89%	89%	86%	86%	88%	89%	82%	82%
	Measles	85%	87%	87%	87%	87%	88%	80%	74%	76%
	Mumps	85%	87%	86%	87%	86%	88%	80%	73%	75%
	Rubella	92%	95%	94%	96%	94%	95%	95%	88%	89%
	Varicella	85%	88%	89%	61%	67%	70%	73%	71%	73%
	Meningococcal C conjugate	87%	88%	89%	91%	90%	92%	n/a	85%	85%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	72%	74%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0%	0.0%	

**Note:** Coverage rates approaching 100% in FHA, VIHA and NHA are likely over-estimates resulting from the use of different data sources for numerators and denominators (see [Notes](#)).

**Table 5. Percent of seven-year olds with up-to-date immunizations by Health Service Delivery Area, Vancouver Coastal Health**

HSDA	Vaccination Details	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Richmond RICH</b>	<b>Up-to-date for age</b>	<b>81%</b>	<b>85%</b>	<b>87%</b>	<b>82%</b>	<b>83%</b>	<b>86%</b>	<b>87%</b>	<b>88%</b>	<b>83%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	87%	89%	91%	89%	88%	91%	91%	92%	90%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	91%	92%	95%
	Hepatitis B	95%	94%	95%	96%	93%	95%	95%	95%	95%
	Measles	91%	95%	94%	95%	95%	94%	93%	93%	92%
	Mumps	90%	93%	93%	94%	94%	94%	93%	93%	91%
	Rubella	96%	97%	97%	97%	97%	97%	97%	98%	97%
	Varicella	93%	95%	95%	84%	87%	89%	90%	92%	89%
	Meningococcal C conjugate	88%	93%	95%	95%	95%	96%	n/a	96%	90%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	93%	91%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.1%	0.0%	
<b>Vancouver VAN</b>	<b>Up-to-date for age</b>	<b>78%</b>	<b>78%</b>	<b>76%</b>	<b>69%</b>	<b>73%</b>	<b>75%</b>	<b>75%</b>	<b>78%</b>	<b>76%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	83%	82%	81%	80%	82%	82%	81%	84%	85%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	81%	84%	91%
	Hepatitis B	90%	90%	90%	90%	87%	90%	89%	90%	90%
	Measles	90%	91%	90%	89%	89%	90%	85%	86%	87%
	Mumps	89%	90%	89%	88%	88%	89%	85%	86%	86%
	Rubella	94%	94%	94%	94%	93%	94%	94%	95%	94%
	Varicella	89%	91%	91%	72%	80%	81%	81%	84%	83%
	Meningococcal C conjugate	88%	91%	92%	92%	91%	91%	n/a	93%	87%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	85%	86%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0%	0.2%	
<b>North Shore / Coast Garibaldi NSCG</b>	<b>Up-to-date for age</b>	<b>63%</b>	<b>63%</b>	<b>63%</b>	<b>61%</b>	<b>66%</b>	<b>73%</b>	<b>73%</b>	<b>76%</b>	<b>75%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	76%	71%	71%	75%	78%	82%	80%	84%	84%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	81%	84%	88%
	Hepatitis B	85%	82%	83%	84%	83%	86%	86%	87%	86%
	Measles	81%	84%	81%	84%	86%	87%	83%	85%	85%
	Mumps	81%	84%	81%	83%	86%	87%	83%	85%	85%
	Rubella	92%	90%	88%	89%	91%	92%	92%	92%	93%
	Varicella	83%	85%	84%	66%	74%	79%	79%	82%	81%
	Meningococcal C conjugate	81%	86%	87%	89%	90%	91%	n/a	91%	89%
	Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	85%	85%
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.3%	0.4%	

**Table 6. Percent of seven-year olds with up-to-date immunizations by Health Service Delivery Area, Vancouver Island Health**

HSDA	Vaccination Details	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>South Vancouver Island SVI</b>	<b>Up-to-date for age</b>	<b>72%</b>	<b>71%</b>	<b>73%</b>	<b>63%</b>	<b>67%</b>	<b>70%</b>	<b>69%</b>	<b>66%</b>	<b>65%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	80%	77%	78%	75%	76%	77%	76%	73%	70%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	76%	73%	71%
	Hepatitis B	92%	91%	94%	88%	89%	91%	92%	84%	83%
	Measles	93%	92%	94%	91%	91%	90%	80%	76%	81%
	Mumps	93%	91%	94%	91%	91%	90%	80%	76%	81%
	Rubella	97%	95%	97%	96%	97%	96%	96%	89%	91%
	Varicella	93%	91%	94%	69%	72%	74%	73%	73%	78%
	Meningococcal C conjugate	93%	92%	95%	94%	95%	94%	n/a	87%	88%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	74%	74%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.2%	0.6%	
<b>Central Vancouver Island CVI</b>	<b>Up-to-date for age</b>	<b>70%</b>	<b>69%</b>	<b>69%</b>	<b>60%</b>	<b>62%</b>	<b>67%</b>	<b>70%</b>	<b>65%</b>	<b>64%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	76%	75%	74%	75%	73%	74%	77%	72%	72%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	77%	72%	72%
	Hepatitis B	91%	92%	92%	92%	90%	93%	95%	84%	81%
	Measles	90%	91%	92%	93%	89%	90%	81%	74%	77%
	Mumps	90%	91%	92%	93%	89%	90%	81%	74%	77%
	Rubella	95%	95%	97%	99%	96%	98%	100%	90%	90%
	Varicella	90%	92%	93%	65%	68%	71%	75%	71%	75%
	Meningococcal C conjugate	92%	92%	94%	97%	95%	97%	n/a	89%	88%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	73%	75%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.5%	0.9%	
<b>North Vancouver Island NVI</b>	<b>Up-to-date for age</b>	<b>72%</b>	<b>65%</b>	<b>71%</b>	<b>63%</b>	<b>66%</b>	<b>64%</b>	<b>62%</b>	<b>70%</b>	<b>68%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	81%	75%	79%	77%	76%	71%	70%	77%	76%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	71%	77%	76%
	Hepatitis B	90%	91%	95%	92%	93%	88%	88%	86%	80%
	Measles	93%	93%	96%	94%	94%	88%	77%	80%	80%
	Mumps	93%	93%	96%	94%	94%	88%	77%	80%	80%
	Rubella	96%	99%	100%	100%	100%	95%	95%	93%	90%
	Varicella	90%	93%	96%	69%	71%	68%	67%	77%	77%
	Meningococcal C conjugate	93%	93%	97%	98%	99%	94%	n/a	92%	88%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	78%	78%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.2%	1.1%	

**Note:** Coverage rates approaching 100% in FHA, VIHA and NHA are likely over-estimates resulting from the use of different data sources for numerators and denominators (see [Notes](#)).

**Table 7. Percent of seven-year olds with up-to-date immunizations by Health Service Delivery Area, Northern Health**

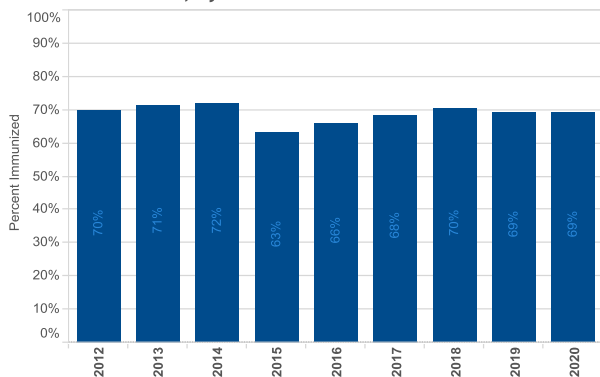
HSDA	Vaccination Details	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Northwest NW</b>	<b>Up-to-date for age</b>	<b>68%</b>	<b>73%</b>	<b>70%</b>	<b>59%</b>	<b>61%</b>	<b>62%</b>	<b>65%</b>	<b>70%</b>	<b>68%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	78%	83%	78%	77%	76%	74%	73%	80%	76%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	73%	80%	77%
	Hepatitis B	87%	89%	85%	84%	82%	83%	83%	91%	83%
	Measles	87%	90%	85%	86%	86%	82%	76%	82%	79%
	Mumps	87%	89%	85%	86%	86%	82%	76%	82%	79%
	Rubella	92%	94%	88%	91%	92%	89%	88%	97%	89%
	Varicella	85%	89%	83%	66%	69%	68%	70%	77%	76%
	Meningococcal C conjugate	86%	90%	85%	90%	91%	88%	n/a	95%	86%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	81%	78%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0%	0.0%	
<b>Northern Interior NI</b>	<b>Up-to-date for age</b>	<b>79%</b>	<b>82%</b>	<b>80%</b>	<b>81%</b>	<b>72%</b>	<b>78%</b>	<b>79%</b>	<b>78%</b>	<b>74%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	88%	90%	88%	90%	81%	86%	86%	85%	81%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	86%	85%	81%
	Hepatitis B	93%	98%	94%	95%	95%	96%	95%	97%	88%
	Measles	94%	97%	94%	97%	96%	95%	90%	87%	84%
	Mumps	94%	97%	94%	96%	96%	95%	90%	87%	83%
	Rubella	97%	100%	97%	99%	100%	99%	98%	100%	94%
	Varicella	91%	95%	94%	85%	75%	81%	83%	84%	81%
	Meningococcal C conjugate	93%	98%	94%	98%	98%	98%	n/a	99%	91%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	86%	83%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.6%	0.3%	
<b>Northeast NE</b>	<b>Up-to-date for age</b>	<b>73%</b>	<b>70%</b>	<b>74%</b>	<b>67%</b>	<b>47%</b>	<b>70%</b>	<b>68%</b>	<b>67%</b>	<b>64%</b>
	<i>Specific Agents</i>									
	D/T/aP/IPV	86%	78%	84%	81%	54%	80%	78%	76%	72%
	D/T/aP	n/a	n/a	n/a	n/a	n/a	n/a	78%	76%	72%
	Hepatitis B	95%	92%	95%	94%	96%	96%	100%	99%	82%
	Measles	98%	93%	97%	95%	95%	95%	82%	79%	75%
	Mumps	98%	93%	97%	95%	95%	95%	82%	79%	75%
	Rubella	100%	99%	100%	100%	100%	100%	100%	100%	86%
	Varicella	96%	93%	98%	74%	51%	75%	73%	74%	71%
	Meningococcal C conjugate	97%	93%	98%	99%	100%	100%	n/a	100%	84%
Polio	n/a	n/a	n/a	n/a	n/a	n/a	n/a	77%	74%	
Refused all vaccines	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.9%	0.1%	

**Note:** Coverage rates approaching 100% in FHA, VIHA and NHA are likely over-estimates resulting from the use of different data sources for numerators and denominators (see [Notes](#)).

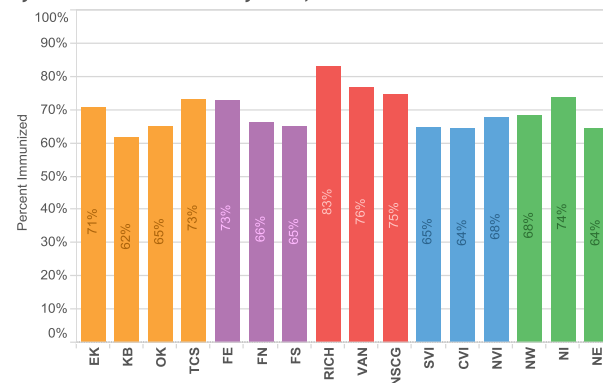
## Up-to-date for age

Figure 1. Percent of seven-year olds immunized up-to-date for age, British Columbia

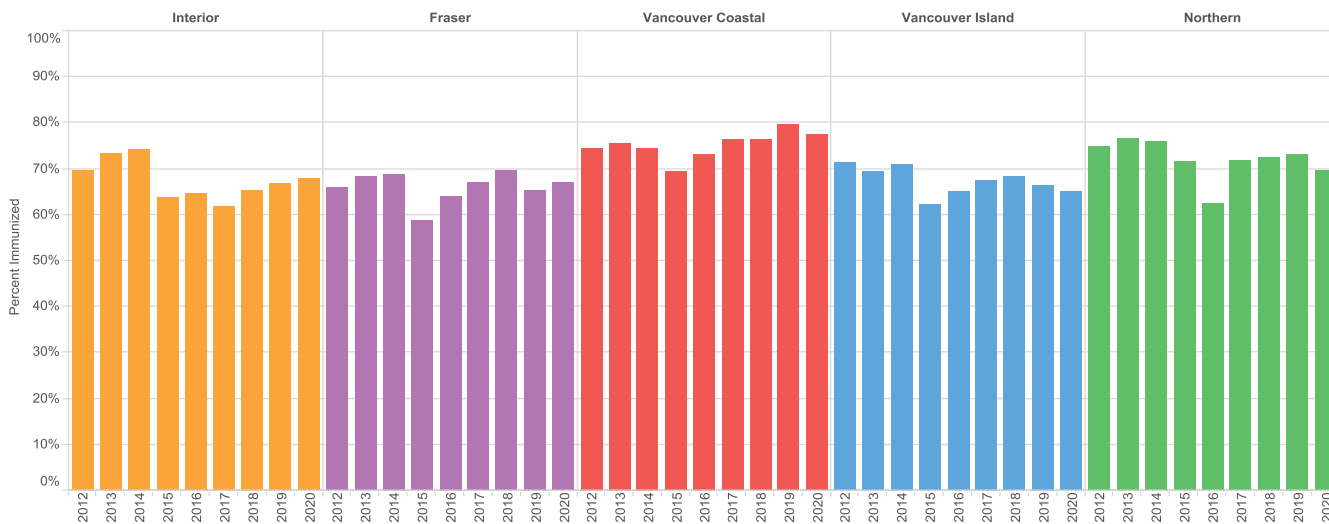
All British Columbia, by Year



By Health Service Delivery Area, 2020



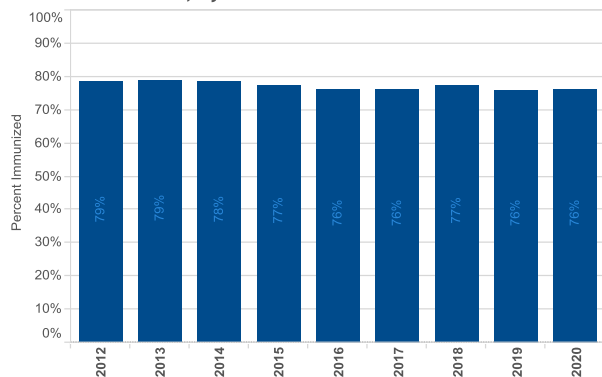
By Health Authority and Year



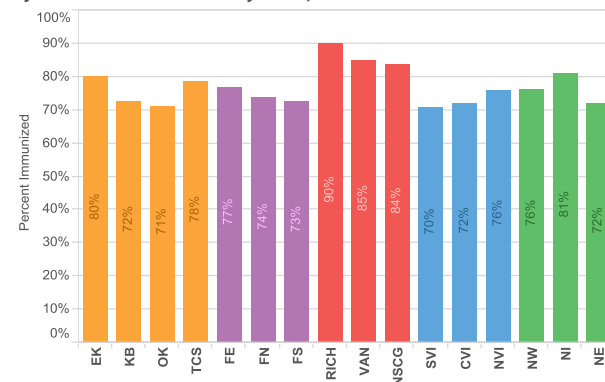
## Diphtheria, Tetanus, Pertussis and Polio (D/T/aP/IPV)

Figure 2. Percent of seven-year olds immunized, D/T/aP/IPV, British Columbia

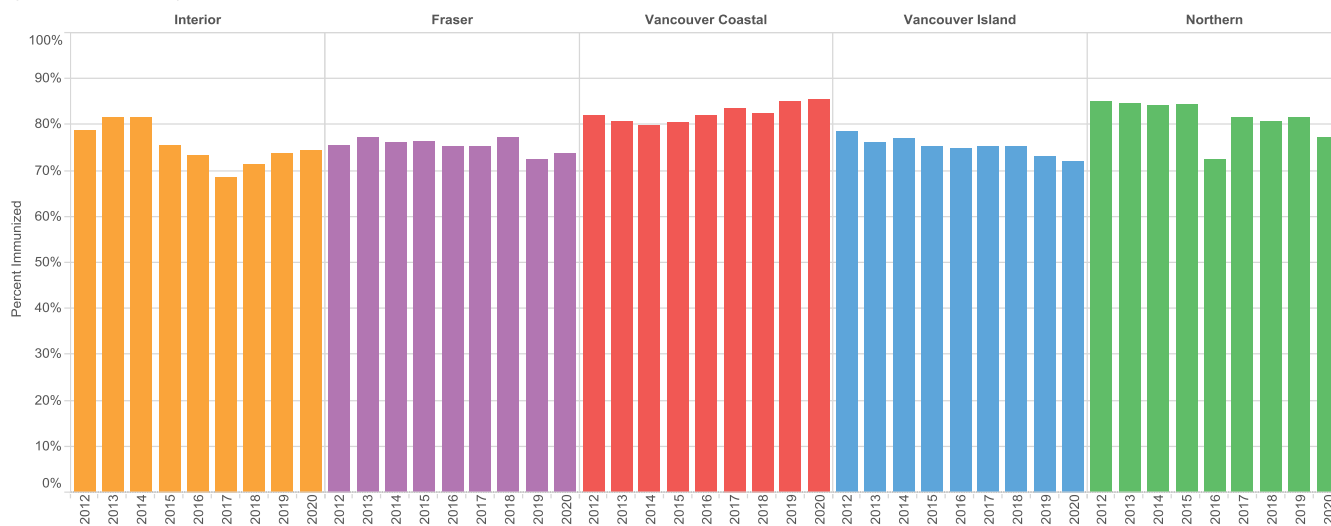
All British Columbia, by Year



By Health Service Delivery Area, 2020



By Health Authority and Year



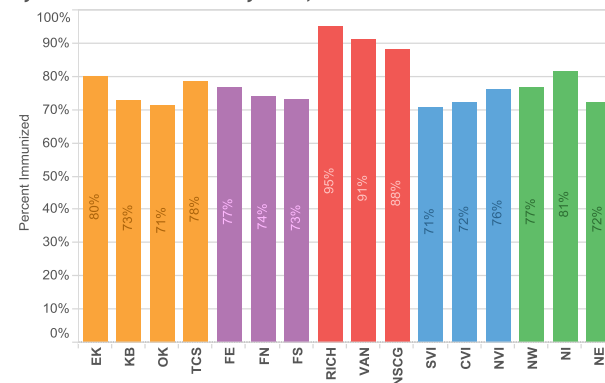
## Diphtheria, Tetanus and Pertussis (D/T/aP)

Figure 3. Percent of seven-year olds immunized, D/T/aP, British Columbia

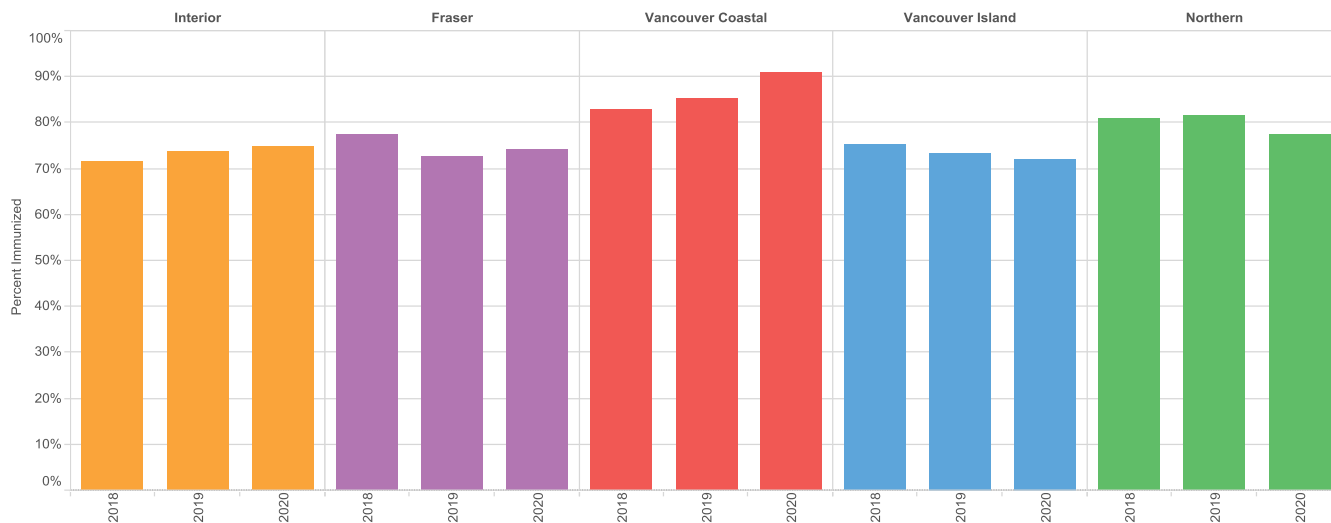
All British Columbia, by Year



By Health Service Delivery Area, 2020



By Health Authority and Year



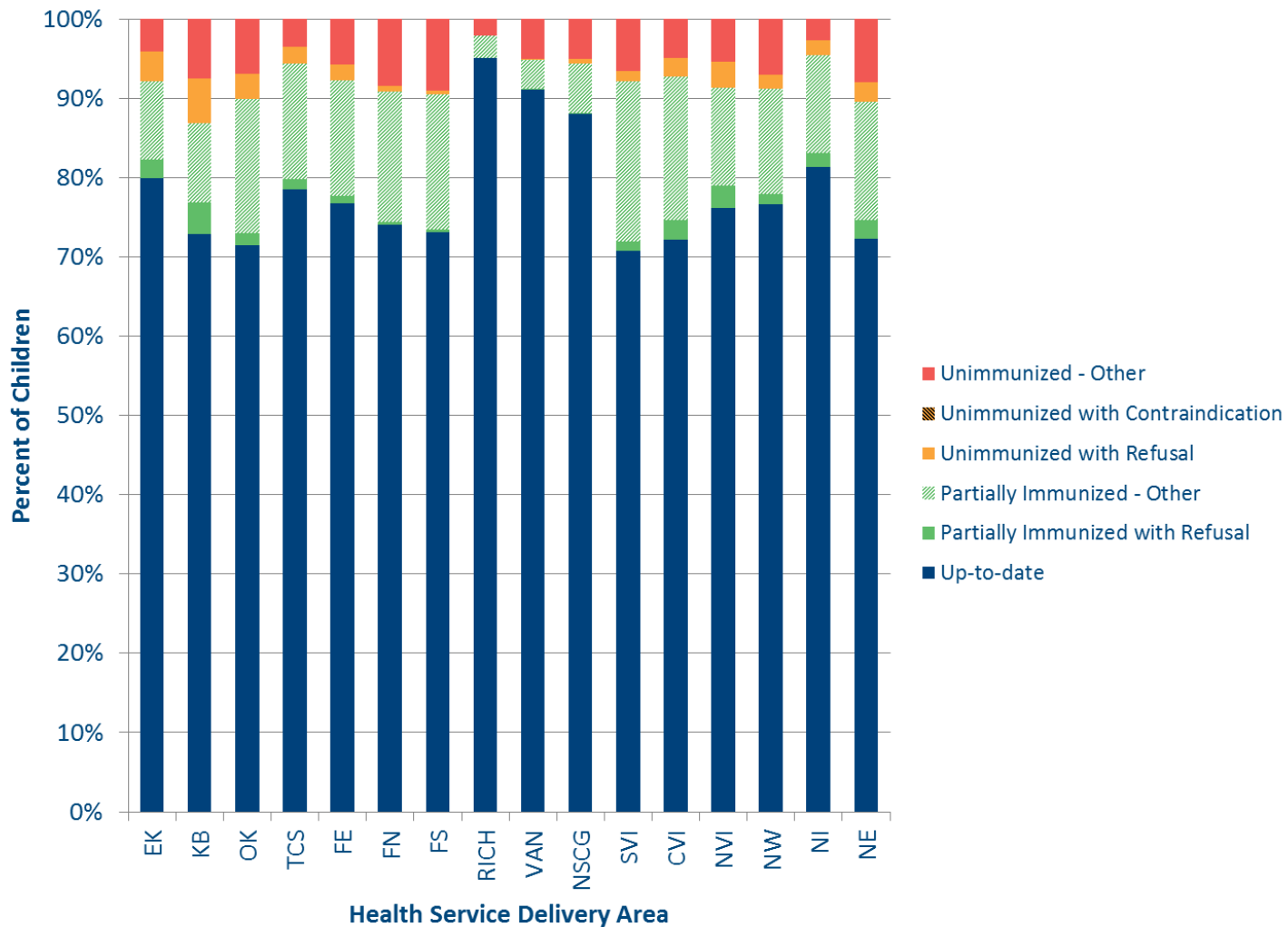


**Table 8. Reasons for non-immunization, D/T/aP, British Columbia, 2020**

Region	Population	Count						Percent					
		Immunized Up-to-date	Partially Immunized		Unimmunized			Immunized Up-to-date	Partially Immunized		Unimmunized		
			Refusal	Other	Refusal	Contra-indication	Other		Refusal	Other	Refusal	Contra-indication	Other
<b>British Columbia</b>	<b>45,263</b>	<b>35,082</b>	<b>420</b>	<b>6,212</b>	<b>615</b>	<b>1</b>	<b>2,933</b>	<b>78%</b>	<b>1%</b>	<b>14%</b>	<b>1%</b>	<b>0%</b>	<b>6%</b>
<b>Interior</b>	<b>7,196</b>	<b>5,381</b>	<b>131</b>	<b>1,050</b>	<b>230</b>	<b>0</b>	<b>404</b>	<b>75%</b>	<b>2%</b>	<b>15%</b>	<b>3%</b>	<b>0%</b>	<b>6%</b>
East Kootenay	833	666	19	82	32	0	34	80%	2%	10%	4%	0%	4%
Kootenay Boundary	750	546	30	75	43	0	56	73%	4%	10%	6%	0%	7%
Okanagan	3,368	2,407	52	567	107	0	235	71%	2%	17%	3%	0%	7%
Thompson Cariboo Shuswap	2,245	1,762	30	326	48	0	79	78%	1%	15%	2%	0%	4%
<b>Fraser</b>	<b>18,635</b>	<b>13,806</b>	<b>83</b>	<b>3,049</b>	<b>158</b>	<b>0</b>	<b>1,539</b>	<b>74%</b>	<b>0%</b>	<b>16%</b>	<b>1%</b>	<b>0%</b>	<b>8%</b>
Fraser East	3,443	2,643	30	502	71	0	197	77%	1%	15%	2%	0%	6%
Fraser North	6,122	4,531	19	1,009	46	0	517	74%	0%	16%	1%	0%	8%
Fraser South	9,070	6,632	34	1,538	41	0	825	73%	0%	17%	0%	0%	9%
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>8,233</b>	<b>8</b>	<b>387</b>	<b>20</b>	<b>0</b>	<b>404</b>	<b>91%</b>	<b>0%</b>	<b>4%</b>	<b>0%</b>	<b>0%</b>	<b>4%</b>
Richmond	1,826	1,735	1	51	0	0	39	95%	0%	3%	0%	0%	2%
Vancouver	4,515	4,112	5	165	6	0	227	91%	0%	4%	0%	0%	5%
North Shore / Coast Garibaldi	2,711	2,386	2	171	14	0	138	88%	0%	6%	1%	0%	5%
<b>Vancouver Island</b>	<b>7,192</b>	<b>5,190</b>	<b>139</b>	<b>1,302</b>	<b>143</b>	<b>0</b>	<b>418</b>	<b>72%</b>	<b>2%</b>	<b>18%</b>	<b>2%</b>	<b>0%</b>	<b>6%</b>
South Vancouver Island	3,422	2,421	40	693	43	0	225	71%	1%	20%	1%	0%	7%
Central Vancouver Island	2,490	1,795	62	452	57	0	124	72%	2%	18%	2%	0%	5%
North Vancouver Island	1,280	974	37	157	43	0	69	76%	3%	12%	3%	0%	5%
<b>Northern</b>	<b>3,188</b>	<b>2,472</b>	<b>59</b>	<b>424</b>	<b>64</b>	<b>1</b>	<b>168</b>	<b>78%</b>	<b>2%</b>	<b>13%</b>	<b>2%</b>	<b>0%</b>	<b>5%</b>
Northwest	769	589	10	102	14	0	54	77%	1%	13%	2%	0%	7%
Northern Interior	1,499	1,218	28	184	28	1	40	81%	2%	12%	2%	0%	3%
Northeast	920	665	21	138	22	0	74	72%	2%	15%	2%	0%	8%

**Note:** "Other" 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.

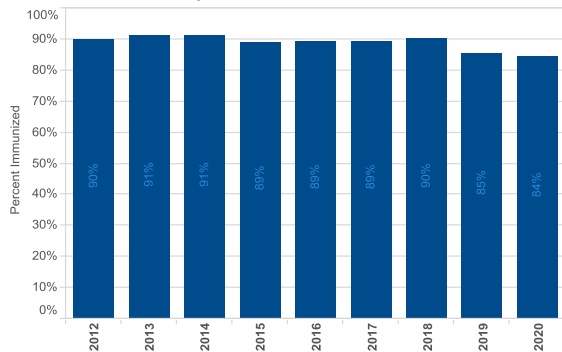
Figure 4. Reasons for non-immunization by Health Service Delivery Area, D/T/aP, British Columbia, 2020



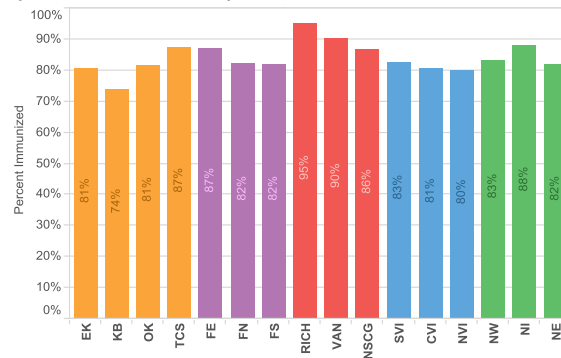
## Hepatitis B

Figure 5. Percent of seven-year olds immunized, Hepatitis B, British Columbia

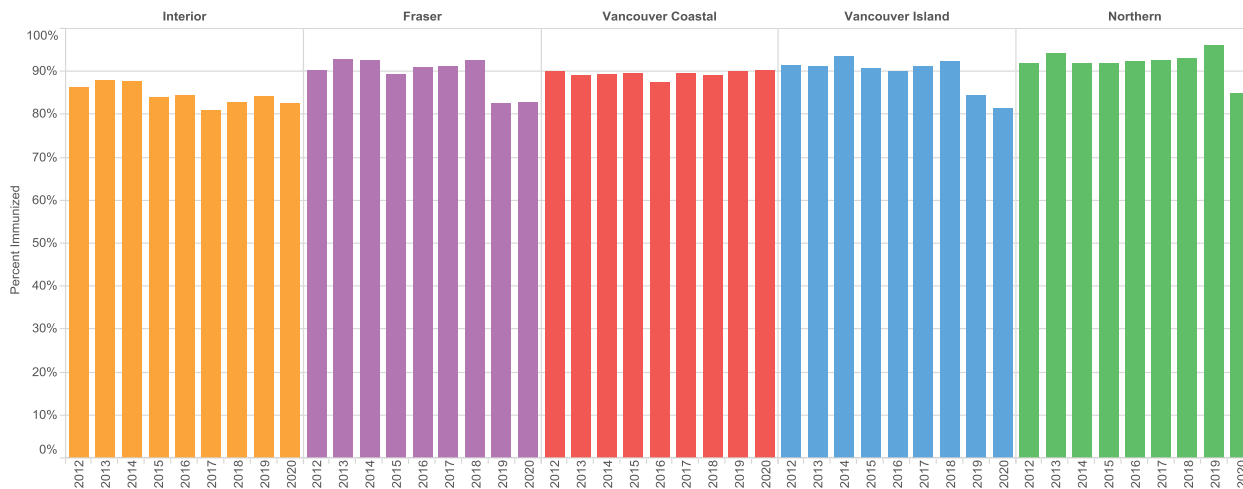
All British Columbia, by Year



By Health Service Delivery Area, 2020



By Health Authority and Year

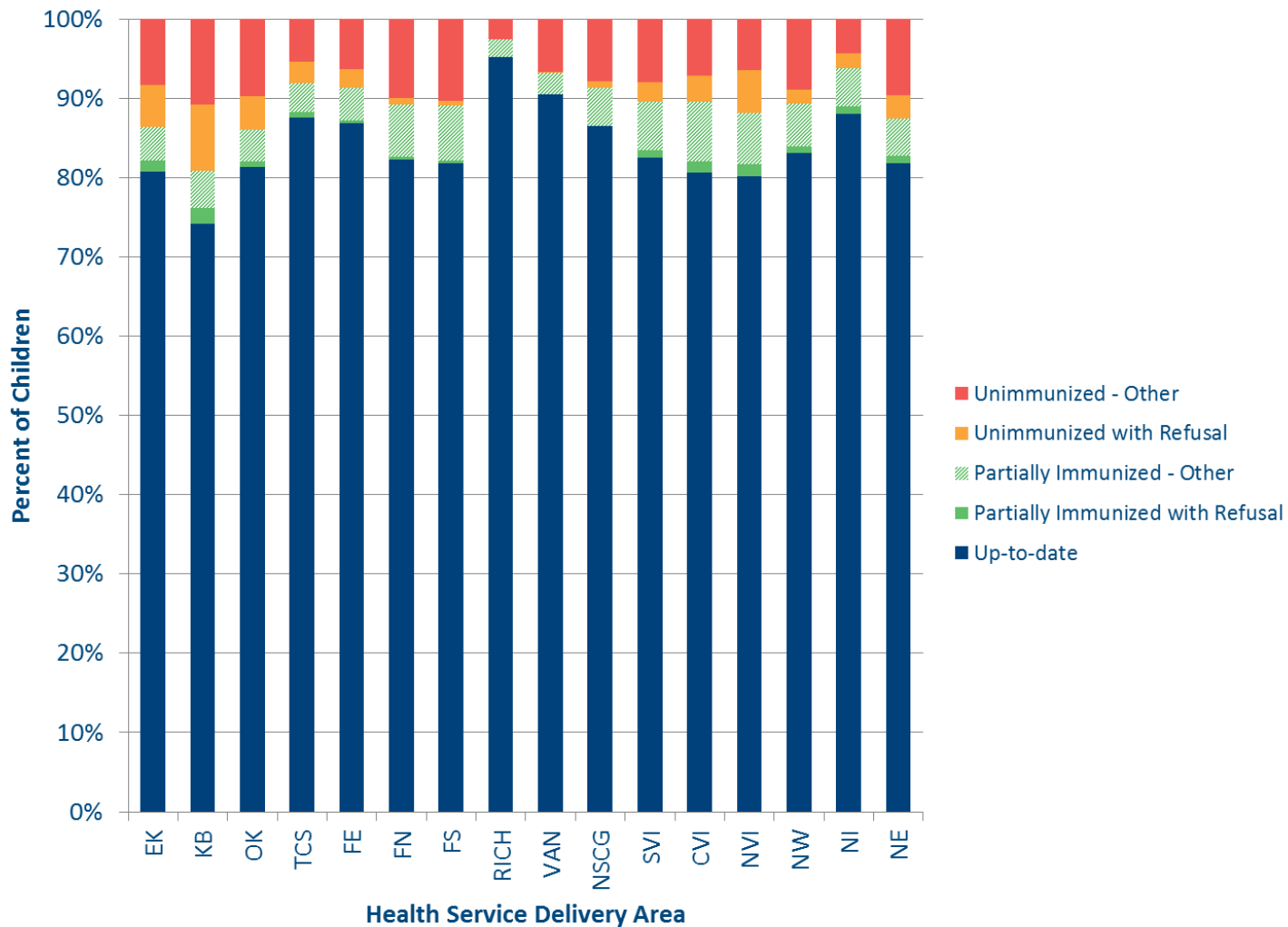


**Table 9. Reasons for non-immunization, Hepatitis B, British Columbia, 2020**

Region	Population	Count					Percent				
		Immunized Up-to-date	Partially Immunized		Unimmunized		Immunized Up-to-date	Partially Immunized		Unimmunized	
			Refusal	Other	Refusal	Other		Refusal	Other		
<b>British Columbia</b>	<b>45,263</b>	<b>38,112</b>	<b>244</b>	<b>2,386</b>	<b>830</b>	<b>3,691</b>	<b>84%</b>	<b>1%</b>	<b>5%</b>	<b>2%</b>	<b>8%</b>
<b>Interior</b>	<b>7,196</b>	<b>5,930</b>	<b>67</b>	<b>288</b>	<b>309</b>	<b>602</b>	<b>82%</b>	<b>1%</b>	<b>4%</b>	<b>4%</b>	<b>8%</b>
East Kootenay	833	672	12	35	44	70	81%	1%	4%	5%	8%
Kootenay Boundary	750	556	15	35	63	81	74%	2%	5%	8%	11%
Okanagan	3,368	2,738	24	135	142	329	81%	1%	4%	4%	10%
Thompson Cariboo Shuswap	2,245	1,964	16	83	60	122	87%	1%	4%	3%	5%
<b>Fraser</b>	<b>18,635</b>	<b>15,448</b>	<b>64</b>	<b>1,167</b>	<b>190</b>	<b>1,766</b>	<b>83%</b>	<b>0%</b>	<b>6%</b>	<b>1%</b>	<b>9%</b>
Fraser East	3,443	2,990	13	139	83	218	87%	0%	4%	2%	6%
Fraser North	6,122	5,039	19	399	54	611	82%	0%	7%	1%	10%
Fraser South	9,070	7,419	32	629	53	937	82%	0%	7%	1%	10%
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>8,166</b>	<b>0</b>	<b>294</b>	<b>29</b>	<b>563</b>	<b>90%</b>	<b>0%</b>	<b>3%</b>	<b>0%</b>	<b>6%</b>
Richmond	1,826	1,738	0	41	0	47	95%	0%	2%	0%	3%
Vancouver	4,515	4,084	0	121	8	302	90%	0%	3%	0%	7%
North Shore / Coast Garibaldi	2,711	2,344	0	132	21	214	86%	0%	5%	1%	8%
<b>Vancouver Island</b>	<b>7,192</b>	<b>5,857</b>	<b>85</b>	<b>480</b>	<b>233</b>	<b>537</b>	<b>81%</b>	<b>1%</b>	<b>7%</b>	<b>3%</b>	<b>7%</b>
South Vancouver Island	3,422	2,824	31	209	83	275	83%	1%	6%	2%	8%
Central Vancouver Island	2,490	2,008	34	188	81	179	81%	1%	8%	3%	7%
North Vancouver Island	1,280	1,025	20	83	69	83	80%	2%	6%	5%	6%
<b>Northern</b>	<b>3,188</b>	<b>2,711</b>	<b>28</b>	<b>157</b>	<b>69</b>	<b>223</b>	<b>85%</b>	<b>1%</b>	<b>5%</b>	<b>2%</b>	<b>7%</b>
Northwest	769	639	6	42	13	69	83%	1%	5%	2%	9%
Northern Interior	1,499	1,320	13	72	29	65	88%	1%	5%	2%	4%
Northeast	920	752	9	43	27	89	82%	1%	5%	3%	10%

**Note:** "Other" 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.

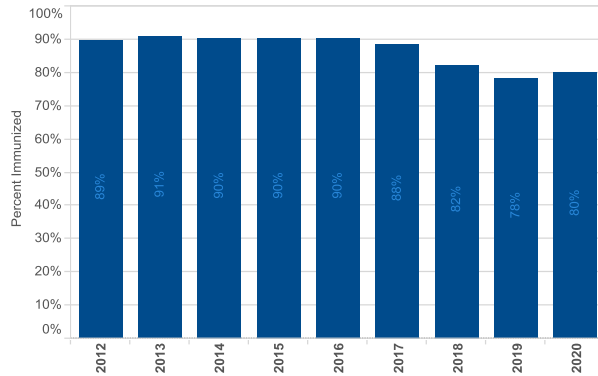
Figure 6. Reasons for non-immunization by Health Service Delivery Area, Hepatitis B, British Columbia, 2020



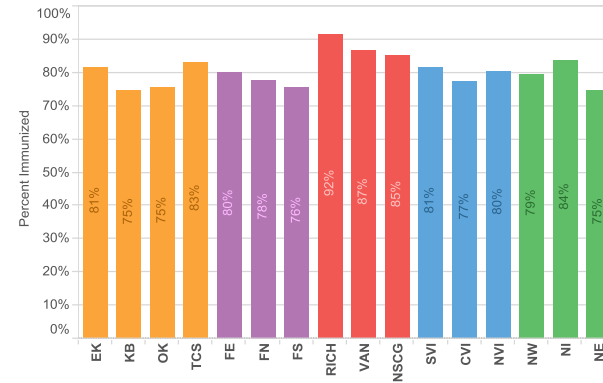
# Measles

Figure 7. Percent of seven-year olds immunized, Measles, British Columbia

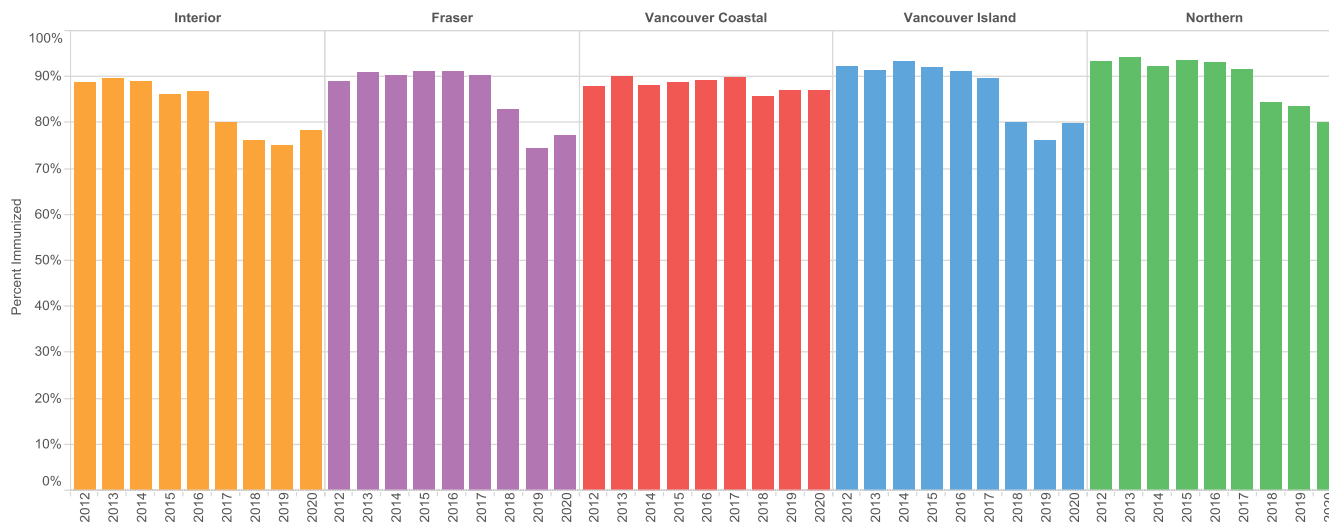
All British Columbia, by Year



By Health Service Delivery Area, 2020



By Health Authority and Year



**Table 10. Reasons for non-immunization, Measles, British Columbia, 2020**

Region	Population	Count							
		Immunized Up-to-date	Immune: Lab Evidence	Partially Immunized			Unimmunized		
				Refusal	Contraindication	Other	Refusal	Contraindication	Other
<b>British Columbia</b>	<b>45,263</b>	<b>36,165</b>	<b>8</b>	<b>299</b>	<b>4</b>	<b>4,561</b>	<b>778</b>	<b>3</b>	<b>3,445</b>
<b>Interior</b>	<b>7,196</b>	<b>5,637</b>	<b>1</b>	<b>110</b>	<b>3</b>	<b>699</b>	<b>309</b>	<b>1</b>	<b>436</b>
East Kootenay	833	677	0	9	0	67	43	0	37
Kootenay Boundary	750	560	0	22	0	53	60	0	55
Okanagan	3,368	2,539	0	49	0	381	151	1	247
Thompson Cariboo Shuswap	2,245	1,861	1	30	3	198	55	0	97
<b>Fraser</b>	<b>18,635</b>	<b>14,363</b>	<b>3</b>	<b>57</b>	<b>0</b>	<b>2,238</b>	<b>181</b>	<b>0</b>	<b>1,793</b>
Fraser East	3,443	2,758	0	19	0	344	80	0	242
Fraser North	6,122	4,754	1	16	0	697	48	0	606
Fraser South	9,070	6,851	2	22	0	1,197	53	0	945
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>7,884</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>646</b>	<b>23</b>	<b>0</b>	<b>489</b>
Richmond	1,826	1,672	0	1	0	108	0	0	45
Vancouver	4,515	3,906	0	5	0	333	9	0	262
North Shore / Coast Garibaldi	2,711	2,306	0	4	0	205	14	0	182
<b>Vancouver Island</b>	<b>7,192</b>	<b>5,730</b>	<b>4</b>	<b>85</b>	<b>0</b>	<b>685</b>	<b>174</b>	<b>1</b>	<b>513</b>
South Vancouver Island	3,422	2,779	3	25	0	295	55	0	265
Central Vancouver Island	2,490	1,923	1	40	0	288	71	1	166
North Vancouver Island	1,280	1,028	0	20	0	102	48	0	82
<b>Northern</b>	<b>3,188</b>	<b>2,551</b>	<b>0</b>	<b>37</b>	<b>1</b>	<b>293</b>	<b>91</b>	<b>1</b>	<b>214</b>
Northwest	769	611	0	6	1	68	17	0	66
Northern Interior	1,499	1,252	0	14	0	138	37	1	57
Northeast	920	688	0	17	0	87	37	0	91

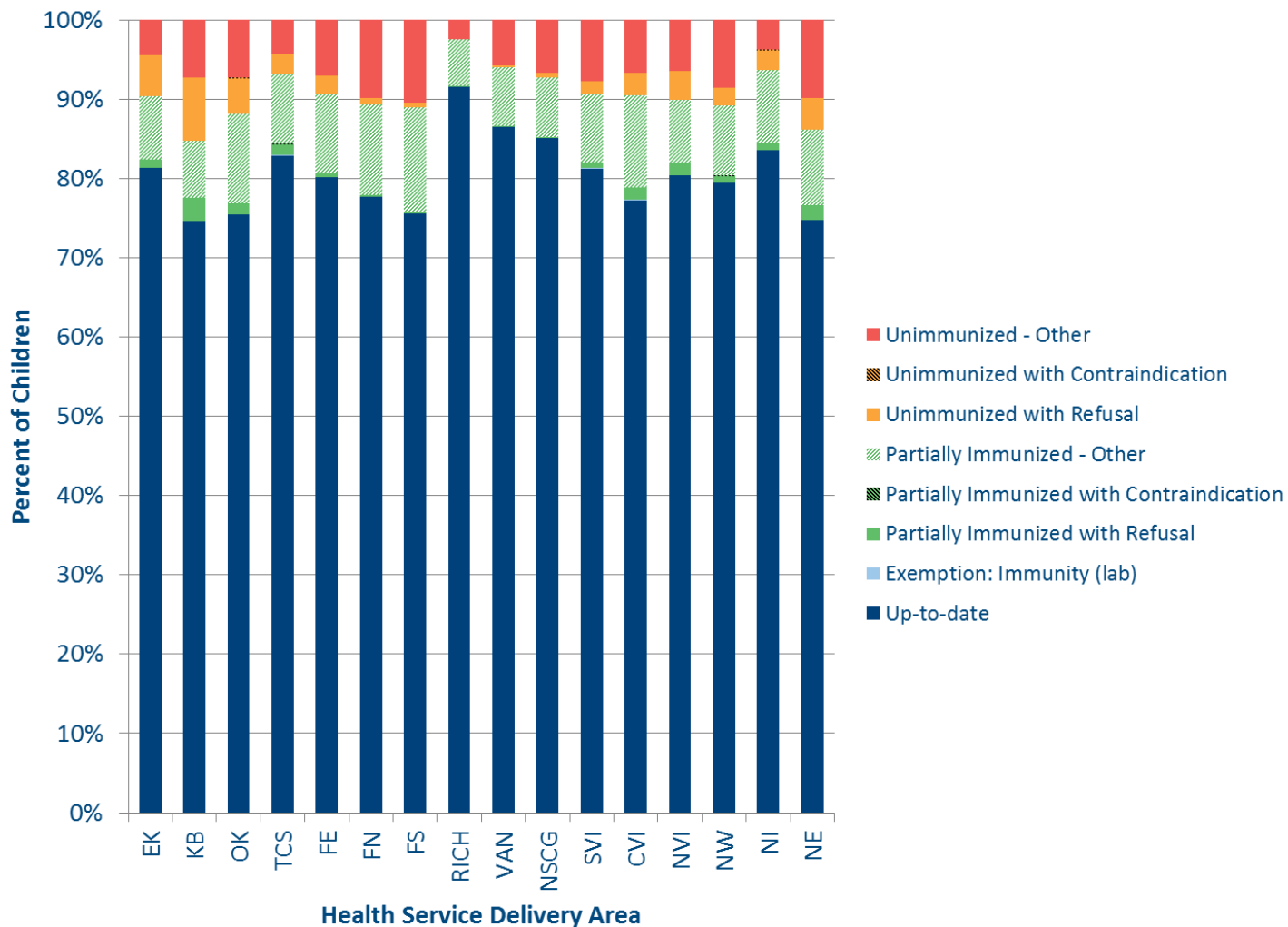
**Note:** "Other" includes all children who are partially immunized or unimmunized who do not have documented immunity, refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have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

Region	Population	Percent							
		Immunized Up-to-date	Immune: Lab Evidence	Partially Immunized			Unimmunized		
				Refusal	Contraindication	Other	Refusal	Contraindication	Other
<b>British Columbia</b>	<b>45,263</b>	<b>80%</b>	<b>0%</b>	<b>1%</b>	<b>0%</b>	<b>10%</b>	<b>2%</b>	<b>0%</b>	<b>8%</b>
<b>Interior</b>	<b>7,196</b>	<b>78%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>10%</b>	<b>4%</b>	<b>0%</b>	<b>6%</b>
East Kootenay	833	81%	0%	1%	0%	8%	5%	0%	4%
Kootenay Boundary	750	75%	0%	3%	0%	7%	8%	0%	7%
Okanagan	3,368	75%	0%	1%	0%	11%	4%	0%	7%
Thompson Cariboo Shuswap	2,245	83%	0%	1%	0%	9%	2%	0%	4%
<b>Fraser</b>	<b>18,635</b>	<b>77%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>12%</b>	<b>1%</b>	<b>0%</b>	<b>10%</b>
Fraser East	3,443	80%	0%	1%	0%	10%	2%	0%	7%
Fraser North	6,122	78%	0%	0%	0%	11%	1%	0%	10%
Fraser South	9,070	76%	0%	0%	0%	13%	1%	0%	10%
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>87%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>7%</b>	<b>0%</b>	<b>0%</b>	<b>5%</b>
Richmond	1,826	92%	0%	0%	0%	6%	0%	0%	2%
Vancouver	4,515	87%	0%	0%	0%	7%	0%	0%	6%
North Shore / Coast Garibaldi	2,711	85%	0%	0%	0%	8%	1%	0%	7%
<b>Vancouver Island</b>	<b>7,192</b>	<b>80%</b>	<b>0%</b>	<b>1%</b>	<b>0%</b>	<b>10%</b>	<b>2%</b>	<b>0%</b>	<b>7%</b>
South Vancouver Island	3,422	81%	0%	1%	0%	9%	2%	0%	8%
Central Vancouver Island	2,490	77%	0%	2%	0%	12%	3%	0%	7%
North Vancouver Island	1,280	80%	0%	2%	0%	8%	4%	0%	6%
<b>Northern</b>	<b>3,188</b>	<b>80%</b>	<b>0%</b>	<b>1%</b>	<b>0%</b>	<b>9%</b>	<b>3%</b>	<b>0%</b>	<b>7%</b>
Northwest	769	79%	0%	1%	0%	9%	2%	0%	9%
Northern Interior	1,499	84%	0%	1%	0%	9%	2%	0%	4%
Northeast	920	75%	0%	2%	0%	9%	4%	0%	10%

**Note:** "Other" includes all children who are partially immunized or unimmunized who do not have documented immunity, 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 immunity, refusal, contraindication, or immunization doses recorded.



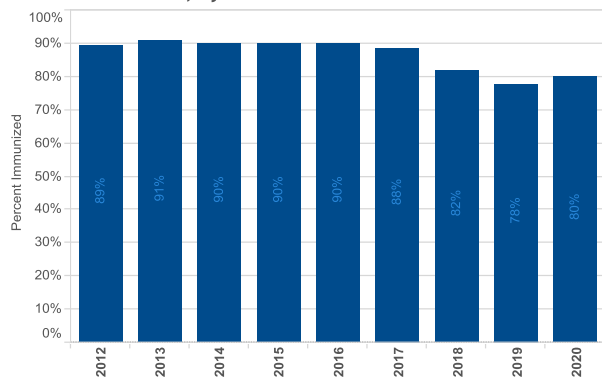
Figure 8. Reasons for non-immunization by Health Service Delivery Area, Measles, British Columbia, 2020



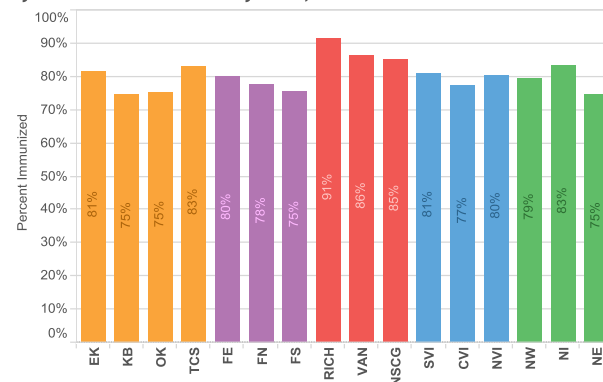
# Mumps

Figure 9. Percent of seven-year olds immunized, Mumps, British Columbia

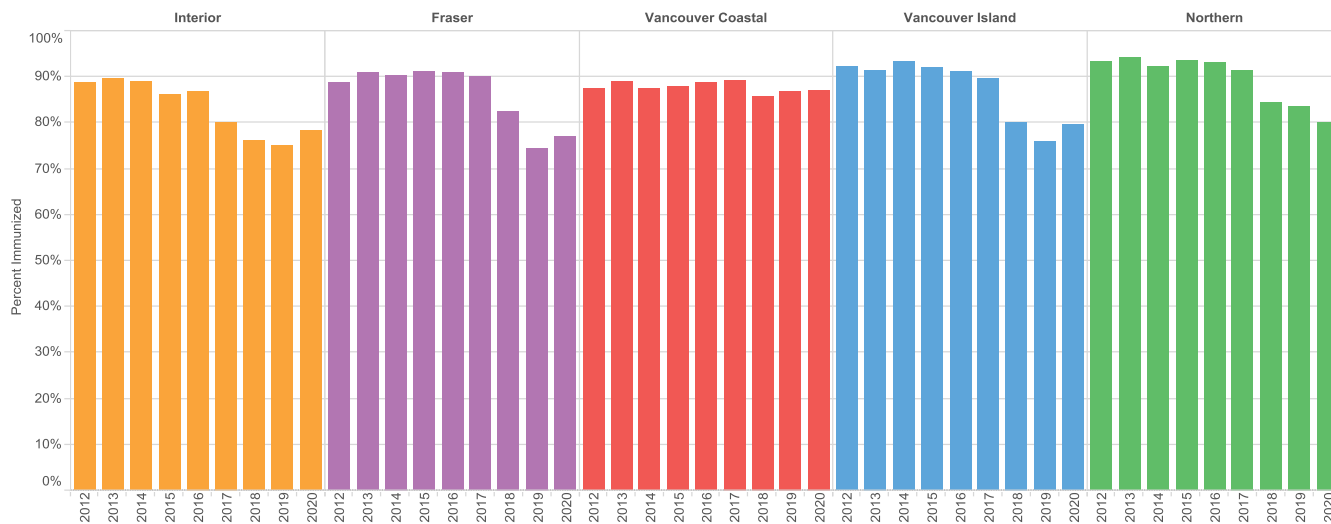
All British Columbia, by Year



By Health Service Delivery Area, 2020



By Health Authority and Year



**Table 11. Reasons for non-immunization, Mumps, British Columbia, 2020**

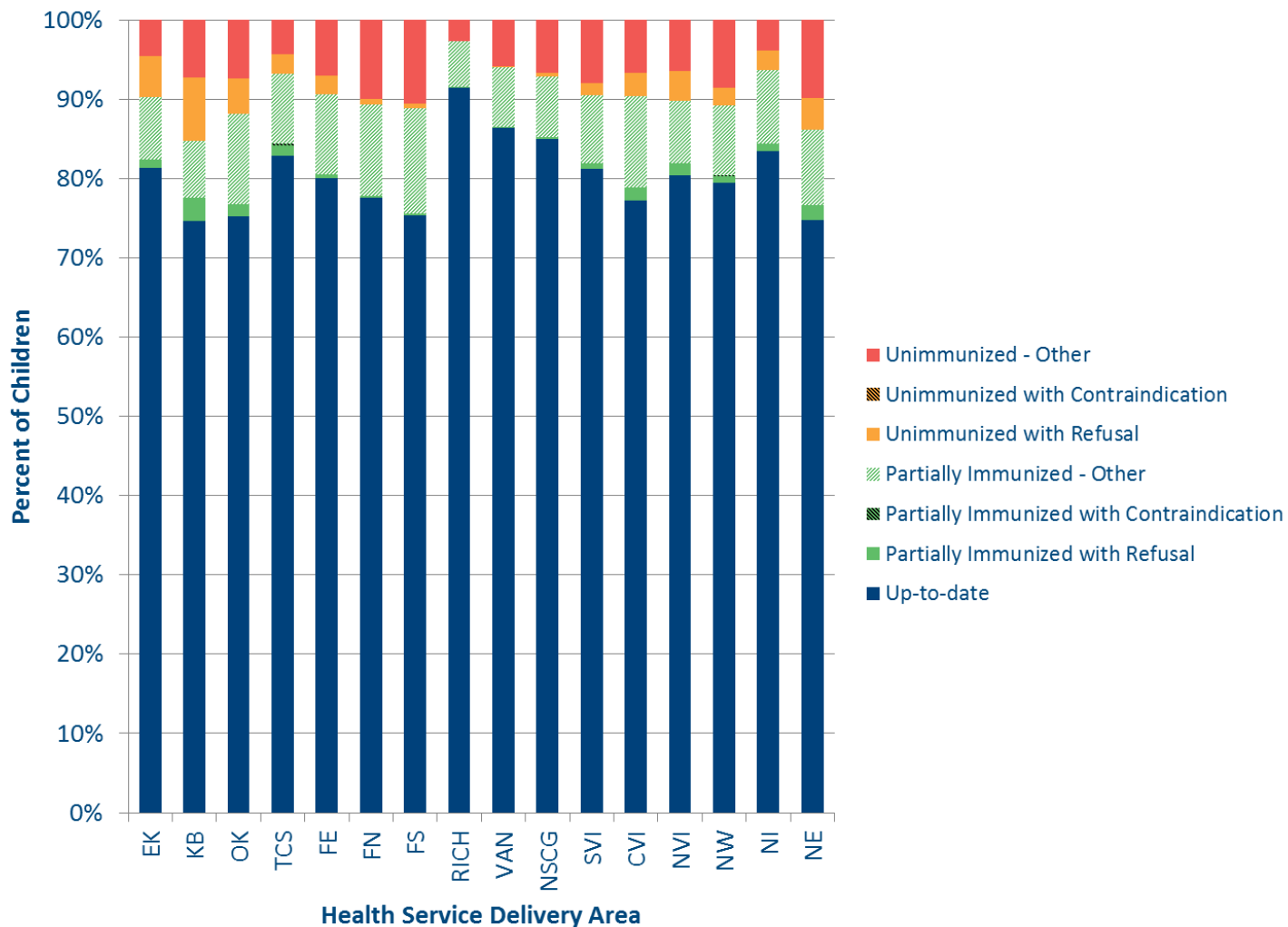
Region	Population	Count						
		Immunized Up-to-date	Partially Immunized			Unimmunized		
			Refusal	Contraindication	Other	Refusal	Contraindication	Other
<b>British Columbia</b>	<b>45,263</b>	<b>36,117</b>	<b>300</b>	<b>4</b>	<b>4,580</b>	<b>778</b>	<b>3</b>	<b>3,481</b>
<b>Interior</b>	<b>7,196</b>	<b>5,632</b>	<b>109</b>	<b>3</b>	<b>701</b>	<b>310</b>	<b>1</b>	<b>440</b>
East Kootenay	833	677	9	0	66	43	0	38
Kootenay Boundary	750	560	22	0	53	60	0	55
Okanagan	3,368	2,534	49	0	384	151	1	249
Thompson Cariboo Shuswap	2,245	1,861	29	3	198	56	0	98
<b>Fraser</b>	<b>18,635</b>	<b>14,335</b>	<b>58</b>	<b>0</b>	<b>2,253</b>	<b>181</b>	<b>0</b>	<b>1,808</b>
Fraser East	3,443	2,754	19	0	347	80	0	243
Fraser North	6,122	4,747	16	0	702	48	0	609
Fraser South	9,070	6,834	23	0	1,204	53	0	956
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>7,873</b>	<b>11</b>	<b>0</b>	<b>650</b>	<b>22</b>	<b>0</b>	<b>496</b>
Richmond	1,826	1,670	1	0	105	0	0	50
Vancouver	4,515	3,899	6	0	337	8	0	265
North Shore / Coast Garibaldi	2,711	2,304	4	0	208	14	0	181
<b>Vancouver Island</b>	<b>7,192</b>	<b>5,727</b>	<b>85</b>	<b>0</b>	<b>683</b>	<b>174</b>	<b>1</b>	<b>522</b>
South Vancouver Island	3,422	2,777	25	0	293	55	0	272
Central Vancouver Island	2,490	1,922	40	0	289	71	1	167
North Vancouver Island	1,280	1,028	20	0	101	48	0	83
<b>Northern</b>	<b>3,188</b>	<b>2,550</b>	<b>37</b>	<b>1</b>	<b>293</b>	<b>91</b>	<b>1</b>	<b>215</b>
Northwest	769	611	6	1	68	17	0	66
Northern Interior	1,499	1,251	14	0	138	37	1	58
Northeast	920	688	17	0	87	37	0	91

**Note:** "Other" 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.

Region	Population	Percent						
		Immunized Up-to-date	Partially Immunized			Unimmunized		
			Refusal	Contraindication	Other	Refusal	Contraindication	Other
<b>British Columbia</b>	<b>45,263</b>	<b>80%</b>	<b>1%</b>	<b>0%</b>	<b>10%</b>	<b>2%</b>	<b>0%</b>	<b>8%</b>
<b>Interior</b>	<b>7,196</b>	<b>78%</b>	<b>2%</b>	<b>0%</b>	<b>10%</b>	<b>4%</b>	<b>0%</b>	<b>6%</b>
East Kootenay	833	81%	1%	0%	8%	5%	0%	5%
Kootenay Boundary	750	75%	3%	0%	7%	8%	0%	7%
Okanagan	3,368	75%	1%	0%	11%	4%	0%	7%
Thompson Cariboo Shuswap	2,245	83%	1%	0%	9%	2%	0%	4%
<b>Fraser</b>	<b>18,635</b>	<b>77%</b>	<b>0%</b>	<b>0%</b>	<b>12%</b>	<b>1%</b>	<b>0%</b>	<b>10%</b>
Fraser East	3,443	80%	1%	0%	10%	2%	0%	7%
Fraser North	6,122	78%	0%	0%	11%	1%	0%	10%
Fraser South	9,070	75%	0%	0%	13%	1%	0%	11%
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>87%</b>	<b>0%</b>	<b>0%</b>	<b>7%</b>	<b>0%</b>	<b>0%</b>	<b>5%</b>
Richmond	1,826	91%	0%	0%	6%	0%	0%	3%
Vancouver	4,515	86%	0%	0%	7%	0%	0%	6%
North Shore / Coast Garibaldi	2,711	85%	0%	0%	8%	1%	0%	7%
<b>Vancouver Island</b>	<b>7,192</b>	<b>80%</b>	<b>1%</b>	<b>0%</b>	<b>9%</b>	<b>2%</b>	<b>0%</b>	<b>7%</b>
South Vancouver Island	3,422	81%	1%	0%	9%	2%	0%	8%
Central Vancouver Island	2,490	77%	2%	0%	12%	3%	0%	7%
North Vancouver Island	1,280	80%	2%	0%	8%	4%	0%	6%
<b>Northern</b>	<b>3,188</b>	<b>80%</b>	<b>1%</b>	<b>0%</b>	<b>9%</b>	<b>3%</b>	<b>0%</b>	<b>7%</b>
Northwest	769	79%	1%	0%	9%	2%	0%	9%
Northern Interior	1,499	83%	1%	0%	9%	2%	0%	4%
Northeast	920	75%	2%	0%	9%	4%	0%	10%

**Note:** "Other" 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.

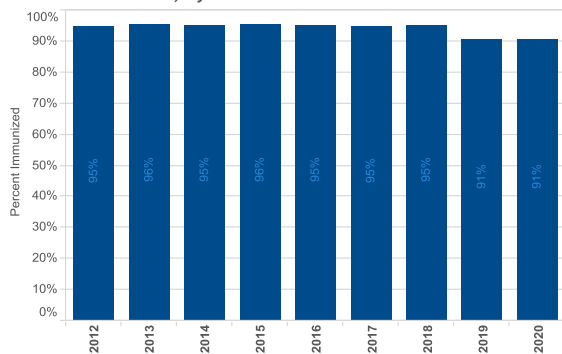
Figure 10. Reasons for non-immunization by Health Service Delivery Area, Mumps, British Columbia, 2020



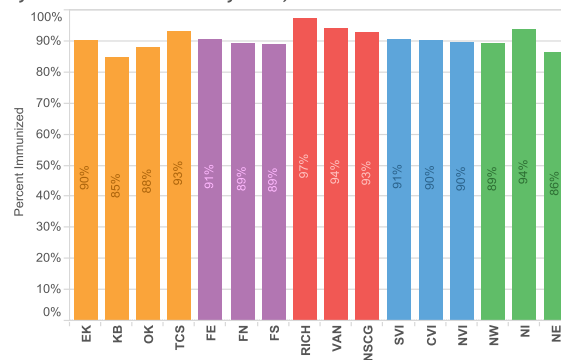
## Rubella

Figure 11. Percent of seven-year olds immunized, Rubella, British Columbia

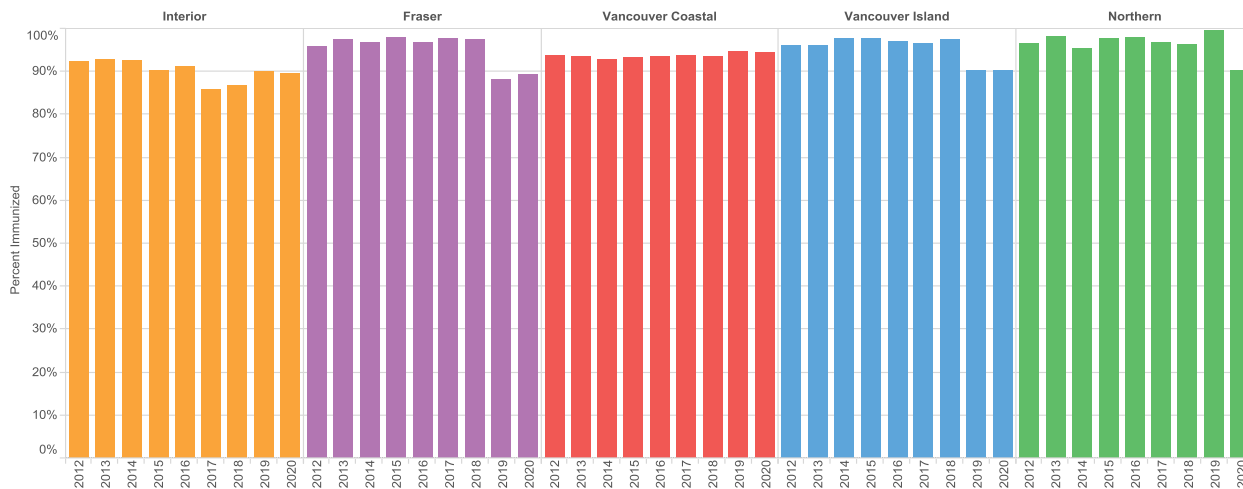
All British Columbia, by Year



By Health Service Delivery Area, 2020



By Health Authority and Year



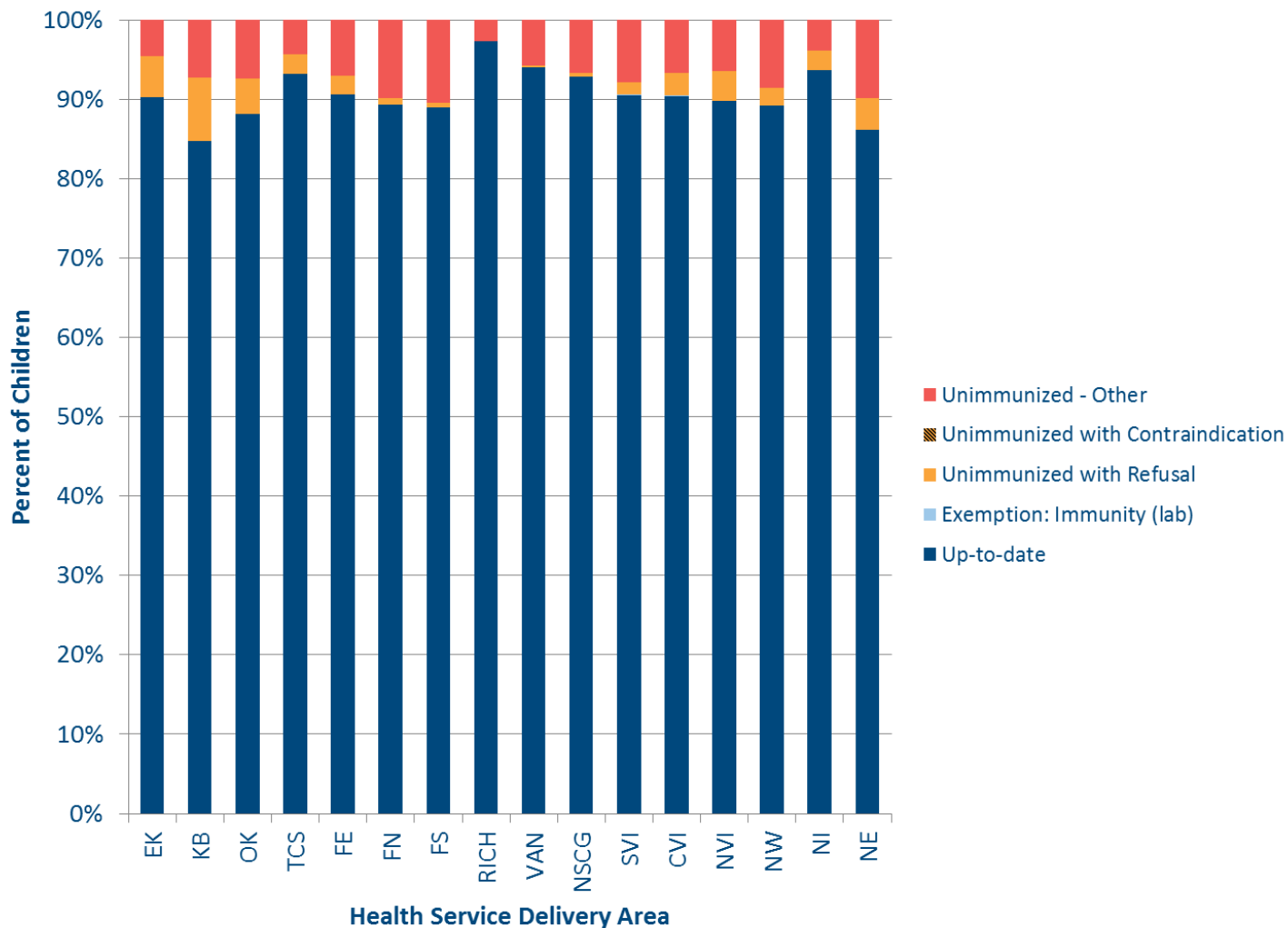
Note: Coverage rates approaching 100% in FHA, VIHA and NHA are likely over-estimates resulting from the use of different data sources for numerators and denominators (see [Notes](#)).

**Table 12. Reasons for non-immunization, Rubella, British Columbia, 2020**

Region	Population	Count					Percent				
		Immunized Up-to-date	Immune: Lab Evidence	Unimmunized			Immunized Up-to-date	Immune: Lab Evidence	Unimmunized		
				Refusal	Contraindication	Other			Refusal	Contraindication	Other
<b>British Columbia</b>	<b>45,263</b>	<b>41,008</b>	<b>7</b>	<b>777</b>	<b>3</b>	<b>3,468</b>	<b>91%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>8%</b>
<b>Interior</b>	<b>7,196</b>	<b>6,445</b>	<b>1</b>	<b>309</b>	<b>1</b>	<b>440</b>	<b>90%</b>	<b>0%</b>	<b>4%</b>	<b>0%</b>	<b>6%</b>
East Kootenay	833	752	0	43	0	38	90%	0%	5%	0%	5%
Kootenay Boundary	750	635	0	60	0	55	85%	0%	8%	0%	7%
Okanagan	3,368	2,967	0	151	1	249	88%	0%	4%	0%	7%
Thompson Cariboo Shuswap	2,245	2,091	1	55	0	98	93%	0%	2%	0%	4%
<b>Fraser</b>	<b>18,635</b>	<b>16,648</b>	<b>2</b>	<b>181</b>	<b>0</b>	<b>1,804</b>	<b>89%</b>	<b>0%</b>	<b>1%</b>	<b>0%</b>	<b>10%</b>
Fraser East	3,443	3,119	0	80	0	244	91%	0%	2%	0%	7%
Fraser North	6,122	5,466	0	48	0	608	89%	0%	1%	0%	10%
Fraser South	9,070	8,063	2	53	0	952	89%	0%	1%	0%	10%
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>8,538</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>492</b>	<b>94%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>5%</b>
Richmond	1,826	1,776	0	0	0	50	97%	0%	0%	0%	3%
Vancouver	4,515	4,246	0	8	0	261	94%	0%	0%	0%	6%
North Shore / Coast Garibaldi	2,711	2,516	0	14	0	181	93%	0%	1%	0%	7%
<b>Vancouver Island</b>	<b>7,192</b>	<b>6,496</b>	<b>4</b>	<b>174</b>	<b>1</b>	<b>517</b>	<b>90%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>7%</b>
South Vancouver Island	3,422	3,096	3	55	0	268	90%	0%	2%	0%	8%
Central Vancouver Island	2,490	2,251	1	71	1	166	90%	0%	3%	0%	7%
North Vancouver Island	1,280	1,149	0	48	0	83	90%	0%	4%	0%	6%
<b>Northern</b>	<b>3,188</b>	<b>2,881</b>	<b>0</b>	<b>91</b>	<b>1</b>	<b>215</b>	<b>90%</b>	<b>0%</b>	<b>3%</b>	<b>0%</b>	<b>7%</b>
Northwest	769	686	0	17	0	66	89%	0%	2%	0%	9%
Northern Interior	1,499	1,403	0	37	1	58	94%	0%	2%	0%	4%
Northeast	920	792	0	37	0	91	86%	0%	4%	0%	10%

**Note:** "Other" includes all children who are partially immunized or unimmunized who do not have documented immunity, 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 immunity, refusal, contraindication, or immunization doses recorded.

Figure 12. Reasons for non-immunization by Health Service Delivery Area, Rubella, British Columbia, 2020

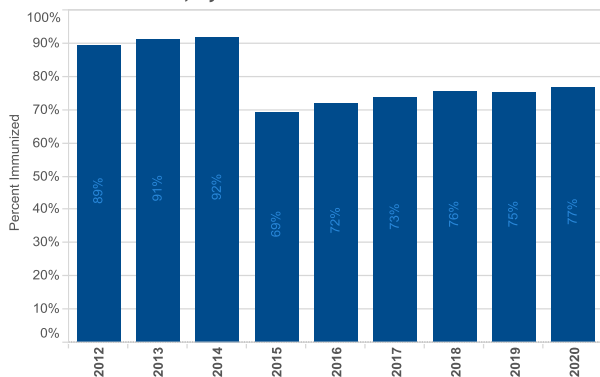




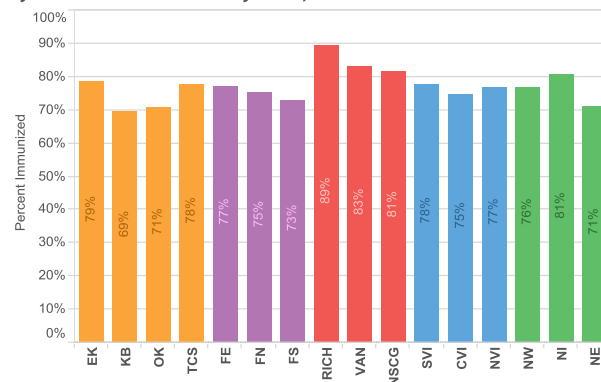
# Varicella

Figure 13. Percent of seven-year olds immunized, Varicella, British Columbia

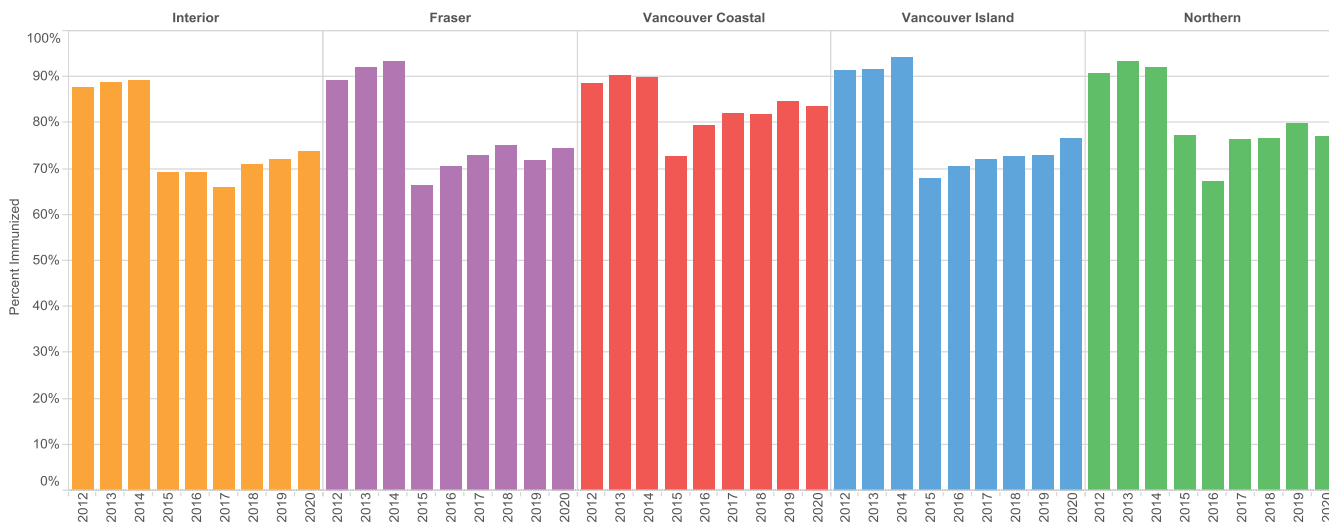
All British Columbia, by Year



By Health Service Delivery Area, 2020



By Health Authority and Year



**Table 13. Reasons for non-immunization, Varicella, British Columbia, 2020**

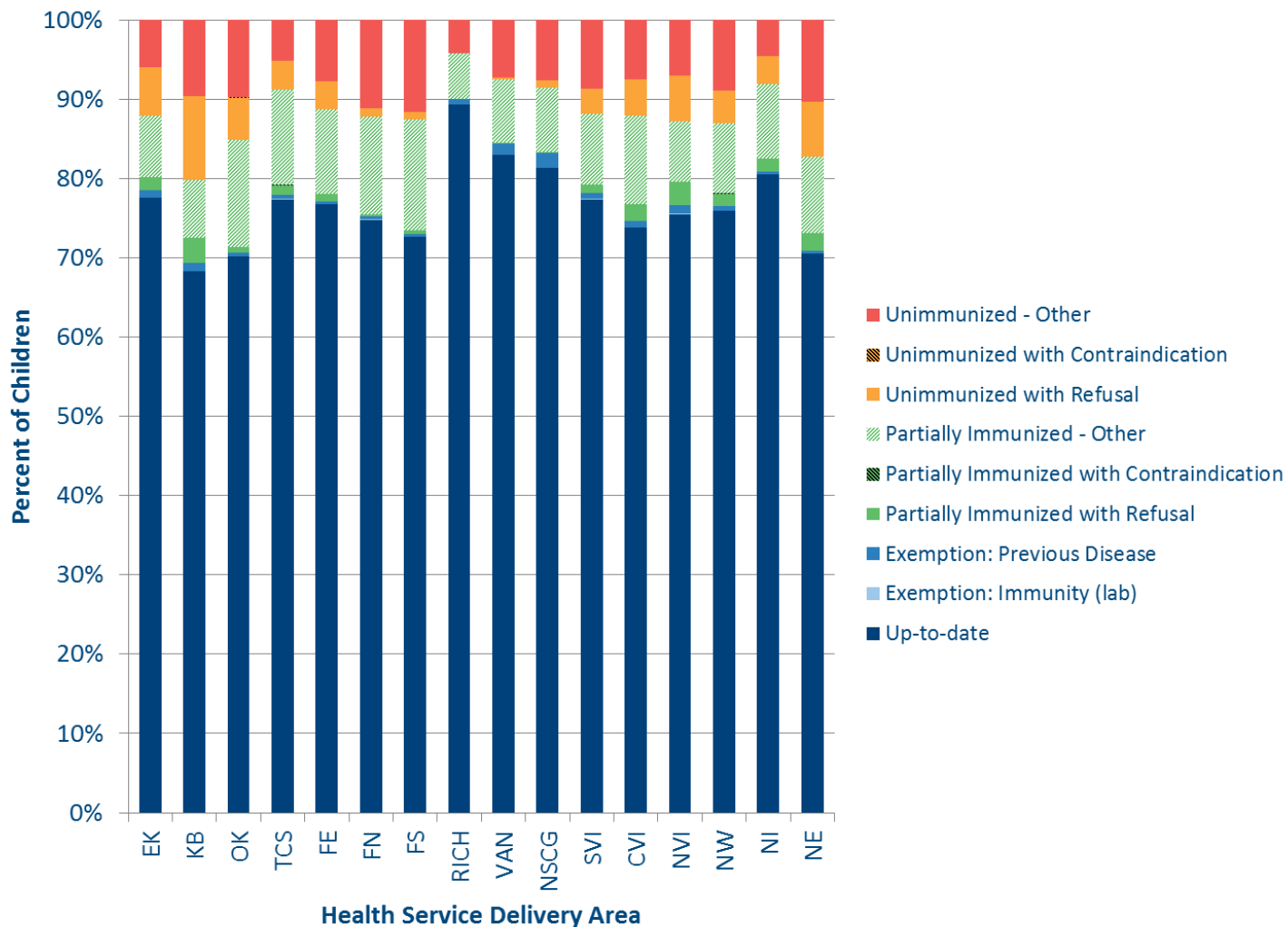
Region	Population	Count								
		Immunized Up-to-date	Immune: Previous Disease	Immune: Lab Evidence	Partially Immunized			Unimmunized		
					Refusal	Contraindication	Other	Refusal	Contraindication	Other
<b>British Columbia</b>	<b>45,263</b>	<b>34,523</b>	<b>307</b>	<b>20</b>	<b>368</b>	<b>4</b>	<b>4,895</b>	<b>1,151</b>	<b>3</b>	<b>3,992</b>
<b>Interior</b>	<b>7,196</b>	<b>5,257</b>	<b>41</b>	<b>3</b>	<b>89</b>	<b>3</b>	<b>840</b>	<b>395</b>	<b>1</b>	<b>567</b>
East Kootenay	833	646	8	0	14	0	64	51	0	50
Kootenay Boundary	750	512	8	0	24	0	54	80	0	72
Okanagan	3,368	2,362	16	1	24	0	454	180	1	330
Thompson Cariboo Shuswap	2,245	1,737	9	2	27	3	268	84	0	115
<b>Fraser</b>	<b>18,635</b>	<b>13,801</b>	<b>68</b>	<b>10</b>	<b>86</b>	<b>0</b>	<b>2,392</b>	<b>273</b>	<b>0</b>	<b>2,005</b>
Fraser East	3,443	2,642	13	0	31	0	368	123	0	266
Fraser North	6,122	4,575	27	5	13	0	751	68	0	683
Fraser South	9,070	6,584	28	5	42	0	1,273	82	0	1,056
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>7,579</b>	<b>128</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>682</b>	<b>38</b>	<b>0</b>	<b>616</b>
Richmond	1,826	1,631	12	0	0	0	105	1	0	77
Vancouver	4,515	3,745	65	0	4	0	359	11	0	331
North Shore / Coast Garibaldi	2,711	2,203	51	0	5	0	218	26	0	208
<b>Vancouver Island</b>	<b>7,192</b>	<b>5,447</b>	<b>57</b>	<b>7</b>	<b>128</b>	<b>0</b>	<b>683</b>	<b>297</b>	<b>1</b>	<b>572</b>
South Vancouver Island	3,422	2,644	24	5	37	0	307	109	0	296
Central Vancouver Island	2,490	1,837	19	1	54	0	278	114	1	186
North Vancouver Island	1,280	966	14	1	37	0	98	74	0	90
<b>Northern</b>	<b>3,188</b>	<b>2,439</b>	<b>13</b>	<b>0</b>	<b>56</b>	<b>1</b>	<b>298</b>	<b>148</b>	<b>1</b>	<b>232</b>
Northwest	769	584	4	0	12	1	68	31	0	69
Northern Interior	1,499	1,206	6	0	24	0	141	53	1	68
Northeast	920	649	3	0	20	0	89	64	0	95

**Note:** "Other" includes all children who are partially immunized or unimmunized who do not have documented immunity, 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 immunity, refusal, contraindication, or immunization doses recorded.

Region	Population	Percent								
		Immunized Up-to-date	Immune: Previous Disease	Immune: Lab Evidence	Partially Immunized			Unimmunized		
					Refusal	Contraindication	Other	Refusal	Contraindication	Other
<b>British Columbia</b>	<b>45,263</b>	<b>76%</b>	<b>1%</b>	<b>0%</b>	<b>1%</b>	<b>0%</b>	<b>11%</b>	<b>3%</b>	<b>0%</b>	<b>9%</b>
<b>Interior</b>	<b>7,196</b>	<b>73%</b>	<b>1%</b>	<b>0%</b>	<b>1%</b>	<b>0%</b>	<b>12%</b>	<b>5%</b>	<b>0%</b>	<b>8%</b>
East Kootenay	833	78%	1%	0%	2%	0%	8%	6%	0%	6%
Kootenay Boundary	750	68%	1%	0%	3%	0%	7%	11%	0%	10%
Okanagan	3,368	70%	0%	0%	1%	0%	13%	5%	0%	10%
Thompson Cariboo Shuswap	2,245	77%	0%	0%	1%	0%	12%	4%	0%	5%
<b>Fraser</b>	<b>18,635</b>	<b>74%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>13%</b>	<b>1%</b>	<b>0%</b>	<b>11%</b>
Fraser East	3,443	77%	0%	0%	1%	0%	11%	4%	0%	8%
Fraser North	6,122	75%	0%	0%	0%	0%	12%	1%	0%	11%
Fraser South	9,070	73%	0%	0%	0%	0%	14%	1%	0%	12%
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>84%</b>	<b>1%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>8%</b>	<b>0%</b>	<b>0%</b>	<b>7%</b>
Richmond	1,826	89%	1%	0%	0%	0%	6%	0%	0%	4%
Vancouver	4,515	83%	1%	0%	0%	0%	8%	0%	0%	7%
North Shore / Coast Garibaldi	2,711	81%	2%	0%	0%	0%	8%	1%	0%	8%
<b>Vancouver Island</b>	<b>7,192</b>	<b>76%</b>	<b>1%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>9%</b>	<b>4%</b>	<b>0%</b>	<b>8%</b>
South Vancouver Island	3,422	77%	1%	0%	1%	0%	9%	3%	0%	9%
Central Vancouver Island	2,490	74%	1%	0%	2%	0%	11%	5%	0%	7%
North Vancouver Island	1,280	75%	1%	0%	3%	0%	8%	6%	0%	7%
<b>Northern</b>	<b>3,188</b>	<b>77%</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>9%</b>	<b>5%</b>	<b>0%</b>	<b>7%</b>
Northwest	769	76%	1%	0%	2%	0%	9%	4%	0%	9%
Northern Interior	1,499	80%	0%	0%	2%	0%	9%	4%	0%	5%
Northeast	920	71%	0%	0%	2%	0%	10%	7%	0%	10%

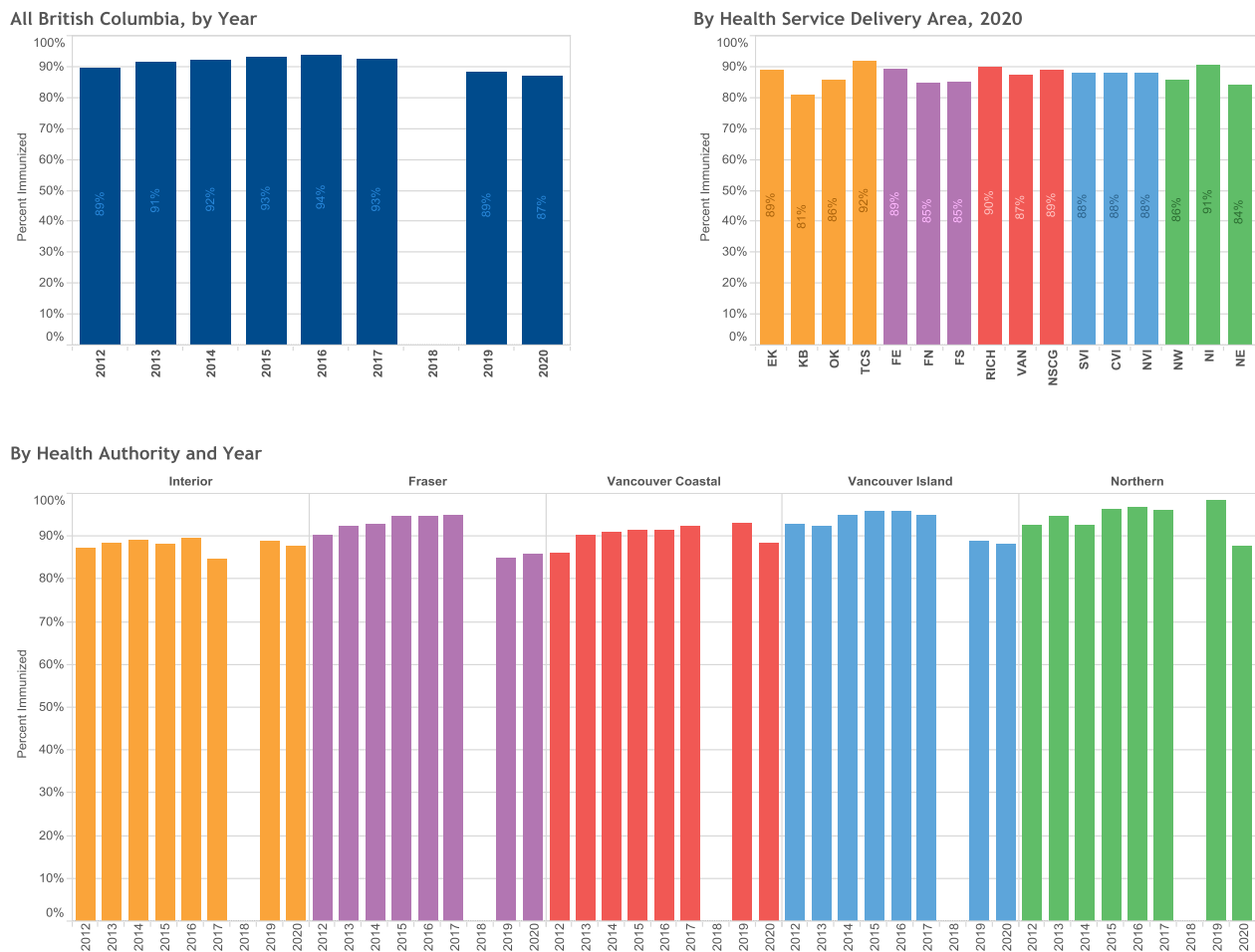
**Note:** "Other" includes all children who are partially immunized or unimmunized who do not have documented immunity, refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have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

Figure 14. Reasons for non-immunization by Health Service Delivery Area, Varicella, British Columbia, 2020



## Meningococcal C Conjugate

Figure 15. Percent of seven-year olds immunized, Meningococcal C Conjugate, British Columbia



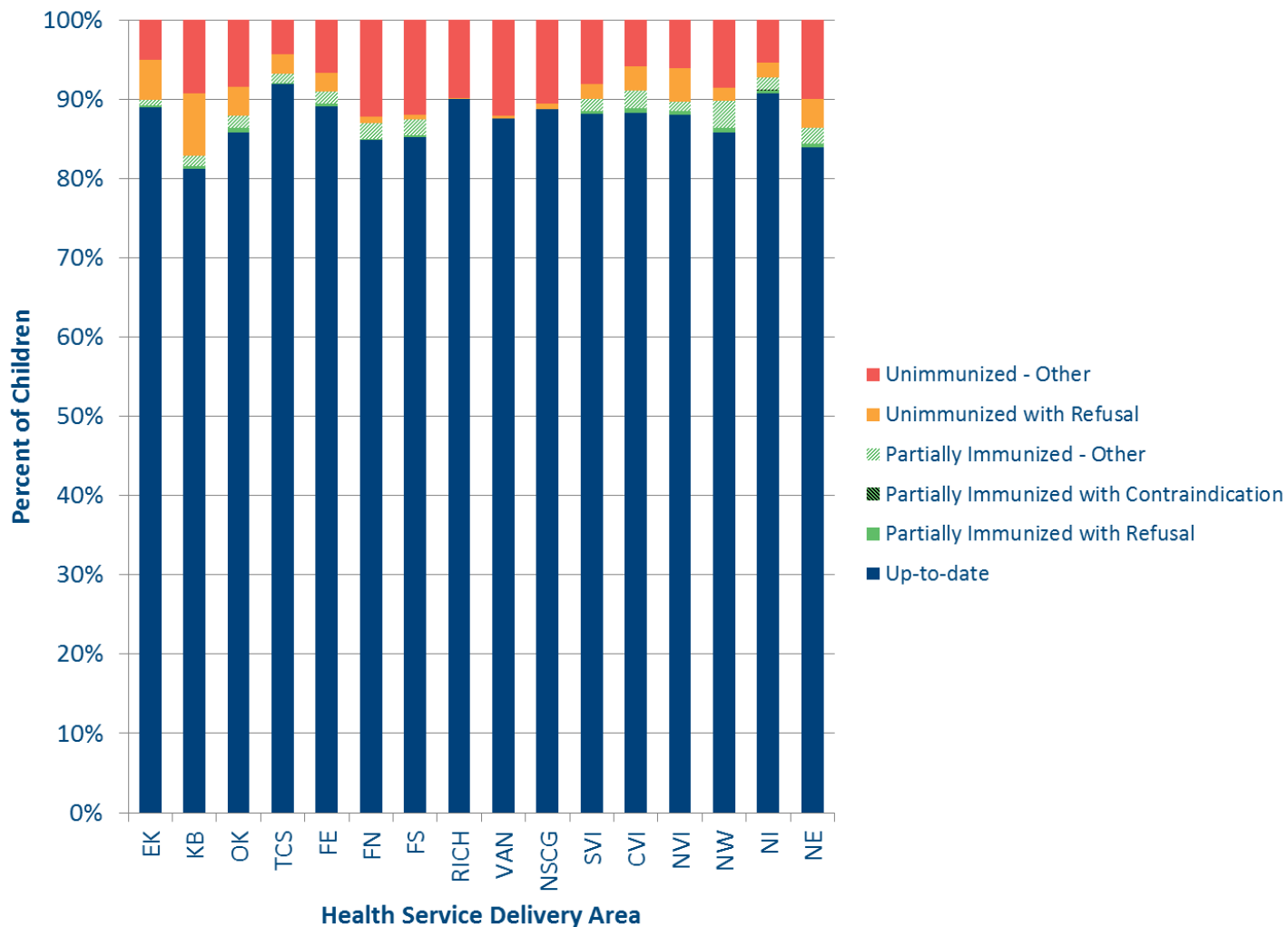
**Note:** Coverage rates approaching 100% in NHA are likely over-estimates resulting from the use of different data sources for numerators and denominators. The proportions of children immunized up-to-date in NHA differ from the coverage rates reported in other parts of this report. See [Notes](#).

**Table 14. Reasons for non-immunization, Meningococcal C Conjugate, British Columbia, 2020**

Region	Population	Count						Percent					
		Immunized Up-to-date	Partially Immunized			Unimmunized		Immunized Up-to-date	Partially Immunized			Unimmunized	
			Refusal	Contra-indication	Other	Refusal	Other		Refusal	Contra-indication	Other	Refusal	Other
<b>British Columbia</b>	<b>45,263</b>	<b>39,422</b>	<b>105</b>	<b>1</b>	<b>650</b>	<b>770</b>	<b>4,315</b>	<b>87%</b>	<b>0%</b>	<b>0%</b>	<b>1%</b>	<b>2%</b>	<b>10%</b>
<b>Interior</b>	<b>7,196</b>	<b>6,302</b>	<b>27</b>	<b>0</b>	<b>95</b>	<b>278</b>	<b>494</b>	<b>88%</b>	<b>0%</b>	<b>0%</b>	<b>1%</b>	<b>4%</b>	<b>7%</b>
East Kootenay	833	741	2	0	6	42	42	89%	0%	0%	1%	5%	5%
Kootenay Boundary	750	609	3	0	9	59	70	81%	0%	0%	1%	8%	9%
Okanagan	3,368	2,890	18	0	54	122	284	86%	1%	0%	2%	4%	8%
Thompson Cariboo Shuswap	2,245	2,062	4	0	26	55	98	92%	0%	0%	1%	2%	4%
<b>Fraser</b>	<b>18,635</b>	<b>15,990</b>	<b>33</b>	<b>0</b>	<b>363</b>	<b>183</b>	<b>2,066</b>	<b>86%</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>	<b>1%</b>	<b>11%</b>
Fraser East	3,443	3,068	9	0	54	83	229	89%	0%	0%	2%	2%	7%
Fraser North	6,122	5,196	7	0	122	51	746	85%	0%	0%	2%	1%	12%
Fraser South	9,070	7,726	17	0	187	49	1,091	85%	0%	0%	2%	1%	12%
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>7,998</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>1,014</b>	<b>88%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>11%</b>
Richmond	1,826	1,643	0	0	0	2	181	90%	0%	0%	0%	0%	10%
Vancouver	4,515	3,950	0	0	0	19	546	87%	0%	0%	0%	0%	12%
North Shore / Coast Garibaldi	2,711	2,405	0	0	0	19	287	89%	0%	0%	0%	1%	11%
<b>Vancouver Island</b>	<b>7,192</b>	<b>6,340</b>	<b>32</b>	<b>0</b>	<b>124</b>	<b>194</b>	<b>502</b>	<b>88%</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>	<b>3%</b>	<b>7%</b>
South Vancouver Island	3,422	3,017	12	0	50	66	277	88%	0%	0%	1%	2%	8%
Central Vancouver Island	2,490	2,196	15	0	58	74	147	88%	1%	0%	2%	3%	6%
North Vancouver Island	1,280	1,127	5	0	16	54	78	88%	0%	0%	1%	4%	6%
<b>Northern</b>	<b>3,188</b>	<b>2,792</b>	<b>13</b>	<b>1</b>	<b>68</b>	<b>75</b>	<b>239</b>	<b>88%</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>	<b>2%</b>	<b>7%</b>
Northwest	769	660	4	0	26	13	66	86%	1%	0%	3%	2%	9%
Northern Interior	1,499	1,360	5	1	23	29	81	91%	0%	0%	2%	2%	5%
Northeast	920	772	4	0	19	33	92	84%	0%	0%	2%	4%	10%

**Note:** "Other" 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.

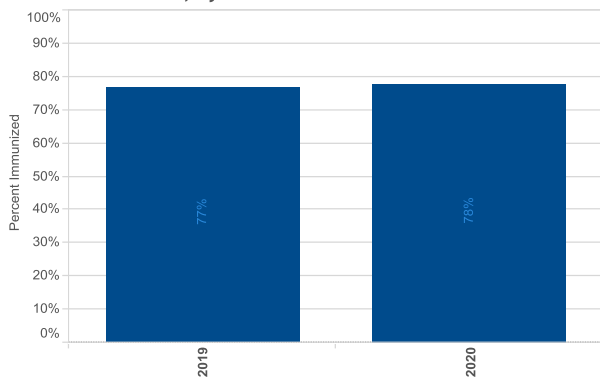
Figure 16. Reasons for non-immunization by Health Service Delivery Area, Meningococcal C Conjugate, British Columbia, 2020



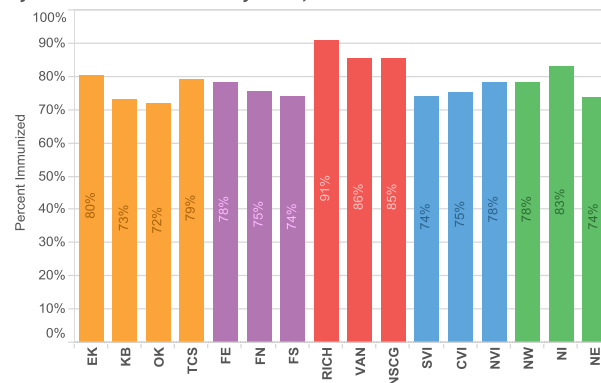
# Polio

Figure 17. Percent of seven-year olds immunized, Polio, British Columbia

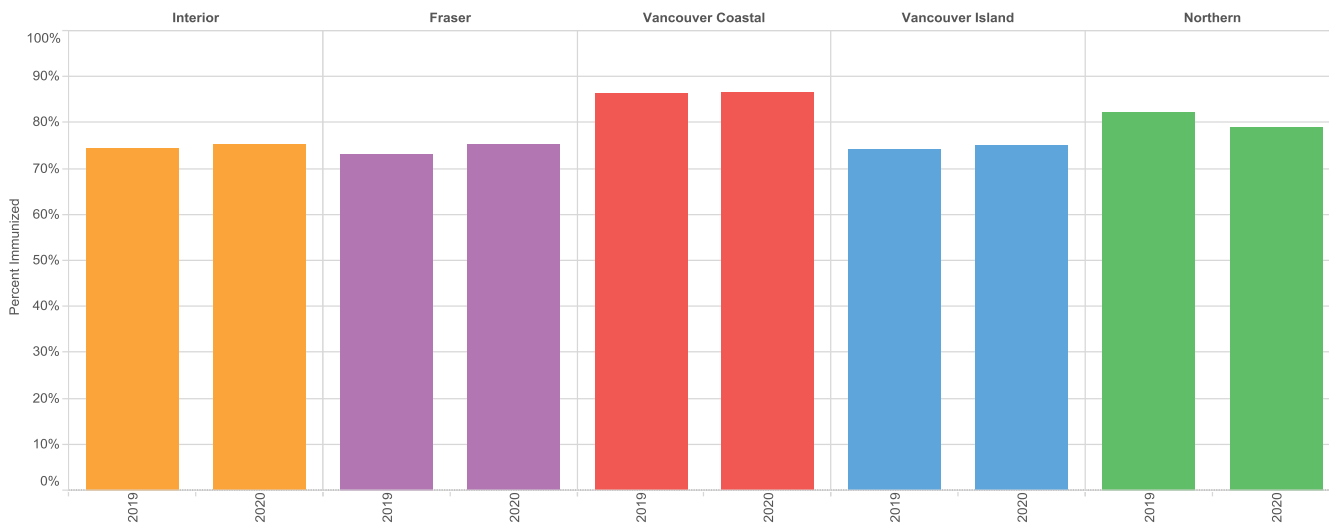
All British Columbia, by Year



By Health Service Delivery Area, 2020



By Health Authority and Year



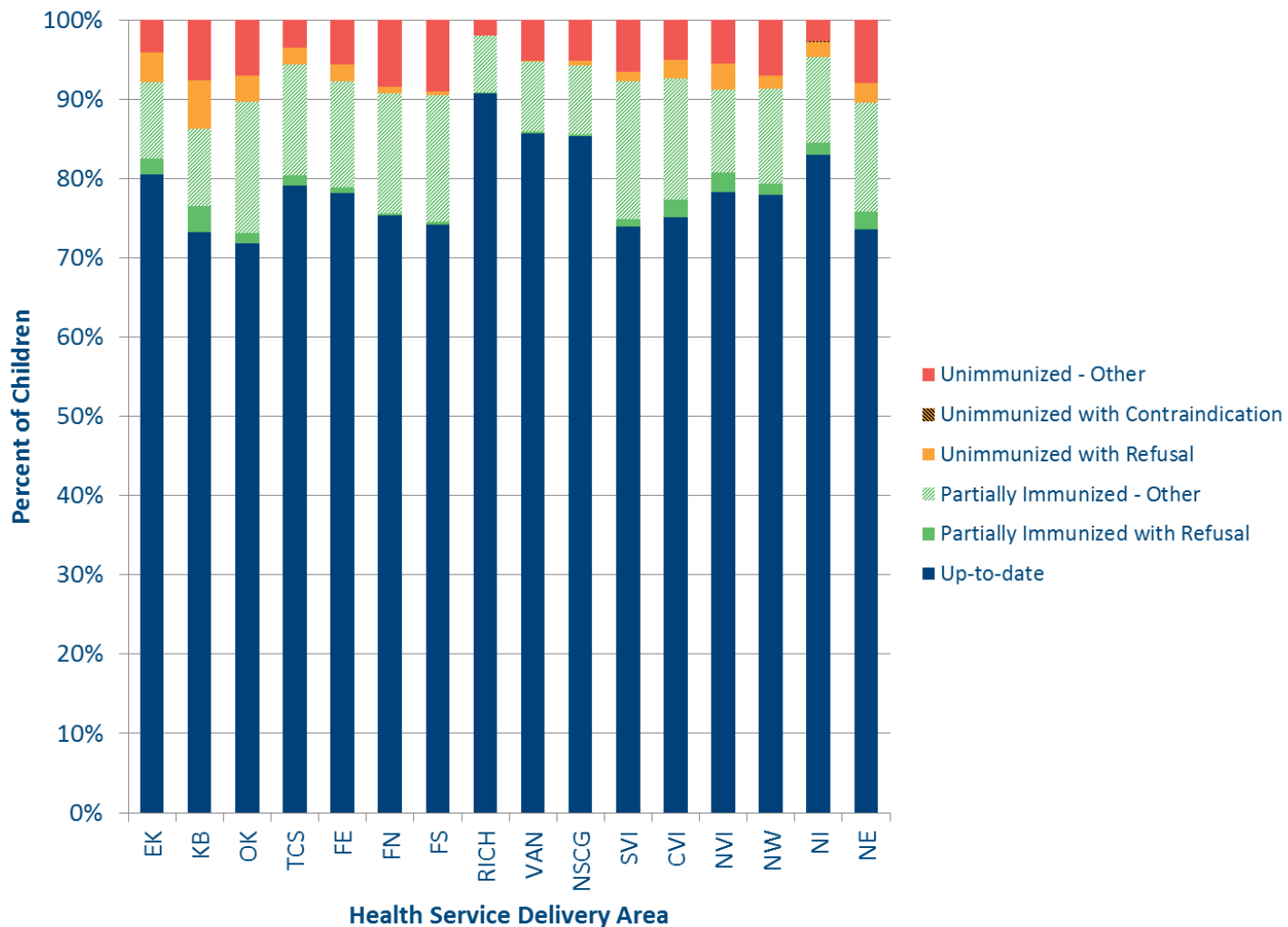


**Table 15. Reasons for non-immunization, Polio, British Columbia, 2020**

Region	Population	Count						Percent					
		Immunized Up-to-date	Partially Immunized		Unimmunized			Immunized Up-to-date	Partially Immunized		Unimmunized		
			Refusal	Other	Refusal	Contra-indication	Other		Refusal	Other	Refusal	Contra-indication	Other
<b>British Columbia</b>	<b>45,263</b>	<b>35,188</b>	<b>390</b>	<b>6,118</b>	<b>618</b>	<b>1</b>	<b>2,948</b>	<b>78%</b>	<b>1%</b>	<b>14%</b>	<b>1%</b>	<b>0%</b>	<b>7%</b>
<b>Interior</b>	<b>7,196</b>	<b>5,410</b>	<b>118</b>	<b>1,026</b>	<b>233</b>	<b>0</b>	<b>409</b>	<b>75%</b>	<b>2%</b>	<b>14%</b>	<b>3%</b>	<b>0%</b>	<b>6%</b>
East Kootenay	833	670	17	80	32	0	34	80%	2%	10%	4%	0%	4%
Kootenay Boundary	750	549	25	73	46	0	57	73%	3%	10%	6%	0%	8%
Okanagan	3,368	2,416	47	558	108	0	239	72%	1%	17%	3%	0%	7%
Thompson Cariboo Shuswap	2,245	1,775	29	315	47	0	79	79%	1%	14%	2%	0%	4%
<b>Fraser</b>	<b>18,635</b>	<b>14,025</b>	<b>74</b>	<b>2,838</b>	<b>158</b>	<b>0</b>	<b>1,540</b>	<b>75%</b>	<b>0%</b>	<b>15%</b>	<b>1%</b>	<b>0%</b>	<b>8%</b>
Fraser East	3,443	2,691	25	459	72	0	196	78%	1%	13%	2%	0%	6%
Fraser North	6,122	4,609	18	929	46	0	520	75%	0%	15%	1%	0%	8%
Fraser South	9,070	6,725	31	1,450	40	0	824	74%	0%	16%	0%	0%	9%
<b>Vancouver Coastal</b>	<b>9,052</b>	<b>7,835</b>	<b>21</b>	<b>765</b>	<b>21</b>	<b>0</b>	<b>410</b>	<b>87%</b>	<b>0%</b>	<b>8%</b>	<b>0%</b>	<b>0%</b>	<b>5%</b>
Richmond	1,826	1,656	2	131	0	0	37	91%	0%	7%	0%	0%	2%
Vancouver	4,515	3,866	14	397	6	0	232	86%	0%	9%	0%	0%	5%
North Shore / Coast Garibaldi	2,711	2,313	5	237	15	0	141	85%	0%	9%	1%	0%	5%
<b>Vancouver Island</b>	<b>7,192</b>	<b>5,398</b>	<b>123</b>	<b>1,108</b>	<b>143</b>	<b>0</b>	<b>420</b>	<b>75%</b>	<b>2%</b>	<b>15%</b>	<b>2%</b>	<b>0%</b>	<b>6%</b>
South Vancouver Island	3,422	2,528	35	592	42	0	225	74%	1%	17%	1%	0%	7%
Central Vancouver Island	2,490	1,869	56	382	58	0	125	75%	2%	15%	2%	0%	5%
North Vancouver Island	1,280	1,001	32	134	43	0	70	78%	3%	10%	3%	0%	5%
<b>Northern</b>	<b>3,188</b>	<b>2,520</b>	<b>54</b>	<b>381</b>	<b>63</b>	<b>1</b>	<b>169</b>	<b>79%</b>	<b>2%</b>	<b>12%</b>	<b>2%</b>	<b>0%</b>	<b>5%</b>
Northwest	769	599	11	92	13	0	54	78%	1%	12%	2%	0%	7%
Northern Interior	1,499	1,244	23	162	28	1	41	83%	2%	11%	2%	0%	3%
Northeast	920	677	20	127	22	0	74	74%	2%	14%	2%	0%	8%

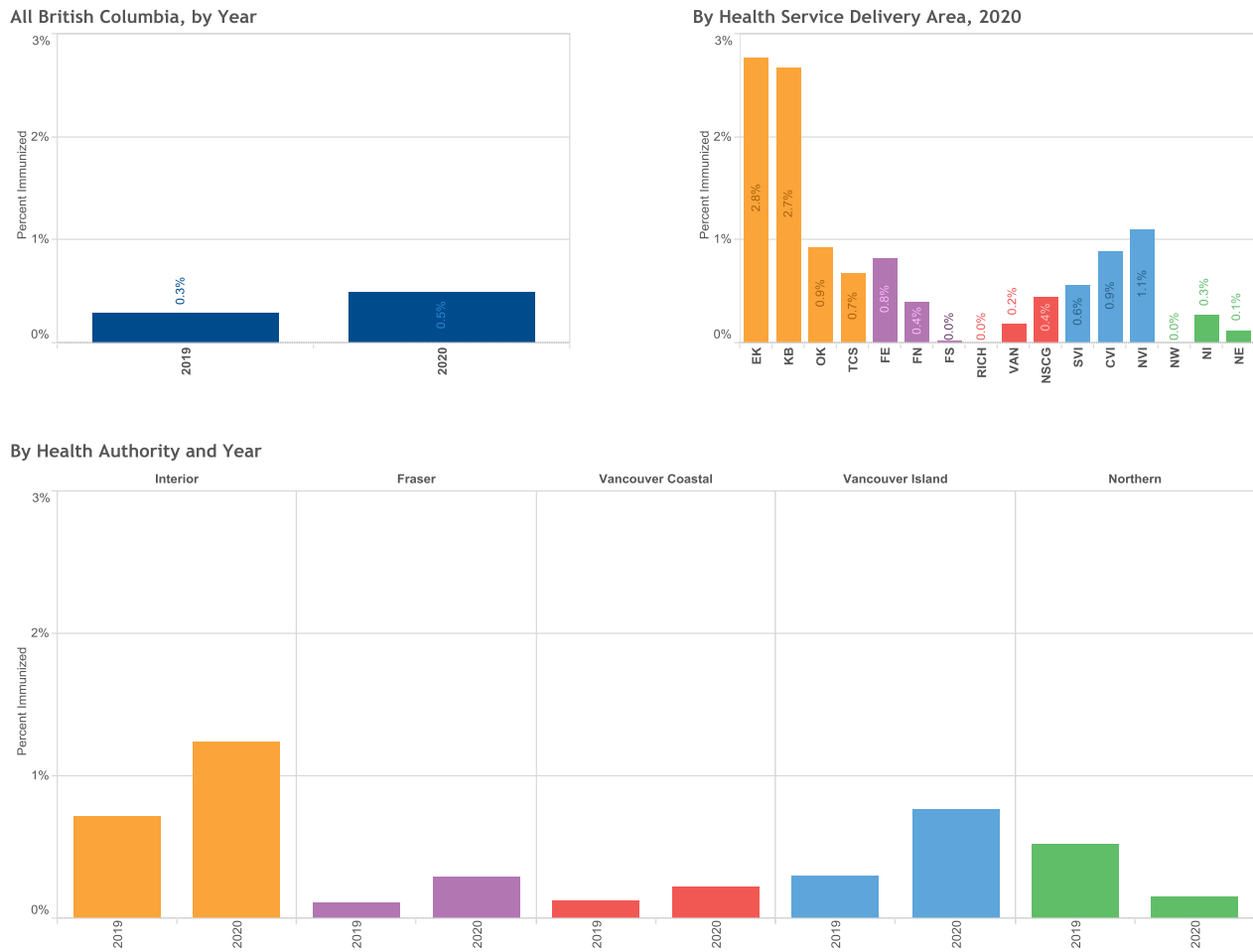
**Note:** "Other" includes all children who are partially immunized or unimmunized who do not have a documented refusal or contraindication, based on information in the immunization registry. This includes children who have deferred or inadvertently missed their immunizations, and those who have not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

Figure 18. Reasons for non-immunization by Health Service Delivery Area, Polio, British Columbia, 2020



## Refusal to all vaccines

Figure 19. Percent of seven-year olds unimmunized, Refusal to all vaccines, British Columbia



**Note:** The increase in the proportion of children with refusals to all vaccines in the Interior, Fraser, Vancouver Coastal and Vancouver Island health authorities is likely related to the improved documentation of refusals as a result of the implementation of the [Vaccination Status Reporting Regulation](#). See [Notes](#).

## Notes

### 1. Numerators:

Number of children with active records in Panorama/iPHIS/PARIS who were up-to-date for the specified agent(s) by their seventh birthday. As of 2018 for the Interior Health Authority (IHA), as of 2019 for the Fraser (FHA) and Vancouver Island (VIHA) Health Authorities, and as of 2020 for the Northern Health Authority (NHA) only those that also had Panorama records indicating that they were enrolled in school as of June 30 of the most recent school year.

### 2. Denominators:

For VCHA - All children with active records in PARIS.

For IHA in 2012-2017- All children with active records in iPHIS/Panorama.

For IHA as of 2018; FHA and VIHA as of 2019; NHA as of 2020 - All children with active records in Panorama indicating that they were enrolled in school as of June 30 of the most recent school year.

For all other health authorities/years - All children in the specified birth cohort and health region in the BC MoE enrollment data.

### 3. Changes in Data Sources:

The data sources used for each of the health authorities changed over time as follows:

Health Authority	Year									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	
IHA	Registry(cohort)					Registry(school)				
FHA	Registry/MoE							Registry(school)		
VCHA	Registry(cohort)									
VIHA	Registry/MoE							Registry(school)		
NHA	Registry/MoE								Registry(school)	

**Registry(cohort):** the denominator was the number of children in the birth cohort of interest with active records in the health authority's immunization registry (iPHIS, PARIS or Panorama); the numerator was the number of children from the denominator who were up-to-date for the specified agent.

**Registry(school):** the denominator was the number of children in the birth cohort of interest with active records in the health authority's immunization registry (iPHIS, PARIS or Panorama) and with immunization registry records indicating they were registered in a BC school in the previous school year; the numerator was the number of children from the denominator who were up-to-date for the specified agent.

**Registry/MoE:** the denominator was the number of children in the birth cohort of interest attending schools within the health authority, based on estimates derived from BC Ministry of Education enrolment statistics; the numerator was the number of children in the birth cohort of interest with active records in the health authority's immunization registry who were up-to-date for the specified agent.

- Changes in data sources can impact coverage rates. In 2020, NHA changed their data sources to count children in the birth cohort of interest with active records in Panorama whose records indicated they were enrolled in school during the previous school year. FHA and VIHA had made the same change in 2019 and IHA in 2018. While this change in measurement is anticipated to more accurately reflect the population of these regions, it may explain some of the differences observed in coverage rates, when compared to previous years.
- Ideally, numerators and denominators should be taken from the same data source.  
In order to maintain accurate denominators in an immunization registry, the health authorities need to be aware of every child who moves into and out of the health region. As not all health regions had been able to fully establish

these processes, VIHA (2012-2018), FHA (2012-2018) and NHA (2012-2019) felt that the BC MoE enrollment data were more accurate estimates of the number of children in each health region than iPHIS/Panorama.

School district boundaries do not directly line up with health region boundaries. As such, the BC MoE enrollment data are based on a process of identifying the schools that lie within each health service delivery area (with health authority input). The BC MoE enrollment data exclude youth custody, continuing education, early learning and summer schools.

Using different data sources for numerators and denominators can result in inaccurate results, including coverage results that appear to be greater than 100%. When this occurred, the coverage rates were adjusted to 100%. Immunization coverage rates approaching 100% in FHA (2012-2018), VIHA (2012-2018) and NHA (2012-2019) are likely over-estimates resulting from the use of different data sources for numerators and denominators. This artefact was rectified when the health authorities used the same data source for numerators and denominators.

6. The 2020 reporting period was not affected by the COVID-19 response, as all doses assessed were received by December 31, 2019.
7. Compared to 2019, the proportion of children with refusals to all vaccines increased in 2020 for all health authorities, except NHA. This is likely related to improved documentation of refusals as a result of the implementation of the [Vaccination Status Reporting Regulation](#), which supports the collection of immunization records (including refusals) of school-age children by Public Health. NHA records refusals in their regional public health information system (cMOIS), but they are not yet automatically transferred to Panorama.
8. British Columbia launched a measles catch-up immunization program for school-age children in 2019. This program ran between April 1 and June 30, 2019. This program resulted in the collection of measles-related immunization records that were not previously reported to public health and some catch-up immunization with measles/mumps/rubella (MMR) or measles/mumps/rubella/varicella vaccine (MMRV). The impact of this program cannot be assessed using the routine 7-year old immunization coverage data due to the change in data sources (see notes #3-5) and other program changes (see note #7).
9. In January 2012, the BC immunization schedule changed to introduce a second dose of varicella vaccine as MMRV at school entry (4-6 years of age), replacing the 18-month MMR dose. The first group of children affected by this change in schedule was those born in July 2010, or those receiving their second dose of MMR-containing vaccine in 2012 or later. The change in immunization schedule may have resulted in fewer opportunities to provide the second dose of MMR-containing vaccine prior to the seventh birthday, explaining the drop in measles and mumps coverage in 2018. The impact of this program change could not be assessed in 2019 due to changes in data sources (see notes #3-5) and the measles catch-up immunization program for school-age children (see note #6).
10. Assessment of uptake of Meningococcal-C conjugate vaccine at the 7-year old milestone was stopped in 2018 and resumed in 2019.
11. In 2016 (2008 birth cohort), the in-Panorama coverage report was used to assess immunization coverage, because the routine method (analysis using an external analysis program) could not be applied. The in-Panorama reports allow for doses to be counted as adequate even if these do not meet the minimum age/interval criteria through a manual validation process at the user and record level. An assessment of the differences between estimates produced by the two reporting methods indicated that these produce very similar results. For the 2007 birth cohort, the differences in coverage results between the two reporting methods were less than 0.7% for all measure at the provincial level.
12. In July 2013, Northern Health Authority began using the Community Medical Office Information System (MOIS) to record immunizations at point of care, with secondary data entry into Panorama. As of 2016, Northern Health Authority has also been undergoing changes to the delivery of publicly funded immunization programs. It is unclear whether the fluctuations seen in coverage in NHA are data artefacts or true changes in uptake; if they are true changes, the root cause is unknown. Northern Health Authority continues to monitor the situation.
13. In 2015 (2007 birth cohort), the varicella requirement changed from requiring one to two doses of varicella for a child to be considered up-to-date. As a result of this change, the percent of children born in 2007 who were

considered up-to-date for varicella decreased considerably when compared to previous years. If only one dose of varicella vaccine had been required for the 2007 birth cohort, the percent of children up-to-date for varicella would have been 24% higher (93%) and the percent of up-to-date for age would have been 6% higher (69%).

14. Historically, health regions using the iPHIS immunization registry inactivated the records of clients receiving the majority of their immunizations from First Nations Health Services Organizations (FNHSOs) that did not use the iPHIS immunization registry. The reason for inactivation was because the iPHIS records were likely incomplete as their immunizations were recorded in other systems. Inactivated records were excluded from coverage analyses. Three FNHSOs used the iPHIS immunization registry, and the records of children immunized by these FNHSOs remained active. Between June 2015 and January 2018 the Panorama records of children born in 2008-2013 that had been inactivated because they received the majority of their immunizations from FNHSOs were reactivated. These records were activated to facilitate the use of Panorama by the FNHSOs that have adopted Panorama. The overall effect of activating the Panorama records was an increase of up to 0.1% in the provincial immunization coverage estimate for children up-to-date for age in 2015-2018. This ranged from a decrease of 0.5% to an increase of 1.5% at the Health Authority level and a decrease of 1.1% to an increase of 2.1% at the Health Service Delivery Area level. When the school enrolment denominators were used for the coverage calculations, the denominators remained the same. As such, any change in the proportion up-to-date for age reflected the fact that additional children were being counted in the numerator. When Panorama data were used for both the numerators and denominators, the inclusion of the records that had previously been inactivated resulted in small declines in coverage, likely due to the inclusion of children with incomplete Panorama records.
15. Starting in 2015, for varicella assessment, only exemptions for previous disease that were effective at the time of the 7th birthday were considered as proof of immunity, while in previous years all recorded exemptions for previous disease in Panorama were considered as proof of immunity. This change only applied to a small number of children and did not have an appreciable effect on overall coverage rates.
16. Starting in 2015, doses marked invalid in Panorama due to vaccine interactions and manual invalidation were excluded from counts, while in previous years these invalid doses in Panorama had been counted. At the provincial level, this change resulted in a decrease in coverage rates that ranged 0.0% to 0.5% for all measures.
17. Data need to be interpreted with caution for the following reasons:
  - a. To be considered up-to-date for age, documentation of every dose in an immunization registry (iPHIS/Panorama/PARIS) is required. Some children may have received doses that have not been documented. All regions make their best efforts to obtain vaccination records pertaining to immunizations given by providers other than BC public health.
  - b. There can be a delay in obtaining immunization records, which can result in delay of data entry.
  - c. First Nations children may not be completely captured in the registries. On-reserve birth records and immunizations may not be reported to the regional health authorities.

**18. Reporting History**

Seven-year old coverage assessment became an official measure in 2012 (for the 2004 birth cohort).

Prior to 2012, assessment of school-entry immunization coverage was conducted at the end of Kindergarten. Kindergarten assessment did not allow for complete capture of on-time immunizations since "school-entry" doses are recommended at 4-6 years of age. Kindergarten assessment does not capture doses administered after Kindergarten but prior to the seventh birthday.

Due to the use of different data sources, 7-year old coverage results cannot be directly compared to Kindergarten coverage results.

**19. Abbreviations**

Health Authorities:

FHA Fraser Health Authority  
IHA Interior Health Authority

VCHA Vancouver Coastal Health Authority  
VIHA Vancouver Island Health Authority

NHA Northern Health Authority

Health Service Delivery Areas:

EK East Kootenay

KB Kootenay Boundary

OK Okanagan

TCS Thompson Cariboo Shuswap

FE Fraser East

FN Fraser North

FS Fraser South

RICH Richmond

VAN Vancouver

NSCG North Shore / Coast Garibaldi

SVI South Vancouver Island

CVI Central Vancouver Island

NVI North Vancouver Island

NW Northwest

NI Northern Interior

NE Northeast

For an explanation of BC Health Authorities, please visit: <http://www.health.gov.bc.ca/socsec/index.html>

20. The BCCDC Immunization Coverage Dashboard is available online at <http://www.bccdc.ca/health-professionals/data-reports/childhood-immunization-coverage-dashboard>.

## Minimum Intervals Between Eligible Doses

Antigen/Agent	Minimum Age or Minimum Time Interval Between Eligible Doses			
	Dose 1 <sup>A</sup>	Dose 2	Dose 3	Dose 4
Diphtheria, Tetanus, acellular Pertussis (DTaP or Tdap)	42 days	28 days	28 days	24 weeks <sup>B</sup>
Polio <sup>C</sup>	42 days	28 days	24 weeks <sup>B</sup>	
Hepatitis B				
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>D</sup>	
received 3rd dose in June 2014 or later	0 days	28 days	56 days <sup>D,E</sup>	
Measles	12 months	28 days		
Mumps	12 months	28 days		
Rubella <sup>F</sup>	12 months			
Varicella <sup>G</sup>	12 months	28 days		
Meningococcal C Conjugate <sup>H</sup>	12 months			

- A. Dose 1 refers to the earliest age a child can receive the initial dose.
- B. Last dose must be given on or after 4 years of age.
- C. Schedule for DTaP should be followed when poliomyelitis provided in combination vaccine.
- D. Dose 3 must be given at least 16 weeks (112 days) after dose 1.
- E. Dose 3 must be given on or after 24 weeks of age.
- F. Schedule for measles/mumps should be followed when rubella provided in combination vaccine with measles/mumps.
- G. 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 Panorama. For the purposes of this assessment, any child with a past history of varicella disease recorded in Panorama is considered protected, regardless of their age at the time of illness.
- H. Dose must be given at least 56 days after any previous meningococcal C conjugate dose (if previous dose given).