BC Ministry of Health

Provincial Kindergarten Dental Survey

School Year 2022/23 Findings

Population and Public Health Division
BC Ministry of Health
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Acknowledgements

The British Columbia (BC) Ministry of Health (the Ministry) recognizes the invaluable contributions made by the First Nations Health Authority (FNHA) and the regional health authorities (RHAs)[1], including the leadership and support of the public health dental staff in conducting the School Year (SY) 2022/23 Kindergarten Dental Survey (KDS). This report would not be possible without these partnerships.

The Population and Public Health Division would also like to thank the Office of the Provincial Health Officer for their collaboration in developing this report, particularly for their leadership in data collection and analysis and their expertise in interpreting the survey results.

Inherent Rights of Indigenous Peoples

Land Acknowledgement

The Ministry acknowledges, with great respect and gratitude, the territories of the lək̓ʷəŋən (Lekwungen) Peoples of the Songhees and Esquimalt (Xwsepsum) Nations, on which the Ministry headquarters building is located.

Rights Acknowledgment

The Ministry affirms the inherent rights and title of the First Nations whose ancestral territories cover every inch of the province known colonially as British Columbia, including their unextinguished rights to land, self-determination, health and wellness. Laws and governance systems rooted in the land have upheld the sovereignty of these diverse Nations for thousands of years. The rights and responsibilities of First Nations to their ancestral territories have, for the most part, never been ceded or surrendered, and are upheld in provincial, national and international laws.

The Ministry also honours and recognizes all First Nations, Inuit and Métis Peoples (Indigenous Peoples) who call the lands and waters of this province home. Indigenous Peoples have inherent rights to self-determination, health, and wellness that must be upheld.

[1] RHAs include Fraser Health, Interior Health, Northern Health, Vancouver Coastal Health, and Island Health Authorities.

Executive Summary

The Provincial Kindergarten Dental Survey (KDS) is a provincial population health surveillance program that collects data from kindergarten children in BC to understand their oral health outcomes and referrals for dental treatment. In SY 2022/23, a total of 40,363 kindergarten children in BC participated in the KDS, representing 89% of children enrolled in kindergarten from that school year.

Key provincial findings from the SY 2022/23 KDS include the following:

- 69.8% of children were *caries free*
- 13.4% of children had *treated caries*
- 16.8% of children had *visible decay*
- 14.9% of children were referred for *non-urgent* dental treatment
- 2.1% of children were referred for *urgent* dental treatment

Overall, the percentage of kindergarten children who were *caries free* increased from 67.2% in SY 2012/13 to 69.8% in SY 2022/23, and the percentage of children with *treated caries* decreased from 18.1% to 13.4% over this same period. Further, the percentage of children with *visible decay* remained relatively stable across the first three survey cycles but increased from 14.3% in SY 2018/19 to 16.8% in SY 2022/23. This increase in the percentage of children with *visible decay* alongside a decrease in the percentage of children with *treated caries* is of particular interest and warrants further examination at the regional level. Additionally, while the percentage of children requiring *urgent referrals* and *non-urgent referrals* for dental care has remained relatively stable since SY 2012/13, the percentage of children requiring *non-urgent referrals* increased from 12.5% to 14.9% between SY 2018/19 and SY 2022/23.

Further analyses revealed variations in children's oral health outcomes by RHA and Health Service Delivery Area (HSDA) over time. Some RHAs followed the same trend seen at the provincial level, with a decrease in the percentage of children with *treated caries* and an increase in the percentage of *visible decay*. It is recommended that RHAs explore potential reasons for any variation in oral health outcomes to inform regional service planning and delivery of oral health programs for young children.

Introduction

Provincial KDS Overview & SY 2022/23 Survey

The KDS is a provincial population health surveillance program that monitors the oral health outcomes of kindergarten children (aged 4 to 6 years) in BC over time, and informs provincial and regional policy, planning, and service delivery. The KDS also facilitates access to dental treatment for children who have been identified as needing dental care during their screening. The first survey was conducted in SY 2006/07 and typically occurs every three years.[2]

Through the KDS program, kindergarten children in public schools, independent schools, and participating First Nations Schools[3] in BC are offered an oral screening that is administered by registered dental hygienists and certified dental assistants (see Appendix A for screening criteria and definitions). Data is collected on three types of oral health outcomes (i.e., children who are *caries free*, have *treated caries*, and with *visible decay*) as well as the percentage of children referred for *urgent* and *non-urgent dental care.* While most dental screenings are conducted in the school setting, some take place in a public health unit or other community setting (see Appendix B for a list of school districts).

In SY 2022/23, a total of 40,363 kindergarten children participated in the KDS, representing 89% of children enrolled in kindergarten from that school year (see Appendix C for participation rates over time). This provincial report presents findings from the recent SY 2022/23 survey as well as previous survey findings from SY 2018/19, SY 2015/16, and SY 2012/13.

Key Considerations

Over the past few years, health system partners have recognized opportunities for improving the Provincial KDS Program and ensuring that findings continue to inform provincial and regional program and policy decisions. Most notably, future KDS delivery should strive to be culturally safe and work to advance health equity and Indigenous reconciliation. Several 'colonial knots'[i] that perpetuate Indigenous-specific racism have been identified with the way Indigenous kindergarten children's oral health information is collected and used within the program. For example, future data collection and analysis will require a respectful and distinctions-based approach to determining Indigenous identity (First Nations, Métis, Inuit). As a result, this provincial report does not report on

[2] The SY 2022/23 KDS cycle was originally scheduled to take place during SY 2021/22 but was delayed due to the COVID-19 pandemic, resulting in a four-year timeframe between survey findings instead of the typical three-year cycle.
[3] The First Nations Health Authority supported this process through providing introductions to communities where requested.

data disaggregated by Indigenous and non-Indigenous populations. This decision is a step towards interrupting Indigenous-specific racism and discrimination as related to Indigenous kindergarten children's oral health outcomes and is an interim measure until necessary program improvements are implemented for future KDS cycles.

Moving forward, the Ministry is committed to working with key partners to embed program improvements and to ensure that future KDS cycles are in alignment with the First Nations principles of Ownership, Control, Access, Possession (OCAP®) as a key tenet, and also the *BC Declaration on the Rights of Indigenous People Act* (and Declaration Act Action Plan)[ii], the *Truth and Reconciliation Commission of Canada: Calls to Action*[iii], and the recommendations in the *In Plain Sight: Addressing Indigenous Specific Racism and Discrimination in BC Health Care* report[iv].

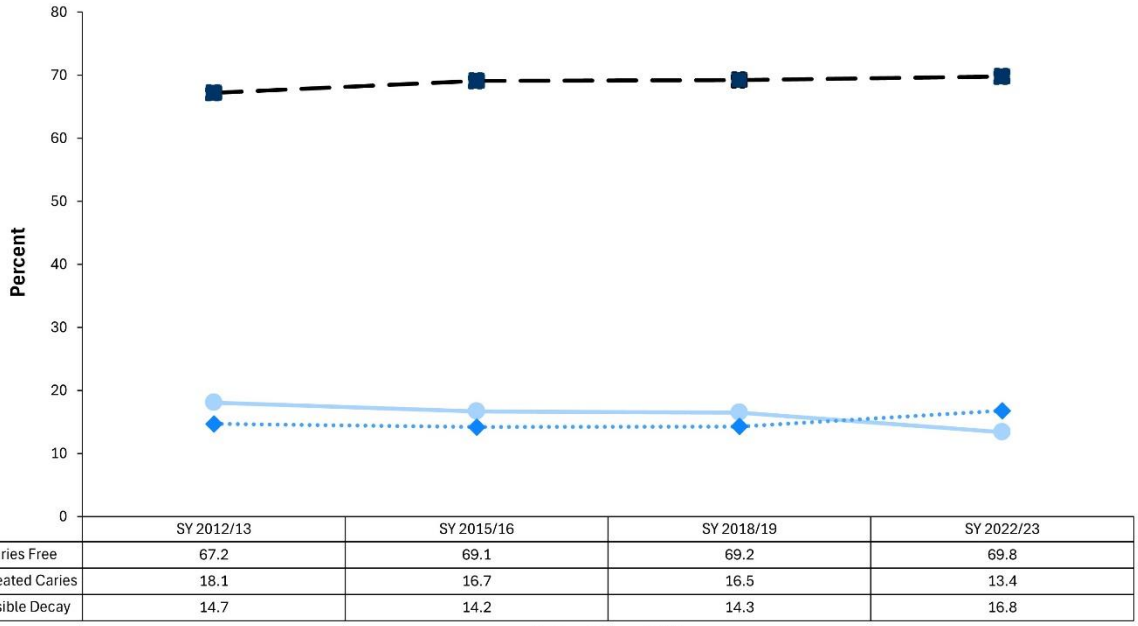
Part 1: Kindergarten Children's Oral Health Outcomes from SY 2012/13 to SY 2022/23

The KDS collects data on three types of oral health outcomes (i.e., children who are *caries free*, have *treated caries*, and with *visible decay*) as well as the percentage of children referred for *urgent* and *non-urgent dental care*. For the oral health outcome of *visible decay*, findings are further disaggregated by visible decay in one, two, three, or all four quadrants of the mouth.

I. Provincial Trends in Children's Oral Health Outcomes

Figure 1 below illustrates provincial trends of kindergarten children who were *caries free*, had *treated caries*, or who had *visible decay* from SY 2012/13 to SY 2022/23.

Figure 1. All Kindergarten Children, Dental Outcomes Over Time: 2012/13 to 2022/23



	SY 2012/13	SY 2015/16	SY 2018/19	SY 2022/23
Caries Free	67.2	69.1	69.2	69.8
Treated Caries	18.1	16.7	16.5	13.4
Visible Decay	14.7	14.2	14.3	16.8

School Year (SY)

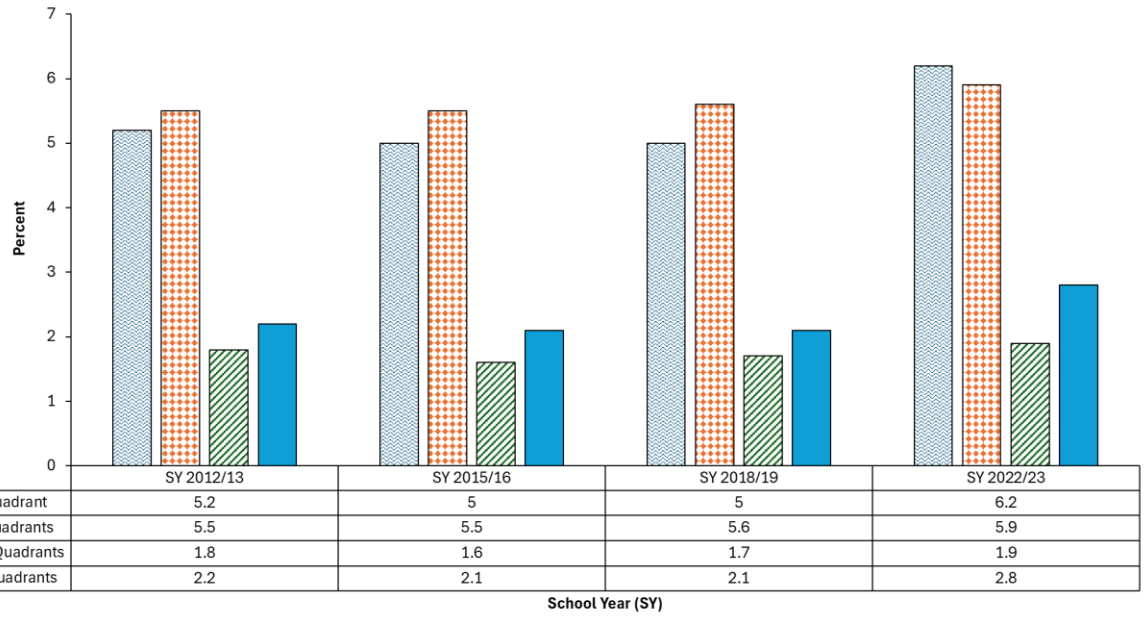
Notes: 'Caries free' refers to the percent of all kindergarten children screened with no evidence of visible decay or existing restorations. 'Treated caries' refers to the percent of all kindergarten children screened with no evidence of visible decay but with existing restorations. 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth.
Source: The Provincial Kindergarten Dental Survey Program. Prepared by the Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Nov 2024.

From SY 2012/13 to SY 2022/23, the percentage of kindergarten children in BC who were *caries free* increased from 67.2% to 69.8% while the percentage of children with *treated caries* decreased from 18.1% to 13.4%. The percentage of children with *visible decay*

remained relatively stable between SY 2012/13 and SY 2018/19 and then increased by 17.5% from SY 2018/19 to SY 2022/23. This increase in *visible decay* occurred alongside a decrease in the percentage of children with *treated caries*.

The percentage of children with *visible decay* in one, two, three, or four quadrants are presented in Figure 2. Between SY 2012/13 and SY 2015/16, the percentage of children with *visible decay* decreased in all quadrant categories, except for in two quadrants where the percentage remained the same. Between SY 2015/16 and SY 2018/19, there were small increases in the percentage of *visible decay* in two and three quadrants, whereas the percentage of *visible decay* remained stable in one and four quadrants. Of note, there was an increase across all quadrants between SY 2018/19 and SY 2022/23.

Figure 2. All Kindergarten Children with Visible Decay in One, Two, Three, or Four Quadrants, BC, 2012/13 to 2022/23



	SY 2012/13	SY 2015/16	SY 2018/19	SY 2022/23
One Quadrant	5.2	5	5	6.2
Two Quadrants	5.5	5.5	5.6	5.9
Three Quadrants	1.8	1.6	1.7	1.9
Four Quadrants	2.2	2.1	2.1	2.8

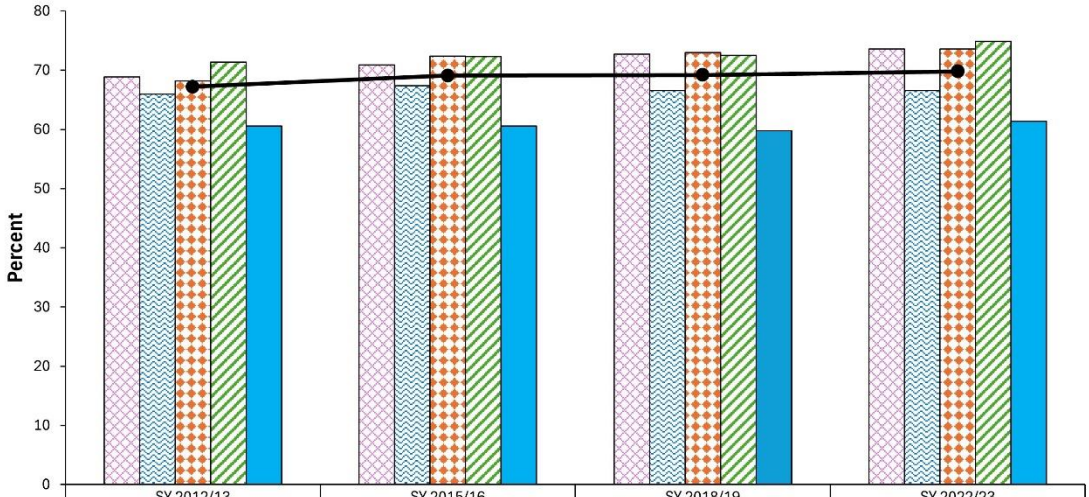
School Year (SY)

Notes: 'One Quadrant' refers to the percent of all kindergarten children screened who showed visible decay present in only one quadrant in the mouth. 'Two Quadrants' refers to the percent of all kindergarten children screened who showed visible decay in any two quadrants of the mouth. 'Three Quadrants' refers to the percent visible decay of all kindergarten children screened who showed in any three quadrants of the mouth. 'Four Quadrants' refers to the percent of all kindergarten children screened who showed visible decay in all four quadrants of the mouth

Source: The Provincial Kindergarten Dental Survey Program. Prepared by the Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Nov 2024.

Regional changes in oral health outcomes (i.e., *caries free*, *treated caries*, and *visible decay*) were also seen over time. From SY 2012/13 to SY 2022/23, the percentage of children who were *caries free* remained relatively stable in Fraser Health (FH) and Northern Health (NH); however, there was an increasing trend in Interior Health (IH), Vancouver Coastal Health (VCH), and Island Health (ISLH; see Figure 3).

Figure 3. Percentage of Caries Free Kindergarten Children, by Regional Health Authority and Provincial Average, SY 2012/13 to 2022/23

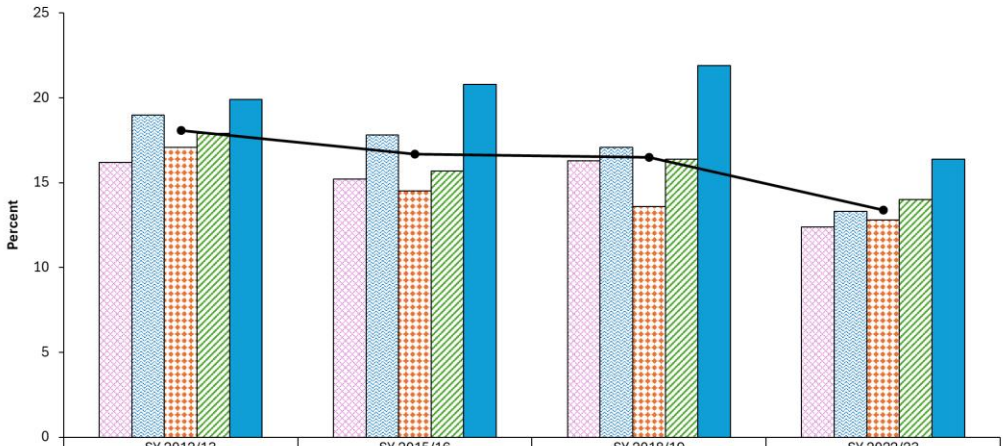


	SY 2012/13	SY 2015/16	SY 2018/19	SY 2022/23
Interior	68.9	70.9	72.7	73.6
Fraser	66	67.4	66.6	66.6
Vancouver Coastal	68.2	72.4	73	73.6
Island	71.4	72.3	72.5	74.9
Northern	60.6	60.6	59.8	61.4
BC	67.2	69.1	69.2	69.8

Note: 'Caries free' refers to the percent of all kindergarten children screened with no evidence of visible decay or existing restorations.
Source: The Provincial Kindergarten Dental Survey Program. Prepared by the Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Nov 2024.

From SY 2018/2019 to SY 2022/23, the percentage of *treated caries* decreased whereas the percentage of *visible decay* increased in FH, IH, and NH. In ISLH and VCH, the percentage of *treated caries* also decreased over time, but the percentage of *visible decay* remained relatively stable (see Figures 4 and 5).

Figure 4. Percentage of Kindergarten Children with Treated Caries by RHA and Provincial Average, SY 2012/13 to 2022/23

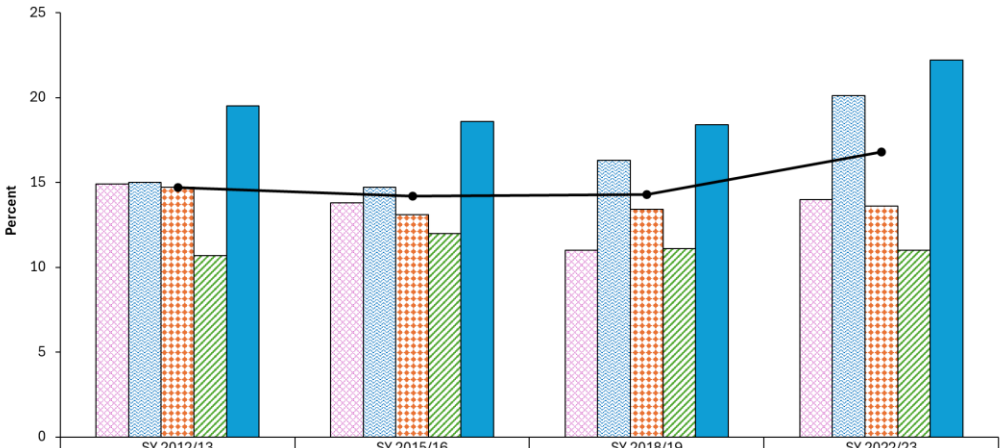


	SY 2012/13	SY 2015/16	SY 2018/19	SY 2022/23
Interior	16.2	15.2	16.3	12.4
Fraser	19.0	17.8	17.1	13.3
Vancouver Coastal	17.1	14.5	13.6	12.8
Island	17.9	15.7	16.4	14.0
Northern	19.9	20.8	21.9	16.4
BC	18.1	16.7	16.5	13.4

School Year (SY)

Note: 'Treated caries' refers to the percent of all kindergarten children screened with no evidence of visible decay but with existing restorations.
Source: The Provincial Kindergarten Dental Survey Program. Prepared by the Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Nov 2024.

Figure 5. Percentage of Kindergarten Children with Visible Decay by RHA and Provincial Average, SY 2012/13 to 2022/23



	SY 2012/13	SY 2015/16	SY 2018/19	SY 2022/23
Interior	14.9	13.8	11.0	14.0
Fraser	15.0	14.7	16.3	20.1
Vancouver Coastal	14.7	13.1	13.4	13.6
Island	10.7	12.0	11.1	11.0
Northern	19.5	18.6	18.4	22.2
BC	14.7	14.2	14.3	16.8

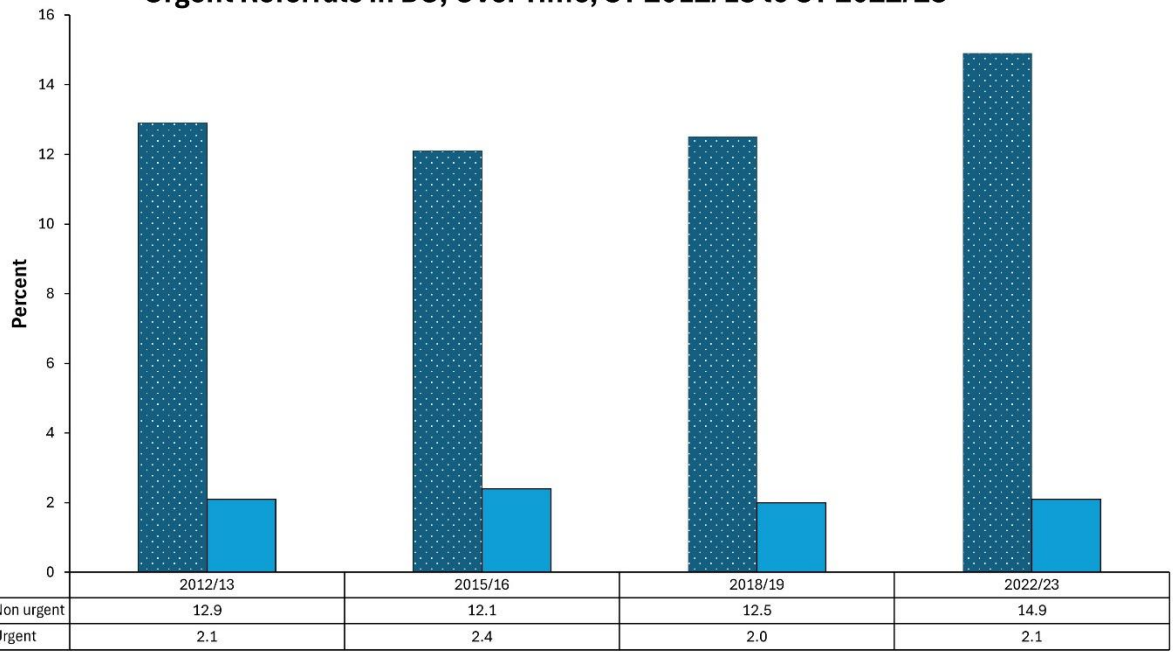
School Year (SY)

Note: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth.
Source: The Provincial Kindergarten Dental Survey Program. Prepared by the Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Nov 2024.

II. Provincial Trends in Urgent and Non-Urgent Referrals[4]

From SY 2012/13 to SY 2022/23, the percentage of kindergarten children referred for *non-urgent care* showed slight fluctuations and then increased from 12.5% in SY 2018/19 to 14.9% in SY 2022/23 (see Figure 6). The percentage of children referred for *urgent care* remained relatively stable during this period.

Figure 6. Percent of Kindergarten Children Requiring Non-Urgent and Urgent Referrals in BC, Over Time, SY 2012/13 to SY 2022/23



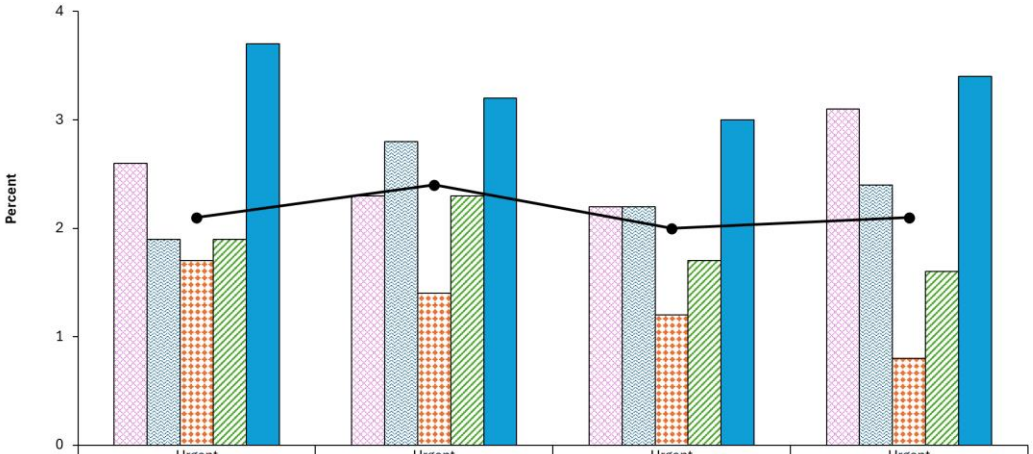
	2012/13	2015/16	2018/19	2022/23
Non urgent	12.9	12.1	12.5	14.9
Urgent	2.1	2.4	2.0	2.1

Notes: 'Urgent' represents the percent of Indigenous kindergarten children screened who were referred for further treatment due to the urgency of their conditions. 'Non-urgent' represents the percent of Indigenous kindergarten children screened who did not have urgent conditions but were referred for further treatment. Indigenous kindergarten children represent varying proportions of all enrolled kindergarten children across British Columbia's health authorities: Fraser (5.0%), Interior (15.7%), Northern (25.6%), Vancouver Coastal (3.3%), Vancouver Island (12.7%), and the province overall (8.8%).
Source: The Provincial Kindergarten Dental Survey Program 2022/23. Prepared by the Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, November 2025.

Additional analyses revealed insights into regional changes over time. Between SY 2012/13 and SY 2022/23, the percentage of *urgent referrals* increased in FH and IH, and decreased in VCH, ISLH, and NH (see Figure 7). During the same period, the percentage of *non-urgent referrals* increased in FH, ISLH, and NH, but decreased in IH and in VCH (see Figure 8).

[4] *Urgent referral:* pain and/or visible infection (such as abscess, gross swelling, or the presence of pus). *Non-urgent referral:* require dental treatment, but not urgently.

Figure 7. Percentage of Kindergarten Children Requiring Urgent Referrals by RHA and Provincial Average, Over Time, SY 2012/13 to 2022/23

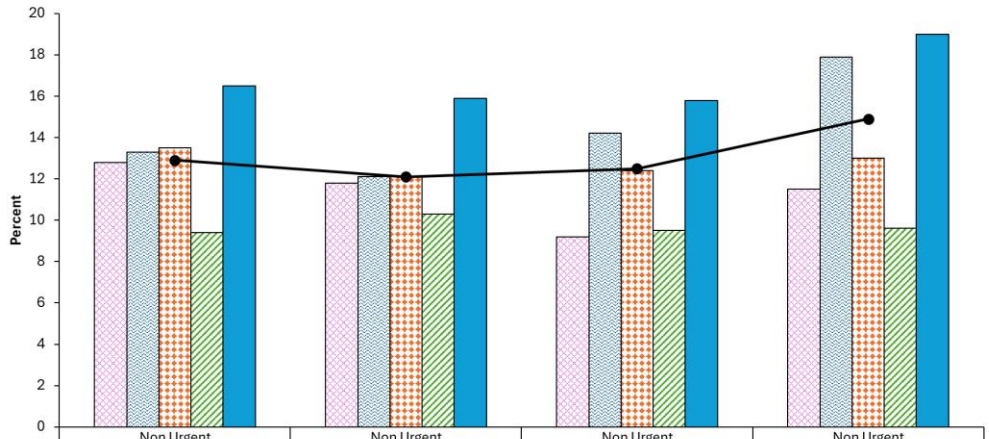


	Urgent SY 2012/13	Urgent SY 2015/16	Urgent SY 2018/19	Urgent SY 2022/23
Interior	2.6	2.3	2.2	3.1
Fraser	1.9	2.8	2.2	2.4
Vancouver Coastal	1.7	1.4	1.2	0.8
Island	1.9	2.3	1.7	1.6
Northern	3.7	3.2	3.0	3.4
BC	2.1	2.4	2.0	2.1

School Year (SY)

Note: 'Urgent' represents the percent of kindergarten children screened who were referred for further treatment due to the urgency of their conditions.
Source: The Provincial Kindergarten Dental Survey Program. Prepared by the Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Nov 2024.

Figure 8. Percentage of Kindergarten Children Requiring Non-Urgent Referrals by RHA and Provincial Average, Over Time, SY 2012/13 to 2022/23



	Non Urgent SY 2012/13	Non Urgent SY 2015/16	Non Urgent SY 2018/19	Non Urgent SY 2022/23
Interior	12.8	11.8	9.2	11.5
Fraser	13.3	12.1	14.2	17.9
Vancouver Coastal	13.5	12.1	12.4	13.0
Island	9.4	10.3	9.5	9.6
Northern	16.5	15.9	15.8	19.0
BC	12.9	12.1	12.5	14.9

School Year (SY)

Note: 'Non-urgent' represents the percent of kindergarten children screened who did not have urgent conditions but were referred for further treatment.
Source: The Provincial Kindergarten Dental Survey Program. Prepared by the Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Nov 2024.

Part 2: Regional Analyses of Kindergarten Children's Oral Health Outcomes

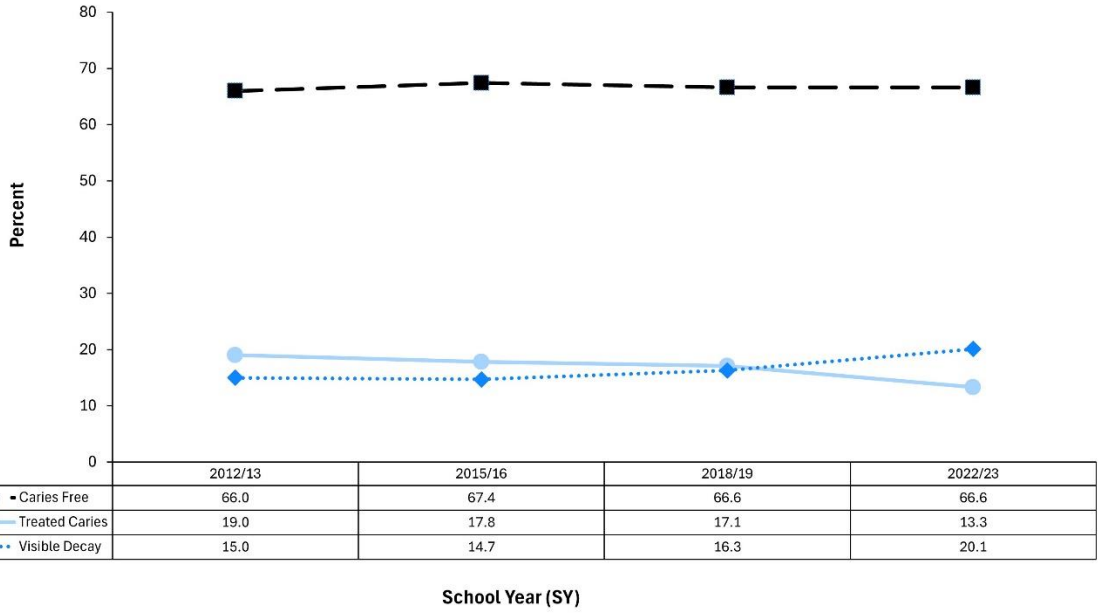
This section provides an overview of findings by RHA (and HSDA) to inform service planning and delivery of children's oral health initiatives within the respective regions.

1. Fraser Health (FH)

1.1 Oral Health Outcomes in FH Over Time

From SY 2012/13 to SY 2022/23, the percentage of children who were *caries free* remained relatively stable; however, the percentage of children with *treated caries* decreased over time alongside an overall increase in the percentage of children with *visible decay* (see Figure 9).

Figure 9. All Kindergarten Children, Dental Outcomes Over Time: Fraser Health, SY 2012/13 to SY 2022/23



	2012/13	2015/16	2018/19	2022/23
Caries Free	66.0	67.4	66.6	66.6
Treated Caries	19.0	17.8	17.1	13.3
Visible Decay	15.0	14.7	16.3	20.1

School Year (SY)

Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. 'Treated caries' refers to the percent of all kindergarten children screened with no evidence of visible decay but with existing restorations.'Caries free' refers to the percent of all kindergarten children screened with no evidence of visible decay or existing restorations.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

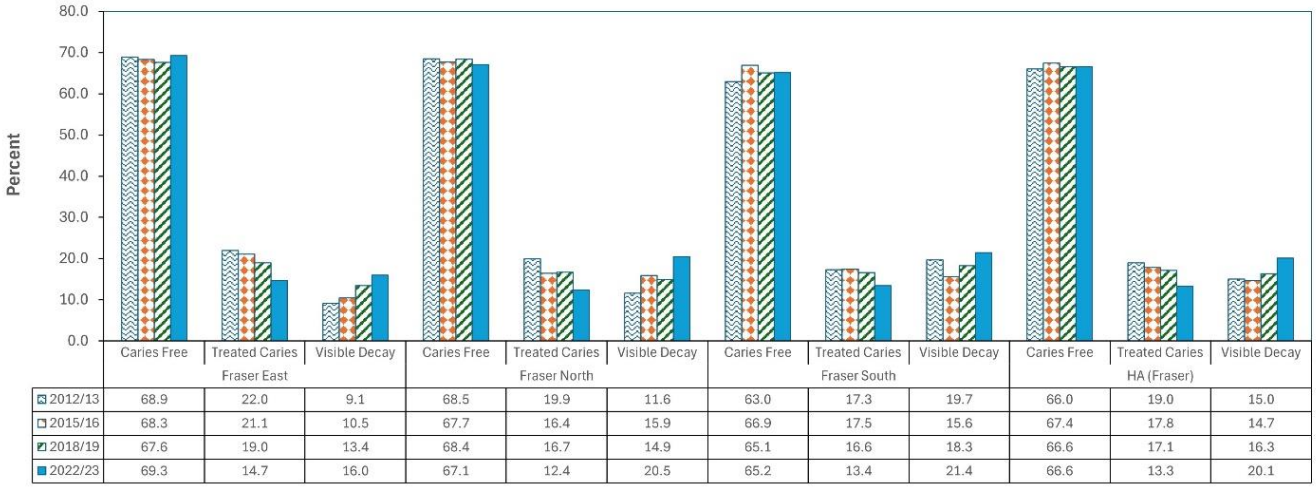
1.2 Oral Health Outcomes in FH by Health Service Delivery Area

FH consists of three HSDAs:

- **Fraser East**, includes Hope, Chilliwack, Abbotsford, Mission, and Agassiz/Harrison.
- **Fraser North**, includes New Westminster, Burnaby, Maple Ridge/Pitt Meadows, and the Tri-Cities (Coquitlam, Port Coquitlam, and Port Moody, as well as the Villages of Belcarra and Anmore).
- **Fraser South**, includes Langley, Delta, Surrey, and South Surrey/White Rock.

The percentage of kindergarten children in FH who were *caries free*, had *treated caries*, or had *visible decay* is presented in Figure 10 by HSDA. From SY 2012/13 to SY 2022/23, the percentage of children who were *caries free* varied over time across the HSDAs. During the same period, the percentage of children with *treated caries* decreased in all HSDAs whereas the percentage of children with *visible decay* increased.

Figure 10. Dental Outcomes Over Time, by HSDA, Fraser Health, SY 2012/13 - SY 2022/23



	Fraser East			Fraser North			Fraser South			HA (Fraser)		
	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay
2012/13	68.9	22.0	9.1	68.5	19.9	11.6	63.0	17.3	19.7	66.0	19.0	15.0
2015/16	68.3	21.1	10.5	67.7	16.4	15.9	66.9	17.5	15.6	67.4	17.8	14.7
2018/19	67.6	19.0	13.4	68.4	16.7	14.9	65.1	16.6	18.3	66.6	17.1	16.3
2022/23	69.3	14.7	16.0	67.1	12.4	20.5	65.2	13.4	21.4	66.6	13.3	20.1

Region / Dental Outcome

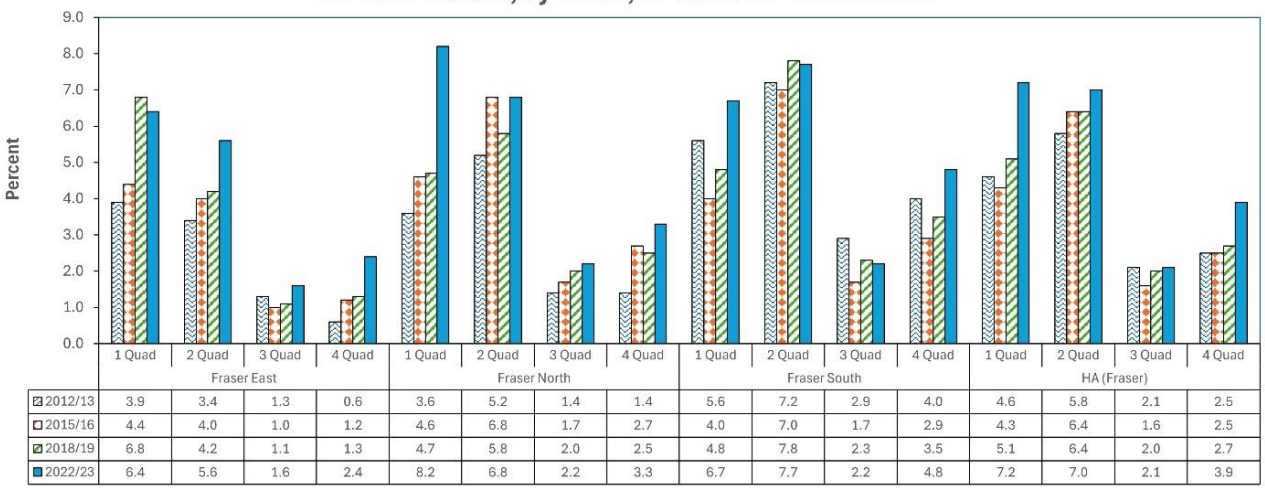
Notes: Caries free refers to children who had no signs of visible decay, broken/chipped enamel or treated caries. Treated caries refers to children who had no visible decay or broken/chipped enamel but did have restorations present. Visible decay refers to children who had visible decay experience and or broken /chipped enamel.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

The percentage of children in FH with *visible decay* in one, two, three, or four quadrants between SY 2012/13 and SY 2022/23 are shown in Figure 11 and summarized below.

- **Fraser East:** The percentage increased in all quadrant categories. Of note, the percentage decreased initially in three quadrants between SY 2012/13 and SY 2015/16 and then increased from SY 2015/16 to SY 2022/23.
- **Fraser North:** There were increases overall in all quadrant categories.

- **Fraser South:** The percentage decreased in all quadrant categories between SY 2012/13 and SY 2015/16 and then increased in all quadrant categories between SY 2015/16 and SY 2022/23.

Figure 11. Percent of Kindergarten Children with Visible Decay in 1, 2, 3, 4 Quadrants in Fraser Health, by HSDA, SY 2012/13 - SY 2022/23



	Fraser East				Fraser North				Fraser South				HA (Fraser)			
	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad
2012/13	3.9	3.4	1.3	0.6	3.6	5.2	1.4	1.4	5.6	7.2	2.9	4.0	4.6	5.8	2.1	2.5
2015/16	4.4	4.0	1.0	1.2	4.6	6.8	1.7	2.7	4.0	7.0	1.7	2.9	4.3	6.4	1.6	2.5
2018/19	6.8	4.2	1.1	1.3	4.7	5.8	2.0	2.5	4.8	7.8	2.3	3.5	5.1	6.4	2.0	2.7
2022/23	6.4	5.6	1.6	2.4	8.2	6.8	2.2	3.3	6.7	7.7	2.2	4.8	7.2	7.0	2.1	3.9

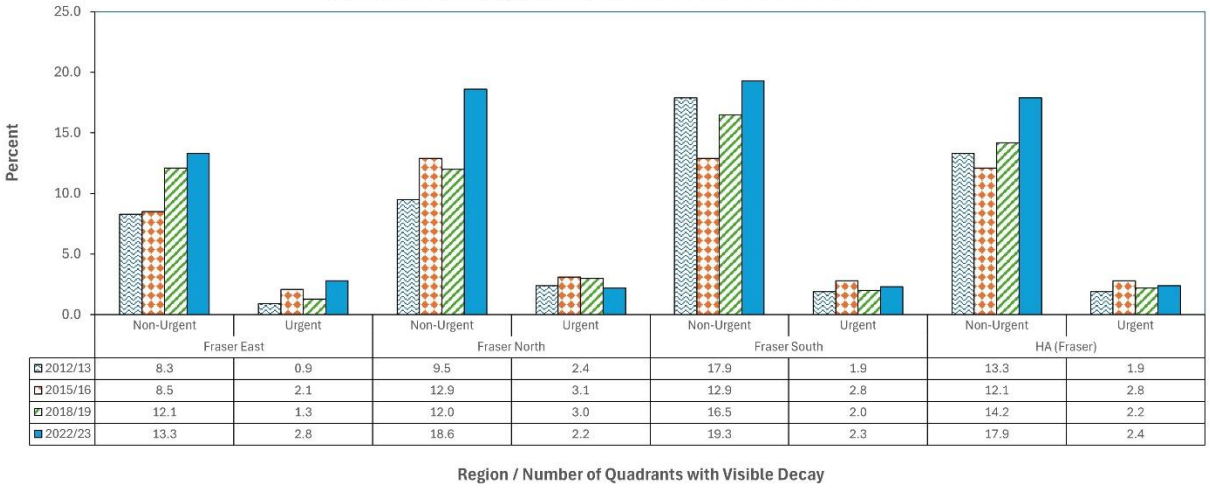
Region / Number of Quadrants with Visible Decay

Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. This analysis report out on children that have visible decay in either 1, 2, 3, or all 4 quadrants.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

1.3 Non-Urgent and Urgent Referrals in FH by Health Service Delivery Area

From SY 2012/13 to SY 2022/23, the percentage of *non-urgent referrals* increased in all HSDAs, with the largest increases in Fraser East (from 8.3% to 13.3%) and in Fraser North (from 9.5% to 18.6%). For *urgent referrals,* the percentage varied in all three Fraser HSDAs, with Fraser East demonstrating an increase of 211.1% between SY 2012/13 and SY 2022/23.

Figure 12. Percent of Kindergarten Children with Non-Urgent and Urgent Referrals in Fraser Health, by HSDA, SY 2012/13 - SY 2022/23



	Fraser East		Fraser North		Fraser South		HA (Fraser)	
	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent
2012/13	8.3	0.9	9.5	2.4	17.9	1.9	13.3	1.9
2015/16	8.5	2.1	12.9	3.1	12.9	2.8	12.1	2.8
2018/19	12.1	1.3	12.0	3.0	16.5	2.0	14.2	2.2
2022/23	13.3	2.8	18.6	2.2	19.3	2.3	17.9	2.4

Region / Number of Quadrants with Visible Decay

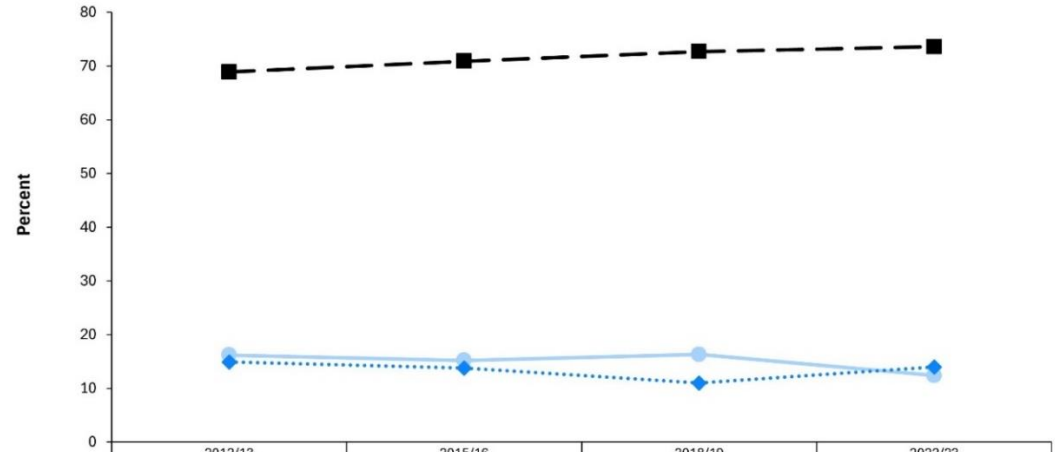
Notes: This analysis reports out on kindergarten children with non-urgent and urgent referrals for dental care. Urgent referrals occur when conditions including pain, swelling and/or visible infection are present.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

2. Interior Health (IH)

2.1 Oral Health Outcomes in IH Over Time

From SY 2012/13 to SY 2022/23, the percentage of children who were *caries free* increased from 68.9% to 73.6%, whereas the percentage of children with *treated caries* decreased from 16.2% to 12.4% and the percentage of children with *visible decay* decreased from 14.9% to 14.0% (see Figure 13). Of note from SY 2018/19 to SY 2022/23, the decrease in the percentage of children with *treated caries* occurred alongside an increase in the percentage of children with *visible decay*.

Figure 13. All Kindergarten Children, Dental Outcomes Over Time: Interior Health, SY 2012/13 to SY 2022/23



	2012/13	2015/16	2018/19	2022/23
Caries Free	68.9	70.9	72.7	73.6
Treated Caries	16.2	15.2	16.3	12.4
Visible Decay	14.9	13.8	11.0	14.0

School Year (SY)

Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. 'Treated caries' refers to the percent of all kindergarten children screened with no evidence of visible decay but with existing restorations.'Caries free' refers to the percent of all kindergarten children screened with no evidence of visible decay or existing restorations.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

2.2 Oral Health Outcomes in IH by Health Service Delivery Area

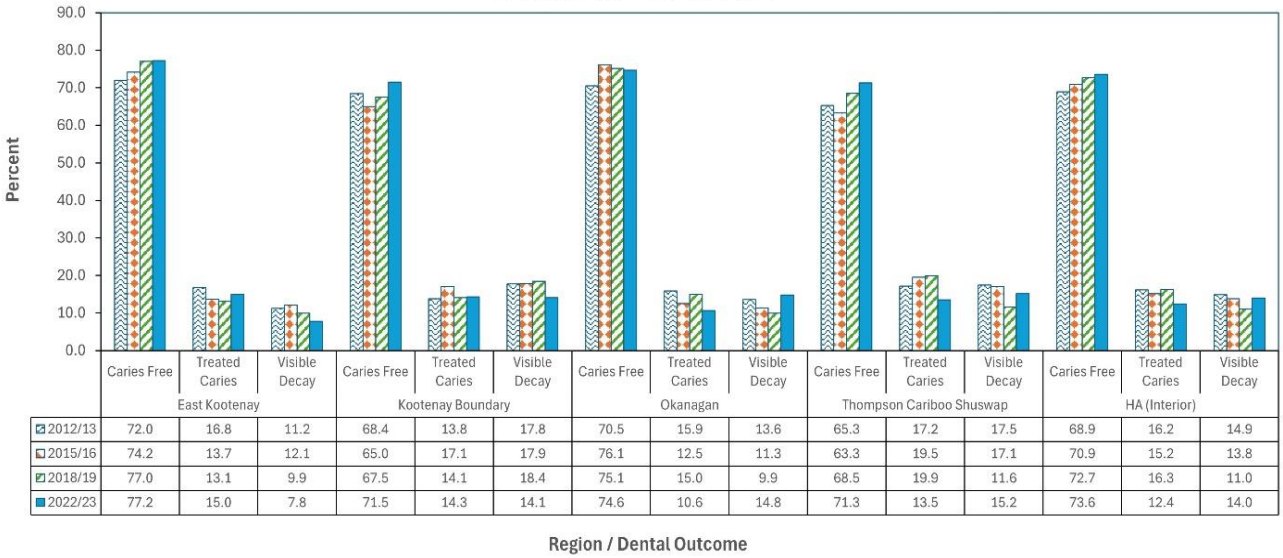
IH consists of four HSDAs:

- **East Kootenay**, includes Fernie, Cranbrook, Kimberley, Windermere, Creston, and Golden.
- **Kootenay Boundary**, includes Kootenay Lake, Nelson, Castlegar, Arrow Lakes, Trail, Grand Forks, and the Kettle Valley.
- **Okanagan**, includes Southern Okanagan, Penticton, Keremeos, Princeton, Armstrong/Spallumcheen, Vernon, Central Okanagan, Summerland, and Enderby.

- **Thompson Cariboo Shuswap**, includes Revelstoke, Salmon Arm, Kamloops, 100 Mile House, North Thompson, Cariboo/Chilcotin, Lillooet, South Cariboo, and Merritt.

Figure 14 presents the percentage of children who were *caries free*, had *treated caries*, or had *visible decay* disaggregated by HSDA. Variations were observed within HSDAs in the percentage of children who were *caries free*. In Kootenay Boundary and Thompson Cariboo Shuswap, the percentage of children who were *caries free* decreased from SY 2012/13 to SY 2015/16 and then increased from SY 2025/16 to SY 2022/23. An opposite trend occurred in the Okanagan, where the percentage increased from SY 2012/13 to SY 2015/16, and then decreased from SY 2015/16 to SY 2022/23. For children with *treated caries*, there was a decreasing trend observed from SY 2012/13 and SY 2022/23 in East Kootenay, Okanagan, and Thompson Cariboo Shuswap. In contrast, the percentage increased in Kootenay Boundary. For *visible decay*, findings in the Okanagan and Thompson Cariboo Shuswap followed a similar provincial trend, with a decrease in the percentage of *treated caries* from SY 2018/19 to SY 2022/23 occurring in conjunction with an increase in the percentage of *visible decay*.

Figure 14. Dental Outcomes Over Time, by HSDA, Interior Health, SY 2012/13 - SY 2022/23



	East Kootenay			Kootenay Boundary			Okanagan			Thompson Cariboo Shuswap			HA (Interior)		
	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay
2012/13	72.0	16.8	11.2	68.4	13.8	17.8	70.5	15.9	13.6	65.3	17.2	17.5	68.9	16.2	14.9
2015/16	74.2	13.7	12.1	65.0	17.1	17.9	76.1	12.5	11.3	63.3	19.5	17.1	70.9	15.2	13.8
2018/19	77.0	13.1	9.9	67.5	14.1	18.4	75.1	15.0	9.9	68.5	19.9	11.6	72.7	16.3	11.0
2022/23	77.2	15.0	7.8	71.5	14.3	14.1	74.6	10.6	14.8	71.3	13.5	15.2	73.6	12.4	14.0

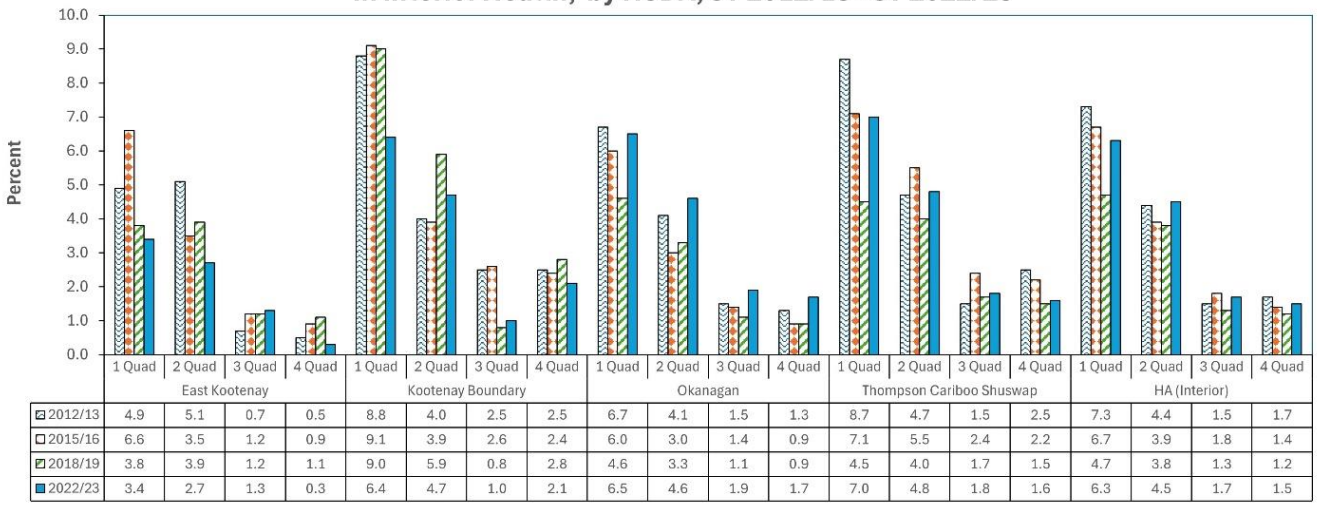
Region / Dental Outcome

Notes: Caries free refers to children who had no signs of visible decay, broken/chipped enamel or treated caries. Treated caries refers to children who had no visible decay or broken/chipped enamel but did have restorations present. Visible decay refers to children who had visible decay experience and or broken /chipped enamel.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

The percentage of children in IH with *visible decay* in one, two, three, or four quadrants between SY 2012/13 and SY 2022/23 are shown in Figure 15 and summarized below.

- **East Kootenay**: The percentage decreased in one, two, and four quadrants and increased in three quadrants, with some fluctuations between surveys.
- **Kootenay Boundary**: The percentage decreased in one, three, and four quadrants and increased overall in two quadrants, with some fluctuations between surveys.
- **Okanagan:** The percentage increased in two, three, and four quadrants and decreased in one quadrant. Of note, initial decreases occurred in all quadrant categories between SY 2012/13 and SY 2018/19, followed by increases between SY 218/19 and SY 2022/23.
- **Thompson Cariboo Shuswap:** There were initial decreases in the percentage of children with *visible decay* in one and four quadrants between SY 2012/13 and SY 2018/19, followed by increases between SY 2018/19 and SY 2022/23. There were fluctuations between surveys in two and three quadrants.

Figure 15. Percent of Kindergarten Children with Visible Decay in 1, 2, 3, 4 Quadrants in Interior Health, by HSDA, SY 2012/13 - SY 2022/23



	East Kootenay				Kootenay Boundary				Okanagan				Thompson Cariboo Shuswap				HA (Interior)			
	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad
2012/13	4.9	5.1	0.7	0.5	8.8	4.0	2.5	2.5	6.7	4.1	1.5	1.3	8.7	4.7	1.5	2.5	7.3	4.4	1.5	1.7
2015/16	6.6	3.5	1.2	0.9	9.1	3.9	2.6	2.4	6.0	3.0	1.4	0.9	7.1	5.5	2.4	2.2	6.7	3.9	1.8	1.4
2018/19	3.8	3.9	1.2	1.1	9.0	5.9	0.8	2.8	4.6	3.3	1.1	0.9	4.5	4.0	1.7	1.5	4.7	3.8	1.3	1.2
2022/23	3.4	2.7	1.3	0.3	6.4	4.7	1.0	2.1	6.5	4.6	1.9	1.7	7.0	4.8	1.8	1.6	6.3	4.5	1.7	1.5

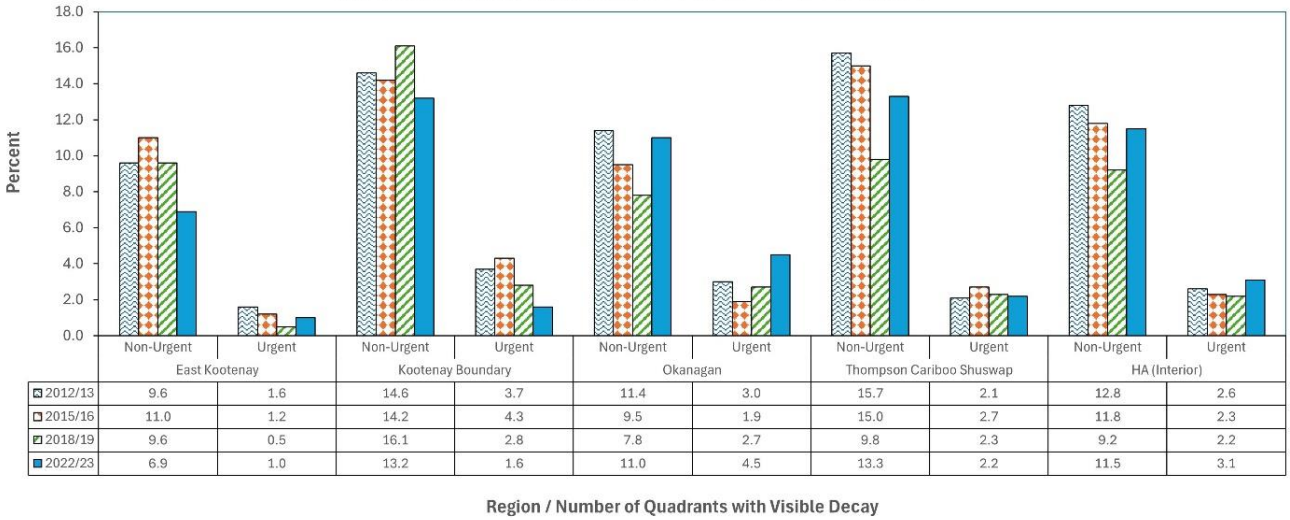
Region / Number of Quadrants with Visible Decay

Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. This analysis report out on children that have visible decay in either 1, 2, 3, or all 4 quadrants.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

2.3 Non-Urgent and Urgent Referrals in IH by Health Service Delivery Area

From SY 2012/13 to SY 2022/23, the percentage of *non-urgent referrals* decreased overall for all HSDAs, with fluctuations observed between school years (see Figure 16). *Urgent referrals* decreased by over a third in East Kootenay and by half in Kootenay Boundary but remained relatively stable in the Thompson Cariboo Shuswap. However, in the Okanagan, the percentage of *urgent referrals* increased from 2.7% in SY 2018/19 to 4.5% in SY 2022/23.

Figure 16. Percent of Kindergarten Children with Non-Urgent and Urgent Referrals in Interior Health, by HSDA, SY 2012/13 - SY 2022/23



	East Kootenay		Kootenay Boundary		Okanagan		Thompson Cariboo Shuswap		HA (Interior)	
	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent
2012/13	9.6	1.6	14.6	3.7	11.4	3.0	15.7	2.1	12.8	2.6
2015/16	11.0	1.2	14.2	4.3	9.5	1.9	15.0	2.7	11.8	2.3
2018/19	9.6	0.5	16.1	2.8	7.8	2.7	9.8	2.3	9.2	2.2
2022/23	6.9	1.0	13.2	1.6	11.0	4.5	13.3	2.2	11.5	3.1

Region / Number of Quadrants with Visible Decay

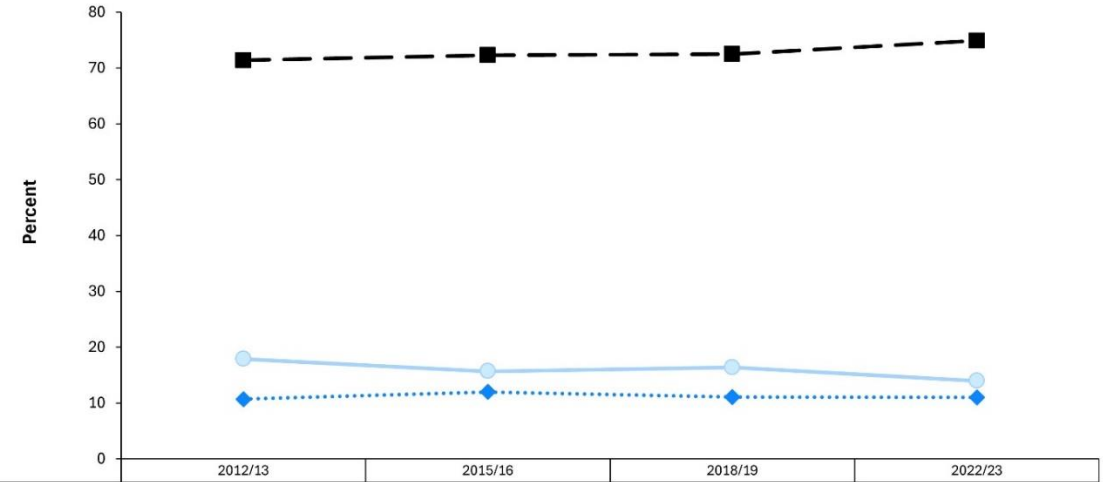
Notes: This analysis reports out on kindergarten children with non-urgent and urgent referrals for dental care. Urgent referrals occur when conditions including pain, swelling and/or visible infection are present.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

3. Island Health (ISLH)

3.1 Oral Health Outcomes in ISLH Over Time

From SY 2012/13 to SY 2022/23, the percentage of children who were *caries free* increased from 71.4% to 74.9%, the percentage of children with *treated caries* decreased from 17.9% to 14%, and the percentage of children with *visible decay* remained relatively stable.

Figure 17. All Kindergarten Children, Dental Outcomes Over Time: Island Health, SY 2012/13 to SY 2022/23



	2012/13	2015/16	2018/19	2022/23
Caries Free	71.4	72.3	72.5	74.9
Treated Caries	17.9	15.7	16.4	14.0
Visible Decay	10.7	12.0	11.1	11.0

School Year (SY)

Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. 'Treated caries' refers to the percent of all kindergarten children screened with no evidence of visible decay but with existing restorations.'Caries free' refers to the percent of all kindergarten children screened with no evidence of visible decay or existing restorations.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

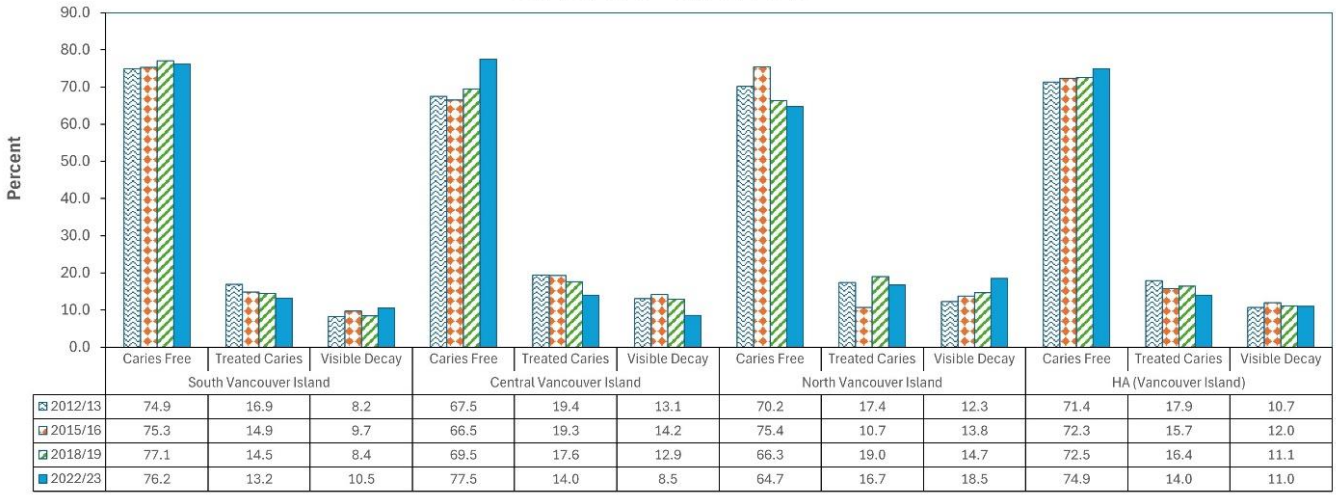
3.2 Oral Health Outcomes in ISLH by Health Service Delivery Area

The ISLH consists of three HSDAs:

- **South Vancouver Island**, includes Greater Victoria, Western Communities, Saanich Peninsula, and the Southern Gulf Islands.
- **Central Vancouver Island**, includes Cowichan Valley South, Cowichan Valley West, Cowichan Valley North, Greater Nanaimo, Oceanside, and Alberni/Clayoquot.
- **North Vancouver Island**, includes Comox Valley, Greater Campbell River, Vancouver Island West, and Vancouver Island North.

Figure 18 below presents the percentage children who were *caries free*, had *treated caries*, or had *visible decay* by ISLH HSDA. From SY 2012/13 to SY 2022/23, the percentage of children who were *caries free* increased in South Vancouver Island and Central Vancouver Island and decreased in North Vancouver Island. For children with *treated caries,* the percentage decreased in South Vancouver Island and Central Vancouver Island and fluctuated in North Vancouver Island. Further, South and North Vancouver Island appear to be following a similar provincial trend with a decrease in *treated caries* alongside an increase in *visible decay* between SY 2018/19 to SY 2022/23.

Figure 18. Dental Outcomes Over Time, by HSDA, Island Health, SY 2012/13 - SY 2022/23



	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay
	South Vancouver Island			Central Vancouver Island			North Vancouver Island			HA (Vancouver Island)		
2012/13	74.9	16.9	8.2	67.5	19.4	13.1	70.2	17.4	12.3	71.4	17.9	10.7
2015/16	75.3	14.9	9.7	66.5	19.3	14.2	75.4	10.7	13.8	72.3	15.7	12.0
2018/19	77.1	14.5	8.4	69.5	17.6	12.9	66.3	19.0	14.7	72.5	16.4	11.1
2022/23	76.2	13.2	10.5	77.5	14.0	8.5	64.7	16.7	18.5	74.9	14.0	11.0

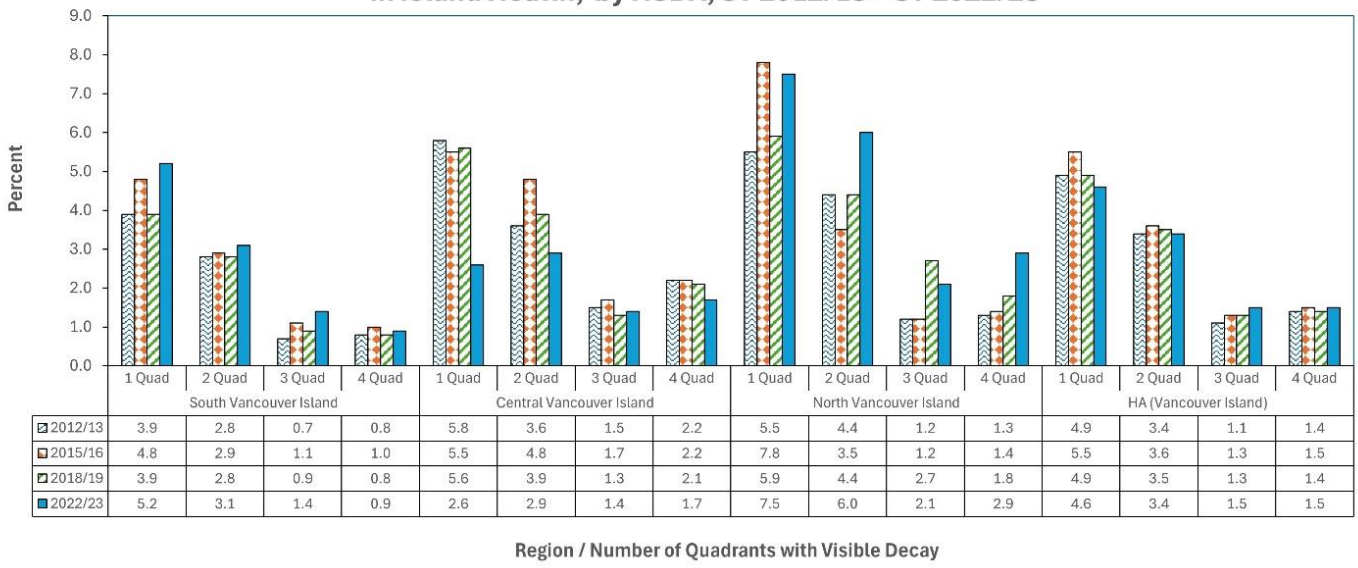
Region / Dental Outcome

Notes: Caries free refers to children who had no signs of visible decay, broken/chipped enamel or treated caries. Treated caries refers to children who had no visible decay or broken/chipped enamel but did have restorations present. Visible decay refers to children who had visible decay experience and or broken /chipped enamel.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

The percentage of children in ISLH with *visible decay* in one, two, three, or four quadrants from SY 2012/13 to SY 2022/23 are shown in Figure 15 and summarized below.

- **South Vancouver Island**: The percentage fluctuated between school years in all quadrant categories but showed an overall increasing trend.
- **Central Vancouver Island**: The percentage showed a decreasing trend in all quadrant categories, with some fluctuations for visible decay in two and three quadrants.
- **North Vancouver Island:** The percentage fluctuated between school years in all quadrant categories but showed an overall increasing trend.

Figure 19. Percent of Kindergarten Children with Visible Decay in 1, 2, 3, 4 Quadrants in Island Health, by HSDA, SY 2012/13 - SY 2022/23



	South Vancouver Island				Central Vancouver Island				North Vancouver Island				HA (Vancouver Island)			
	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad
2012/13	3.9	2.8	0.7	0.8	5.8	3.6	1.5	2.2	5.5	4.4	1.2	1.3	4.9	3.4	1.1	1.4
2015/16	4.8	2.9	1.1	1.0	5.5	4.8	1.7	2.2	7.8	3.5	1.2	1.4	5.5	3.6	1.3	1.5
2018/19	3.9	2.8	0.9	0.8	5.6	3.9	1.3	2.1	5.9	4.4	2.7	1.8	4.9	3.5	1.3	1.4
2022/23	5.2	3.1	1.4	0.9	2.6	2.9	1.4	1.7	7.5	6.0	2.1	2.9	4.6	3.4	1.5	1.5

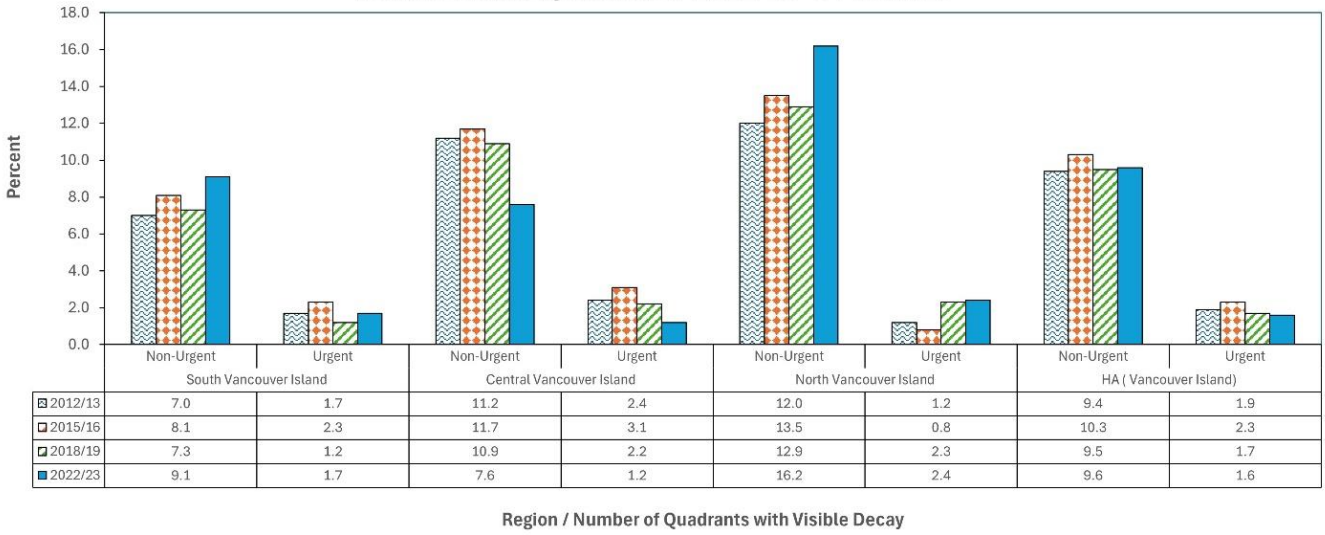
Region / Number of Quadrants with Visible Decay

Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. This analysis report out on children that have visible decay in either 1, 2, 3, or all 4 quadrants.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

3.3 Non-Urgent and Urgent Referrals in ISLH by Health Service Delivery Area

Between SY 2012/13 and SY 2022/23, the percentage of *non-urgent referrals* showed an increasing trend in South Vancouver Island and North Vancouver Island, and a decreasing trend in Central Vancouver Island (see Figure 20). With respect to *urgent referrals*, there was an overall decrease in Central Vancouver Island, and an overall increase in North Vancouver Island. In South Vancouver Island, the percentage of children receiving *urgent referrals* fluctuated over time.

Figure 20. Percent of Kindergarten Children with Non-Urgent and Urgent Referrals in Island Health, by HSDA, SY 2012/13 - SY 2022/23



	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent
	South Vancouver Island		Central Vancouver Island		North Vancouver Island		HA (Vancouver Island)	
2012/13	7.0	1.7	11.2	2.4	12.0	1.2	9.4	1.9
2015/16	8.1	2.3	11.7	3.1	13.5	0.8	10.3	2.3
2018/19	7.3	1.2	10.9	2.2	12.9	2.3	9.5	1.7
2022/23	9.1	1.7	7.6	1.2	16.2	2.4	9.6	1.6

Region / Number of Quadrants with Visible Decay

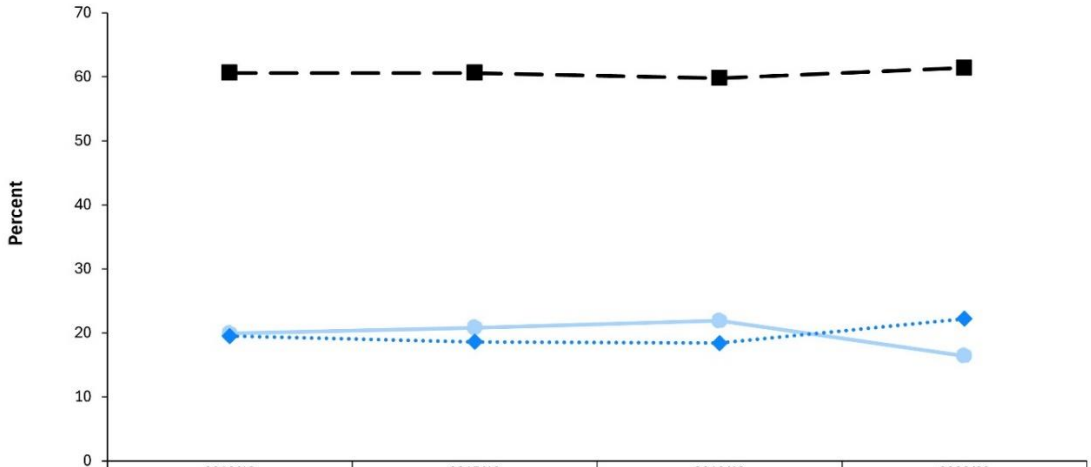
Notes: This analysis reports out on kindergarten children with non-urgent and urgent referrals for dental care. Urgent referrals occur when conditions including pain, swelling and/or visible infection are present.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

4. Northern Health Authority (NH)

4.1 Oral Health Outcomes in NH Over Time

From SY 2012/13 to SY 2022/23, the percentage of children in NH who were *caries free* remained relatively stable. NH is following a similar provincial trend between SY 2018/19 and SY 2022/23, with a decrease in the percentage of children with *treated caries* occurring in conjunction with an increase in *visible decay*.

Figure 21. All Kindergarten Children, Dental Outcomes Over Time: Northern Health, SY 2012/13 to SY 2022/23



	2012/13	2015/16	2018/19	2022/23
Caries Free	60.6	60.6	59.8	61.4
Treated Caries	19.9	20.8	21.9	16.4
Visible Decay	19.5	18.6	18.4	22.2

School Year (SY)

Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. 'Treated caries' refers to the percent of all kindergarten children screened with no evidence of visible decay but with existing restorations.'Caries free' refers to the percent of all kindergarten children screened with no evidence of visible decay or existing restorations.

Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

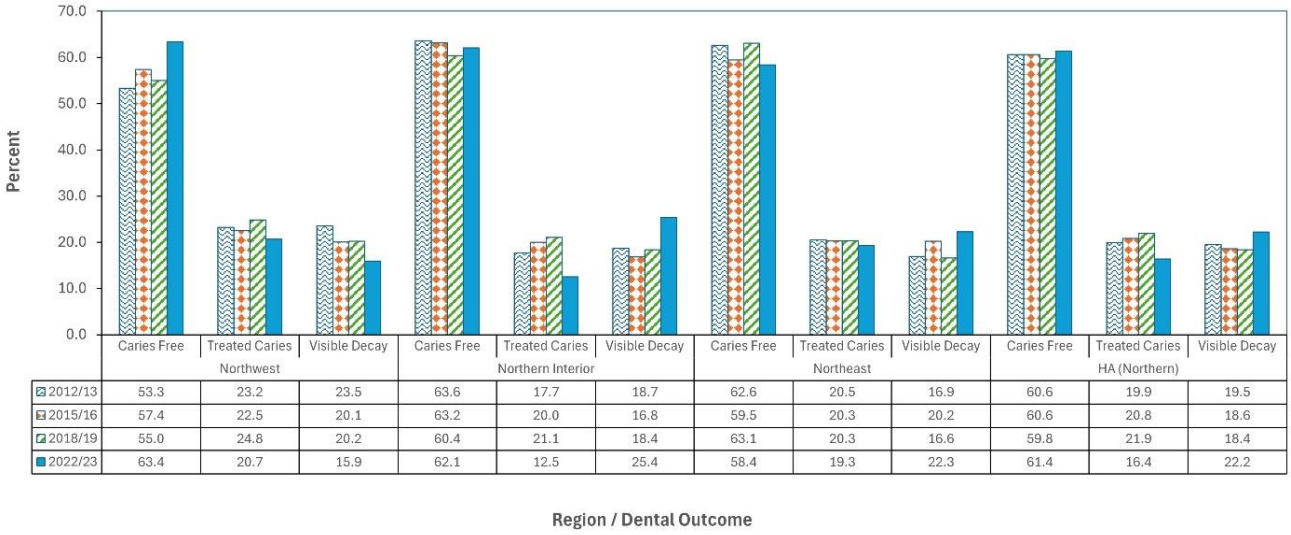
4.2 Oral Health Outcomes in NH by Health Service Delivery Area

The NH consists of three HSDAs:

- **Northwest**, includes Haida Gwaii, Snow Country, Prince Rupert, Upper Skeena, Smithers, Kitimat, Stikine, Terrace, Nisga'a, and Telegraph Creek.
- **Northern Interior**, includes Quesnel, Burns Lake, Nechako, and Prince George.
- **Northeast**, includes Peace River South, Peace River North, and Fort Nelson.

The percentage of kindergarten children in NH who were *caries free*, had *treated caries*, or had *visible decay* are presented in Figure 22. Between SY 2012/13 and SY 2022/23, the percentage of children who were *caries free* increased in the Northwest and decreased in both Northern Interior and Northeast. For *treated caries*, there was a decreasing trend in the Northwest, whereas the percentage in the Northeast remained relatively stable. In Northern Interior, there was an initial increasing trend, followed by a decrease of 40.8% in the percentage of children with *treated caries* from SY 2018/19 to SY 2022/23. With respect to *visible decay,* there was a decreasing trend in the Northwest, and an increasing trend in the Northern Interior and Northeast.

Figure 22. Dental Outcomes Over Time, by HSDA, Northern Health, SY 2012/13 - SY 2022/23



	Northwest			Northern Interior			Northeast			HA (Northern)		
	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay
2012/13	53.3	23.2	23.5	63.6	17.7	18.7	62.6	20.5	16.9	60.6	19.9	19.5
2015/16	57.4	22.5	20.1	63.2	20.0	16.8	59.5	20.3	20.2	60.6	20.8	18.6
2018/19	55.0	24.8	20.2	60.4	21.1	18.4	63.1	20.3	16.6	59.8	21.9	18.4
2022/23	63.4	20.7	15.9	62.1	12.5	25.4	58.4	19.3	22.3	61.4	16.4	22.2

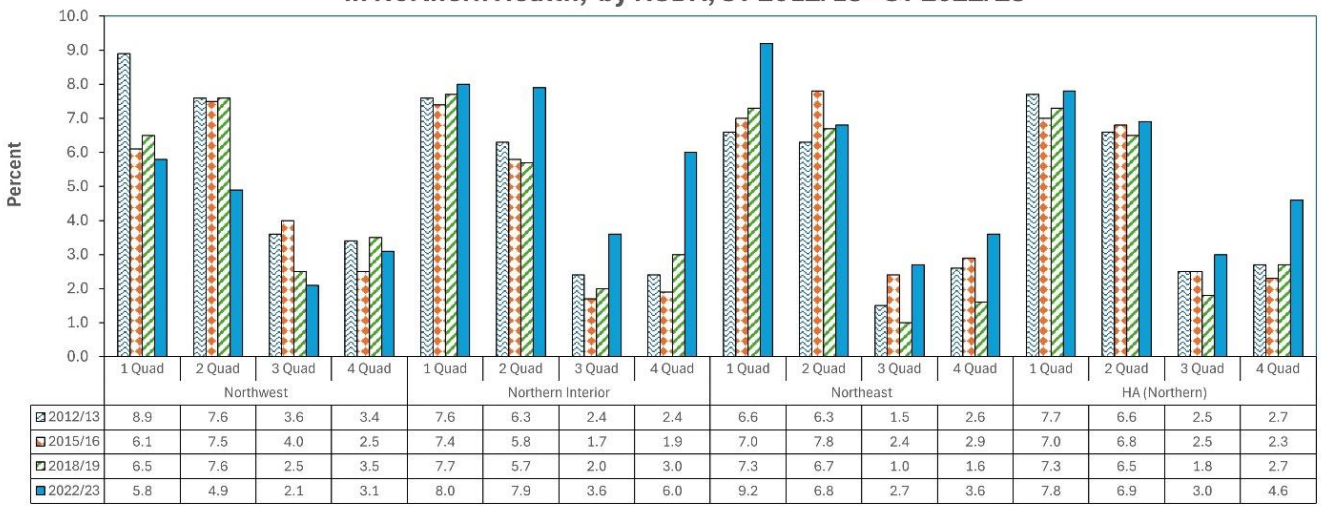
Region / Dental Outcome

Notes: Caries free refers to children who had no signs of visible decay, broken/chipped enamel or treated caries. Treated caries refers to children who had no visible decay or broken/chipped enamel but did have restorations present. Visible decay refers to children who had visible decay experience and or broken /chipped enamel.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

The percentage of children in NH with *visible decay* in one, two, three, or four quadrants from SY 2012/13 to SY 2022/23 are shown in Figure 23 and summarized below.

- **Northwest**: There was a decreasing trend in all quadrant categories, with some fluctuations between surveys.
- **Northern Interior**: There were initial decreases between SY 2012/13 and SY 2015/16 across all quadrants before increasing through to SY 2022/23.
- **Northeast:** There was an increasing trend in all quadrant categories over time, with a decrease in visible decay for 2, 3, and 4 quadrants in SY 208/19 followed by an increase again across all quadrant categories in SY 202/23.

Figure 23. Percent of Kindergarten Children with Visible Decay in 1, 2, 3, 4 Quadrants in Northern Health, by HSDA, SY 2012/13 - SY 2022/23



	Northwest				Northern Interior				Northeast				HA (Northern)			
	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad
2012/13	8.9	7.6	3.6	3.4	7.6	6.3	2.4	2.4	6.6	6.3	1.5	2.6	7.7	6.6	2.5	2.7
2015/16	6.1	7.5	4.0	2.5	7.4	5.8	1.7	1.9	7.0	7.8	2.4	2.9	7.0	6.8	2.5	2.3
2018/19	6.5	7.6	2.5	3.5	7.7	5.7	2.0	3.0	7.3	6.7	1.0	1.6	7.3	6.5	1.8	2.7
2022/23	5.8	4.9	2.1	3.1	8.0	7.9	3.6	6.0	9.2	6.8	2.7	3.6	7.8	6.9	3.0	4.6

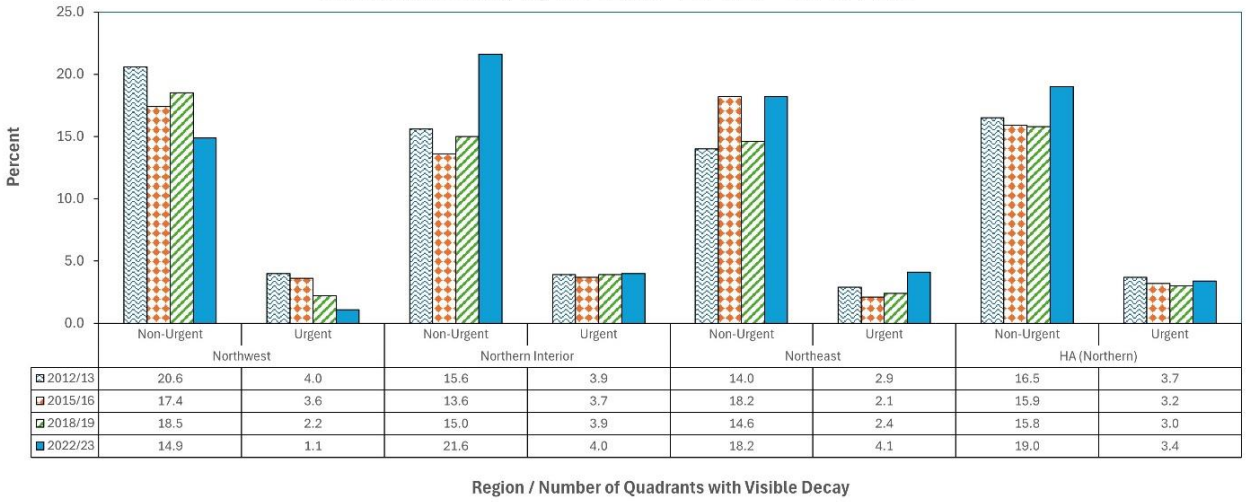
Region / Number of Quadrants with Visible Decay

Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. This analysis report out on children that have visible decay in either 1, 2, 3, or all 4 quadrants.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

4.3 Non-Urgent and Urgent Referrals in NH by Health Service Delivery Area

Between SY 2012/13 and SY 2022/23, the percentage of *non-urgent referrals* showed a decreasing trend in the Northwest, an increasing trend in the Northern Interior, and fluctuated in the Northeast. Between SY 2018/19 and SY 2022/23, the percentage of *non-urgent referrals* decreased in the Northwest and increased in Northern Interior and Northeast. For *urgent referrals* between SY 2012/13 and SY 2022/23, the percentage remained relatively stable in the Northern Interior, increased in the Northeast, and decreased in the Northwest. Of note, from SY 2018/19 to SY 2022/23, the percentage of *urgent referrals* increased by 70.8% in the Northeast and decreased by 50% in the Northwest.

Figure 24. Percent of Kindergarten Children with Non-Urgent and Urgent Referrals in Northern Health, by HSDA, SY 2012/13 - SY 2022/23



	Northwest		Northern Interior		Northeast		HA (Northern)	
	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent
2012/13	20.6	4.0	15.6	3.9	14.0	2.9	16.5	3.7
2015/16	17.4	3.6	13.6	3.7	18.2	2.1	15.9	3.2
2018/19	18.5	2.2	15.0	3.9	14.6	2.4	15.8	3.0
2022/23	14.9	1.1	21.6	4.0	18.2	4.1	19.0	3.4

Region / Number of Quadrants with Visible Decay

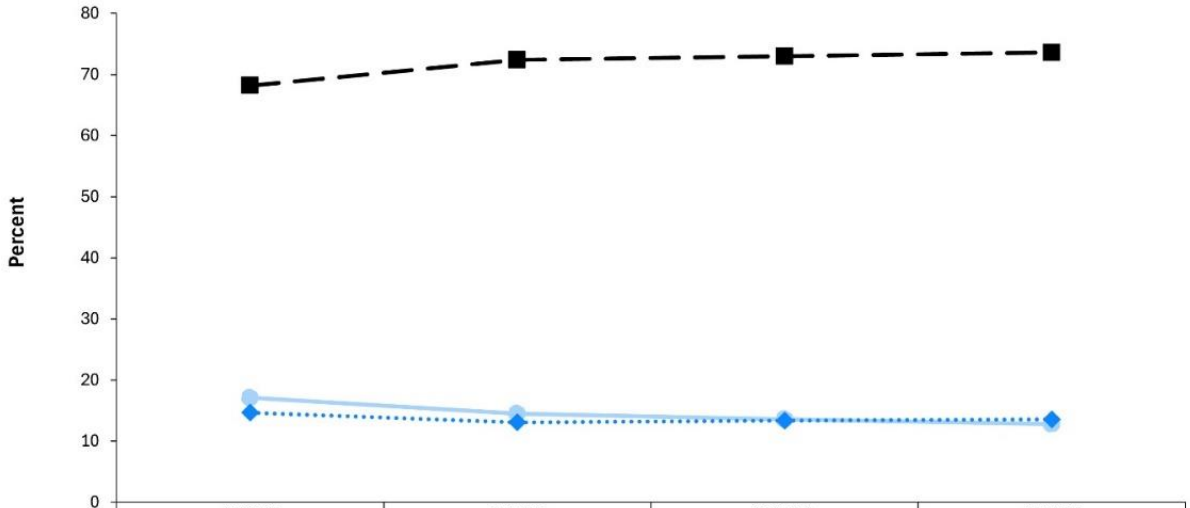
Notes: This analysis reports out on kindergarten children with non-urgent and urgent referrals for dental care. Urgent referrals occur when conditions including pain, swelling and/or visible infection are present.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

5. Vancouver Coastal Health (VCH)

5.1 Oral Health Outcomes in VCH Over Time

Between SY 2012/13 and SY 2022/23, there was an increasing trend in the percentage of children who were *caries free*, alongside decreases in both the percentage of children with *treated caries* and with *visible decay,* respectively, over time (see Figure 25).

Figure 25. All Kindergarten Children, Dental Outcomes Over Time: Vancouver Coastal Health, SY 2012/13 to SY 2022/23



	2012/13	2015/16	2018/19	2022/23
Caries Free	68.2	72.4	73.0	73.6
Treated Caries	17.1	14.5	13.6	12.8
Visible Decay	14.7	13.1	13.4	13.6

School Year (SY)

Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. 'Treated caries' refers to the percent of all kindergarten children screened with no evidence of visible decay but with existing restorations.'Caries free' refers to the percent of all kindergarten children screened with no evidence of visible decay or existing restorations.

Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

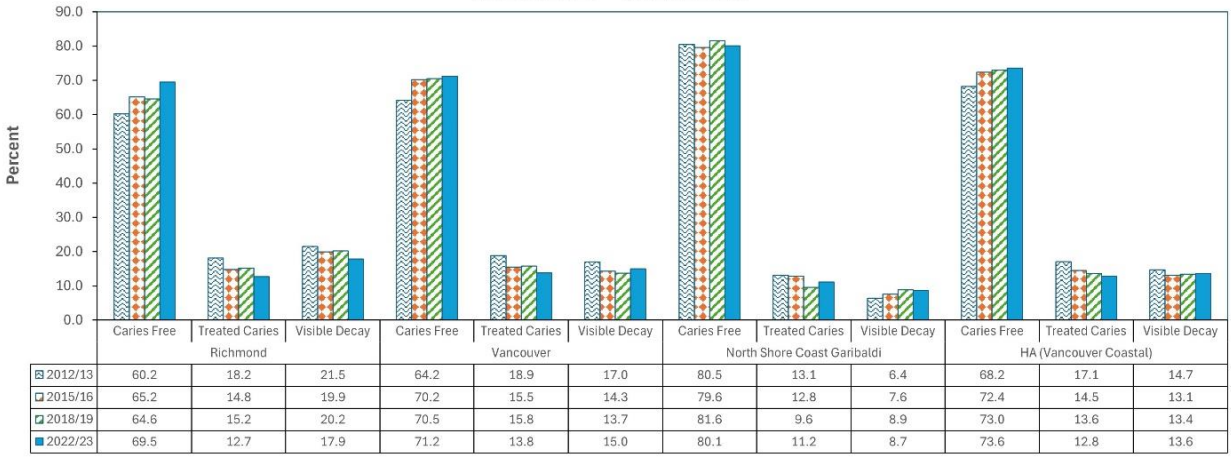
5.2 Oral Health Outcomes in VCH by Health Service Delivery Area

The VCHA consists of three HSDAs:

- **Richmond**, which includes the city of Richmond.
- **Vancouver**, which includes Vancouver – City Centre, Vancouver – Centre North, Vancouver – Northeast, Vancouver – Westside, Vancouver – Midtown, and Vancouver – South.
- **North Shore/ Coast Garibaldi**, which includes North Vancouver, West Vancouver/ Bowen Island, Sunshine Coast, Powell River, Howe Sound, Bella Coola Valley, and Central Coast.

Figure 26 shows the percentage of kindergarten children in VCH who were *caries free*, had *treated caries*, or had *visible decay* disaggregated by HSDA. Between SY 2012/13 and SY 2022/23, the percentage of children who were *caries free* increased in Richmond and Vancouver and fluctuated in North Shore/ Coast Garibaldi. On the other hand, the percentage of children who had *treated caries* showed a decreasing trend across all HSDAs. For *visible decay*, the percentage demonstrated overall decreases in Richmond and Vancouver but increased in the North Shore/ Coast Garibaldi. Furthermore, from SY 2018/19 to SY 2022/23, Vancouver appears to be following a similar provincial trend with a decrease in the percentage of *treated caries* alongside an increase in the percentage of *visible decay*.

Figure 26. Dental Outcomes Over Time, by HSDA, Vancouver Coastal Health, SY 2012/13 - SY 2022/23



	Richmond			Vancouver			North Shore Coast Garibaldi			HA (Vancouver Coastal)		
	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay	Caries Free	Treated Caries	Visible Decay
2012/13	60.2	18.2	21.5	64.2	18.9	17.0	80.5	13.1	6.4	68.2	17.1	14.7
2015/16	65.2	14.8	19.9	70.2	15.5	14.3	79.6	12.8	7.6	72.4	14.5	13.1
2018/19	64.6	15.2	20.2	70.5	15.8	13.7	81.6	9.6	8.9	73.0	13.6	13.4
2022/23	69.5	12.7	17.9	71.2	13.8	15.0	80.1	11.2	8.7	73.6	12.8	13.6

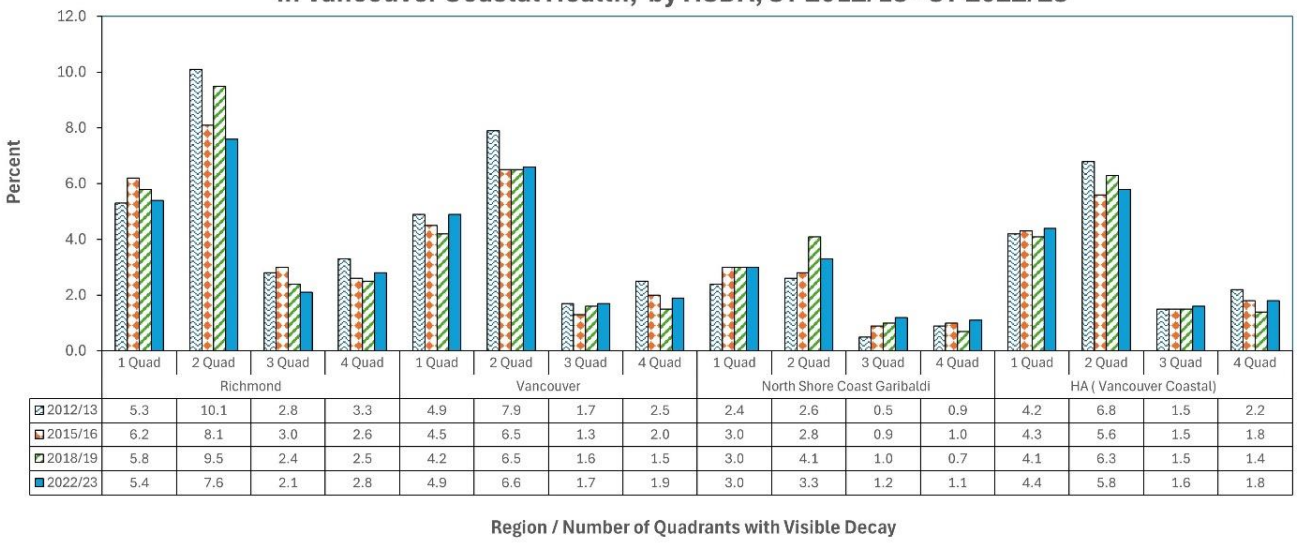
Region / Dental Outcome

Notes: Caries free refers to children who had no signs of visible decay, broken/chipped enamel or treated caries. Treated caries refers to children who had no visible decay or broken/chipped enamel but did have restorations present. Visible decay refers to children who had visible decay experience and or broken /chipped enamel.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

The percentage of children in VCH with *visible decay* in one, two, three, or four quadrants from SY 2012/13 to SY 2022/23 are shown in Figure 27 and summarized below.

- **Richmond:** The percentage fluctuated across all quadrant categories but showed a decreasing trend overall.
- **Vancouver**: The percentage showed a decreasing trend in two and four quadrants. In one and three quadrants, there were initial small decreases followed by increases.
- **North Shore/ Coast Garibaldi**: The percentage showed an increasing trend in all quadrant categories, with some fluctuation in two and four quadrants.

Figure 27. Percent of Kindergarten Children with Visible Decay in 1, 2, 3, 4 Quadrants in Vancouver Coastal Health, by HSDA, SY 2012/13 - SY 2022/23



	Richmond				Vancouver				North Shore Coast Garibaldi				HA (Vancouver Coastal)			
	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad	1 Quad	2 Quad	3 Quad	4 Quad
2012/13	5.3	10.1	2.8	3.3	4.9	7.9	1.7	2.5	2.4	2.6	0.5	0.9	4.2	6.8	1.5	2.2
2015/16	6.2	8.1	3.0	2.6	4.5	6.5	1.3	2.0	3.0	2.8	0.9	1.0	4.3	5.6	1.5	1.8
2018/19	5.8	9.5	2.4	2.5	4.2	6.5	1.6	1.5	3.0	4.1	1.0	0.7	4.1	6.3	1.5	1.4
2022/23	5.4	7.6	2.1	2.8	4.9	6.6	1.7	1.9	3.0	3.3	1.2	1.1	4.4	5.8	1.6	1.8

Region / Number of Quadrants with Visible Decay

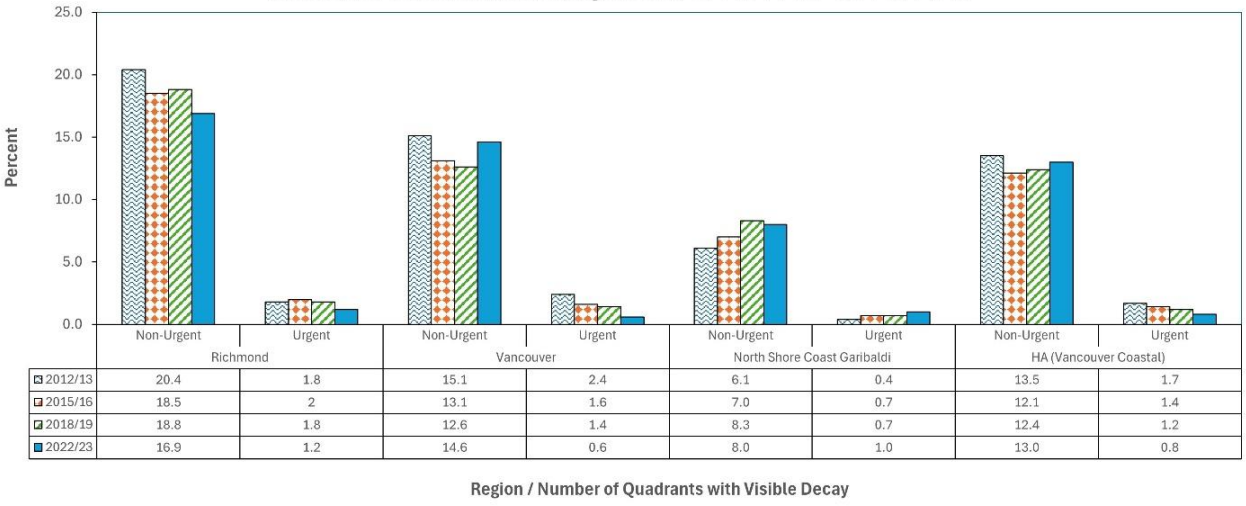
Notes: 'Visible decay' refers to the percent of all kindergarten children screened with evidence of obvious decay in one or more teeth. This analysis report out on children that have visible decay in either 1, 2, 3, or all 4 quadrants.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

5.3 Non-Urgent and Urgent Referrals in VCH by Health Service Delivery Area

Between SY 2012/13 and SY 2022/23, the percentage of *non-urgent* referrals showed an increasing trend in North Shore/ Coast Garibaldi, and a decreasing trend in Richmond. In Vancouver, the percentage decreased initially but then increased from 12.6% in SY 2018/19 to 14.6% in SY 2022/23 (see Figure 28).

The percentage of *urgent referrals* increased between SY 2012/13 to SY 2022/23 in North Shore/ Coast Garibaldi. In contrast, the percentage of *urgent referrals* had a decreasing trend in Richmond and Vancouver.

Figure 28. Percent of Kindergarten Children with Non-Urgent and Urgent Referrals in Vancouver Coastal Health, by HSDA, SY 2012/13 - SY 2022/23



	Richmond		Vancouver		North Shore Coast Garibaldi		HA (Vancouver Coastal)	
	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent	Non-Urgent	Urgent
2012/13	20.4	1.8	15.1	2.4	6.1	0.4	13.5	1.7
2015/16	18.5	2	13.1	1.6	7.0	0.7	12.1	1.4
2018/19	18.8	1.8	12.6	1.4	8.3	0.7	12.4	1.2
2022/23	16.9	1.2	14.6	0.6	8.0	1.0	13.0	0.8

Notes: This analysis reports out on kindergarten children with non-urgent and urgent referrals for dental care. Urgent referrals occur when conditions including pain, swelling and/or visible infection are present.
Source: Provincial Kindergarten Dental Survey Program. Prepared by Population Health Surveillance and Epidemiology, Office of the Provincial Health Officer, BC Ministry of Health, Jan 2025.

Part 3: Conclusion

This provincial report presents findings from the most recent KDS cycle in SY 2022/23 and discusses trends in oral health outcomes of kindergarten children who participated in the KDS from SY 2012/13 to SY 2022/23. Findings are intended to inform provincial and regional planning, policy, and service delivery for preventative oral health care. The current SY 2022/23 KDS survey highlights a few findings worth noting:

- Provincial findings show that the percentage of kindergarten children who were *caries free* and who had *visible decay* increased between the SY 2012/13 and SY 2022/23 surveys. On the other hand, there was a decrease in the percentage of kindergarten children with *treated caries* over time.[5]

- Regional variations in the three types of oral health outcomes were observed (i.e., children who are *caries free*, had *treated caries*, and with *visible decay*), both within and across health authority regions. For more information, see *Part 2: Regional Analyses of Kindergarten Children's Oral Health Outcomes*.

When interpreting the SY 2022/23 KDS findings, it is important to note that communities within each health authority may experience different protective and risk factors that could impact the oral health of kindergarten children and their access to preventative dental care. For instance, children from families with lower socioeconomic status may have decreased access to dental care.[v] Socioeconomic status can also influence children's oral health outcomes such as dietary habits, food security, and health-related knowledge.[vi] As a result, community-specific approaches that consider the social determinants of health are needed to address inequities in children's oral health. It is recommended that health authorities explore potential factors that may have contributed to recent trends in children's oral health outcomes within their respective regions, and to consider opportunities for supporting increased awareness and access to preventative dental care.

It is also important to acknowledge that the COVID-19 pandemic may have had an impact on the current SY 2022/23 survey results. Specifically, the cohort of kindergarten children from the SY 2022/23 KDS would have been between the ages of three and four years of age when the COVID-19 pandemic began in March 2020. Some of these children may have experienced barriers in accessing preventative and restorative dental services during this period. For instance, findings from a survey conducted in 2021 by the UBC Human Early Learning Partnership showed that the COVID-19 pandemic was reported by parents/caregivers as a barrier to their child seeing a health care professional.[vii]

[5] As noted previously, it was not possible to assess the reason behind these changes over time and to test whether these changes were statistically significant.

Finally, while the KDS has supported the provincial monitoring of oral health outcomes among kindergarten children (aged 4 to 6 years) in BC since SY 2006/07, the Ministry acknowledges that there are several opportunities for improving the provincial surveillance program. The Ministry is committed to working with health system partners to explore program improvements and ensure that findings will continue to inform provincial and regional policy and program delivery. Most notably, the Ministry is committed to working with key Indigenous partners to ensure that future KDS cycles will strive to be culturally safe, and advance Indigenous reconciliation with the way Indigenous kindergarten children's oral health information is collected and used within the program.

Appendix A: BC Public Health Dental Screening Criteria and Definitions

The Kindergarten Dental Survey (KDS) is a provincial population health surveillance program that aims to monitor the oral health outcomes of kindergarten children (aged 4 to 6 years) in BC over time, and to inform provincial and regional policy, planning and service delivery. The KDS also facilitates access to dental treatment for children who have been identified as needing dental care during their screening.

The KDS is administered by public health dental professionals (registered dental hygienists and certified dental assistants) in public schools, independent schools, and participating First Nations Schools[6] in BC. While most dental screenings are conducted in the school setting, some take place in a public health unit.

During the KDS screening, public health dental professionals perform a visual inspection using a penlight and tongue depressor to assess each child's dental health. Each child is assigned one code[7] based on the visual assessment of their teeth at the time of screening. A child may be assigned at least one of the following codes:[8]

01 – no visible broken enamel (visible decay), no visible restorations. Note, this corresponds to "caries free" in the charts below.

02 – no visible broken enamel (visible decay), visible restorations present. Note, this corresponds to "treated caries" in the charts below.

03 – visible broken enamel (visible decay). Note, this corresponds to "visible decay" in the charts below. Further coding also indicates the number of quadrants affected:

- 03.1 – visible broken enamel in one or more teeth in a single quadrant
- 03.2 – visible broken enamel in one or more teeth in any two quadrants
- 03.3 – visible broken enamel in one or more teeth in any three quadrants
- 03.4 – visible broken enamel in one or more teeth in all four quadrants

04 – urgent: pain and/or visible infection (such as abscess, gross swelling, or the presence of pus).

[6] The First Nations Health Authority supported this process through providing introductions to communities where requested.
[7] The KDS has a list of Standard Codes with definitions that are used for every child screened in the province. Some children may be assigned more than one code if they are identified as needing urgent referral.
[8] British Columbia Public Health Dental Screening Manual. (2022).

Kindergarten children who are assigned codes 02 and 03 are considered to have Early Childhood Caries.[9] In addition, parents/ caregivers of children who are assigned codes 03 (non-urgent dental care) and 04 (urgent – immediate dental care) are notified that their child needs to see a dentist.

Note: Public health dental professionals use a penlight and tongue depressor to perform a visual dental assessment during each child's KDS screening. It is important to understand that the KDS screening does not capture all dental health conditions, is not the same as and does not replace an examination by a dentist. The KDS screening codes only identify visual evidence of tooth decay experience as observed by visible broken enamel, visible restorations, and infection and/or identified pain. The screening codes do not identify white spot lesions, shadowing or grey areas, black stained pits or fissures, chipped or fractured teeth, or teeth with wear.[10] In addition, the data reflects the dental health status at the time of the survey and is influenced by the day-to-day availability of students[11], which may affect overall data representation.

[9] Note that the definition of Early Childhood Caries, as well as other terms, will be reviewed/updated as a component of future program improvements.
[10] British Columbia Public Health Dental Screening Manual (2022).
[11] Some children were not screened due to being absent or their parents opted their child out of the screening.

Appendix B: School Districts by Health Service Delivery Area (HSDA)

Fraser Health Authority School Districts by HSDA

HSDA	School District	Communities
Fraser East	33 - Chilliwack	Chilliwack, Cultus Lake, Rosedale
	34 - Abbotsford	Abbotsford
	75 - Mission	Dewdney, Mission
	78 - Fraser-Cascade	Agassiz, Boston Bar, Harrison Hot Springs, Hope
Fraser North	40 - New Westminster	New Westminster
	41 - Burnaby	Burnaby
	42 - Maple Ridge-Pitt Meadows	Maple Ridge, Pitt Meadows
	43 - Coquitlam	Anmore, Coquitlam, Port Coquitlam, Port Moody
Fraser South	35 - Langley	Aldergrove, Fort Langley, Langley
	36 - Surrey	Surrey, Whiterock
	37 - Delta	Delta, Tsawwassen

Interior Health Authority School Districts by HSDA

HSDA	School District	Communities
Kootenay	5 - Southeast Kootenay	Cranbrook, Elkford, Fernie, Grasmere, Jaffray, Sparwood
	6 - Rocky Mountain	Canal Flats, Edgewater, Golden, Invermere, Kimberly, Windmere
	93 - Conseil scolaire francophone	Kimberley
Kootenay Boundary	8 - Kootenay Lake	Canyon, Crawford Bay, Crescent Valley, Creston, Kaslo, Meadow Creek, Nelson, Winlaw, Salmo, Slocan
	10 - Arrow Lakes	Burton, Edgewood, Nakusp, New Denver
	20 - Kootenay-Columbia	Castlegar, Fruitvale, Robson, Trail,
Okanagan	22 - Vernon	Cherryville, Coldstream, Lumby, Vernon
	23 - Central Okanagan	Kelowna, Westbank, West Kelowna, Lake Country, Oyama, Peachland, Winfield

HSDA	School District	Communities
	51 - Boundary	Beaverdell, Christina Lake, Grand Forks, Greenwood, Big White (Kelowna), Rock Creek
	53 - Okanagan Similkameen	Cawston, Okanagan Falls, Oliver, Osoyoos
	67 - Okanagan Skaha	Kaleden, Naramata, Penticton, Summerland
Thompson Cariboo Shuswap	19 - Revelstoke	Revelstoke
	27 - Cariboo-Chilcotin	100 Mile House, 108 Mile Ranch, 150 Mile House, Big Lake, Forest Grove, Horsefly, Lac La Hache, Likely, Lone Butte, Williams Lake
	58 - Nicola-Similkameen	Lower Nicola, Merritt, Princeton
	73 - Kamloops-Thompson	Barriere, Chase, Clearwater, Heffley Creek, Kamloops, Logan Lake, Pinanton Lake, Vavenby, Westwold
	74 - Gold Trail	Cache Creek, Clinton, Lillooet, Lytton
	83 - North Okanagan-Shuswap	Armstrong, Canoe, Celista, Enderby, Falkland, Grindrod, Salmon Arm, Sicamous, Sorrento, Spallumcheen, Tappen
	93 - Conseil Scolaire francophone	Kamloops

Island Health School Districts by HSDA

HSDA	School Districts	Communities
South Vancouver Island	61 - Greater Victoria	Esquimalt, Oak Bay, Saanich, Victoria, Victoria West, View Royal
	62 - Sooke	Colwood, Highlands, Metchosin, Langford, Sooke
	63 - Saanich	Brentwood Bay, North Saanich, Saanich, Saanichton, Sidney
Central Vancouver Island	64 - Gulf Islands	Pender Island, Salt Spring Island
	68 - Nanaimo-Ladysmith	Gabriola Island, Ladysmith, Lantzville, Nanaimo
	69 - Qualicum	Bowser, Errington, Nanoose Bay, Parksville, Qualicum Beach

HSDA	School Districts	Communities
	70- Pacific Rim	Ahousaht, Bamfield, Port Alberni, Tofino, Ucluelet
	79 - Cowichan Valley	Chemainus, Cobble Hill, Cowichan Bay, Crofton, Duncan, Lake Cowichan, Mill Bay, Penelakut, Shawnigan Lake
North Vancouver Island	71 - Comox Valley	Black Creek, Comox, Courtenay, Cumberland, Denman Island, Fanny Bay, Hornby Island, Lazo, Royston
	72 - Campbell River	Campbell River, Mansons Landing, Sayward, Quathiaski Cove
	84 - Vancouver Island West	Gold River, Zeballos
	85 - Vancouver Island North	Alert Bay, Coal Harbour, Fort Rupert Reserve, Port Alice, Port Hardy, Port McNeill, Sointula

Northern Health School Districts by HSDA

HSDA	School Districts	Communities
Northwest	50 - Haida Gwaii	Massett, Port Clements, Sandspit, Queen Charlotte, Queen Charlotte City
	52 - Prince Rupert	Hartley Bay, Kitkatla, Port Edward, Prince Rupert, Haida Gwaii (Tsimshian First Nation)
	54 - Bulkley Valley	Houston, Smithers, Telkwa
	82 - Coast Mountains	Gitsegukla, Haisla, Hazelton, Kitimat, Kispiox, Kitwanga, New Hazelton, Smithers, Stewart, Terrace
	87 - Stikine	Atlin, Dease Lake, Fort Ware, Iskut, Lower Post, Telegraph Creek
	92 - Nisga'a	Gitwinksihlkw, Greenville, Kincolith, New Aiyansh
	93 - Conseil Scolaire Francophone	Terrace
Northern Interior	28 - Quesnel	Quesnel, Wells
	57 - Prince George	Fort St. James, Hixon, Mackenzie, McBride, Prince George, Valemount, Willow River

HSDA	School Districts	Communities
	91 - Nechako Lakes	Burns Lake, Fort St. James, Fraser Lake, Granisle, Takla Landing, Vanderhoof, Yekooche
	93 - Conseil Scolaire Francophone	Prince George
Northeast	59 - Peace River South	Chetwynd, Dawson Creek, Groundbirch, Peace River Regional District, Pouce Coupe, Tumbler Ridge
	60 - Peace River North	Baldonnel, Buick, Buick Creek, Charlie Lake, Fort St. John, Hudson's Hope, Prespatou, Taylor, Wonowon
	81 - Fort Nelson	Fort Nelson, Prophet River

Vancouver Coastal Health School Districts by HSDA

HSDA	School Districts	Communities
Richmond	38 - Richmond	Richmond
Vancouver	39 - Vancouver	Vancouver
North Shore/ Coast Garibaldi	44 - North Vancouver	North Vancouver
	45 - West Vancouver	Bowen Island, Lion's Bay, West Vancouver
	46 - Sunshine Coast	Gibsons, Halfmoon Bay, Madeira Park, Roberts Creek, Sechelt
	47 - Qathet	Powell River, Van Anda
	48 - Sea To Sky	Brackendale, Devine, Garibaldi Highlands, Mount Currie, Pemberton, Skatin, Squamish, Tipella, Whistler
	49 - Central Coast	Bella Coola

Appendix C: KDS Participation Over Time

The number (and percentage) of kindergarten children enrolled in a BC school who were screened through the KDS by School Year (SY) is shown in Table 1. Overall, the percentage of kindergarten children who were screened through the KDS decreased from 92% in SY 2012/13 to 89% in SY 2022/23.

Table 1: Number and Percentage of Kindergarten Children Enrolled and Screened by Health Authority (HA) From SY 2012/13 to SY 2022/23

Health Authority	SY 2012/13		SY 2015/16		SY 2018/19		SY 2022/23	
	# Enrolled	# (%) Screened	# Enrolled	# (%) Screened	# Enrolled	# (%) Screened	# Enrolled	# (%) Screened
IH	6,657	5,961 (90%)	6,271	5,599 (89%)	6,942	6,207 (89%)	6,798	5,590 (82%)
FH	17,794	16,643 (94%)	18,124	17,051 (94%)	19,054	17,042 (89%)	19,693	17,852 (91%)
VCH	9,067	8,279 (91%)	8,954	8,170 (91%)	9,060	8,332 (92%)	9,146	8,123 (89%)
ISLH	6,504	5,749 (88%)	6,627	5,876 (89%)	6,944	6,208 (89%)	6,798	5,835 (86%)
NH	3,504	3,332 (95%)	3,409	3,230 (95%)	3,293	3,165 (96%)	3,135	2,963 (95%)
BC TOTAL	**43,526**	**39,964 (92%)**	**43,385**	**39,926 (92%)**	**45,293**	**40,954 (90%)**	**45,570**	**40,363 (89%)**

Notes: IH = Interior Health; FH = Fraser Health; VCH = Vancouver Coastal Health; ISLH = Island Health; and NH = Northern Health

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