British Columbia Dental Survey of Kindergarten-Aged Children 2009-2010

A Regional and Provincial Analysis

Ministry of Health Services
Population and Public Health
Women’s Healthy Living Secretariat
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Introduction:

In 1990, a standardized public health dental screening program was implemented in British Columbia. This dental screening program involved public health dental professionals who performed the kindergarten dental screening in school settings. During the screening program, kindergarten children were assessed for:

- evidence of no visible dental decay (caries-immune)
- evidence of no visible decay but evidence of existing restorations
- evidence of pain or infection at the time of screening
- evidence of visible dental decay (caries) in one or more teeth, and
- location of decay by quadrant.

In March 2005, government announced a commitment to improve early childhood development. The dental health initiative was one part of an integrated cross-ministry strategy for addressing dental, hearing, and vision concerns in the early childhood years (birth to five years of age). Health Authorities received increased funding to enhance early childhood dental health programs. The goal was to provide programs that would offer the best opportunity to improve the dental health and well-being of infants and children. The Early Childhood Dental Health initiative included:

- Provision of increased public health dental health services through registered dental hygienists and certified dental assistants, so that health authorities could increase prevention of early childhood caries and improve identification of higher risk, more vulnerable segments of the population
- Increased access to dental treatment, especially for low-income families, and
- Public awareness and education program related to early childhood caries.

Health authority dental staff have continued to monitor the impact of early intervention programs on dental health through ongoing dental surveys of kindergarten children. The kindergarten survey provides a measurement of the success of these services in improving the dental health of the young children. In 2009-2010, a province wide dental survey was conducted by health authority public health dental staff to assess the dental health of kindergarten children.

In the 2009-2010 school year, 35,420 children participated in the provincial dental survey (91.1% of all those enrolled).¹

This report provides a comparative summary to 2006-2007 data. The rationale for limiting comparisons to 2006-07 data is that for this time period there was greater consistency of screening practices and data recording practices. The report is based on the report British Columbia Dental Survey of Kindergarten-Aged Children 2006-2007: A Regional and Provincial Analysis.

¹ 2009-10 provincial dental graphs
Screening Criteria and Definitions

Caries Immune  No evidence of visible decay and no existing restorations

No Visible Decay  No evidence of visible decay but evidence of existing restorations

Visible Decay  Evidence of obvious decay in one or more teeth

Decay in Quadrants  Evidence of decay in one or more teeth in 1,2,3, or 4 quadrants

Urgent referrals  Children who were referred for further treatment due to the urgency of their conditions

Non-urgent referrals  Children who did not have urgent conditions but were referred for further treatment

Target Population

The population for this program is school children (kindergarten) between the ages of 4 and 6 across the province.
Interior Health Authority

Kootenay
Okanagan
Thompson Cariboo Shuswap
### Interior Regional School Districts

<table>
<thead>
<tr>
<th>Region</th>
<th>S.D#</th>
<th>School District Name</th>
<th>Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kootenay</td>
<td>5</td>
<td>South East Kootenay</td>
<td>Cranbrook, Elkford, Fernie, Sparwood, South Country (Grasmere and Jaffrey)</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Rocky Mountain</td>
<td>Edgewater, Golden, Invermere, Kimberly, Marysville, Windermere</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Kootenay Lake</td>
<td>Canyon, Crawford Bay, Creston, Erickson, Kaslo, Nelson, Salmo, South Slocan, Winlaw, Wynndel, Yahk</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Arrow Lakes</td>
<td>Burton, Edgewood, Nakusp, New Denver (Lucerne)</td>
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<td></td>
<td>20</td>
<td>Kootenay Columbia</td>
<td>Castlegar, Fruitvale, Robson, Rossland, Trail</td>
</tr>
<tr>
<td></td>
<td>51</td>
<td>Boundary</td>
<td>Big White, Beaverdell, Christina Lake, Grand Forks, Greenwood, Midway, Rock Creek</td>
</tr>
<tr>
<td>Okanagan</td>
<td>22</td>
<td>North Okanagan</td>
<td>Coldstream, Cherryville, Lavington, Lumby, Vernon</td>
</tr>
<tr>
<td></td>
<td>83</td>
<td>North Okanagan/ Shuswap</td>
<td>Armstrong, Ashton Creek, Falkland, Enderby, Grindrod</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>Central Okanagan</td>
<td>Kelowna, Lake Country, West Kelowna, Peachland</td>
</tr>
<tr>
<td></td>
<td>53</td>
<td>Okanagan-Similkameen</td>
<td>Cawston, Hedley, Okanagan Falls, Oliver</td>
</tr>
<tr>
<td></td>
<td>58</td>
<td>Nicola-Similkameen</td>
<td>Princeton</td>
</tr>
<tr>
<td></td>
<td>67</td>
<td>Okanagan- Skaha</td>
<td>Naramata, Penticton, Summerland</td>
</tr>
<tr>
<td>Thompson Cariboo Shuswap</td>
<td>19</td>
<td>Revelstoke</td>
<td>Revelstoke</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Cariboo Chilcotin</td>
<td>100 Mile, 108 Mile, 150 Mile, Tatla Lake, Likely, Horsefly, Nemiah Valley, Williams Lake</td>
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<tr>
<td></td>
<td>58</td>
<td>Nicola-Similkameen</td>
<td>Merritt</td>
</tr>
<tr>
<td></td>
<td>73</td>
<td>Kamloops/Thompson</td>
<td>Barriere, Clearwater, Kamloops, Logan Lake, Pinantan Lake, Rayleigh, Savona, Vavenby, Westwold</td>
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<tr>
<td></td>
<td>74</td>
<td>Gold Trail</td>
<td>Ashcroft, Cache Creek, Clinton, Gold Bridge, Lilooet, Lytton</td>
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<tr>
<td></td>
<td>83</td>
<td>North Okanagan/ Shuswap</td>
<td>Malakwa, Sorrento, Canoe, Sicamous, Salmon Arm, Celista, Tappen, Carlin</td>
</tr>
</tbody>
</table>
Kootenay

In the 2009-2010 school year, 1296 children had their teeth examined in Kootenay (90.4% of all those enrolled).

Of those screened, 67.7% were caries immune. 16.1% showed no visible decay but restorations present and 16.1% showed visible decay.

83.8% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-2010, the percentage of children caries immune increased by 7.1%, the percentage of children with no visible decay decreased by 3.8%, and the percentage of children with evidence of visible decay decreased by 3.4%.

In 2009-2010, 9.0% of children in Kootenay showed decay in 1 quadrant and 4.9% showed decay in 2 quadrants. 2.2% showed decay in 3 or 4 quadrants, which was lower than the provincial average of 3.9%.

2 2009-10 IHA dental graphs
3 2006-07 IHA dental graphs and 2009-10 IHA dental graphs
4 2006-07 IHA dental graphs and 2009-10 IHA dental graphs
**Okanagan**

In the 2009-2010 school year, 2542 children had their teeth examined in Okanagan (91.8% of all those enrolled).

Of those screened, 66.8% were caries immune. 16.9% showed no visible decay but restorations present and 16.3% showed visible decay.

83.7% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-2010, the percentage of children caries immune increased by 2.7%, the percentage of children with no visible decay decreased by 3.2%, and the percentage of children with evidence of visible decay increased slightly by 0.5%.

In 2009-2010, the percentage of decay in quadrants 1 and 2 increased slightly in comparison to 2006-2007. The percentage of decay in quadrant 3 decreased, while the percentage of decay in quadrant 4 remained the same.

In 2009-2010, 7.1% of children in the Okanagan showed decay in 1 quadrant and 5.7% showed decay in 2 quadrants. 3.5% showed decay in 3 or 4 quadrants, which was lower than the provincial average of 3.9%.

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5 2009-10 IHA dental graphs
6 2006-07 IHA dental graphs and 2009-10 IHA dental graphs
7 2006-07 IHA dental graphs and 2009-10 IHA dental graphs

Provincial Kindergarten Dental Survey Report 2009-2010
Thompson Cariboo Shuswap

In the 2009-2010 school year, a total of 1736 children had their teeth examined in Thompson Cariboo Shuswap (89.3% of all those enrolled).

Of all those screened, 56.8% were caries immune. 21.8% showed no visible decay but restorations present and 21.4% showed visible decay.

78.6% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-2010, the percentage of children caries immune increased by 4.1%, the percentage of children with no visible decay decreased by 0.5%, and the percentage of children with evidence of visible decay decreased by 3.6%.

In 2009-2010, the percentage of decay in all quadrants decreased in comparison to 2006-2007.

In 2009-2010, 9.1% of children in the Thompson Cariboo Shuswap showed decay in 1 quadrant and 6.6% showed decay in 2 quadrants. 5.7% showed decay in 3 or 4 quadrants, which was higher than the provincial average of 3.9%.

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8 2009-10 IHA dental graphs
9 2006-07 IHA dental graphs and 2009-10 IHA dental graphs
Regional Analysis – Interior Health Authority

In the 2009-2010 school year, 5574 children had their teeth examined in the Interior Health Authority (90.7% of all those enrolled).

Of those screened, 63.9% were caries immune.

18.2% showed no visible decay but restorations present and 17.9% showed visible decay.

82.1% of children had no evidence of decay at the time of the survey.

- Kootenay had the highest percentage of caries immune in the Interior region.
- Thompson Cariboo Shuswap had the highest percentage of children with no visible decay and restorations present.
- Thompson Cariboo Shuswap had the highest percentage of children with visible decay.

<table>
<thead>
<tr>
<th>Caries Immune</th>
<th>KO</th>
<th>OK</th>
<th>TCS</th>
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</thead>
<tbody>
<tr>
<td>No Visible Decay</td>
<td>209</td>
<td>430</td>
<td>378</td>
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<tr>
<td>Visible Decay</td>
<td>209</td>
<td>414</td>
<td>372</td>
</tr>
<tr>
<td>Screened</td>
<td>1296</td>
<td>2542</td>
<td>1736</td>
</tr>
</tbody>
</table>

10 2006-07 IHA dental graphs and 2009-10 IHA dental graphs
11 2009-10 IHA dental graphs
Since 2006-07, the percentage of caries immune children has increased in all three service areas for Interior.

Kootenay had the greatest increase in the percentage of caries immune children from 2006-07 to 2009-10.

Since 2006-07, the percentage of children with no visible decay and restorations present has decreased in all three service areas for Interior.

Since 2006-07, the percentage of children with visible decay has decreased in 2 of 3 service areas for Interior.

12 2006-07 IHA dental graphs and 2009-10 IHA dental graphs
13 2006-07 IHA dental graphs and 2009-10 IHA dental graphs
14 2006-07 IHA dental graphs and 2009-10 IHA dental graphs
Thompson Cariboo Shuswap had the highest percentage of both urgent and non-urgent referrals.

All three health service areas were above the provincial average for urgent referrals.

Thompson Cariboo Shuswap was above the provincial average for non-urgent referrals.

The percentage of urgent referrals was 3.1% for the Interior, which was higher than the provincial average of 2.0%.

The percentage of non-urgent referrals was 15.3% for the Interior, which was slightly higher than the provincial average of 15.2%.

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15 2009-10 IHA dental graphs
16 2009-10 IHA dental graphs
**Fraser Health Authority**

Fraser East  
Fraser South  
Fraser North

**Fraser Regional School Districts**

<table>
<thead>
<tr>
<th>Region</th>
<th>S.D#</th>
<th>School District Name</th>
<th>Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraser East</td>
<td>33</td>
<td>Chilliwack</td>
<td>Chilliwack</td>
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<tr>
<td></td>
<td>34</td>
<td>Abbotsford</td>
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<td></td>
<td>75</td>
<td>Mission</td>
<td>Mission</td>
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<td></td>
<td>78</td>
<td>Fraser Cascade</td>
<td>Hope, Agassiz, Harrison Hot Springs, Boston Bar, North Bend</td>
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<tr>
<td>Fraser South</td>
<td>35</td>
<td>Langley</td>
<td>Langley, Aldergrove</td>
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<td>36</td>
<td>Surrey</td>
<td>Surrey, Whiterock</td>
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<td></td>
<td>37</td>
<td>Delta</td>
<td>Delta</td>
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<tr>
<td>Fraser North</td>
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<td>New Westminster</td>
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<td>Burnaby</td>
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<td></td>
<td>42</td>
<td>Maple Ridge</td>
<td>Maple Ridge, Pitt Meadows</td>
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<tr>
<td></td>
<td>43</td>
<td>Coquitlam</td>
<td>Coquitlam, Port Coquitlam, Port Moody, Anmore, Belcarra</td>
</tr>
</tbody>
</table>
Fraser East

In the 2009-2010 school year, 2649 children had their teeth examined in Fraser East (92.4% of all those enrolled).

Of those screened, 63.3% were caries immune. 23.2% showed no visible decay but restorations present and 13.5% showed visible decay.

86.5% of children had no evidence of decay at the time of the survey.

In 2009-2010, the percentage of decay in all quadrants increased in comparison to 2006-2007.

From 2006-2007 to 2009-10, the percentage of caries immune children increased by 0.9%. The percentage of children with no visible decay decreased by 3.2% and the percentage of children with evidence of visible decay increased by 2.3%.

In 2009-2010, 5.2% of children in Fraser East showed decay in 1 quadrant and 5.1% showed decay in 2 quadrants. 3.2% showed decay in 3 or 4 quadrants, which was lower than the provincial average of 3.9%.

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17 2009-10 FHA dental graphs
18 2006-07 FHA dental graphs and 2009-10 FHA dental graphs
19 2006-07 FHA dental graphs and 2009-10 FHA dental graphs
Fraser South

In the 2009-2010 school year, 6295 children had their teeth examined in Fraser South (89.9% of all those enrolled).

Of those screened, 59.8% were caries immune. 18.6% showed no visible decay but restorations present and 21.6% showed visible decay.

78.4% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-10, the percentage of caries immune children increased by 1.7%. The percentage of children with no visible decay decreased by 1.7%, while the percentage of children with evidence of visible decay increased slightly (0.1%).

In 2009-2010, the percentage of decay in 2 quadrants increased in comparison to 2006-2007. The percentage of decay in 1, 3 and 4 quadrants decreased.

In 2009-2010, 6.6% of children in the Fraser South showed decay in 1 quadrant and 8.5% showed decay in 2 quadrants. 6.6% showed decay in 3 or 4 quadrants, which was higher than the provincial average of 3.9%.

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20 2009-10 FHA dental graphs
21 2006-07 FHA dental graphs and 2009-10 FHA dental graphs
Fraser North

In the 2009-2010 school year, 4716 children had their teeth examined in Fraser North (90.9% of all those enrolled).

Of those screened, 65.0% were caries immune. 21.1% showed no visible decay but restorations present and 13.9% showed visible decay.

86.1% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-2010, the percentage of caries immune children decreased by 0.8% and the percentage of children with no visible decay decreased by 2.1%. The percentage of children with evidence of visible decay increased by 2.9%.

In 2009-2010, the percentage of decay in all quadrants increased in comparison to 2006-2007.

In 2009-2010, 5.7% of children in Fraser North showed decay in 1 quadrant and 5.5% showed decay in 2 quadrants. 2.7% showed decay in 3 or 4 quadrants, which was lower than the provincial average of 3.9%.
Regional Analysis - Fraser Health Authority

In the 2009-2010 school year, 13,660 children had their teeth examined in Fraser Health Authority (90.7% of all those enrolled).

Of those screened, 62.3% were caries immune. 20.3% showed no visible decay but restorations present and 17.4% showed visible decay.

82.6% of children had no evidence of decay at the time of the survey.

- Fraser North had the highest percentage of caries immune in the Fraser region while Fraser South had the lowest.
- Fraser East had the highest percentage of children with no visible decay and restorations present.
- Fraser South had the highest percentage of children with visible decay.

Since 2006-07, the percentage of caries immune children has increased in 2 of 3 service areas for Fraser.

Fraser South had the greatest increase in percentage of caries immune children from 2006-07 to 2009-10.
Since 2006-07, the percentage of children with no visible decay has decreased in all three service areas for Fraser.

Since 2006-07, the percentage of children with visible decay has increased in all three service areas for Fraser.

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27 2006-07 FHA dental graphs and 2009-10 FHA dental graphs
28 2006-07 FHA dental graphs and 2009-10 FHA dental graphs
29 2006-07 FHA dental graphs and 2009-10 FHA dental graphs
Fraser South had the highest percentage of urgent and non-urgent referrals in 2009-10.

Fraser South was above the provincial average for both urgent and non-urgent referrals.

Children in Fraser South had higher percentages of decay in all quadrants than children in other in service areas for Fraser.

The percentage of urgent referrals was 2.2% for Fraser, which was higher than the provincial average of 2.0%.

The percentage of non-urgent referrals was 15.3% for Fraser, which was slightly higher than the provincial average of 15.2%.

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30 2009-10 FHA dental graphs
31 2009-10 FHA dental graphs
**Vancouver Coastal Health Authority**

Richmond
Vancouver
Coastal

**Vancouver Coastal School Districts**

<table>
<thead>
<tr>
<th>Region</th>
<th>S.D#</th>
<th>School District Name</th>
<th>Communities</th>
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<tbody>
<tr>
<td>Richmond</td>
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<td>Richmond</td>
<td>Richmond</td>
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<tr>
<td>Vancouver</td>
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<td>Vancouver</td>
<td>Vancouver</td>
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<tr>
<td>Coastal</td>
<td>44</td>
<td>North Vancouver</td>
<td>North Vancouver</td>
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<tr>
<td></td>
<td>45</td>
<td>West Vancouver</td>
<td>West Vancouver, Lions Bay, Bowen Island</td>
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<td>46</td>
<td>Sunshine Coast</td>
<td>Gibsons, Seschelt, Madeira Park, Roberts Creek, Cedar Grove, Halfmoon Bay</td>
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<td>47</td>
<td>Powell River</td>
<td>Powell River</td>
</tr>
<tr>
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<td>48</td>
<td>Howe Sound</td>
<td>Squamish, Whistler, Pemberton, D’Arcy</td>
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<tr>
<td></td>
<td>49</td>
<td>Central Coast</td>
<td>Bella Coola, Bella Bella, Hagensborg,</td>
</tr>
</tbody>
</table>
Vancouver

In the 2009-2010 school year, 3918 children had their teeth examined in Vancouver (89.0% of all those enrolled).

Of those screened, 59.9% were caries immune. 19.8% showed no visible decay but restorations present and 20.3% showed visible decay.

79.7% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-2010, the percentage of caries immune children increased by 5.1% and the percentage of children with no visible decay decreased by 3.1%. The percentage of children with evidence of visible decay decreased by 2.6%.

In 2009-2010, the percentage of decay decreased in all four quadrants in comparison to 2006-2007.

In 2009-2010, 5.2% of children in Vancouver showed decay in 1 quadrant and 9.6% showed decay in 2 quadrants. 5.5% showed decay in 3 or 4 quadrants, which was higher than the provincial average of 3.9%.

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32 2009-10 dental VCHA graphs
33 2006-07 dental VCHA graphs and 2009-10 dental VCHA graphs
34 2006-07 dental VCHA graphs and 2009-10 dental VCHA graphs
Richmond

In the 2009-2010 school year, 1520 children had their teeth examined in Richmond (93.5% of all those enrolled).

Of those screened, 57.1% were caries immune. 20.7% showed no visible decay but restorations present and 22.2% showed visible decay.

77.8% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-2010, the percentage of caries immune children increased by 6.0% and the percentage of children with no visible decay increased by 1.2%. The percentage of children with evidence of visible decay decreased by 7.3%.

In 2009-2010, the percentage of decay decreased in all four quadrants in comparison to 2006-2007.

In 2009-2010, 6.6% of children in Richmond showed decay in 1 quadrant and 9.9% showed decay in 2 quadrants. 5.6% showed decay in 3 or 4 quadrants, which was higher than the provincial average of 3.9%.

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35 2009-10 dental VCHA graphs
36 2006-07 dental VCHA graphs and 2009-10 dental VCHA graphs
37 2006-07 dental VCHA graphs and 2009-10 dental VCHA graphs
Coastal

In the 2009-2010 school year, 1908 children had their teeth examined in Coastal (93.7% of all those enrolled).

Of those screened, 78.7% were caries immune. 14.2% showed no visible decay but restorations present and 7.2% showed visible decay.

92.9% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-2010, the percentage of caries immune children increased by 6.3% and the percentage of children with no visible decay decreased by 3.5%. The percentage of children with evidence of visible decay decreased by 2.7%.

In 2009-2010, the percentage of decay decreased in three of four quadrants in comparison to 2006-2007.

In 2009-2010, 3.0% of children in Coastal showed decay in 1 quadrant. 1.6% showed decay in 3 or 4 quadrants, which was lower than the provincial average of 3.9%.

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38 2009-10 dental VCHA graphs
39 2006-07 dental VCHA graphs and 2009-10 dental VCHA graphs
40 2006-07 dental VCHA graphs and 2009-10 dental VCHA graphs
Regional Analysis - Vancouver Coastal Health Authority

In the 2009-2010 school year, 7864 children had their teeth examined in Vancouver Coastal Health Authority (91.3% of all those enrolled).

Of those screened, 65.1% were caries immune. 18.3% showed no visible decay but restorations present and 16.6% showed visible decay.

83.4% of children had no evidence of decay at the time of the survey.

Coastal had the highest percentage of caries immune in the Vancouver Coastal Health Authority while Richmond had the lowest.

Richmond had the highest percentage of children with no visible decay and restorations present.

Richmond had the highest percentage of children with visible decay.

Since 2006-2007, the percentage of caries immune children has increased in all three health service areas for Vancouver Coastal.

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41 2009-10 dental VCHA graphs
Since 2006-2007, the percentage of children with no visible decay and restorations present has decreased in two of three health service areas for Vancouver Coastal.

Since 2006-2007, the percentage children with visible decay has decreased in all three health service areas for Vancouver Coastal.

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42 2006-07 dental VCHA graphs and 2009-10 dental VCHA graphs
43 2006-07 dental VCHA graphs and 2009-10 dental VCHA graphs
44 2006-07 dental VCHA graphs and 2009-10 dental VCHA graphs
Richmond had the highest percentage of both urgent and non-urgent referrals in Vancouver Coastal Health Authority.

Richmond was at the provincial average for urgent referrals.

Richmond and Vancouver were above the provincial average for non-urgent referrals.

The percentage of urgent referrals was 1.26% for Vancouver Coastal, which was lower than the provincial average of 2.0%.

The percentage of non-urgent referrals was 15.7% for Vancouver Coastal, which was higher than the provincial average of 15.2%.

Vancouver has the highest percentage of decay in 4 quadrants.

Coastal had the lowest percentage of decay in all quadrants.

Richmond had the highest percentage of decay in 1, 2, and 3 quadrants.
Vancouver Island Health Authority

South Vancouver Island
Central Vancouver Island
North Vancouver Island
## Vancouver Island School Districts

<table>
<thead>
<tr>
<th>Region</th>
<th>S.D#</th>
<th>School District Name</th>
<th>Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Vancouver Island</td>
<td>61</td>
<td>Victoria</td>
<td>Victoria, Esquimalt</td>
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South Vancouver Island

In the 2009-2010 school year, 2556 children had their teeth examined in South Vancouver Island (89.5% of all those enrolled).

Of those screened, 69.1% were caries immune. 18.2% showed no visible decay but restorations present and 12.7% showed visible decay.

87.3% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-10, the percentage of caries immune children remained the same, the percentage of children with no visible decay decreased by 3.3%, and the percentage of children with evidence of visible decay increased by 3.3%.

In 2009-2010, the percentage of decay in 1, 2, and 3 quadrants increased in comparison to 2006-2007. The percentage of decay in 4 quadrants decreased slightly.

In 2009-2010, 6.9% of children in the South Island showed decay in 1 quadrant and 3.9% showed decay in 2 quadrants. 1.9% showed decay in 3 or 4 quadrants, which was lower than the provincial average of 3.9%.

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47 2009-10 VIHA dental graphs
48 2006-07 VIHA dental graphs and 2009-10 VIHA dental graphs
Central Vancouver Island

In the 2009-2010 school year, 1765 children had their teeth examined in Central Vancouver Island (89.2% of all those enrolled).

Of all those screened, 62.0% were caries immune. 23.0% showed no visible decay but restorations present and 14.9% showed visible decay.

85.0% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-2010, the percentage of children caries immune increased by 1.1%, the percentage of children with no visible decay decreased by 3.6%, and the percentage of children with evidence of visible decay increased by 2.4%.

In 2009-2010, the percentage of decay in 1, 3 and 4 quadrants increased in comparison to 2006-2007. The percentage of decay in 2 quadrants decreased slightly.

In 2009-2010, 7.0% of children in the Central Vancouver Island showed decay in 1 quadrant and 4.3% showed decay in 2 quadrants. 3.6% showed decay in 3 or 4 quadrants, which was lower than the provincial average of 3.9%.

49 2006-07 VIHA dental graphs and 2009-10 VIHA dental graphs
50 2009-10 VIHA dental graphs
51 2006-07 VIHA dental graphs and 2009-10 VIHA dental graphs
North Vancouver Island

In the 2009-2010 school year, 999 children had their teeth examined in North Vancouver Island (91.9% of all those enrolled).

Of all those screened, 62.3% were caries immune. 22.8% showed no visible decay but restorations present and 14.7% showed visible decay.

85.1% of children had no evidence of decay at the time of the survey.

In 2006-2007, the percentage of caries immune children decreased by 0.1%, the percent of children with no visible decay decreased by 0.8%, and the rate of children with evidence of visible decay decreased by 0.8%.

In 2006-2007, 6.1% of children in the North Vancouver Island showed decay in 1 quadrant and 6.3% showed decay in 2 quadrants. 2.3% showed decay in 3 or 4 quadrants, which was lower than the provincial average of 3.9%.

In 2009-2010, the percentage of decay in 1 and 2 quadrants increased in comparison to 2006-2007. The percentage of decay in 3 and 4 quadrants decreased.

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52 2006-07 VIHA dental graphs and 2009-10 VIHA dental graphs
53 2009-10 VIHA dental graphs
54 2006-07 VIHA dental graphs and 2009-10 VIHA dental graphs
55 2006-07 VIHA dental graphs and 2009-10 VIHA dental graphs
Regional Analysis - Vancouver Island Health Authority

In the 2009-2010 school year, 5320 children had their teeth examined in Vancouver Island Health Authority (89.8% of all those enrolled).

Of those screened, 65.5% were caries immune. 20.7% showed no visible decay but restorations present and 13.8% showed visible decay.

86.2% of children had no evidence of decay at the time of the survey.

- South Vancouver Island had the highest percentage of caries immune in the Vancouver Island region while Central Vancouver Island was slightly lower than North Vancouver Island.
- Central Vancouver Island had the highest percentage of children with no visible decay and restorations present.
- Central Vancouver Island had the highest percentage of children with visible decay, followed closely by North Vancouver Island.

From 2006-07 to 2009-10, the percentage of caries immune children has increased in 1 of 3 health service areas for Vancouver Island.

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56 2009-10 VIHA dental graphs
Since 2006-07, the percentage of children with no visible decay but restorations present has decreased in all three service areas for Vancouver Island.

Since 2006-07, the percentage of children with visible decay increased in all three health service areas for Vancouver Island.

Central Vancouver Island had the highest percentage of decay in 1, 3 and 4 quadrants.

North Vancouver Island had the highest percentage of decay in 2 quadrants.
Central Vancouver Island had the highest percentage of urgent referrals while North Vancouver Island had the highest percentage of non-urgent referrals.

All health service areas were below the provincial average for both urgent and non-urgent referrals.

The percentage of urgent referrals was 1.1% for Vancouver Island, which was lower than the provincial average of 2.0%.

The percentage of non-urgent referrals was 13.0% for Vancouver Island, which was lower than the provincial average of 15.2%.

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61 2009-10 VIHA dental graphs
## Northern Health Authority

Northwest  
Northern Interior  
Northeast

### Northern Regional School Districts

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Northwest

In the 2009-2010 school year, 898 children had their teeth examined in Northwest (96.5% of all those enrolled).

Of those screened, 53.7% were caries immune. 24.8% showed no visible decay but restorations present and 21.5% showed visible decay.

78.5% of children had no evidence of decay at the time of the survey.

From 2006-07 to 2009-10 the percentage of caries immune children increased by 4.4%, the percent of children with no visible decay increased by 6.9%, and the rate of children with evidence of visible decay decreased by 11.4%.

In 2009-10, the percentage of decay in all quadrants decreased in comparison to 2006-07.

In 2009-2010, 8.0% of children in the Northwest showed decay in 1 quadrant and 8.5% showed decay in 2 quadrants. 5.0% showed decay in 3 or 4 quadrants, which was higher than the provincial average of 3.9%.

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62 2009-10 NHA dental graphs
63 2006-07 NHA dental graphs and 2009-10 NHA dental graphs
64 2006-07 NHA dental graphs and 2009-10 NHA dental graphs
Northern Interior

In the 2009-2010 school year, 1330 children had their teeth examined in Northern Interior (95.6% of all those enrolled).

Of those screened, 60.8% were caries immune. 19.5% showed no visible decay but restorations present and 19.7% showed visible decay.

80.3% of children had no evidence of decay at the time of the survey.

In 2009-2010, the percentage of caries immune children decreased by 2.8%, the percent of children with no visible decay/restorations present increased by 1.3%, and the percentage of children with evidence of visible decay increased by 1.5%.

In 2009-2010, 8.4% of children in the Northern Interior showed decay in 1 quadrant and 7.2% showed decay in 2 quadrants. 4.1% showed decay in 3 or 4 quadrants, which was higher than the provincial average of 3.9%.

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65 2009-10 NHA dental graphs
66 2006-07 NHA dental graphs and 2009-10 NHA dental graphs
Northeast

In the 2009-2010 school year, 774 children had their teeth examined in Northeast (95.2% of all those enrolled).

Of those screened, 57.8% were caries immune. 21.4% showed no visible decay but restorations present and 20.7% showed visible decay.

79.2% of children had no evidence of decay at the time of the survey.

From 2006-2007 to 2009-2010, the percentage of caries immune children decreased by 1.0%, the percent of children with no visible decay increased by 2.1%, and the rate of children with evidence of visible decay decreased by 1.2%.

In 2009-2010, the percentage of decay in 1, 3, and 4 quadrants decreased in comparison to 2006-2007. The percentage of decay in 2 quadrants increased.

In 2009-2010, 8.7% of children in the Northeast showed decay in 1 quadrant and 7.2% showed decay in 2 quadrants. 4.8% showed decay in 3 or 4 quadrants, which was higher than the provincial average of 3.9%.

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67 2006-07 NHA dental graphs and 2009-10 NHA dental graphs
68 2009-10 NHA dental graphs
69 2006-07 NHA dental graphs and 2009-10 NHA dental graphs
70 2006-07 NHA dental graphs and 2009-10 NHA dental graphs
Regional Analysis - Northern Health Authority

In the 2009-2010 school year, 3002 children had their teeth examined in Northern Health Authority (95.8% of all those enrolled).

Of those screened, 57.9% were caries immune. 21.6% showed no visible decay but restorations present and 20.5% showed visible decay.

79.5% of children had no evidence of decay at the time of the survey.

Northwest had the highest percentage of children with visible decay.

Since 2006-07, the percentage of children caries immune has increased in one of three service areas for Northern.

Northern Interior had the highest percentage of caries immune in the Northern region.

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71 2009-10 NHA dental graphs
72 2006-07 NHA dental graphs and 2009-10 NHA dental graphs
Since 2006-07, the percentage of children with no visible decay and restorations present has increased in all three service areas for Northern.

Since 2006-07, the percentage of children with visible decay has decreased in two of three service areas for Northern.

Northeast had the highest percentage of decay in 1 and 4 quadrants.

Northwest had the highest percentage of decay in 2 and 3 quadrants.

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73 2006-07 NHA dental graphs and 2009-10 NHA dental graphs
74 2006-07 NHA dental graphs and 2009-10 NHA dental graphs
75 2009-10 NHA dental graphs
Northern Interior had the highest percentage of urgent referrals in the Northern Health Authority.

Northwest had the highest percentage of non-urgent referrals.

All health service areas in Northern were above the provincial average for urgent referrals and non-urgent referrals.

The percentage of urgent referrals was 3.2% for Northern, which was higher than the provincial average of 2.0%.

The percentage of non-urgent referrals was 17.9% for the Interior, which was higher than the provincial average of 15.2%.

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76 2009-10 NHA dental graphs
Provincial Analysis

In the 2009-2010 school year, 35,420 children participated in the provincial dental survey (91.1% of all those enrolled).

In 2009-2010, the provincial percentage of children:
- caries immune was 63.3%
- with no visible decay but restorations present was 19.7%, and
- with visible decay was 17.0%.

83.0% of children had no evidence of decay at the time of the survey (0.2% higher than in 2006-07).  

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77 2009-10 provincial dental graphs
Since 2006-07, the provincial percentage of children:
- caries immune has increased by 2.2%
- with no visible decay but restorations present has decreased by 2.0%, and
- with visible decay has decreased by 0.3%.

Comparison of Dental Survey Results, Health Authority and BC, 2009-2010

Provincial dental totals FINAL 2008_04_09 KMT and 2009-10 provincial dental graphs

2009-10 provincial dental graphs
In 2009-2010:
- 3 of 5 health authorities were above the provincial average for caries immune.
- 2 of 5 health authorities were below the provincial average for no visible decay and restorations present.
- 3 of 5 health authorities were above the provincial average for visible decay.

Coastal, South Vancouver Island, and Kootenay had the highest percentage of caries immune.

Since 2006-07, the percentage of children caries immune has increased in four of five health authorities.

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80 2009-10 provincial dental graphs
81 Provincial dental totals FINAL 2008_04_09 KMT and 2009-10 provincial dental graphs
In 2009-2010, Fraser, Vancouver Island, and Northern were above the provincial average for no visible decay and restorations present.

Northwest, Fraser East, and South Vancouver Island had the highest percentage of no visible decay and restorations present.

Since 2006-07, the percentage of children with no visible decay but restorations present has decreased in four of five health authorities.

In 2009-2010, Vancouver Coastal and Vancouver Island were below the provincial average for visible decay.

Richmond, Fraser South and Northwest had the highest rate of visible decay.

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82 2009-10 provincial dental graphs
83 Provincial dental totals FINAL 2008_04_09 KMT and 2009-10 provincial dental graphs
84 2009-10 provincial dental graphs
Since 2006-07, the percentage of children with visible decay has decreased in four of five health authorities.

In 2009-10, Interior, Vancouver Island, and Northern were above the provincial average for decay in one quadrant.

Thompson Cariboo Shuswap, Kootenay and Northeast had the highest rate of decay in one quadrant.

In 2009-2010, Fraser, Vancouver Coastal and Northern were above the provincial average for decay in two quadrants.

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85 Provincial dental totals FINAL 2008_04_09 KMT and 2009-10 provincial dental graphs
86 2009-10 provincial dental graphs
87 2009-10 provincial dental graphs
Vancouver, Richmond, Fraser South and Northwest had the highest rate of decay in two quadrants.

Northwest, Richmond and Fraser South had the highest rates of decay in three quadrants.

Fraser South, Thompson Cariboo Shuswap and Vancouver had the highest rates of decay in four quadrants. Coastal and South Vancouver Island had the lowest percentage of decay in 2, 3, and 4 quadrants.

In 2009-2010, Vancouver Coastal and Northern were above the provincial average for decay in three quadrants.

In 2009-2010, Fraser and Vancouver Coastal were above the provincial average for decay in four quadrants.

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88 2009-10 provincial dental graphs
89 2009-10 provincial dental graphs
The percentage of decay has decreased in 1, 3 and 4 quadrants since 2006-07. The percentage of decay in 2 quadrants has remained the same since 2006-07.

In 2009-2010, Interior, Fraser and Northern were above the provincial average for urgent referrals.

Northern Interior, Thompson Cariboo Shuswap, Okanagan and Fraser South had the highest rates of urgent referrals.
In 2009-2010, Interior, Fraser, Vancouver Coastal, and Northern were above the provincial average for non-urgent referrals.

Richmond, Northwest and Vancouver had the highest rates of non-urgent referrals.
Conclusion

The 2009-2010 kindergarten dental survey provides a measurement of the success of early intervention programs in improving the dental health of young children. These programs include caries risk assessment and parent education, fluoride varnish application for children, provision of dental health information to community organization and early childhood providers as well as public awareness campaigns.

In 2005 government in collaboration with the BC Dental Association launched a three year media awareness and education program on preventing oral disease, particularly early childhood caries. Parents of this 2009-2010 dental survey cohort would have been key recipients of the early childhood caries prevention media campaign.

In the 2009-2010 school year, 91.1% of kindergarten children in B.C. were screened by public health dental staff. Of these children, 83.0% were decay free at the time of the survey, and of these, 63.3% had no evidence of having had decay (no decay and no fillings present). Vancouver Island, Vancouver Coastal, Interior and Fraser Health Authorities showed increased rates of caries free children. The Northwest area of the Northern Health Authority also showed overall improvements in oral health for children surveyed.

Survey findings also indicate that since 2006-07 the percentage of children with visible decay has decreased in four of five health authorities. Since 2006-07, the percentage of decay in 1, 2 and 4 quadrants has decreased by 0.1%, 0.3% and 0.2%, respectively. The percentage of decay in 2 quadrants remained the same.

It is accepted in dental surveys that small increases or decreases in decay levels are inevitable based on differences in the population group surveyed. What is significant is where large changes occur and the direction of changes.

The Core Public Health Functions for BC: Evidence Review, Dental Public Health, 2006 indicates that the Federal, Provincial and Territorial Dental Directors suggested a Canadian goal of 60% of children at age 5-6 be caries free. The provincial dental survey results indicate that this target was attained in both 2006-2007 and 2009-2010.

A recent Health Canada 2010 dental survey report showed that 53% of Canadian children aged six years were caries free and 47% had evidence of decay and did not meet the above 60% target. Although survey processes differ between the Health Canada survey and the public health dental survey, the results are basically comparable, and indicate that BC dental outcomes for kindergarten age children are better than that of six year old Canadian children.

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93 2009-10 provincial dental graphs
94 Provincial dental totals FINAL 2008_04_09 KMT and 2009-10 provincial dental graphs
95 Provincial dental totals FINAL 2008_04_09 KMT and 2009-10 provincial dental graphs
While BC has met the target for children with no visible decay and showed an overall improvement in the oral health of children surveyed, it remains clear that children in some parts of the province remain consistently worse off in their dental health. Children in the Northwest, Northeast, Richmond, Vancouver, Fraser South and Thompson Cariboo Shuswap show higher rates of visible decay than the provincial average. Three of these service areas (Fraser South, Vancouver, and Thompson Cariboo Shuswap) had the highest rates of decay in four quadrants.

Health authority dental staff has continued to monitor the impact of early intervention programs on dental health through dental surveys of kindergarten children. The provincial dental survey is key for monitoring trends between regions and within communities as well as for evaluating the effectiveness of multiple prevention strategies in an effort to decrease the rate of dental caries in young children. The survey results inform public health program planning and allocation of resources to those areas with identified need, where those needs can be addressed through preventative programs. Subsequent kindergarten surveys will be important for monitoring trends and identifying changes in the oral health status of children.
### Appendix 1

Area Abbreviations

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<tr>
<th>Abbreviation</th>
<th>Region/Province</th>
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## Appendix 2

Provincial Kindergarten Dental Survey Data by Health Service Delivery Area – 2009-2010

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Source: 2009-10 provincial dental graphs

### Definitions

- **a)** Caries Immune - No evidence of visible decay and no existing restorations
- **b)** No Visible Decay – No evidence of visible decay but evidence of existing restorations
- **c)** Visible Decay – Evidence of obvious decay in one or more teeth
- **d)** Decay in Quadrants – Evidence of decay in one of more teeth in 1, 2, 3 or 4 quadrants.
- **e)** Urgent Referrals – Children who were referred for further treatment due to the urgency of their condition
- **f)** Non-urgent Referrals – Children who did not have urgent conditions but were referred for further treatment

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