Children's Oral Health in Saskatchewan

2018-19

Saskatchewan Health Authority Oral Health Program

Table of Contents

List of Tables and Figures

Acknowledgements

Dental Health Screening Advisors (all with Saskatchewan Health Authority)

Dental Public Health Leads
Cindy Hansen
Kelly Fuchs
Julie Laberge-Lalonde
Bernie Laevens
Cathleen Lesperance
Victoria Lukye
Jennifer Pituley
Gwen Sawicki
Loretta Singh
Patricia Skalicky
Valerie Stopanski
Tammy Thorimbert-Kutnikoff
Ellen Wagner

Report Development Team (all with Saskatchewan Health Authority)

Leslie Topola	Clinical Integration Manager, Primary Health Care
Josh Marko	Epidemiologist
Kyle Kendall	IT Analyst
Leanne McLean	Epidemiologist
Shailee Tanna	Epidemiologist
Joyce Birchfield	Office Administrative Supervisor
Barbara Karpluk	Office Administrative Assistant

Sponsor
Pam McKay, Executive Director of Primary Health Care, Saskatchewan Health Authority

List of Acronyms

CCC	Complete Caries Care
COHF	Canadian Oral Health Framework
COHI	The Children's Oral Health Initiative
deft	decayed, extracted (due to caries) and filled (due to caries) primary teeth
DMFT	Decayed, Missing (due to caries) and Filled (due to caries) permanent teeth
ECC	Early Childhood Caries
ECTD	Early Childhood Tooth Decay
NDE	No Decay Experience
NEC	No Evidence of Care
PCC	Partial Caries Care
S-ECTD	Severe Early Childhood Tooth Decay
WHO	World Health Organization

Executive Summary

The Children's Oral Health in Saskatchewan Report for 2018-19 includes information to assess oral health status of children in the province. The 2018-19 Report provides a comprehensive appraisal of the dental health of Grade One and Seven students in Saskatchewan. It is the sixth screening survey of the Saskatchewan Dental Health Education Program since its introduction in 1993-1994. Comparisons to previous years are noted where applicable.

Highlights

- Over 24,000 students from across the province participated in dental screening for 2018-19 school year.
- Unfortunately many Grade Ones' oral health outcomes were worse in 2018-19 as compared to previous years.
- Grade Sevens' outcomes showed more promise in 2018-19.
- Most of the Canadian Oral Health Framework standards have not been met.

Demographics

In the 2018-19 school year, 24,188 children participated in the provincial Grade One and Grade Seven dental screening (Table 1). Slightly more Grade One students participated than Grade Seven students. More male than female students participated in the screening. Students from former Regina and former Saskatoon Health Regions made up the most students screened (Table 2). The mean age for students in Grade One was 6.6 years versus 12.6 years in Grade Seven (Table 3).

ECTD

Early Childhood Tooth Decay (ECTD) percentage for Grade Ones was 2.0%, which was a drop from 2.8% in 2013-14. Severe Early Childhood Tooth Decay (S-ECTD), which is an additional component of ECTD, increased to 2.6% in 2018-19 (Table 6), as compared to 2.0% in 2013-14.

Quadrants

To determine the caries burden, quadrants were assessed. For both grades combined, 20.8% of students had some decay on at least one quadrant. This dropped slightly from 21.8% in 2013-14.

deft/DMFT

The 'deft' score measures the prevalence of dental caries (past or present) in primary dentition and is a significant indicator of tooth decay in Grade One students. The average deft score in 2018-19 was 3.54, which is slightly higher than the score of 3.40 found in 2013-14. For Grade Seven students the deft score was 0.30, which is the same as 2013-14.

The 'DMFT' index is used to determine the prevalence of caries in permanent dentition. The Grade One students' score was 0.11, while for Grade Seven students the DMFT score was 1.13. These scores are slightly less than the scores found in 2013-14.

Combining both deft and DMFT scores together shows that Grade One students had an average score of 3.65 compared to 1.43 for Grade Seven students in 2018-19. The average deft+DMFT for Grade One students was 3.58 in 2013-14, which is virtually unchanged. Grade Seven students had a deft+DMFT score of 1.68 in 2013-14.

Caries Free

40.6% of Grade One students had a deft=0, which means caries free in their primary dentition, similar to 2013-14. By contrast, 60.2% of Grade Seven students were caries free in their permanent dentition (DMFT=0). The combined deft+DMFT score shows that 40.0% of Grade One students and 53.0% of Grade Seven students were considered caries free.

Dental Health Status
The deft and DMFT indices were used to allocate Dental Health Status to each child, categorized as No Decay Experience (NDE), Complete Caries Care (CCC), Partial Caries Care (PCC) and No Evidence of Care (NEC). Grade One students were shown to have caries experience with 13.4% partial caries care (PCC), while 14.9% of students had no evidence of care (NEC). For Grade Seven students, the caries experience was 7.1% with PCC, while 6.4% of students had NEC. Compared to 2013-2014, NEC increased from 10.4% to 11.0% in 2018-19 for Grade One and Grade Seven students combined. For NDE, there was an increase from 44.2% in 2013-14 to 46.7% in 2018-19 (40.5% Grade One and 53.9% Grade Seven students).

Unmet Dental Needs
Unmet dental needs were measured by priority scores for both Grade One and Grade Seven students. 27.8% of Grade One students, and 12.9% of Grade Seven students required either treatment as soon as possible or immediately. These percentages have not shifted appreciably from 2013-14.

Summary Trends
Oral health outcomes in 2018-19 were compared with the previous dental screening years. The trends show that Grade One student outcomes have generally worsened over time as evidenced by deft/DMFT scores, percentage with cavities and percentage with no evidence of dental care. On the other hand, Grade Seven students showed improvement in most indicators compared to 2013-14, but have yet to reach the outcomes achieved in 2008-09.

Canadian Oral Health Framework
The Dental Health Screening 2018-19 results were analyzed against the *Canadian Oral Health Framework 2013-2018 (COHF)*[2]. The first main goal of the COHF was to Improve Oral Health for Children and Youth. For six year olds, three specific objectives are identified, and for 12 year olds, two specific objectives are identified. The three objectives for six years olds were not met and have essentially stagnated since 2013-2014. For 12 years olds in Saskatchewan, both the objectives were not met, but improvements were seen since 2013-14. Many former Health Regions achieved at least some of the twelve year old guidelines.

The second COHF goal is to improve oral health of Aboriginal people[2]. Three objectives were specified under this goal related to school-based preventive services, as well as six year old and twelve year old outcomes. Two of the three objectives were met, as many First Nations schools do provide preventive dental health services. The guidelines set in the COHF for twelve year old health outcomes for Aboriginal students were achieved, however the six year old outcomes dropped below the recommended guidelines.

Disparities Analysis
The 2018-19 data was analyzed to determine dental health disparities based on different factors such as location of schools in urban or rural areas, access to fluoride treated water, visited a dentist, had a regular dentist, has dental insurance, Hutterite and non Hutterite areas, Aboriginal status and a comparison between Saskatoon and Regina. The findings suggest that there was a fairly even split between urban and rural schools. Non-Hutterite students fared a little better than Hutterite students. Students with access to fluoridated drinking water had better outcomes than those who did not. Aboriginal students fared worse than non-Aboriginal students in most indicators examined. Having dental insurance, having visited a dentist, or better yet, having a regular dentist all provided much better outcomes for students compared to students who had none of those things. Finally, students in Saskatoon fared better on most indicators compared to Regina students.

Introduction

Oral health is an integral part of overall health and contributes to physical, mental and social wellbeing. Good oral health is imperative to enjoy life's possibilities, as it allows one to speak, eat and socialize unhindered by pain, discomfort or embarrassment.[3]

According to World Health Organization (WHO), a healthy oral cavity is a state free from chronic oro-facial pain, oro-pharyngeal cancer, oral ulcers, congenital oro-facial defects such as cleft palate and cleft lips, dental caries, tooth fatality due to dental caries and other pathological factors that affect the oral cavity.[4] The WHO estimates 60-90% of school children worldwide have dental cavities, often leading to pain and discomfort.[5] It is considered one of the major factors of economic burden owing to oral health issues.[5] According to a student by the World Health Organization's Commission on Macroeconomics and Health, direct treatment costs due to dental diseases worldwide were estimated at US$298 billion yearly, corresponding to an average of 4.6% of global health expenditure, while indirect costs due to dental diseases worldwide amounted to US$144 billion yearly.[9] Other indirect impacts include absenteeism from school and work and productivity losses in the labor market.[9]

Oral health is greatly influenced by socioeconomic factors. The *Canadian Oral Health Framework 2013-2018* identifies the disparities among different populations regarding access to dental care and higher rates of disease in specific populations.[2] There has been a decrease in funding of publicly-provided services in Canada which can further widen these disparities.[2] First Nations and Inuit people are found to have higher rate of dental caries than non-Aboriginals and they have lesser access to oral health care than the Canadian average.[2]

Despite being preventable, dental caries greatly impairs the quality of life due to inflicting pain, difficulty eating and sleeping. Once established, dental caries requires treatment and if left untreated, it not only becomes extensive but more expensive to repair.[6] Early Childhood Decay is a severe form of tooth decay affecting primary teeth in children 71 months of age or younger. It involves multiple primary teeth and in severe cases may require dental surgery under general anesthesia.[7]

Dental caries can be prevented by maintaining a constant low level of fluoride in the oral cavity. Water fluoridation is the most effective public health measure for the prevention of dental decay.[6,8] Long term exposure to optimal levels of fluoride level in water significantly reduce the dental caries in children as well as adults.[6] Other sources of fluoride are toothpastes, mouth rinses and gels, as well as through application of foams and varnishes.[8]

The dental health screening report 2018-19 provides comprehensive information regarding oral health status of the Grade One and Seven students in Saskatchewan including comparative analysis on health disparities.

Methods

Dental screening was offered to all Grade One and Seven students who attended schools in Saskatchewan between September 2018 and August 2019. Oral health screenings were carried out by licensed Saskatchewan Dental Therapists and a registered Dental Hygienist by recording history and visual examinations of Grade One and Seven students. Mouth mirrors and LED (light emitting diode) flashlights were used to carry out visual oral examinations. The examinations recorded oral health indicators such as filled/restored teeth and cavitated lesions/untreated tooth decay. These recordings were then entered into a database where further oral health measures were calculated.

A 'Dear Parent/Guardian' letter was initially provided (Appendix 6) which also included four optional questions to be filled by the parent/guardian. The responses to these questions were also added to the database along with other screening data.

Students were assessed for possible health needs and these were communicated back to parents via a 'Dear Parent/Guardian letter' (Appendix 7). The students were also provided basic recommendations for oral hygiene, including illustrations of proper flossing and tooth brushing techniques.

The oral health data collected was then entered into a Microsoft Access database. The screening data was subsequently exported to Microsoft Excel where it was cleaned and analyzed. In cases where outlier values were not resolved, they were excluded from the analysis.

Results

Participation

From a total of 685 elementary schools in Saskatchewan (from 27 school divisions and independent schools), 629 schools (91.8%) participated in the 2018-19 dental screening. From 66 First Nations schools, six (9.1%) participated in the 2018-19 dental screening.

The total number of students enrolled in Grade One and Seven for this report was 27,540, out of which 24,188 students participated in the Dental Health Screening (Table 1). Out of the total number of students screened, 12,983 students were Grade One while 11,205 were Grade Seven. The actual number of Grade One and Seven students in the province was 30,282 (Ministry of Education, R Warnock email).

Table 1: Participation in Dental Health Screening, Saskatchewan, 2018-2019

Total Enrolment*	Total Screened**	Total Absent/Refused
27,540	24,188 (87.8%)	3,352 (12.4%)

*Comes from compilation of Health Region enrollment sheets.
** Includes students screened in Grade One and Seven, regardless of whether it was in schools or not.

Demographics

Screening numbers increased from 19,279 in 2013-14 to 24,188 in 2018-19, an increase of 25.4%. Table 2 shows some of the major demographic features for the students screened in 2018-19. More than half the students were in Grade 1 at time of screening and more than half of the students screened were male. Most students were from the former Saskatoon and Regina Health Regions. Athabasca Health Authority (AHA) did not participate due to staffing.

Table 2: Demographics of Students, 2018-2019 (n=24,188)

		Screened Number	Screened %
Grade	One	12,983	53.7%
	Seven	11,205	46.3%
Gender	Male	12,249	50.6%
	Female	11,551	47.8%
	Not answered	388	1.6%
Former Health Region	Cypress	874	3.6%
	Five Hills	1,100	4.5%
	Heartland	816	3.4%
	Keewatin Yatthé	229	0.9%
	Kelsey Trail	751	3.1%
	Mamawetan Churchill River	300	1.2%
	Prairie North	2,266	9.4%
	Prince Albert Parkland	1,292	5.3%
	Regina Qu'Appelle	6,200	25.6%
	Saskatoon	7,855	32.5%
	Sun Country	1,376	5.7%
	Sunrise	1,129	4.7%

*2013-14 includes students screened in schools only. 2018-19 figures include those screened outside of school (n=144).

Age

Students' date of birth and date of examination were entered into the screening database. Given that some date of births were inputted incorrectly, we excluded records outside the following: Grade One (4.5-8.5 years) and Grade Seven (11-15.5 years). The mean age within each grade was recorded (Table 3).

Table 3: Mean Age of Students by Grade, 2018-2019

Grade One	6.6 years
Grade Seven	12.6 years

Note: 41 records did not have an accurate date of birth to meet the age groupings as highlighted above.

Dental Health Assessment

A Dental Health Assessment was conducted to determine decayed, treated or teeth extracted due to caries. These three aspects of the dental health assessment are important for determining past or present caries experience and also any outstanding dental needs.

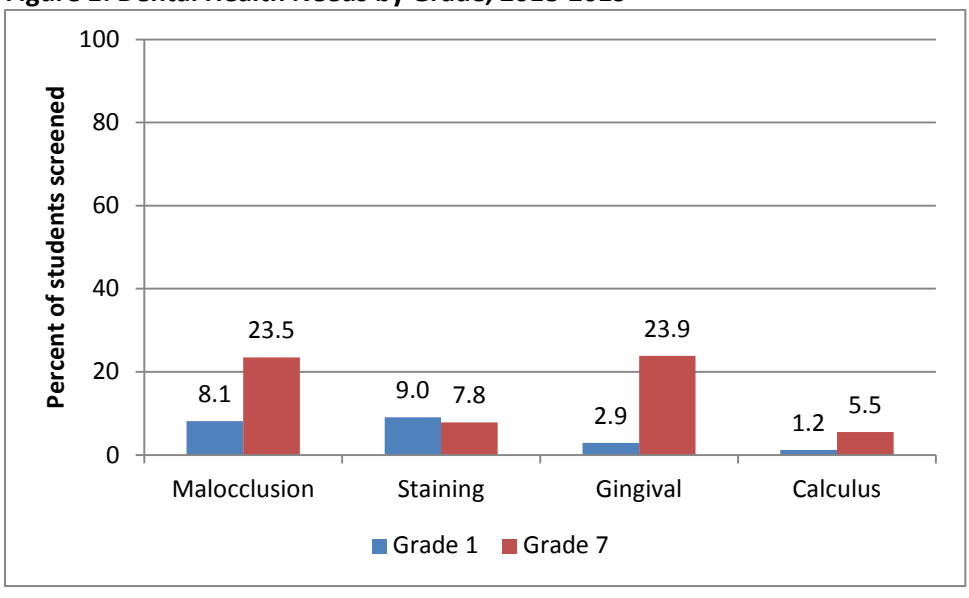
The factors included for assessment of Dental Health Needs were malocclusion, staining, gingival and calculus. Grade Seven students had much higher malocclusion, gingival and calculus than Grade One students (Table 4; Figure 1). The percentage of students affected by malocclusion and calculus went down in 2018-19 compared to 2013-14 for Grade Ones. However the percentage of staining and gingival went up. For Grade Seven students, the main difference was gingival which at 23.9%, was almost three times the percentage found in 2013-14 (Table 4).

Table 4: Dental Health Needs by Grade, 2018-2019

Dental Health Need	Malocclusion	Staining	Gingival	Calculus
% of Grade One Students	8.1%	9.0%	2.9%	1.2%
% of Grade Seven Students	23.5%	7.8%	23.9%	5.5%

Malocclusion: Crooked or crowded teeth and/or poor bite.
Staining: Suspicious areas (possible decay), tartar and/or frank surface staining.
Gingival: Bleeding gums, early signs of gum disease.
Calculus: Hardened plaque on teeth.
Note: Students could have multiple dental health needs, i.e. be represented in multiple categories.

Figure 1: Dental Health Needs by Grade, 2018-2019



Early Childhood Tooth Decay (ECTD)

ECTD is a rapid form of tooth decay affecting primary dentition which was previously measured as Early Childhood Caries (ECC). As described by American Academy of Pediatric Dentistry (2008), ECTD has an additional form (S-ECTD) which is defined as extreme form of ECTD. It is measured only for children less than or equal to 71 months of age. Therefore, only Grade One students (regardless of age) were assessed for ECTD. Table 5 shows that in 2018-19, 2.0% of Grade One students had ECTD and 2.6% for S-ECTD. There is little change compared to 2013-14 data.

Table 5: Early Childhood Tooth Decay (%), Grade One, 2013-2014/2018-19

Year	ECTD	S-ECTD
2013-14	2.8%	2.2%
2018-19	2.0%	2.6%

Note: ECTD=1, S-ECTD=2, Non-ECTD=3 in database.

Quadrants

Grade One and Seven students were assessed for visible tooth decay and scored on the specific quadrant (0-4) of the oral cavity. The dental arches were divided into the quadrants as upper right, upper left, lower right and lower left. Any decay in one of these quadrants was recorded as involved in decay.

A total of 27.5% of Grade One students had visible tooth decay compared to 13.0% of Grade Seven students. Quadrants 1 and 2 were the most common sites of tooth decay (Table 6 and Figure 2). The quadrant values have changed very little since 2013-14 (Table 7), from 21.8% to 20.8%.

Table 6: Decay by Quadrant, by Grade, 2018-2019

	Quad 1	Quad 2	Quad 3	Quad 4	Total
Percent of Grade Ones	9.5%	8.6%	3.8%	5.7%	27.6%
Percent of Grade Sevens	7.0%	3.6%	1.5%	1.0%	13.0%

Figure 2: Decay by Quadrant, Grade One and Grade Seven students, 2018-2019

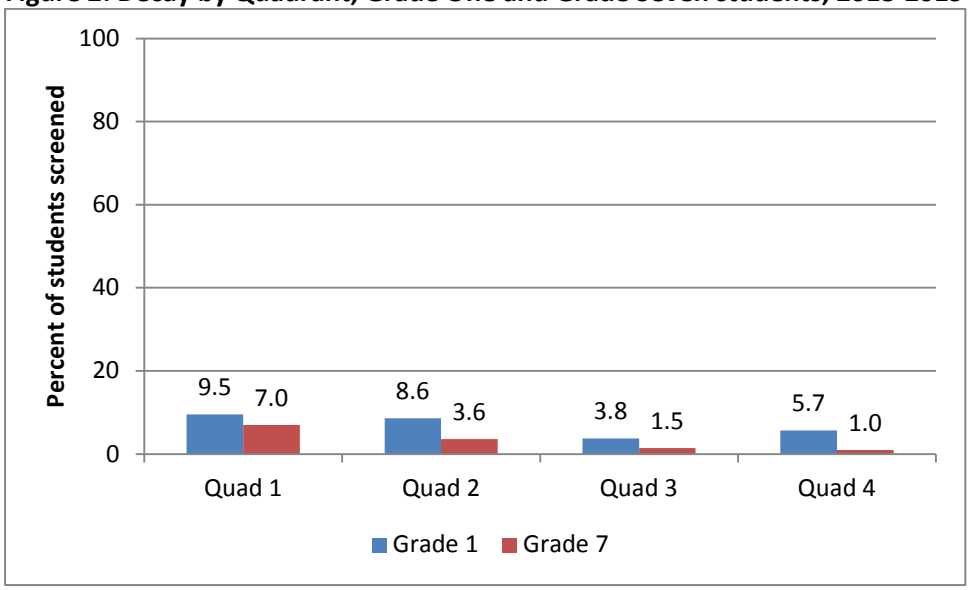


Table 7: Decay by Quadrant, Combined Grades, 2013-2014/2018-19

	Quad 1	Quad 2	Quad 3	Quad 4	Total
2013-14	8.9%	6.2%	2.9%	3.8%	21.8%
2018-19	8.3%	6.3%	2.7%	3.5%	20.8%

'deft' Index

'deft' is an index which describes the prevalence of caries in primary dentition. It has three components: decayed ***(d),*** extracted (due to caries) ***(e)*** and filled ***(f)*** which measures the current caries as well as previous caries experience. It is calculated by counting the number of decayed, extracted and filled deciduous teeth. Refer to Appendix 1 for definitions.

For Grade One students, 32.8% had dental caries on one to six teeth, and over 26% had dental caries on seven or more teeth (Table 8). The average deft score was 3.54, nearly identical to the 2013-14 value of 3.40.

For Grade Seven students, being that primary dentition is far less common than for Grade One students, only 13.4% showed dental caries, with an average deft score of 0.30 (same as in 2013-14).

Table 8: 'deft' Scores by Grade, 2018-2019

Number of Teeth Affected	Grade One Students	Grade One %	Grade Seven Students	Grade Seven %
0	5,274	40.6%	9,702	86.6%
1 to 6	4,262	32.8%	1,462	13.0%
7+	3,443	26.5%	41	0.4%
Avg deft score	3.54		0.30	

Note: deft scores >20 were excluded from this analysis (n=4).

'DMFT' Index

'DMFT' is an index which describes the prevalence of caries index in permanent dentition. It also has three components: decayed ***(D),*** missing (due to caries) ***(M)*** and filled (due to caries) ***(F)*** which measures the current caries as well as previous caries experience. DMFT is calculated by counting the number of decayed, missing and filled permanent teeth (see Appendix 1 for definitions). The low prevalence of caries in permanent teeth among Grade One students is due to a low number of permanent teeth (they start erupting around age six).

94.3% of grade 1 students had a DMFT score of zero. The prevalence of dental caries in permanent dentition among Grade One students was 5.7%, with an average score of 0.11 (Table 9), which is the same as in 2013-14.

The average DMFT Score for Grade Seven students was 1.13, slightly lower than 1.3 found in 2013-14. Almost 40% of Grade Seven had prevalence of dental caries in permanent dentition (in at least 1 tooth).

Table 9: 'DMFT' Scores by Grade, 2018-2019

Teeth affected	Grade 1 Number	Grade 1%	Grade 7 Number	Grade 7 %
0	12,241	94.3%	6,746	60.2%
1-6	740	5.7%	4,222	37.7%
7+	2	0%	237	2.1%
Avg DMFT score	0.11		1.13	

Combining both deft and DMFT scores show Grade 1's had a combined score of 3.65 and for Grade 7's it was 1.43. The scores for 2013-14 were 3.51 and 1.60 respectively.

Caries Free

Following from the deft+DMFT is caries free, which is percentage of students who had a 0 in either the deft and DMFT. In 2018-19, 40.6% Grade 1's were caries free in their primary dentition (deft=0), and 60.2% of Grade 7's were considered caries free (DMFT=0).

Dental Health Status

This index is calculated from deft/DMFT to assign every student with a Dental Health Status. No decay experience (NDE), no evidence of care (NEC), partial caries care (PCC) and complete caries care (CCC) were the four indicators in this section (see Appendix 1 for definitions).

For 2018-19, 14.9% of Grade One students and 6.4% of Grade Seven students had NEC (11.0% combined). For NDE, the combined total was 46.7% (40.5% Grade One and 53.9% Grade Seven students). For Grade One students, PCC reduced from 16.0% to 13.4% (Table 10).

Table 10: Dental Health Status by Grade, 2013-2014/2018-19

	2013-14		2018-19	
	Grade 1	**Grade 7**	**Grade 1**	**Grade 7**
No Decay Experience (NDE)	4,309 (39.7%)	4,210 (50%)	5,262 (40.5%)	6,038 (53.9%)
No Evidence of Care (NEC)	1,469 (13.5%)	543 (6.4%)	1,934 (14.9%)	716 (6.4%)
Partial Caries Care (PCC)	1,733 (16.0%)	780 (9.3%)	1,740 (13.4%)	792 (7.1%)
Complete Caries Care(CCC)	3,338 (30.8%)	2,894 (34.3%)	4,047 (31.2%)	3,658 (32.7%)

Note: One Grade Seven student had no status available.

Looking at both grades combined, the percentage of students who have No Decay Experience has increased from 2013-14 to 46.7% in 2018-19.

Unmet Dental Need (Priority Scores)

Depending on the urgency of their dental health needs, students were scored for treatment priority. The priorities were assigned based on three categories which are:

Priority 1 = Urgent (pain or infection) requiring immediate treatment.
Priority 2 = Treatment required as soon as possible.
Priority 3 = No immediate treatment indicated (Appendix 1).

About 27.8% of Grade One and 12.9% of Grade Seven students required treatment soon or very urgently in 2018-19 (Priority 1 & Priority 2). Very little change occurred in priority scores between 2013-14 and 2018-19. Only about 2% of Grade One Students required immediate treatment. Similarly, less than 1% of Grade Seven students required immediate treatment (see Table 11)

Table 11: Priority Scores by Grade, 2013-2014/2018-19

	2013-14		2018-19	
	Grade 1	**Grade 7**	**Grade 1**	**Grade 7**
Priority 1	219 (2.0%)	55(0.7%)	296 (2.3%)	54 (0.5%)
Priority 2	2,783 (25.6%)	1,127 (13.4%)	3,294 (25.4%)	1,384 (12.4%)
Priority 3	7,849 (72.3%)	7,246 (86.0%)	9,392 (72.3%)	9,766 (87.1%)

Note: 2 records were not given priority scores.

Not much change was noted in priority scores between 2013-14 and 2018-19. Almost 80% of students did not need immediate treatment with less than 2% needing immediate treatment.

Dental Health Trends in Saskatchewan

Screening outcomes for Grade One students since 1993-94 are shown in Table 12. Average deft/DMFT scores have increased over time to 3.65 in 2018-19. Students with cavities declined slightly in 2018-19 to 28.2%, which is still above proportions prior to 2013-14. No evidence of dental care increased markedly to 14.9% and is the highest ever. Pain scores increased slightly in 2018-19 but is generally below all previous screening years. The proportion of cavity free students is generally lower than in almost all previous years. Overall, most Grade One students screening outcomes have gotten worse over time.

Table 12: Dental Health Screening Outcomes, Grade One, 1993-94/2018-19

Screening Year	Number of Children Screened	Average 'deft/DMFT'	% with Cavities[i]	% with No Evidence of Dental Care[ii]	% Pain[iii]	% Cavity-free[iv]
1993-94	13,398	2.74	20.0	9.6	5.8	45.2
1998-99	12,701	2.61	24.9	12.4	3.6	46.7
2003-04	10,832	2.94	25.5	13.2	3.9	44.7
2008-09	9,079	3.14	27.5	11.9	4.0	41.5
2013-14	10,851	3.58	29.7	10.8	2.2	39.2
2018-19	12,983	3.65	28.2	14.9	2.8	40.0

'% with cavities includes those with decay>0+Decay>0-those with decay in both.
[ii] No evidence of dental care is NEC from Table 10.
[iii]% pain includes those who answered whether they had existing pain.
[iv] % cavity free includes those that are deft and DMFT=0.

Screening outcomes for Grade Seven students since 2008-09 are shown in Table 13. Average deft/DMFT scores reduced in 2018-19 to 1.43. The proportion of students with cavities also declined in 2018-19 to 13.5%. Students with no evidence of dental care increased to 6.4%. Pain scores decreased slightly to 0.6% and the proportion of cavity free students improved to 53.0%. Unlike for Grade One students, Grade Seven students screening outcomes improved in 2018-19.

Table 13: Dental Health Screening Outcomes, Grade Seven, 2008-09/2018-19

Screening Year	Number of Children Screened	Average 'deft/DMFT'	% with Cavities [i]	% with No Evidence of Dental Care [ii]	% Pain [iii]	% Cavity-free [iv]
2008-09	8,835	1.24	11.3	5.3	0.9	57.1
2013-14	8,428	1.68	15.8	5.8	0.7	49.1
2018-19	11,205	1.43	13.5	6.4	0.6	53.0

[i] % with cavities includes those with decay>0+Decay>0-those with decay in both.
[ii] No evidence of dental care is NEC from Table 10.
[iii] % pain includes those who answered whether they had existing pain.
[iv] % cavity free includes those that are deft and DMFT=0.

Canadian Oral Health Framework 2013-2018 (COHF):[2]

The Canadian Oral Health Framework 2013-18 was produced by the Federal, Provincial and Territorial Dental Working Group. Two different categories, improvement in oral health and access to care, are related to data in this Dental Health Screening report. The two main objectives of the COHF were to Improve Oral Health for Children and Youth and Improve Oral Health for Aboriginal People.

- **<u>Improve Oral Health:</u> Improve Oral Health for Children and Youth**

  The Canadian Oral Health Framework (COHF) set out guidelines in this objective. For 2018-19, the six year old objectives are not met as:

  - deft+DMFT is 3.59 (guideline <2.50)
  - % of students with deft+DMFT=0 is 40.9% (guideline >=55%)
  - % of students with untreated cavities is 28.0% (guideline < 15%).

  The 2018-19 values are essentially unchanged from 2013-14 (Table 14).

Table 14: Canadian Oral Health Framework Indicators, Six year olds, 2013-14/2018-19

No.	Objective	Baseline[i]	Indicator	2013-14	2018-19
1.a	Reduce the number of teeth affected by cavities in 6 year olds	2.52	Deft + DMFT of <2.5 for 6 year olds	3.58	3.59
1.b	Reduce the percentage of 6 year olds who experienced cavities	46.6%	55% of 6 year olds have deft + DMFT = 0	39.9%	40.9%
1.c	Reduce the percentage of 6 year olds with untreated cavities	18.6%	<15% of 6 year olds have d+D>0	28.2%	28.0%

[i] Baseline established from Canadian Health Measures Survey, 2007-09.

The COHF indicators were also examined by former Health Regions. In nearly all cases, none of the six year olds in the former Health Regions achieved the standards set by the COHF. Only for deft+DMFT scores being less than 2.5 did six year olds in former Cypress, and former Sun Country meet that objective. Improvements were seen in all three COHF indicators in 2018-19 compared to 2013-14 for former Cypress, former Sun Country, former Five Hills and former Mamawetan Churchill (see Table 15).

Table 15: Canadian Oral Health Framework Indicators, Six year olds, by fHealth Region, 2013-14/2018-19

	Avg deft+DMFT <2.5		At least 55% have deft+DMFT=0		<15% have d+D>0	
Former Health Region	**2013-14**	**2018-19**	**2013-14**	**2018-19**	**2013-14**	**2018-19**
Cypress	3.45	2.35	36.8%	50.1%	26.5%	22.7%
Five Hills	3.83	3.12	40.2%	42.6%	29.8%	26.7%
Heartland	3.64	4.05	33.3%	35.2%	28.4%	29.4%
Keewatin Yatthé	8.07	8.26	5.2%	6.9%	52.0%	61.8%
Kelsey Trail	4.15	4.49	36.5%	31.2%	31.9%	37.6%
Mamawetan Churchill River	7.47	6.55	16.0%	22.2%	52.6%	45.3%
Prairie North	4.17	4.59	32.1%	33.4%	27.7%	38.8%
Prince Albert Parkland	5.19	5.33	27.8%	31.5%	35.4%	26.1%
Regina Qu'Appelle	3.53	3.62	38.6%	41.8%	32.3%	31.1%
Saskatoon	2.79	3.13	47.3%	43.6	20.9%	22.4%
Sun Country	2.64	2.16	41.5%	53.9%	25.6%	21.6%
Sunrise	3.91	3.73	34.6%	38.1	34.0%	28.2%
Saskatchewan	**3.58**	**3.59**	**39.9%**	**40.9%**	**28.2%**	**28.0%**

The COHF Guidelines for 12 year olds have improved from 2013-14 but ultimately not met. The DMFT score for 12 years olds was 1.06, close to the less than 1.0 guideline. Furthermore, 61.3% of 12 year olds provincially had a DMFT=0, short of the 70% guideline (Table 16).

Table 16: Canadian Oral Health Framework Indicators, 12-year olds, 2013-14/2018-19

No.	Objective	Baseline[i]	Indicator	2013-14	2018-19
1.d	Improve the DMFT rate for 12 year olds	1.02	DMFT of <1.0 for 12 year olds	1.35	1.06
1.e	Decrease the percentage of 12 year olds who experienced permanent tooth cavities	61.3%	>70% of 12 year olds have DMFT = 0	56.7%	61.3%

[i] Baseline established from Canadian Health Measures Survey, 2007-09.

More former Health Regions achieved a DMFT less than 1.0 in 2018-19 than did in 2013-14 including former Cypress, former Heartland, former Regina Qu'Appelle, former Saskatoon, former Sun Country, and former Sunrise. Only former Cypress Health Region achieved the greater than 70% goal of DMFT=0 guideline (Table 17).

Table 17: Canadian Oral Health Framework indicators, 12 year olds, 2013-14/2018-19

	DMFT of <1.0 for 12 year olds		>70% of 12 year olds have DMFT=0	
Former Health Region	**2013-14**	**2018-19**	**2013-14**	**2018-19**
Cypress	1.02	0.50	68.1%	80.6%
Five Hills	1.33	1.26	55.3%	52.7%
Heartland	0.79	0.92	65.5%	60.0%
Keewatin Yatthé	3.22	3.20	12.3%	22.0%
Kelsey Trail	1.88	1.84	43.8%	41.2%
Mamawetan Churchill River	2.51	1.42	47.8%	50.0%
Prairie North	1.76	1.57	49.1%	46.1%
Prince Albert Parkland	2.73	1.72	28.9%	45.1%
Regina Qu'Appelle	1.40	1.01	55.7%	63.7%
Saskatoon	0.93	0.85	63.9%	66.8%
Sun Country	1.07	0.76	61.8%	68.5%
Sunrise	1.48	0.99	54.8%	64.0%
Saskatchewan	1.35	1.06	56.7%	61.3%

- **<u>Improve Oral Health Access for Aboriginal People</u>: COHF Guidelines 2013-2018 for First Nations & Inuit School based preventive services;[2]**

The Aboriginal status of children was determined using information about dental insurance coverage. Under dental insurance coverage, there was an option to declare the type of coverage used for dental care. Students who declared their coverage from First Nations/Inuit Health Branch were considered to be Aboriginal.

The *COHF 2018* guidelines for Saskatchewan are that at least 50% of First Nations schools provide school-based preventive care. Except for six schools in former Prairie North, First Nations community

schools were not included in this screening report. However, nearly all First Nations (or community schools) provide school-based preventive dental services via the Indigenous Services Canada Children's Oral Health Initiative (COHI) program, in which over 60 First Nations communities participated provincially for kids age 0 to 7 years (Table 18).

Table 18: First Nation School Based Preventive Services, 2013-14/2018-19

#	Objective	Indicator	Saskatchewan 2013-2014	Saskatchewan 2018-19
2.b	50% of First Nations and Inuit schools provide school-based preventive dental services	% of First Nations and Inuit schools provide school-based preventive dental services	89.6%	Nearly All

For 6 year old Aboriginal students, outcomes have regressed as only 12.6% have deft+DMFT=0. This is under the 15% guideline and worse than what was achieved in 2013-14 (Table 19).

Table 19: COHF, Aboriginal Six year old Outcomes, 2013-14/2018-19

#	Objective	Baseline[i]	Indicator	2013-14	2018-19
2.c	Improve the oral health status of 6 year old Aboriginal children entering school	13.9%	15% of 6 year old Aboriginal have deft+DMFT=0	17.5%	12.6%

[i] Baseline from Inuit Oral Health Survey, 2009-10

In 2018-19, for 12 year old Aboriginal students, 30.4% had a DMFT=0. While this exceeded the COHF guideline of 20%, it decreased slightly from 2013-14 (Table 20).

#	Objective	Baseline[i]	Indicator	2013-14	2018-19
2.d	Improve the oral health status of 12 year old Aboriginal children	17.8% of 12 year old Aboriginal; 38.7% of 12 year old Canadians	20% of 12 year old Aboriginal have DMFT=0	31.6%	30.4%

Table 20: COHF, Aboriginal 12 year old Outcomes, 2013-14/2018-19

[i] Baseline from Inuit Oral Health Survey, 2009-10
Note: This is not representative of all First Nations populations. The sample includes only those children whose parents self-declared as First Nations for insurance purposes.

Dental Health Disparities

In this section, we analyzed a similar set of screening data for Grade One and Seven students together. Comparisons conducted include:

- Urban (Saskatoon and Regina) and all other schools
- Communities with and without access to fluoridated water systems
- Those that have visited a dentist in past year and those who have not
- Those that have a family dentist and those that do not
- Those that have dental insurance and those that do not
- Hutterite and non-Hutterite schools
- Aboriginal and Non Aboriginal students
- Saskatoon and Regina students

Note that for the above, a z-test for proportion analysis was conducted to identify whether the indicator value between the two groups was different or not. A p-value of less than 0.05 was used to represent statistical significance. For the DMFT and deft scores, a z-test for means analysis was utilized using the same p-value cut off. Note that statistical significance can be different than clinical significance.

1. **Urban and All Other Schools**

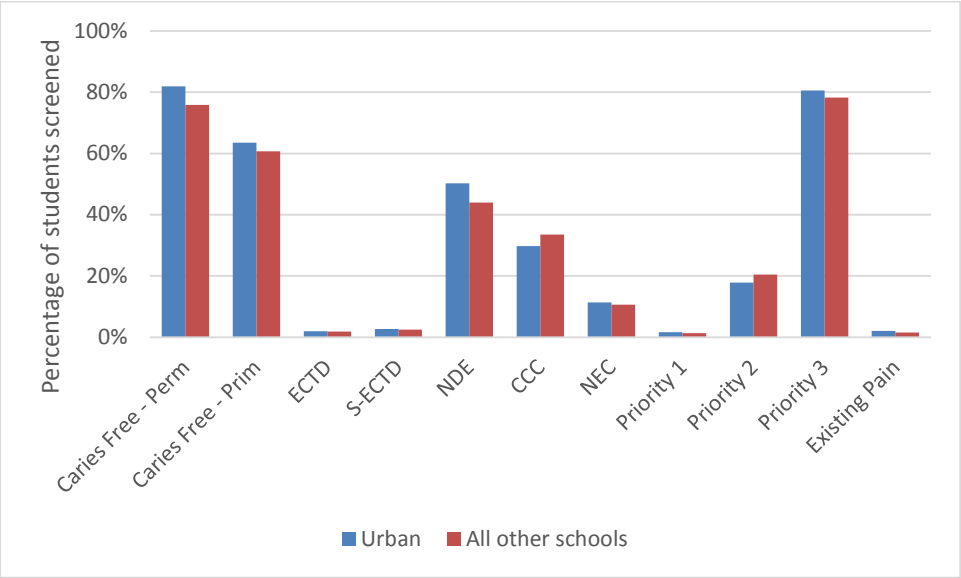
   All children were assigned as attending an urban or other school based on the location of the school they attended during the screening year. Regina and Saskatoon were considered urban, compared to all other schools. For the 13 different indicators, findings were roughly evenly split between urban and all other schools. Students from urban schools fared better with deft and DMFT as well as caries free proportions, while students in all other schools fared better in some status, priority and pain indicators (Table 21 and Figure 3).

Table 21: Outcomes in Urban vs. All Other schools, Grades One and Seven combined, 2018-19

		School Location			
		Urban	**All Other Schools**	**Better[i]**	**p-value**
DMFT score		0.48	0.66	Urban	<.05[i]
deft score		1.96	2.10	Urban	<.05[i]
Caries Free - Permanent Dentition		8,722 (81.9%)	10,265 (75.8%)	Urban	<.05
Caries Free - Primary Dentition		6,764 (63.5%)	8,212 (60.7%)	Urban	<.05
Childhood Tooth Decay (Gr 1 only)	**ECTD**	118 (2.0%)	140 (1.9%)	No Difference	.74
	S-ECTD	155 (2.7%)	178 (2.5%)	No Difference	.50
Oral Health Status	**NDE**	5,342 (50.2%)	5,958 (44.0%)	Urban	<.05
	CCC	3,176 (29.8%)	4,529 (33.5%)	Other	<.05
	NEC	1,219 (11.4%)	1,431 (10.6%)	Other	<.05
Priority Scores	**1**	179 (1.7%)	171 (1.3%)	Other	<.05
	2	1,899 (17.8%)	2,779 (20.5%)	Urban	<.05
	3	8,573 (80.5%)	10,585 (78.2%)	Urban	<.05
Existing Pain	**Yes**	222 (2.1%)	214 (1.6%)	Other	<.05

[i] Based on z test for two sample means. All other tests in this column z test for proportions. P-value less than 0.05 means a statistically significant difference at the 95% level. N= 10,651 for Urban; N=13,536 for All Other Schools.

Figure 3: Dental Health of Students by Urban and All Other Schools, 2018-2019



2. Fluoridation

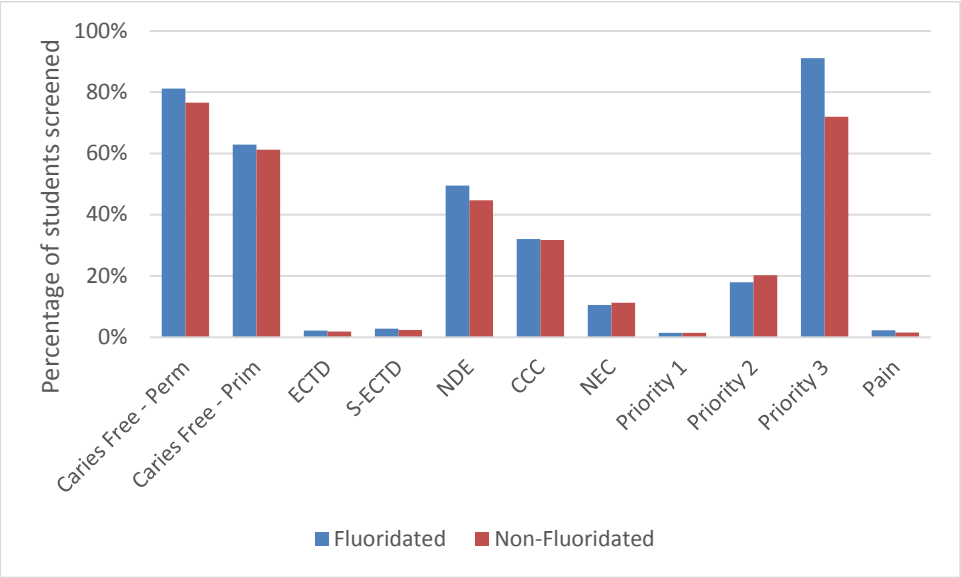
Outcomes for students attending schools in communities with fluoridated water or naturally occurring fluoride at optimal levels, compared with communities with non-fluoridated water was conducted (see Appendix 6 for list of fluoridated communities). Students having access to fluoridated water showed better oral health outcomes on nine of the 13 indicators examined (Table 22 and Figure 4). Note that fluoride levels were assessed in 2020 and the dental screening took place in 2018-19. As such, it is unclear how much exposure each student had to fluoridated water in their communities.

Table 22: Fluoridated and Non-Fluoridated outcomes, Grades One and Seven combined, 2018-19

		Water Supply			
		Fluoridated	**Non-Fluoridated**	**Better** [i]	**p-value**
DMFT Score		0.50	0.64	Fluoridated	<.05[i]
deft Score		1.96	2.10	Fluoridated	<.05[i]
Caries Free - Permanent Dentition		8,223 (81.2%)	10,764 (76.6%)	Fluoridated	<.05
Caries Free - Primary Dentition		6,368 (62.9%)	8,608 (61.2%)	Fluoridated	<.05
Childhood Tooth Decay (Gr 1 only)	**ECTD**	120 (2.2%)	138 (1.9%)	No difference	.745
	S-ECTD	155 (2.8%)	178 (2.4%)	No difference	.496
Oral Health Status	**NDE**	5,015 (49.5%)	6,285 (44.7%)	Fluoridated	<.05
	CCC	3,255 (32.1%)	4,450 (31.7%)	Fluoridated	<.05
	NEC	1,064 (10.5%)	1,586 (11.3%)	Fluoridated	<.05
Priority Scores	**1**	151 (1.5%)	199 (1.4%)	Non-Fluoridated	<.05
	2	1,638 (17.9%)	3,040 (20.2%)	Fluoridated	<.05
	3	8,338 (91.1%)	10,820 (72.0%)	Fluoridated	<.05
Pain	**YES**	207 (2.3%)	229 (1.5%)	Non-Fluoridated	<.05

[i] Based on z test for two sample means. All other tests in this column z test for proportions. P-value less than 0.05 means a statistically significant difference at the 95% level. N= 10,128 for Fluoride; N=14,059 for Non-Fluoridated.

Figure 4: Dental Health of Students by Fluoridated and Non-Fluoridated Water Supply, 2018-2019



3. Dental Visit

Students were asked whether they had seen a dentist in the past year. Over 80% of students responded yes [i]. Those who visited a dentist had better oral health than students who did not visit a dentist based on the 13 indicators (Table 23 and Figure 5). Those who visited a dentist scored better on seven indicators, with much better outcomes achieved for NEC (neglect) and CCC (complete care). Also, 83.8% of the students who visited dentist answered 'Yes' for having dental coverage as compared to 57.7% of the students who answered 'No' to the same question.

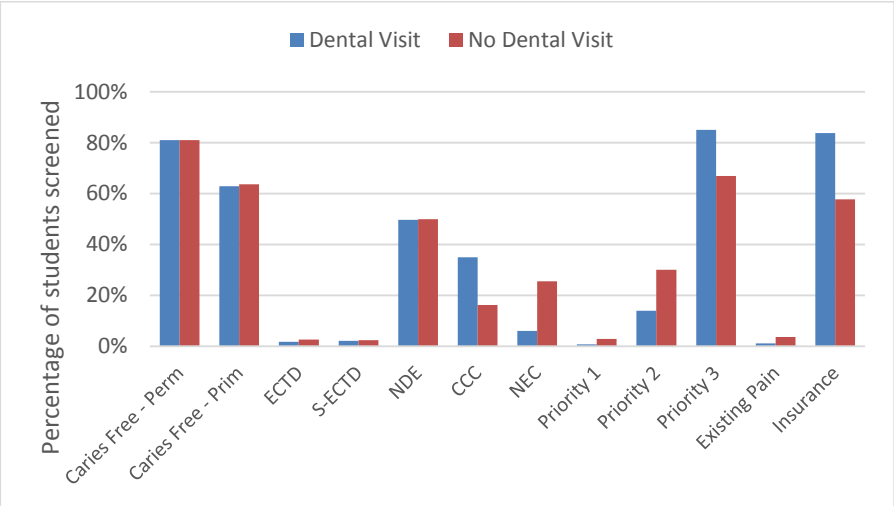
Table 23: Dental Visit Yes vs. No outcomes, Grades One and Seven combined, 2018-19

		Dental Visit			
		Yes	**No**	**Better [ii]**	**p-value**
DMFT Score		0.49	0.51	No difference	.182
deft Score		1.92	1.87	No Dental Visit	<.05
Caries Free - Permanent Dentition		10,737 (81.0%)	2,592 (81.1%)	No difference	.970
Caries Free - Primary Dentition		8,331 (62.9%)	2,037 (63.7%)	No difference	.374
Childhood Tooth Decay (Grade 1 only)	**ECTD**	132 (1.8%)	50 (2.7%)	Dental Visit	<.05
	S-ECTD	155 (2.1%)	45(2.4%)	No difference	.448
Oral Health Status	**NDE**	6,587 (49.7%)	1,595 (49.9%)	No difference	.864
	CCC	4,636 (35.0%)	517 (16.2%)	Dental Visit	<.05
	NEC	804 (6.1%)	816 (25.5%)	Dental Visit	<.05
Priority Scores	**1**	111 (0.8%)	93 (2.9%)	Dental Visit	<.05
	2	1,860 (14.0%)	961 (30.1%)	Dental Visit	<.05
	3	11,281 (85.1%)	2,144 (67.0%)	Dental Visit	<.05
Existing Pain	**Yes**	153 (1.2%)	116 (3.6%)	Dental Visit	<.05
Dental Insurance	**Yes**	11,099 (83.8%)	1,845 (57.7%)	Dental Visit	<.05

[i] Note that 13,252 responded yes and 3,198 responded no to visiting dentist. Another 7,738 students either responded don't know or was blank. These responses were excluded from the percentage calculation.

[ii] Based on z test for two sample means. All other tests in this column z test for proportions. P-value less than 0.05 means a statistically significant difference at the 95% level.

Figure 5: Dental Health of Students by Dental Visit, Yes/No, 2018-2019



4. Has Family Dentist

Analysis was conducted between students having a regular dentist and those students who did not. Over 80% of students responded that they had a family dentist[i]. Having a regular dentist had major benefits as for all indicators examined, students with a dentist fared better than those without (Table 24 and Figure 6). Also, 85.6% of the students with dental insurance had a regular dentist compared to 52.1% without insurance.

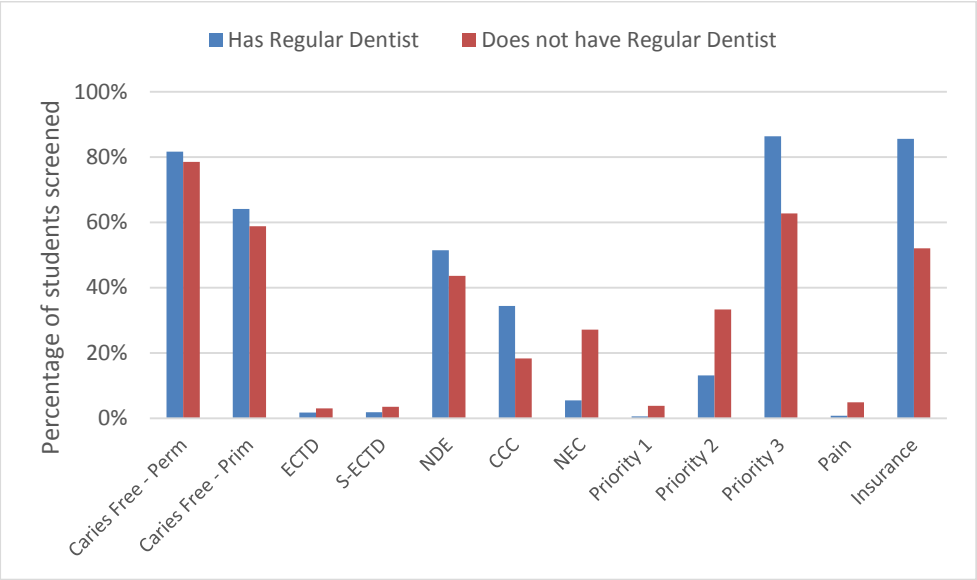
Table 24: Family Dentist Yes vs No outcomes, Grades One and Seven combined, 2018-19

		Regular Dentist			
		Yes	**No**	**Better[ii]**	**p-value**
DMFT Score		0.47	0.58	Dentist	<.05
deft Score		1.78	2.34	Dentist	<.05
Caries Free - Permanent Dentition		10,695 (81.7%)	2,479 (78.6%)	Dentist	<.05
Caries Free - Primary Dentition		8,398 (64.1%)	1,856 (58.8%)	Dentist	<.05
Childhood Tooth Decay (Grade 1 only)	**ECTD**	125 (1.8%)	53 (3.0%)	Dentist	<.05
	S-ECTD	133 (1.9%)	63 (3.5%)	Dentist	<.05
Oral Health Status	**NDE**	6744 (51.5%)	1,374 (43.6%)	Dentist	<.05
	CCC	4,504 (34.4%)	578 (18.3%)	Dentist	<.05
	NEC	721 (5.5%)	857 (27.2%)	Dentist	<.05
Priority Scores	**1**	77 (0.6%)	121 (3.8%)	Dentist	<.05
	2	1710 (13.1%)	1,050 (33.3%)	Dentist	<.05
	3	11,305 (86.4%)	1,981 (62.8%)	Dentist	<.05
Pain	**Yes**	108 (0.8%)	155 (4.9%)	Dentist	<.05
Dental Insurance	**Yes**	11,214 (85.6%)	1,644 (52.1%)	NA	<.05

[i] Note: 13,092 responded yes and 3,152 responded no to having a dentist. Another 7,944 students either responded don't know or left blank. These responses were excluded from the percentage calculation.

[ii] Based on z test for two sample means. All other tests in this column z test for proportions. P-value less than 0.05 means a statistically significant difference at the 95% level.

Figure 6: Dental Health of Students by Regular Dentist Yes/No, 2018-2019.



5. Dental Health Insurance

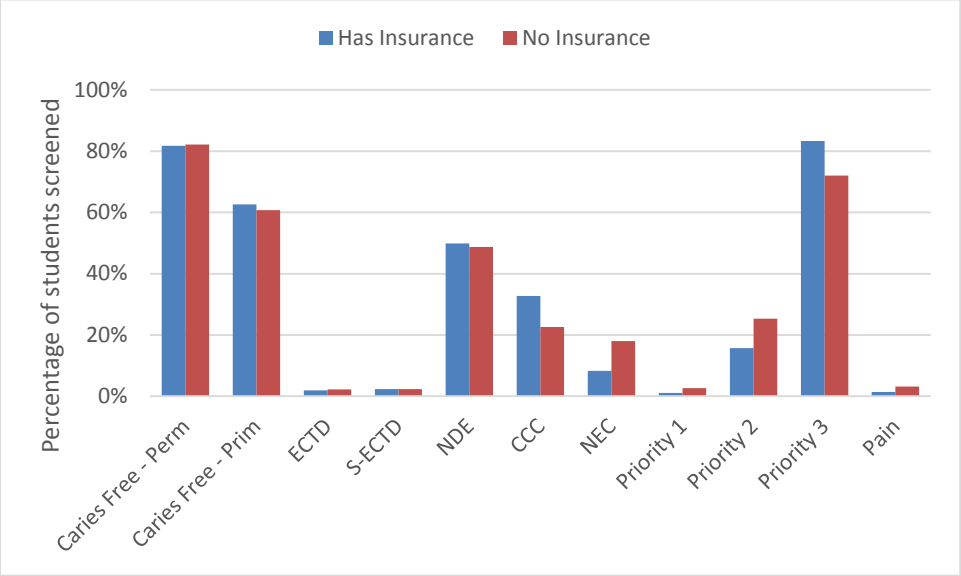
Students could select whether they had dental health insurance or not as part of the screening process. Students with dental insurance fared better on seven indicators including DMFT and deft scores as well as most status and priority indicators (see Table 25 and Figure 7).

Table 25: Dental Insurance Yes vs No outcomes, Grades One and Seven combined, 2018-19

		Dental Insurance			
		Yes	No	Better[i]	p-value
DMFT Score		0.47	0.45	No Difference	.134
deft Score		1.97	2.00	Insurance	<.05
Caries Free - Permanent Dentition		81.7%	82.2%	No Difference	.609
Caries Free - Primary Dentition		62.5%	60.8%	No Difference	.124
Childhood Tooth Decay (Grade 1 only)	ECTD	1.9%	2.2%	No Difference	.505
	S-ECTD	2.3%	2.3%	No Difference	.941
Oral Health Status	NDE	49.9%	48.7%	No Difference	.309
	CCC	32.8%	22.6%	Insurance	<.05
	NEC	8.3%	18.0%	Insurance	<.05
Priority Scores	1	1.1%	2.7%	Insurance	<.05
	2	15.7%	25.3%	Insurance	<.05
	3	83.3%	72.0%	Insurance	<.05
Pain	Yes	1.4%	3.2%	Insurance	<.05

[i] Based on z test for two sample means. All other tests in this column z test for proportions. P-value less than 0.05 means a statistically significant difference at the 95% level. N= 13,347 has insurance; N=1,999 does not have insurance.

Figure 7: Dental Insurance, Yes vs No outcomes, Grades One and Seven combined, 2018-19



6. Aboriginal Status

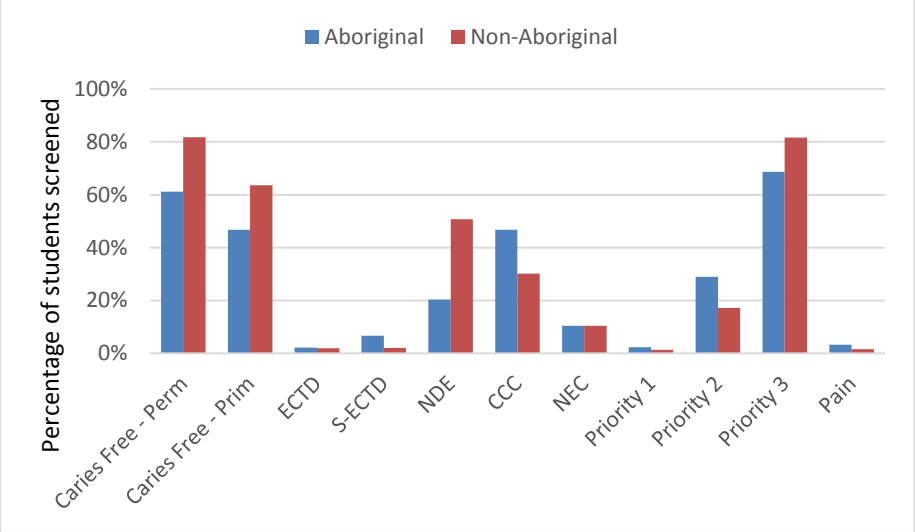
Aboriginal status of children was determined using the information provided on the dental insurance coverage. Under dental insurance coverage, there was an option to declare the type of coverage used for dental care. The students who declared their coverage from First Nations/Inuit Health Branch were considered to be Aboriginal. Aboriginal students and non-Aboriginal students was applied on 13 different indicators. Non-Aboriginal students performed better on nearly all of these indicators, indicating worse oral health status for Aboriginal students in the province (Table 26 and Figure 8).

Table 26: Aboriginal and Non-Aboriginal outcomes, Grades One and Seven combined, 2018-2019

		Aboriginal Status			
		Aboriginal	**Non-Aboriginal**	**Better** [i]	**p-value**
DMFT Score		1.29	0.46	Non-Aboriginal	<.05
deft Score		4.27	1.80	Non-Aboriginal	<.05
Caries Free - Permanent Dentition		757 (61.2%)	14,113 (81.7%)	Non-Aboriginal	<.05
Caries Free - Primary Dentition		578 (46.8%)	10,986 (63.6%)	Non-Aboriginal	<.05
Childhood Tooth Decay (Grade 1 only)	**ECTD**	15 (2.2%)	193 (2.0%)	No Difference	.797
	S-ECTD	46 (6.7%)	202 (2.1%)	Non-Aboriginal	<.05
Oral Health Status	**NDE**	252 (20.4%)	8,758 (50.7%)	Non-Aboriginal	<.05
	CCC	579 (46.8%)	5,225 (30.2%)	Aboriginal	<.05
	NEC	129 (10.4%)	1,788 (10.4%)	No Difference	.923
Priority Scores	**1**	28 (2.3%)	221 (1.3%)	Non-Aboriginal	<.05
	2	359 (29.0%)	2,965 (17.2%)	Non-Aboriginal	<.05
	3	849 (68.7%)	14,089 (81.6%)	Non-Aboriginal	<.05
Existing Pain	**Yes**	41 (3.3%)	278 (1.6%)	Non-Aboriginal	<.05

[i] Based on z test for two sample means. All other tests in this column z test for proportions. P-value less than 0.05 means a statistically significant difference at the 95% level. N= 1,236 Aboriginal; N=17,275 Non-Aboriginal.

Figure 8: Dental Health of Students by Aboriginal/Non-Aboriginal Status, 2018-2019



7. Hutterite and Non-Hutterite

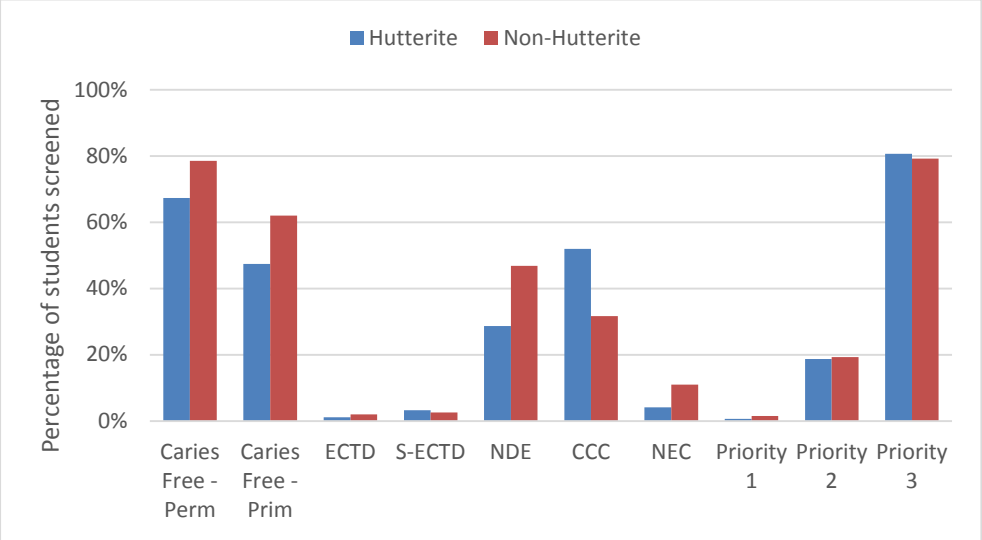
Hutterites are communal people who live throughout the prairies in distinct communities consisting of about 100 people each. They generally work within their communities and they have their own schools. Analysis comparing students attending Hutterite schools and non-Hutterite schools was conducted (see Appendix 4 for list of Hutterite schools). Student outcomes for Non-Hutterites were generally better on the nine indicators where there was sufficient sample size to report. Non Hutterite school students fared better on deft, DMFT, and caries free indicators. Hutterite school students scored better on most of the status indicators (Table 27 and Figure 9).

Table 27: Hutterite and Non-Hutterite outcomes, Grades One and Seven combined, 2018-19

		Hutterite	Non Hutterite	Better [i]	p-value
DMFT Score		1.17	0.58	Non-Hutterite	<.05
deft Score		3.04	2.03	Non-Hutterite	<.05
Caries Free - Permanent Dentition		115 (67.3%)	18,872 (78.6%)	Non-Hutterite	<.05
Caries Free - Primary Dentition		81 (47.4%)	14,985 (62.0%)	Non-Hutterite	<.05
Childhood Tooth Decay (Grade 1 only)	**ECTD**	NA	257 (2.0%)	NA	NA
	S-ECTD	NA	330 (2.6%)	NA	NA
Oral Health Status	**NDE**	49 (28.7%)	11,251 (46.8%)	Non-Hutterite	<.05
	CCC	89 (52.0%)	7,616 (31.7%)	Hutterite	<.05
	NEC	7 (4.1%)	2,643 (11.0%)	Hutterite	<.05
Priority Scores	**1**	NA	349 (1.5%)	NA	NA
	2	32 (18.7%)	4,646 (19.3%)	No Difference	.83
	3	138 (80.7%)	19,020 (79.2%)	No Difference	.63
Pain	**Yes**	NA	435 (1.8%)	NA	NA

[i] Based on z test for two sample means. All other tests in this column z test for proportions. P-value less than 0.05 means a statistically significant difference at the 95% level. N= 171 Hutterite; N=24,016 Non-Hutterite.
NA: Cell size too small to report (less than 6).

Figure 9: Dental Health of Students by Hutterite and Non-Hutterite Community, 2018-19



Regina and Saskatoon

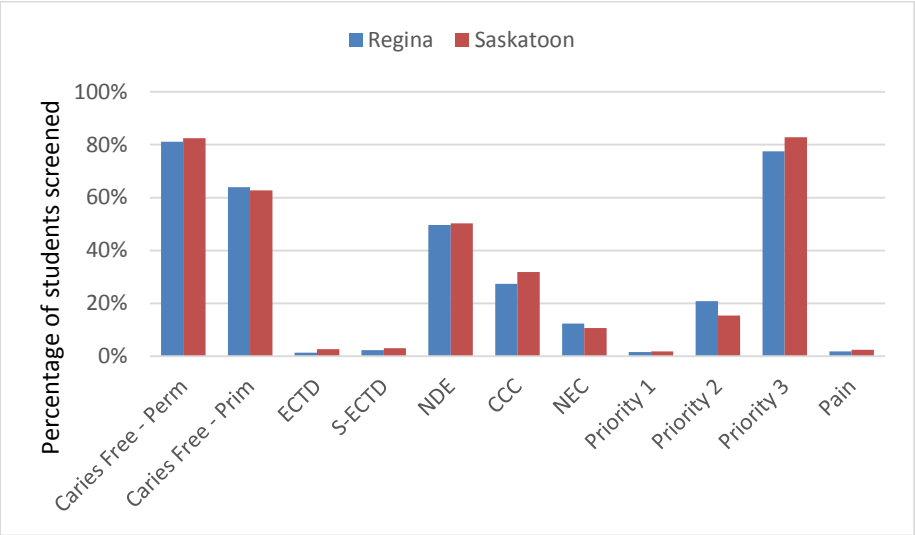
Students attending schools in Regina and Saskatoon were assessed for outcomes on 13 different indicators. Students from Saskatoon schools fared better on six indicators including DMFT and deft scores as well as most status and priority indicators. Regina students fared better on ECTD and pain prevalence (see Table 28 and Figure 10).

Table 28: Regina and Saskatoon outcomes, Grades One and Seven combined, 2018/19

		Regina	Saskatoon	Better[i]	p-value
DMFT Score		0.51	0.46	Saskatoon	<.05
deft Score		2.02	1.92	Saskatoon	<.05
Caries Free - Permanent Dentition		3,937 (81.1%)	4,692 (82.5%)	No Difference	.08
Caries Free - Primary Dentition		3,104 (64.0%)	3,576 (62.8%)	No Difference	.221
Childhood Tooth Decay (Grade 1 only)	**ECTD**	36 (1.4%)	82 (2.7%)	Regina	<.05
	S-ECTD	62 (2.3%)	93 (3.0%)	No Difference	.108
Oral Health Status	**NDE**	2,410 (49.7%)	2,864 (50.3%)	No Difference	.497
	CCC	1,329 (27.4%)	1,817 (31.9%)	Saskatoon	<.05
	NEC	603 (12.4%)	609 (10.7%)	Saskatoon	<.05
Priority Scores	**1**	78 (1.6%)	101 (1.8%)	No Difference	.507
	2	1,014 (20.9%)	874 (15.4%)	Saskatoon	<.05
	3	3,760 (77.5%)	4,715 (82.9%)	Saskatoon	<.05
Pain	**Yes**	85 (1.8%)	137 (2.4%)	Regina	<.05

[i] Based on z test for two sample means. All other tests in this column z test for proportions. P-value less than 0.05 means a statistically significant difference at the 95% level. N= 4,852 Regina; N=5,640 Saskatoon.

Figure 10: Dental Health of Students, Regina vs. Saskatoon, 2018-19



Dental Health Status by Region

The following table illustrates a summary of dental health status indicators by former Health Region. The analysis shows that students from the former northern regions of Keewatin Yatthe and Mamawetan Churchill River had far worse outcomes than students from southern former regions like Cypress and Sun Country (Table 29).

Table 29: Dental Health of Students by Former Health Region, 2018-2019

Location of School	Average 'deft/DMFT' score	% Cavity Free	% with No Evidence of Dental Care	% with Pain
Cypress	1.73	58.0	7.3	1.0
Five Hills	2.56	44.6	9.2	1.0
Heartland	2.86	41.2	11.4	3.2
Keewatin Yatthé	6.38	11.8	25.8	6.1
Kelsey Trail	3.39	31.7	12.6	1.7
Mamawetan Churchill River	4.36	33.0	17.0	3.0
Prairie North	3.34	35.3	12.3	1.6
Prince Albert Parkland	3.72	34.4	10.9	2.8
Regina Qu'Appelle	2.54	48.1	12.0	1.7
Saskatoon	2.30	49.7	9.9	2.0
Sun Country	1.59	58.9	9.6	0.2
Sunrise	2.64	44.6	10.4	1.0

Some dental health indicators, namely deft/DMFT scores for six year olds (Figure 11) and twelve year olds (Figure 12), pain for all ages combined (Figure 13) and no evidence of dental care for all ages combined (Figure 14) were mapped and presented by former Health Region.

Figure 11 displays the deft/DMFT score distribution for six year olds by former Health Region for both the 2013-14 screening years as well as the 2018-19 screening years. For the most part, the scores have remained consistent over time and geography.

Figure 11: Average deft/DMFT score of greater than 2.5 for six year olds by Former Health Regions, 2013-14 and 2018-19

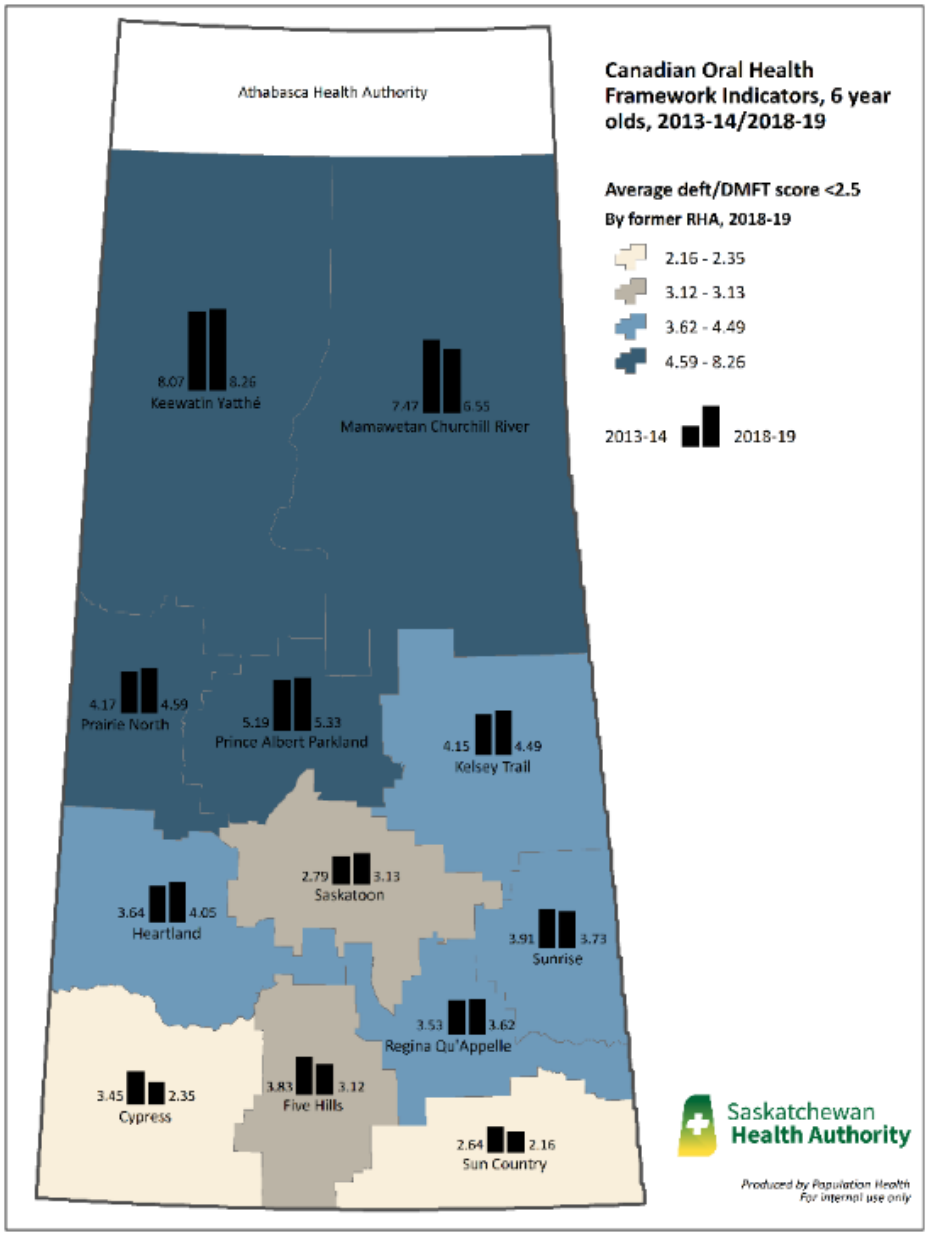


Figure 12 displays the DMFT score distribution for 12 year olds by former Health Region for both the 2013/14 screening years as well as the 2018/19 screening years. For the most part, the scores have remained consistent over time and geography. However, there are some geographical variations, particularly in former Cypress HR, former Mamawetan Churchill River HR and former Prince Albert Parkland HR.

Figure 12: DMFT score of less than 1.0 for twelve year olds by Former Health Regions, 2013-14 and 2018-19

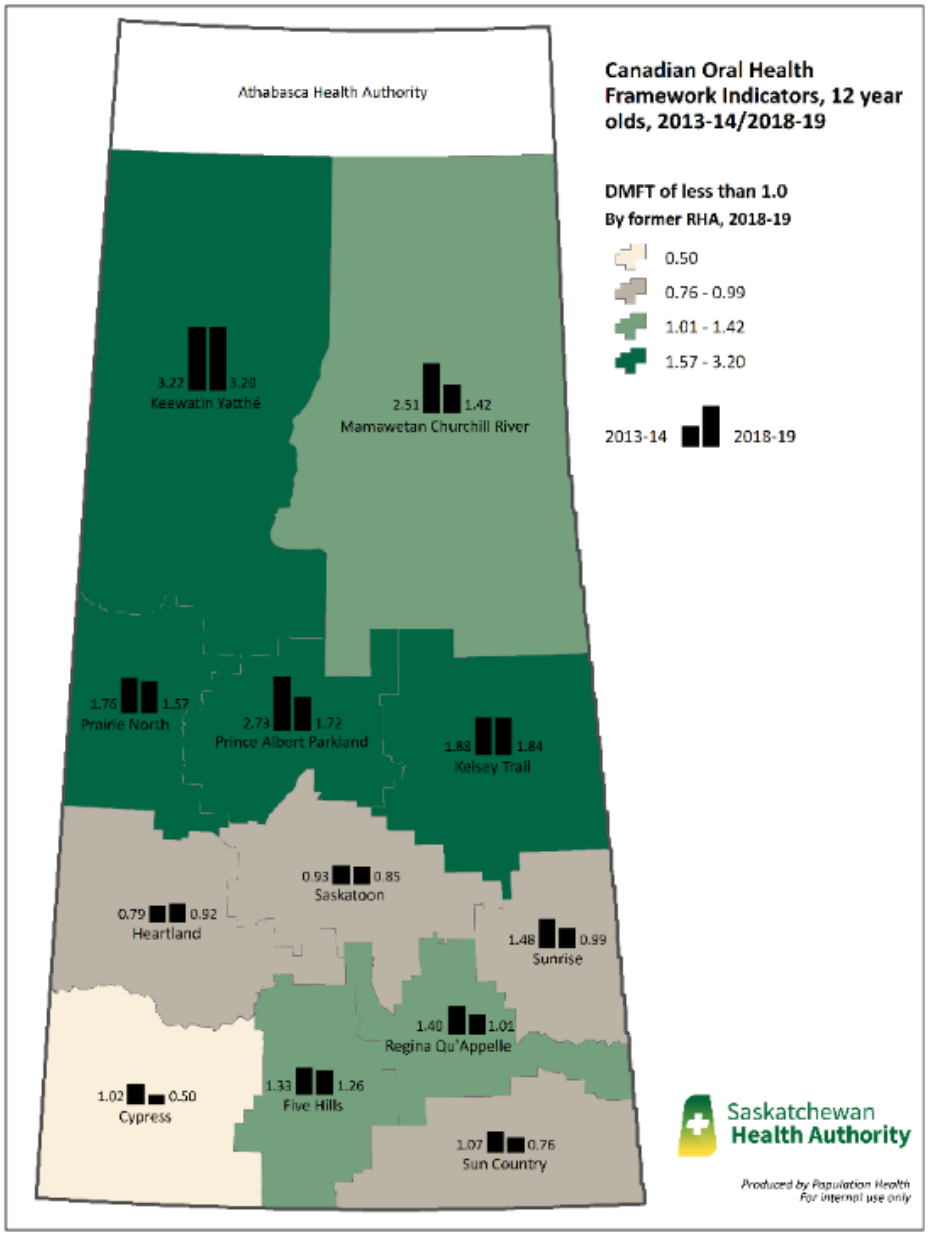


Figure 13 displays the geographical distribution of students with pain for the 2018-19 screening year. Generally, higher pain scores are seen in northern former regions of the province as well as former Heartland Health region in the central west part of the province.

Figure 13: Dental Health of Students, percent with pain, by Former Health Region, 2018-19

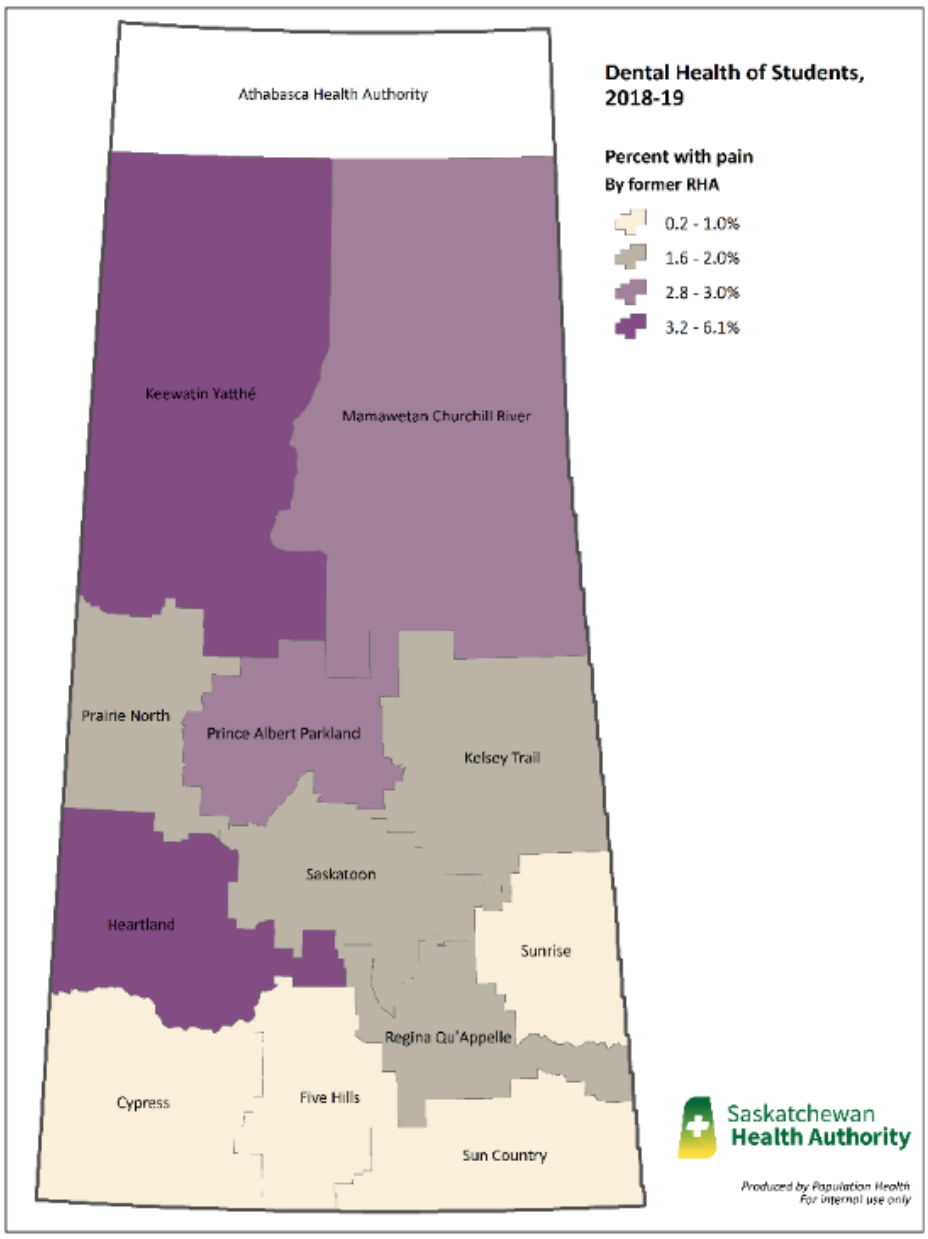
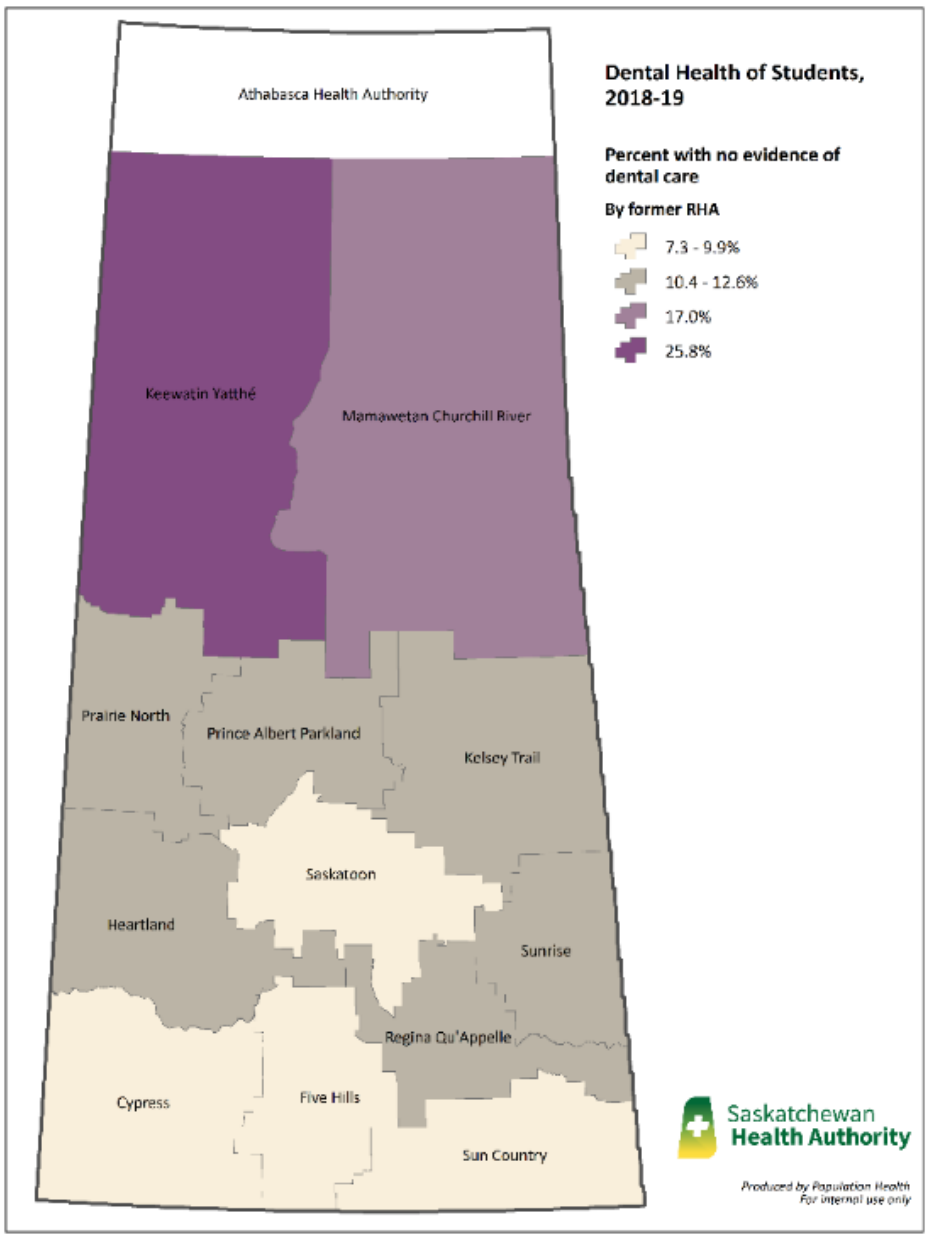


Figure 14 displays the geographical distribution of students with pain for the 2018-19 screening year. No evidence of dental care shows worse outcomes in the northern part of the province with continually better outcomes as one travels south.

Figure 14: Dental Health of Students, percent with no evidence of dental care, by Former Health Region, 2018-19



Discussion

Over 24,000 students participated provincially in Dental Health Screening in 2018-19. While over 3,300 were either absent on the day of screening, or did not return signed forms from their parents/guardians in time, or stated “no” to the dental screening, this still represents almost 88% of students across the province. The number of students screened was nearly 5,000 more than in 2013-14.The total number of Grade One and Seven children, including those on First Nations communities and those home schooled totaled over 32,000. Thus, using that marker, it can be assumed that about three quarters of the total population of Grade One and Seven students were screened.

Over time in Saskatchewan, oral health outcomes have gotten worse for Grade One students. In 2018/19, the deft/DMFT score was 3.65, the percentage of children with cavities at 28.2%, and the percentage of children with no evidence of dental care at 14.9%, which is worse than the first dental screening report in 1993-94. For Grade Seven students, the picture is not as bleak as 2018-19 saw improvements in deft/DMFT score of 1.43 and the percentage of children cavity free at 53.0%. As a whole however, the trends seem to be worsening over time in Saskatchewan.

Regular dentist visits are important for maintaining good health. For the 2018-19 screening year, 80.6% of students visited a dentist, nearly identical to the 80.2% reported in 2013-14. Furthermore, 80.6% of students have a regular dentist as reported in 2018-19.

Six year old and twelve year old outcomes were compared to national standards as set out in the Canadian Oral Health Framework. Unfortunately, six year olds have not met any of the standards while twelve year olds were very close to meeting the DMFT score of less than 1.0 (they registered 1.06). In conclusion though, there is more work to be done in Saskatchewan in order to reach national goals.

While it is necessary to report on oral health outcomes as a provincial total, this can mask disparities that exist within the province. The analysis showed that having a regular dentist makes the biggest difference in oral health outcomes. Having visited a dentist as well as coming from a community with fluoridated water also has benefits to children’s oral health. Unfortunately more work is needed to improve Aboriginal student’s oral health outcomes.

Next Steps

The findings of this report will be disseminated and shared with interested stakeholders across Saskatchewan.

Upon review of the findings of this report, recommendations will be developed to assist with implementation of dental health programs, to assist with improvement of outcomes that were not achieved according to the Canadian Oral Health Framework indicators.

Although the screening results provides an overview of the dental health status of children in Saskatchewan, the effects of dental health programs that target high risk schools and outcomes for children in these areas/schools is still unclear. A separate analysis may be conducted to understand the effect of such programs

Appendix 1: Dental Screening Program Definitions

deft/DMFT:

- Index used to measure disease experience. It is the count of the number of decayed, extracted (due to caries), and filled deciduous teeth of an individual and the number of decayed, missing and filled (due to caries) permanent teeth of an individual.

deft:

Decay:

- Visual or obvious decay of primary teeth
- Discoloration or loss of translucency typical of undermined or de-mineralized enamel
- The tooth may or may not be restorable.

Extracted:

- The primary teeth that have been extracted because of dental caries. Teeth missing for other reasons (i.e.: ortho, trauma, heredity) are not recorded.

Filled:

- A primary tooth with a permanent or temporary restoration as a result of caries
- If the tooth has a defective restoration without evidence of decay. (Note: Record as broken/fractured/lost).

DMFT:

Decay:

- Visual or obvious decay of permanent teeth
- Discoloration or loss of translucency typical of undermined or de-mineralized enamel the tooth may or may not be restorable.

Missing:

- The permanent teeth that have been extracted as a result of dental caries. Teeth lost for other reasons (i.e.: ortho, trauma, heredity) are not recorded.

Filled:

- A permanent tooth with a permanent or temporary restoration as a result of caries
- If the tooth has a defective restoration without evidence of decay. (Note: Record as broken/fractured/lost).

Recurrent decay:

- When a tooth has visible recurrent decay (around a filling) then the tooth is marked as decayed even though it may have a restoration in place.
- When a tooth has a restoration in place with no visible recurrent decay (around a filling) but decay is visible on another surface (e.g. mesial, distal) record the tooth as decayed.

Pain

- Pain as a result of tooth decay, injury, periodontal disease, or over retention

Infection:

- Infection visible (abscess)

Broken/Fractured/Lost:

- A tooth that has been restored where the restoration (i.e., crown, amalgam) has failed and there is no obvious decay

Restored/Fractured:

- Fracture of the crown involving the dentin. The tooth is restored.

Non-restored/Fractured:

- Fracture of the crown involving the dentin. The tooth is not restored or the restoration has been lost.

ECTD:

- The presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger (American Academy of Pediatric Dentistry, 2008)

S-ECTD:

- Any sign of smooth-surface caries in children younger than 3 years of age. From ages 3 through 5, one or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a decayed, missing or filled score of ≥4 (age 3), ≥5 (age 4), or ≥6 (age 5) surfaces constitutes S-ECC (American Academy of Pediatric Dentistry, 2008)

Supernumerary Teeth:

- Supernumerary teeth are not counted. You must decide which tooth is the legitimate occupant of the space.

Overretained:

- Where both primary and permanent teeth occupy the same tooth space, only the permanent tooth is considered

Non-vital Teeth:

- Are to be scored as if they are vital.

Priority Scores

Priority 1:

- Pain and/or infection present
- Urgent, required immediate attention

Priority 2:

- ECC or S-ECC
- Visible decay in 1-4 quadrants
- Treatment required as soon as possible

Priority 3:

- No visible decay

Note: Suspicious areas recorded that **may** be decay as **"stained".**

Status:

No Decay Experience (NDE):

- Indicates that no decay, fillings or extractions are evident

Complete Caries Care (CCC):

- Indicates that all decayed teeth appear to have been treated

Partial Caries Care (PCC):

- Indicates that some teeth have been treated, but decay is still evident

No Evidence Care/Neglect (NEC):

- Indicated that there is decay, but no evidence of past or present dental treatment

Appendix 2: Hutterite Schools

School Name	School Name
Abbey Hutterite School	Lajord Colony School
Arm River Hutterite School	Lakeside Colony School
Baildon Colony Hutterite Elementary School	Leask Colony School
Barr Colony School	Lost River Hutterite Colony School
Belle Plain Hutterite School	McMahon Colony School
Bone Creek Hutterite	Norfolk Hutterite School
Box Elder Hutterite School	Pelletier Hill Hutterian School
Butte Hutterite School	Pennant Colony School
Capeland Hutterite School	Riverbend Hutterite Colony School
Carmichael Hutterite School	Riverview Hutterite School
Clear Springs Hutterite School	Rose Valley Hutterian
Creston Bench Hutterian School	Sand Lake Hutterite Elementary
Cypress Hutterite School	Sierra Hutterite School
Downie Lake Hutterite School	Silver Stream Hutterite School
Earview Hutterian School	Southland Hutterite School
East Fairwell Hutterian School	Spring Creek Hutterite School
Estuary Hutterite School	Spring Lake Hutterite School
Garden Plane Hutterite School	Star City Hutterite School
Grassy Hill Hutterite School	Sunset Hutterite School
Haven Hutterite School	Tompkins Hutterite School
Hillcrest Hutterite School	Webb Hutterite School
Hillsvale Colony School	Wheatland Hutterite School
Hulbert Hutterite School	

Appendix 3: Community Schools

Albert	McDermid
Argyle	Mayfair Community School
Balcarres	McKitrick
Beauval - Valleyview	Minahik Waskahigan – Elementary
Big River Community Public High School	Minahik Waskahigan - High
Buffalo Narrow – Twin Lakes	Pleasant Hill Community School
Cando Community School	PreCam School Elementary
Canwood Community Public School	Prince Arthur Community School
Caroline Robins Community School	Princess Alexandra Community School
Caswell Community School	Punnichy Elem
Centennial	Queen Mary Community Public School
Cole Bay – Lake view	Riverside Community Public School
Cole Bay	Rosemont
Confederation Park Community School	Sacred Heart
Connaught	Sandy Bay –Hector Thiboutot Community School
Coronation Park	St. Frances
Creighton	St. Georges Hill Community School
Dr. Brass	St. Goretti Community School
Elsie Mironuck	St. John Community School
Empire Community School	St. John Community School
Father Gorman	St. Louis Community Public School
Fort Qu'Appelle Elem	St. Mark Community School
Glen Elm	St. Mary Community School
Gordon Denny	St. Mary Community School
Gordon Denny School Community School	St. Mary's
Gordon Denny School Community School	St. Michael Community School
Green Lake – St. PAscal	St. Michael Community School
Green Lake	St.Augustine
Grenfell Elem	St.Catherine
Grenfell High	St.Francis
Holy Rosary	St.Michael
Ile-a-la-Crosse	Stobart Community School (Duck Lake)
Imperial	Thompson
Jack Kemp	Turtleford School
Jans Bay	Twin Lakes Valley View Ducharme & Highschool
Jans Bay	Victoria School
Jonas Sampson Jr High	Vincent Massey Community Public School
Jubilee Elementary	Vincent Massey Community School
King George Community Public School	W.P. Bate Community School
King George Community School	Wascana
Kitchener	Westmount Community School
Lakeview Elementary	Westview Community Public School
La Loche – Dene High Community School	Weyakwin - Kiskahikan
La Loche – Ducharme School Community School	WFA Turgeon Catholic Community School
Leask Community Public School	

Appendix 4: Dental Screening Information Letter: 2018-2019

Government of Saskatchewan
Ministry of Health

Dental Screening Program Grade 1 and 7 Students

Dear Parent or Guardian,

A licensed oral health professional will provide a dental screening for your child on _____.

The dental screening will include the use of a small flashlight and tongue depressor or a sterilized mouth mirror. After the dental screening has been done, a letter will be sent home with your child. This screening does not replace regular checkups at your dental office.

The information collected from the screening will be used to plan and develop preventive program services based on the needs of your community.

Your child will receive a dental screening unless you contact: _____.

Your child's Personal Health Services number is required for statistical purposes.
Complete the bottom portion of this letter and return to the school by: _____.

Dental Screening Program

Enter your child's Personal Health Services Number here →

Saskatchewan Health Services
☐☐☐ ☐☐☐ ☐☐☐

Health Region: _____

School: _____ **Grade:** _____

Child's Name: _____
(Last) (First)

Birthdate: _____/_____/_____ **Male:** ☐ **Female:** ☐
(day) (month) (year)

Address: _____
Street Town/City Postal Code

Home Phone: _____ **Cell phone:** _____ **Email:** _____

Answer the following questions (optional):

1. Does your child have a family dentist that they see regularly? ☐ Yes ☐ No ☐ Not sure
2. Has your child been to the dentist in the past year? ☐ Yes ☐ No ☐ Not sure
3. Does your child have dental insurance/coverage? ☐ Yes ☐ No ☐ Not sure
   If Yes to question 3, what type of insurance does your child have?
   - ☐ First Nations Inuit Branch (Non-insured Health Benefits Program)
   - ☐ Family Health Benefits/Supplementary Health
   - ☐ Private Insurance (example: insurance through work plan)
4. Has your child immigrated to Canada in the past 2 years? ☐ Yes ☐ No ☐ Not sure
   If yes to question 4, from what country? _____

August 2013
DH 276

Dental Health

Office Use Only

17	16	15	14	13	12	11	21	22	23	24	25	26	27
		55	54	53	52	51	61	62	63	64	65		
		85	84	83	82	81	71	72	73	74	75		
47	46	45	44	43	42	41	31	32	33	34	35	36	37

- ☐ Existing Pain
- ☐ Infection
- ☐ Caries requiring tx
- ☐ Stain/material alba/ supra cal
- ☐ Gingivitis
- ☐ ECTD
- ☐ Tobacco (smoke/chew)
- ☐ Non-Restored fractures
- ☐ Broken/ lost/ redecayed fillings
- ☐ Malocclusion
- ☐ S-EDTD

Comments/Recommendations/Observations:

Appendix 5: Dental Screening Results Letter: 2013-2014 (Ministry of Health, Govt. of SK)

Saskatchewan Health Authority

Dental Screening Results

Date: _____

Dear Parent/Guardian:

Today, your child _____ was seen by a licensed oral health professional, who looked at your child's teeth. If you have any questions about the dental screening, contact: _____ at _____

Dental Findings:	Recommendations:
☐ Pain	☐ Your child has dental concerns that require treatment by a dentist. See a dentist soon.
☐ Possible infection (abscessed tooth)	
☐ Demineralized teeth	☐ Your child would benefit from topical fluoride treatments to help prevent cavities. Check with your local public health office for a fluoride varnish clinic near you.
☐ Cavities suspected	
☐ Cavities present	
☐ One or more cavities seen on your child's front baby teeth. These teeth will fall out around age 6. If there is pain or infection, see a dentist.	☐ Your child would benefit from dental sealants (thin plastic coating on the chewing surfaces of the back teeth/molars) to prevent cavities
☐ Broken or lost filling, or missing/worn crown	
☐ Red swollen gums/tartar on teeth	
☐ Over-retained baby tooth/teeth	☐ Better brushing and flossing is needed. Your child would benefit from help with brushing and flossing. See instructions on back of page.
☐ Crooked/crowded teeth or poor bite	
☐ See a dentist regarding space maintainer, appliance or retainer	
☐ No visible concerns. If a dentist takes x-rays, hidden cavities between the teeth may be seen.	☐ Your child would benefit from a professional cleaning at a dental office.

Comments:

_____

_____

Did you know?

- Tooth decay is preventable!
- In Canada, the #1 surgery for children age 0-5 is for dental treatment.*
- Saskatchewan has the third highest rate in Canada for the number of day surgeries for dental treatment, after Nunavut and the Northwest Territories.*
- Each year in Sask., approximately 1900 children age 0-5 have dental treatment done under general anaesthesia. This costs approximately $3.2 M, not including the cost of the dental treatment.
- Dental sealants and fluoride varnish helps prevent tooth decay.

**Treatment of Preventable Dental Caries in Preschoolers: A Focus on Day Surgery under General Anesthesia*

SHA QH2 09/2018

If your child needs dental treatment you can:

- Visit a family dentist, at your own expense.
  If you do not have a family dentist, call the College of Dental Surgeons of Saskatchewan at **306-244-5072** for more information about dentists in your area, or check the website at www.saskdentists.com under **find a dentist**.
- Contact the Population and Public Health Oral Health Program to find out if your child is eligible for dental treatment at their dental clinics.
  Oral Health Program
  Tel: **306-655-4462**
  Email: oralhealthprogram@saskhealthauthority.ca
- **Dental students at the following locations can provide treatment at reduced rates:**

Saskatoon West Dental–Community Clinic
College of Dentistry
1528 20th Street West, Saskatoon
Tel: **306-384-6363**

University of Saskatchewan
College of Dentistry
Dental Clinic, Saskatoon
Tel: **306-966-5056**

Saskatchewan Polytechnic, Regina Campus
4500 Wascana Parkway - 5th floor, Regina
Tel: **306-775-7531**

Dental Coverage

- **Supplementary Health Program**: Children who receive Supplementary Health benefits have full dental coverage. Adults should call first to check on their coverage, as coverage is dependent on the program they are in. For more information call **1-800-266-0695**.
- **Family Health Benefits Program**: Dental coverage is provided for children 0-17. The program is available to families that receive the Saskatchewan Child Benefit, Employment Supplement, Provincial Training Allowance, or Social Services Allowance. For more information call **1-800-266-0695**.
- **Non-Insured Health Benefits Program:** Health Canada provides eligible First Nations and Inuit people with a range of dental care when they are not covered through private insurance plans or provincial/territorial health programs. For more information call **1-855-618-6291**.
- **Private Insurance**: You may have dental coverage through your employment benefit plan. Call your employer for more information.
- **Personal Insurance:** You can purchase dental insurance. Ask your dental office for information.

Brush twice a day – in the morning and at bedtime.
Children need help brushing until about the age of 8.

Outside

Angle brush; place half on teeth, half on gums, vibrate side to side

Inside

Brush the inside of the front and the back teeth

Chewing surfaces

Vibrate back and forth

Floss once a day.
Children younger than 9 will need a parent's help.

Wrap floss around middle fingers. (about half an arm's length)

Gently guide between teeth

Move floss up and down, sliding under gumline, on both adjacent teeth

SHA OH2 09/2018

Appendix 6: Community Fluoridation

Community Water Fluoridation (CWF) 2020	
Aberdeen	McTaggart
Air Ronge	Melfort
Allan	Muenster
Alvena	Osler
Annaheim	Outlook
Assiniboia	Prince Albert
Bradwell	Quill Lake
Bruno	Rama
Buchanan	Saskatoon
Canora	Shields
Carnduff	St. Isidore de Bellevue
Clavet	St. Gregor
Craven	St. Louis
Cudworth	Star City
Dalmeny	Star City Colony
Domremy	Swift Current
Dundurn	Thode
Duval	Tisdale
Estevan	Wakaw
Gronlid	Warman
Hague	Weldon
Hanley	Weyburn
Hepburn	
Humboldt	
Kindersley	
Kinistino	
Lake Lenore	
La Ronge	
Luseland	
Macoun	
Martensville	

Communities with Naturally Occurring Fluoride at Optimal Levels (.7mg/L or greater) 2020
Bone Creek Colony
Box Elder Colony
Butte Colony
Carmichael Colony
Central Butte
Cypress Colony
Eyebrow
Ferland
Frontier
Grassy Hill Colony
Hawarden
La Loche
Main Centre Colony
Major
Ponteix Colony
Rosetown Colony
Smiley
Smiley Colony
Sovereign Colony
Spring Creek Colony
Springfield Colony
Tompkins Colony
Waldeck Colony
Zealandia

Appendix 7: deft and DMFT Scores by Networks for Six and Twelve year old

	6 years old			12 years old	
Area/Network (N)	**Avg deft +DMFT <2.5**	**At least 55% have deft +DMFT=0 (%)**	**<15% have d+D>0**	**DMFT of <1.0**	**>70% of have DMFT=0**
North East	**3.37**	**43.0**	**27.1**	**1.04**	**63.0**
North East 1 (85)	3.65	42.4	24.7	1.07	62.5
North East 2 (38)	2.89	52.6	21.1	0.94	69.4
North East 3 (106)	2.59	51.9	27.4	0.87	67.5
North East 4 (378)	3.16	43.4	27.8	1.02	62.1
North East 5 (119)	3.59	42.9	26.9	1.08	67.0
North East 6 (156)	3.88	39.1	29.5	1.06	60.5
North East 7 (109)	3.90	34.9	31.2	0.94	62.9
North East 8 (94)	3.30	44.7	20.2	1.52	57.1
North West	**3.59**	**41.3**	**28.0**	**1.01**	**62.1**
North West 1 (74)	3.46	39.2	29.7	0.95	65.1
North West 2 (116)	3.83	40.5	24.1	1.07	62.5
North West 3 (91)	3.34	40.7	28.6	0.95	65.6
North West 4 (200)	3.29	41.5	27.5	0.99	60.9
North West 5 (132)	4.21	36.4	32.6	0.92	67.0
North West 6 (245)	3.53	44.9	26.9	1.10	57.2
Regina	**3.59**	**40.7**	**27.7**	**1.06**	**62.0**
Regina 1 (North) (964)	3.57	41.6	28.3	1.10	62.0
Regina 2 (East) (678)	3.61	40.3	26.7	0.99	62.8
Regina 3 (South) (534)	3.67	40.2	26.4	1.14	60.5
Regina 4 (Central) (242)	3.49	39.3	30.6	0.94	63.0
Saskatoon	**3.69**	**39.9**	**28.8**	**1.06**	**61.5**
Saskatoon 1 (North) (548)	3.59	40.0	28.1	1.09	61.1
Saskatoon 2 (East) (649)	3.55	38.7	31.1	1.07	61.3
Saskatoon 3 (West) (611)	3.88	40.3	28.8	1.07	61.9
Saskatoon 4 (South) (782)	3.73	40.8	27.7	0.93	64.6
Saskatoon 5 (Core) (327)	3.69	39.8	27.8	1.32	54.2
South East	**3.70**	**41.0**	**28.1**	**1.09**	**60.4**
South East 1 (214)	3.86	38.3	25.7	1.09	61.4
South East 2 (107)	3.83	36.4	22.4	1.10	65.9
South East 3 (110)	3.27	49.1	27.3	1.01	58.0
South East 4 (215)	3.64	44.2	28.8	1.61	48.8
South East 5 (156)	3.57	39.7	26.9	0.77	69.1
South East 6 (198)	4.36	37.4	33.8	1.00	58.6
South East 7 (93)	3.86	40.9	24.7	1.16	60.4
South East 8 (215)	3.28	43.7	28.8	0.97	63.2
South East 9 (312)	3.60	40.7	30.2	1.04	60.5
South West	**3.46**	**40.4**	**27.7**	**1.14**	**58.5**
South West 1 (215)	3.01	44.2	30.2	1.23	59.2
South West 2 (85)	3.72	36.5	24.7	1.20	43.6
South West 3 (415)	3.46	40.2	24.1	1.16	58.0
South West 4 (145)	4.02	39.3	33.8	0.94	64.8
South West 5 (124)	3.60	39.5	29.8	1.19	56.8
South West 6 (148)	3.31	39.2	28.4	1.03	61.5
Saskatchewan	**3.59**	**40.9**	**28.0**	**1.06**	**61.3**

Note: Some cases were not attributed to any Network because of missing or invalid postal codes. Postal code is based on school or clinic where screening took place, so may not represent where students actually live.

References

1. Federal, Provincial and Territorial Dental Working Group. (2005). *Canadian Oral Health Strategy.* Montreal. Retrieved from http://www.fptdwg.ca/assets/PDF/Canadian%20Oral%20Health%20Strategy%20-%20Final.pdf (https://www.caphd.ca/sites/default/files/Canadian%20Oral%20Health%20Strategy%20-%20Final.pdf)

2. Federal, Provincial and Territorial Dental Working Group. (2012). *Reducing Dental Disease.* Retrieved from http://www.caphd.ca/sites/default/files/FrameworkOctober15FINALEnglish.pdf

3. Canadian Dental Association. (2014). *About Us: Canadian Dental Association.* Retrieved from Canadian Dental Association Web site: https://www.cda-adc.ca/en/oral_health/index.asp

4. World Health Organization. (2014). *About Us: World Health Organization.* Retrieved from World Health Organization Web site: http://www.who.int/topics/oral_health/en/

5. World Health Organization. (2012, April). *About Us: World Health Organization.* Retrieved from World Health Organization Web site: http://www.who.int/mediacentre/factsheets/fs318/en/

6. Centers for Disease Control and Prevention. (2013, July 10). *About Us: Centers for Disease Control and Prevention*. Retrieved from Centers for Disease Control and Prevention Web site: http://www.cdc.gov/oralhealth/publications/factsheets/dental_caries.htm

7. American Academy of Pediatric Dentistry. (2008). Policy on Early Childhood Caries (ECC): Classifications, Consequences, and Preventive Strategies. *Oral Health Policies, 32(6)*, 41-44. United States of America. Retrieved from http://www.aapd.org/assets/1/7/P_ECCClassifications.pdf

8. World Health Organization. (2001). *About Us: World Health Organization*. Retrieved from World Health Organization Web site: http://www.who.int/water_sanitation_health/oralhealth/en/index

9. Listl S, Galloway J, Mossey PA, Marcenes W. Global Economic Impact of Dental Diseases. Journal of Dental Research. 2015;94(10):1355-1361. doi:10.1177/0022034515602879