April 2010

Oral Health of Children and Youth

Within the North Bay Parry Sound District Health Unit Area

North Bay Parry Sound District Health Unit

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Suggested citation:

North Bay Parry Sound District Health Unit (2010). *The Oral Health of Children and Youth in the North Bay Parry Sound District Health Unit Area: 2010.* North Bay, ON: Author.

Executive Summary

This report provides a snap shot of the incidence and severity of dental decay in kindergarten (junior and senior), and grades 2 and 8 students within the North Bay Parry Sound District Health Unit (NBPSDHU) area. A summary of demographic indicators for children and youth in the NBPSDHU, as well as families with children residing at home has also been presented to provide a better understanding of the population served by the NBPSDHU Oral Health Program.

In the 2008/09 school year, 35 schools were classified as either medium or high risk, representing just over half of the elementary schools in the NBPSDHU area. The proportion of students with decay was found to be highest in grade 2 students, followed by kindergarten students, with approximately 20% identified with some form of decay. The proportion of students with urgent decay, however, was fairly consistent across the grades, ranging from 49% (grade 8) to 57% (JK and SK). In terms of preventive treatment, eligibility for scaling appeared to increase with age, where as eligibility for sealants and topical fluoride was higher for kindergarten and grade 2 students, compared to grade 8 students.

Follow-up on students identified in the previous year (2007/08) with non-urgent and urgent decay revealed that over 310 clients did not receive treatment, 58% of which had urgent decay. Treatment rates varied depending on whether a student had urgent decay or not; treatment was received for 57% of the non-urgent cases versus 69% of those with urgent decay. Almost 40% of the children treated for urgent decay had their treatment costs paid through the Children In Need of Treatment (CINOT) program. This indicates that over one-third of the students who have urgent decay require the assistance of the CINOT program to support their treatment costs.

The progression of decay was also observed through the 2008/09 school screenings, with 18% of students with non-urgent decay in 2007/08 being identified with urgent decay in the 2008/09 school year. Additionally 54% of students previously identified with either urgent or non-urgent decay, were found to have new decay in the 2008/09 school year.

In 2009 the Ontario Ministry of Health and Long-Term Care (MOHLTC) extended treatment coverage eligibility to youth aged 14 to 17 years. In the NBPSDHU area it is expected based on the number of children with low-income status (11.6% of NBPSDHU population aged less than 18 years), and the higher costs to treat youth, that the funding required to support the CINOT program will be even greater. Average treatment costs per client, for the 2009 calendar year, have shown that the cost of treating youth is 1.5 times higher than for treating children.

Based on the information presented, recommendations to be further considered include: 1) Enhanced oral hygiene instruction targeting younger children in the NBPSDHU area and their parents; 2) Increased funding to support the CINOT program; and, 3) Increased access to treatment for low-income children and youth who may not be eligible for the CINOT program.

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1.

Introduction

GLOSSARY

Oral Refers to the mouth. The mouth includes teeth, gums, supporting connective tissues, ligaments and bone, the hard and soft palate, mucosal tissue which lines the mouth and throat, the tongue, lips, salivary glands, chewing muscles, and upper and lower jaws.[1]

Prevalence The number of existing cases of a disease, or condition, at a designated point in time.

Dental Caries (tooth decay) "Localized destruction of susceptible dental hard tissue by acidic by-products from bacterial fermentation of dietary carbohydrates".[2]

1.1 Oral Health

Oral health is an integral component of general health and quality of life. The term *oral health* is defined by the Canadian Dental Association "…*as a state of the oral and related tissues and structures that contribute positively to physical, mental and social well-being and to the enjoyment of life's possibilities, by allowing the individual to speak, eat and socialize unhindered by pain, discomfort or embarrassment*".[3] Oral health related diseases include dental caries (tooth decay), periodontal disease, tooth loss, oral mucosal lesions and oropharyngeal cancers, HIV/AIDS-related oral disease and orodental trauma.[4] Of these, dental caries and periodontal disease are considered by the World Health Organization (WHO) to be the most important global oral health burdens.[4]

Many oral diseases, including dental caries are preventable and can be controlled if detected and treated early in their onset. The risk factors for most oral diseases are poor oral hygiene, diet (i.e. consumption of sugars), tobacco use, alcohol consumption, stress, and risky behaviours causing injuries and infections.[1, 4] Most of these modifiable lifestyle-related risk factors are common to other non-communicable diseases such as cardiovascular disease, diabetes, and cancer. Many other health conditions including malnutrition and systemic diseases can also increase the risk of oral disease, through either directly or indirectly compromising oral tissue.[1]

Dental Caries (tooth decay)

Dental caries, otherwise known as tooth decay, is one of the most common childhood diseases.[1, 4] It can occur at any age after a tooth erupts and is the primary cause of oral pain and tooth loss.[1] It is a chronic disease that usually progresses slowly increasing in severity and tooth destruction over time.

The prevalence and severity of dental caries within a population is indicated by the dmft/DMFT (primary dentition / permanent dentition) index. This index counts the number of teeth in a person's mouth that are decayed, filled or extracted. The WHO and The Federation of National Dental Associations (FDI) in 1982 set out a global goal that children aged 12 years on average should have a DMFT of below 3 by the turn of the century.

In 2004, the WHO estimated through their Global Data Bank on Oral Health that dental caries affected 60-90% of school-aged children in developed\industrialized countries.[4] Fortunately, however, over the past 20 years the level (severity) of dental caries as measured in 12-year-old children has declined.[4] This is largely due to the introduction of public health measures, effective use of fluorides, improved living conditions, lifestyles and self-care practices.

Unfortunately the prevalence of dental caries level for Canada is currently unknown, however it is hoped that data from the Statistics Canada Canadian Health Measures Survey, will provide more information on the oral health status of the Canadian population, and particularly that of its youth.

The Burden of Poor Oral Health in Children

Untreated oral diseases in children has been found to frequently lead to serious general health problems and significant pain, interfering with eating, overuse of emergency rooms, and lost school time. The U.S. Surgeon General's report on oral health[1] reports that dental-related illness alone accounts for 51 million lost school hours per year in the United States. The statistic for Canada is unknown.

Research also indicates that clinical oral health status affects the quality of life in children.[5] A recent systematic review by Barbosa and Gavião [5] indicated that the relationship between clinical oral health status and quality of life is not direct, but it is influenced by a variety of personal, social, cultural and environmental variables. [5] Socioeconomic factors are also related to oral health related quality of life. Locker[6] found in children with oral health disease, that there was a significantly greater impact on oral health related quality of life for lower income children, than high income children. In fact, household income was a predictor of oral health related quality of life even after controlling for oral diseases and disorders.[6]

It is also known that dental decay and resulting tooth loss reduce the ability to eat a varied diet, and to prepare food for digestion.[7] As a consequence, the likelihood of achieving the recommended consumption of fruits and vegetables is reduced.[7]

Furthermore, chronically poor oral health is associated with diminished growth in toddlers and compromised nutrition.[7, 8]

1.2 Factors influencing children's oral health care

Parental Dental Insurance Coverage, Household Income & Self-Assessed Oral Health

Dental insurance coverage is a strong predictor of receiving dental care.[1, 9] Using data from the Statistics Canada 2003 Canadian Community Health Survey (CCHS), Bhatti et al.[9] reported that the probability of adults (aged 25 years and older) receiving any dental care over the course of a year increased with dental insurance, household income and level of educational attainment. Individuals with dental insurance coverage were 16% more likely to receive dental care than those without.

The probability of having dental insurance coverage increased with a higher household income (i.e. $50,000 and more) and better self-assessed oral health. [9] Individuals with poor self-assessed oral health were 15% less likely to have dental insurance coverage and 19% less likely to receive dental care than those with excellent self-assessed oral health. Interestingly, among those receiving care it was oral health, not insurance and income which was found to primarily determine visit frequency to the dentist.[9] Bhatti et al's.[9] findings indicate that income and dental insurance coverage are important determinants of the decision to receive care, but oral health determines the actual volume of care received.

Although these findings are based on the adult population, it is likely that dental insurance coverage and income also increase the probability of a child receiving dental care. Research summarized in the U.S. Department of Health and Human Services' report on Oral Health in America[1] indicates that children without medical insurance are 2.5 times less likely than insured children to receive dental care, and three times more likely to have unmet dental needs than children with insurance. Studies have shown that children living in poverty have twice as much dental caries as those not living in poverty. Although, government funded programs in Canada are available for children without dental insurance coverage, or inadequate finances, it is unclear on a provincial or national level the extent of the problem in this age group.

Fluoride Exposure

Fluoride increases the teeth's resistance to demineralization as well as the speed of the re-mineralization following a plaque acid challenge.[7] Systematic reviews have found that both water fluoridation[10] and topical fluoride (i.e. fluoride gels, rinse, toothpaste and varnish)[11-14] reduce dental caries. McDonagh et al.'s review [10] found water fluoridation to reduce the prevalence of dental caries by approximately 15% or by 2.2 decayed, missing and filled primary/permanent teeth (dmft/DMFT) compared to non-fluoridated areas.[10] They also found that dental fluorosis increased depending on the dose of fluoride added to the water. Fluoride levels of 1 ppm resulted in approximately 12.5% of exposed people having potentially aesthetically concerning fluorosis.[10] No other potential adverse effects were found.

Analyses of pooled data from a systematic review [13] of placebo-controlled trials on the effectiveness of topical fluoride toothpaste, rinse, gel and varnish showed these topical fluorides to reduce dental caries by 24%, 26%, 21% and 40%, respectively and overall by 24%.[13, 15] In terms of treatment effect, there was no significant difference found among the fluoride gel, rinse or toothpaste, however, significantly greater reductions were reported for fluoride varnish compared to the gel, rinse or toothpaste.[13]

Interestingly, a systematic review[12] on fluoride toothpaste revealed that the extent to which dental caries was reduced was significantly associated with higher initial levels of caries, higher fluoride concentration, higher frequency of use, and supervised brushing.[12] This finding was consistent between trials conducted in fluoridated and non-fluoridated areas.[12] There was, however, evidence showing that the simultaneous use of a topical fluoride treatment with fluoride toothpaste enhanced the reduction by 10% compared with toothpaste alone.[14]

Although sugar consumption has increased in developed countries since the 1980's the prevalence of caries has decreased substantially. This is most likely explained by the extensive exposure to fluoride through drinking water, toothpaste, professional applications, and presence in processed foods and drinks.[16]

Burt and Pai [16] conducted a systematic review to determine whether individuals with high levels of sugar consumption experience greater dental caries severity relative to those with lower levels of consumption even with moderate to extensive fluoride exposure. The review identified two papers with a strong relationship, 16 with a moderate and 18 with a weak-to-no relationship between sugar consumption and caries development in the presence of fluoride exposure. [16] Based on these results the authors concluded that fluoride exposure may have has lessened the effect of that sugar consumption has on the development of dental caries.

Sugar Consumption

It is well established that sugars are the most important dietary factor in the development and progression of dental caries. Research has shown that both the total amount of sugars consumed[17-19] and the frequency[20-25] of intake of sugars and sugars rich foods and drinks are related to dental caries.

The relationship between sugar consumption and dental caries has been described in a review by Moynihan and Petersen[7] as being 'S' shaped: at low levels (27.4 grams/day) dental caries is very low, but when sugar consumption increases to 40 grams/day or more, dental caries increases and intensifies. At or above 96 grams/day however, the curve flattens out and a saturation level is reached. This is consistent with epidemiological observational studies that have found that the level of dental caries is low (DMFT less than 3) in countries where the average consumption of free sugars is below 40-55g/person/day or 6-10% of energy intake (15-20kg/person/year) and significantly higher with sugar supplies in excess of 120g/person/day.[7, 26]

Frequency of intake of sugars and sugars rich foods and drinks is also related to dental caries and not surprisingly strongly associated with the amount of sugars consumed[19, 24, 27, 28]. Frequency of consumption of foods and/or drinks containing free sugars should be limited to a maximum of four times per day.

The relationship between sugar and dental caries has been found to be influenced however by oral hygiene practices[18, 29, 30] and fluoride exposure[29, 31]. Both of these factors, but in particular fluoride have been found to reduce the level of dental caries regardless of the quantity and frequency of sugar consumed.

Parental Behaviour & Past Behaviour

Direct parental modeling is a strong and lasting determinant of a child's health behavior, and is considered to be the most important kind of parental influence. [32-34] The development of smoking behaviour, oral hygiene and sugar intake in late adolescence has been found to be influenced by parent's behaviour, support and control.[32] Research by Astrom showed that higher levels of parental oral hygiene performance and support were consistently associated with favourable patterns of oral health behaviour in adolescents.[32] This finding supports the practice of including parents in oral health prevention efforts targeted at younger children.

Past behaviour, even more so than parental modeling, has been determined as the best predictor of future adolescent oral health-related behaviours. [32-34] This effect is not unique to oral health and has been established for a number of health behaviours (i.e. physical activity). The important role that past behaviours play in the future, highlight the need to establish good oral health practices at an early age.

1.3 Data Sources & Methodology

Population Estimates & Demographics

2008 population estimates were extracted from the Vital Statistics and Population Estimates tables in the MOHLTC, Provincial Health Planning Database (PHPDB).

School Screening Data

2008/09 school screening outcomes were extracted from the NBPSDHU Oral Health Program internal database. Descriptive statistics were analyzed using SPSS version 17.0.

CINOT Treatment Costs

The numbers of children treated through the CINOT program and the average cost per client for the 2008/09 school year were extracted from the MOHLTC, Oral Health Information Support System (OHISS). Data from the 2006/07 and 2007/08 school years were extracted from the MOHLTC, CINOT 5.2 database.

Oral Health Related Emergency Visits

Emergency room visits for oral health problems (digestive diseases) and injuries were extracted from the Ambulatory Visits tables in the MOHLTC, PHPDB. For oral health problems ICD 10 main problem diagnosis codes were categorized using the classifications indicated by Brant County Health Unit in their 2007 report on *Oral Health Problems And Their Impact On The Ontario Hospital System*[35]. Oral health injuries were categorized according to severity (minor, intermediate, severe) using the categorization of ICD 10 main problem diagnosis codes used in the Brant County Health Unit report[35].

To produce a stable and accurate estimate the average number of emergency visits for oral health problems and injuries were calculated based on average of three years (2006-2008) for residents of NBPSDHU and Ontario aged 0 to 19 years. Age standardized counts were generated using population estimates for ages 0 to 19 years from the middle year (2007) of the three years. Counts were age standardized using the Direct Method and standard 1991 Canadian population.

Geographic Information Systems (Mapping)

Urgent and non-urgent decay mapping by planning areas were created using ArcGIS, Version 9.3.1 software and the following Statistics Canada files: 2006 Census Subdivisions (CSD), Catalogue no. 92-162-XWE; 2009 Road Network File, Catalogue no. 92-500-XWE; and, 2006 Lakes File, Catalogue no. 92-160-GIE. Planning areas were created by joining appropriate CSD files for the NBPSDHU area. Data on screenings was extracted from the Oral Health Program Screening Database and mapped by postal code with a single field style address locater. Statistics Canada Unique Postal Code Conversion file Catalogue no. 92-153-XCB and update Catalogue no. 92-153-UCB was used as reference data. Incorrect or incomplete postal codes were excluded from analysis. Display categories for percent of screening with urgent or non-urgent decay were created using equal interval quartiles.

2.

NBPSDHU Oral Health Program

2.1 Preventive Services
2.2 Treatment

NBPSDHU Oral Health Program

With the goal of increasing the proportion of children with optimal health, the NBPSDHU Oral Health Program offers preventative services to children and youth throughout the NBPSDHU area, and a treatment program for those children and youth 17 years of age or younger requiring urgent care who do not have dental insurance and cannot afford treatment. Three teams of registered dental hygienists and certified dental assistants under the direction of a program manager are responsible for the delivery of these essential services.

2.1 Preventive Services

The Oral Health Program offers three main types of preventive services:

1. Oral health screenings
2. Clinical preventive oral health services
3. Health promotion and educational activities

1. Oral health screenings:

Oral health screenings are conducted in two ways: i) annually in elementary schools; and ii) through self-referral and dentist requests at the NBPSDHU oral health clinic. What each child or youth is screened for, and the possible outcomes of the screening is summarized in Box 1.

Annual School Screenings:

Every school year the Oral Health Program conducts oral health screenings in all consenting elementary schools (approximately 68) throughout the NBPSDHU area.

With the introduction of the Ontario Public Health Standards (OPHS) in November 2008 the grades to be screened by the health unit on annual basis changed for the 2008/09 school year. Screening practices pre- and post-OPHS are explained in Box 2. Additionally, a student may also be screened in school for one of the following reasons: absent from screening the previous year; parent requested screening; child was referred for treatment the previous year; child received sealants from the NBPSDHU the previous year.

Clinic Screenings:

The Health Unit also offers screening services at their clinic for children and youth aged 17 years or younger who meet one or more of the following criteria: i) not enrolled in school; ii) absent from school the day routine screening was conducted; iii) presenting with oral health complaints; or, iv) request from dentist.

2. Clinical Preventive Services:

The health unit offers a number of clinical preventive services including topical fluoride, scaling and sealants (pit and fissure). Children identified through school screenings as being eligible for clinical preventive services are able to have them completed at the health unit for free of charge if parents/guardians meet the financial criteria and have consented to treatment. Oral hygiene instructions tailored to the child's need are also provided with clinical preventive services with the goal of increasing adoption and maintenance of good oral care.

3. Health promotion and educational activities:

"An Ounce of Prevention is Worth a Pound of Cure" never were these words more appropriate than in the area of dental care. In addition to screening and the provision of clinical services the health unit dental program also conducts health promotion activities with parents/guardians educating on the importance of good oral health behaviours. Oral health products such as tooth brushes and samples of floss may be provided as well as advice on how to keep their children's teeth cavity free.

Box 1. Oral Health Screening practices and Outcomes

What are children and youth screened for?

Every child or youth who is screened by the Health Unit is checked for: decayed primary or permanent teeth; fluoride eligibility; sealant eligibility; and scaling eligibility and fluorosis. The extent of decay then determines the urgency of the recommended treatment.

What is the outcome of the screening?

- Urgent care required:

  If a child or youth aged 17 years or younger is identified as having urgent decay on crucial teeth or other oral health conditions (e.g. infection, trauma, pathology) that require urgent treatment, a letter and a *Parent Notification Form* for the MOHLTC Children in Need of Treatment Program (CINOT) is sent to the parent/guardian. Parents/guardians are required to respond to the notification either through having the treatment completed by a dentist, or indicating that they require the assistance of the CINOT program. Children and youth are eligible for the CINOT program if the parent/guardian has no dental insurance or other coverage and the cost of care will create financial hardship. Regardless of whether the child is in the CINOT program or not, the health unit is required to follow-up on all children who were identified as requiring urgent treatment. Failure to complete the dental treatment or to respond to three notifications over a period of 90 days from the first date of issue can result in the child's case being referred to the Children's Aid Society by the health unit.

- Non-urgent care required:

  If a child or youth is identified as being eligible for clinical preventive services (i.e. fluoride, scaling, sealants) or as having decay that requires non-urgent treatment, an oral health report card summarizing the results of the screening and recommendations is sent home with the child. It is the responsibility of the parents/guardians to seek out the clinical preventive services for their child/children either through their dentist or the health unit. To obtain free preventive services from the health unit parents/guardians are required to meet a financial criteria.

Box 2. Target grades for school screenings pre and post introduction of Ontario Public Health Standards for NBPSDHU

Pre 2008/09 School Year: The health unit aimed to screen every student in junior (JK) and senior kindergarten (SK) on annual basis as well as grades 2, 4 and 8 every other year. Information from the JK and SK screenings was used to determine whether a school required additional screenings to be conducted in other grades the following year. Schools where the percentage of JK and SK students with two or more open and obvious areas of decay was 9.5% to 13.9% had an additional one to two grades screened, whereas schools where the percentage was 14% or more had an additional two to four grades screened the following year.

2008/09 School Year: Commencing with the 2008/09 school year the health unit aims to screen every student in grade 2 as well as JK and SK on annual basis. Information from the grade 2 screenings is used to determine whether a school requires additional preventive screening to be conducted in other grades the following year. For schools where the percentage of grade 2 students with two or more open and obvious areas of decay is 9.5% to 13.9%, grade 8 will also be screened, whereas schools where the percentage is 14% or more grades 4, 6 and 8 will also be screened the following year.

2.2 Treatment

The Oral Health Program does not provide dental treatment; however it ensures treatment is received for those children and youth aged 17 years or younger who are identified as requiring urgent treatment by an oral health care provider (see Box 2). The CINOT program funded by the Ontario Ministry of Health and Long-Term Care is available through the health unit to support the cost of treatment for those children and youth who do not have dental insurance and whose parent/guardian indicates (through a signed declaration) that the cost of the necessary dental treatment would result in financial hardship. For children and youth who either have insurance or the financial means to pay for the treatment, the health unit's dental staff also ensure that they are examined by an oral health care provider.

Financial support through other agencies

The Health Unit is not the only agency in the NBPSDHU area that provides financial assistance for oral health care. For those with limited means or have children with special needs there are provincially funded groups that can be approached. Box 3 provides a list of other agencies that provide financial assistance for basic oral health care. To be eligible for any of the above the applicant must meet the agency's criteria.

Box 3. Other agencies providing assistance for oral health care

Ontario Works:	Assists adults looking for work and supporting their children's needs.
Ontario Disability Benefits:	Assists adults who are disabled and their children, or children who are disabled and whose parents do not have oral health coverage.
Children's Aid Society:	Provides oral health coverage for those children under their jurisdiction, the majority being foster children.
Low Income People Involvement (LIPI):	A not for profit agency in the City of North Bay who *may* provide assistance with supporting the costs of oral health treatment.

3.

Demographic profile of children & youth in NBPSDHU area

GLOSSARY

Census Family: Refers to a married couple (with or without children of either or both spouses), a couple living common-law (with or without children of either or both partners) or a lone parent of any marital status, with at least one child living in the same dwelling. A couple may be of opposite or same sex.[36]

Introduction

Chapter 3 provides an overview of the population and demographics of children and youth residing in the NBPSDHU area, as well as family and household characteristics most relevant to child oral health outcomes. This chapter also presents some basic demographic information on the schools in which oral screenings are conducted on an annual basis by the NBPSDHU Oral Health Program.

3.1 Population Estimates

Children and youth aged 17 years and under comprise approximately 20% of the total population in the NBPSDHU area (see table 1). Elementary and senior elementary students comprise the largest proportion of the population aged 17 years or younger.

Table 1. Population estimates for children and youth in the NBPSDHU area, 2008

Age	Grade	Category	Population	% of Total Population
1 to 3	-	-	3,306	2.6%
4 to 5	-	Junior & Senior Kindergarten	2,319	1.8%
6 to 13	1 to 8	Elementary & Senior Elementary	10,496	8.3%
14 to 17	9 to 12	High School	6,545	5.2%
Total			22,666	19.9%

SOURCE: Population Estimates, 2008, Ontario Ministry of Health and Long-Term Care, Provincial Health Planning Database (PHPDB), Extracted December 2009.

3.2 Demographic Characteristics

According to the 2006 census, Aboriginal persons comprise approximately 12% and 11% of the NBPSDHU area population aged 0 to 14, and 15 to 19 years, respectively (see Table 2). Less than 5% of the aboriginal population aged 0 to 14 and 15 to 19 years in the NBPSDHU area have registered Indian status.

The proportions of children and youth in the NBPSDHU area that identify themselves as a visible minority or immigrant population comprise less than 3% of the population in this age group (see Table 2).

GLOSSARY

Aboriginal Population: Those persons who reported indentifying with at least one Aboriginal group and/or those who reported being a Treaty Indian, a Registered Indian, or members of an Indian Band or First Nation. Excludes institutional residents.[36]

Visible Minority Population: Excludes institutional residents and Aboriginal persons.[36]

Immigrant Population: Persons who are, or have ever been, landed immigrants in Canada. A landed immigrant is a person who has been granted the right to live in Canada permanently by immigration authorities.[36]

Aboriginal, Visible Minority & Immigrant Populations

Table 2. Aboriginal, visible minority & immigrant populations for persons aged 14 years and under and 15 to 19 years, NBPSDHU, 2006 Census

Characteristic	Parry Sound District	Adjusted Nipissing District[1]	NBPSDHU Area
0 to 14 years			
Aboriginal identity population	8.7%	13.1%	11.8%
Total registered Indian population	4.6%	4.3%	4.5%
Visible minority population	1.8%	2.6%	2.4%
Immigrant population	0.9%	1.5%	1.3%
15 to 19 years			
Aboriginal identity population	10.2%	11.3%	11.0%
Total registered Indian population	4.9%	4.2%	4.4%
Visible minority population	1.2%	2.2%	1.9%
Immigrant population	1.2%	2.4%	2.1%

SOURCE: Statistics Canada, 2006 Census of Population.[37]

1. Adjusted Nipissing District only includes Nipissing District CSDs served by the NBPSDHU

Language

A majority of children and youth in the NBPSDHU area speak English most often at home (see Table 3). A greater proportion of French is spoken in the home in the Adjusted Nipissing District (areas served by the NBPSDHU) compared to the Parry Sound District.

Table 3. Language spoken most often at home for persons aged 14 years and under and 15 to 19 years, 2006 Census

Characteristic	Parry Sound District	Adjusted Nipissing District[1]	NBPSDHU Area
0 to 14 years			
English	97.8%	83.8%	87.8%
French	1.5%	15.7%	11.6%
Non-official languages	0.8%	0.5%	0.5%
15 to 19 years			
English	98.4%	83.7%	87.6%
French	1.1%	11.0%	11.3%
Non-official languages	0.6%	0.6%	0.6%

SOURCE: Statistics Canada, 2006 Census of Population.[37]

1. Adjusted Nipissing District only includes Nipissing District CSDs served by the NBPSDHU

GLOSSARY

Income Status: Refers to the position of an economic family or a person 15 years and over not in an economic family in relation to Statistics Canada's low income before-tax or after-tax cut-offs.

Census Family: Refers to a married couple (with or without children of either or both spouses), a couple living common-law (with or without children of either or both partners), or a lone parent of any marital status, with at least one child living in the same dwelling. A couple may be of opposite or same sex.[36]

Income status after tax

According to the 2006 Census, almost 12% of the population aged 0 to 17 years fall under the low income cut-off (after-tax). Within this age group, children aged less than 6 years account for the greatest proportion of the low income group (see Table 4). Overall, the proportion of children and youth under the low income cut-off is greater in the Adjusted Nipissing District compared to the Parry Sound District.

Table 4. Prevalence of low income after-tax (2005) for children and youth in private households by age group, 2006 Census.

Age group	Parry Sound District	Adjusted Nipissing District[1]	NBPSDHU Area
Under 18	9.0	12.8	11.6
15 to 17	7.8	9.6	9.0
10 to 14	10.7	11.2	11.0
6 to 9	7.6	10.1	9.4
Under 6	9.1	18.8	16.0

SOURCE: Statistics Canada, 2006 Census of Population.[37]
1. Adjusted Nipissing District only includes Nipissing District CSDs served by the NBPSDHU

3.3 Family and Household Characteristics

The number of census families in NBPSDHU has risen by 3.4% from 2001 to 2006. Lone parents comprise 14.9% of census families in the NBPSDHU, which is slightly lower compared to Ontario (see Table 5). A majority of lone-parents are female; however NBPSDHU has a greater proportion of male-lone parents than Ontario (22.1% versus 18.4%).

Only 24.6% of private households in NBPSDHU contain a couple with children, compared to 31.2% in Ontario (see Table 5).

Table 5. Family and household characteristics, by region, 2006 Census.

Type of census family	Parry Sound District	Adjusted Nipissing District [1]	NBPSDHU	Ontario
Total Census Families	12,760	24,030	36,805	3,422,315
% Married-couple	75.4	68.1	70.7	73.9
% Common-law-couple	12.4	15.4	14.5	10.3
% Lone-parent	11.8	16.4	14.9	15.8
% Female	72.6	79.3	78.0	81.6
% Male	25.7	20.8	22.1	18.4
% of private households containing a couple with children	22.7	25.3	24.6	31.2

SOURCE: Statistics Canada, 2006 Census of Population.[37]
1. Adjusted Nipissing District only includes Nipissing District CSDs served by the NBPSDHU

GLOSSARY

Unemployment Rate: Equals the number of persons unemployed divided by the number of persons in the labour force.

Economic Family: Refers to a group of two or more persons who live in the same dwelling and are related to each other by blood, marriage, common-law or adoption. A couple may be of opposite or same sex. Foster children are included. By definition, all persons who are members of a census family are also members of an economic family. Examples of the broader concept of economic family include the following: two co-resident census families who are related to one another are considered one economic family; co-resident siblings who are not members of a census family are considered as one economic family; and, nieces or nephews living with aunts or uncles are considered one economic family.[36]

Employment rates for individuals with children

The NBPSDHU area has higher unemployment rates for individuals aged 15 years and over with children living at home; 5.8%, compared to Ontario, 4.7% (see Table 6). The same pattern exists when males and females are looked at individually. Unemployment rates are higher for females with children only under the age of six years compared to any other category for both the NBPSDHU area and Ontario (10.2% and 11.1%, respectively).

Table 6. Unemployment rates for individuals aged 15 years and over in private households with children by sex, 2006 Census

Parry Sound District			Adj. Nipissing District[1]			NBPSDHU			Ontario		
M	F	B	M	F	B	M	F	B	M	F	B
With children at home											
3.4	5.4	4.4	5.4	7.5	6.4	4.8	6.8	5.8	3.3	6.1	4.7
With children under 6 years only											
4.9	6.4	5.6	6.3	8.4	8.7	5.9	10.2	7.8	3.5	11.1	7.0
With children under 6 years as well as children 6 years and over											
2.2	2.3	1.7	5.7	7.7	7.6	4.6	6.1	5.9	3.4	8.1	5.5
With children 6 years and over											
3.5	5.7	4.7	4.8	6.4	5.8	4.4	6.2	5.4	3.2	4.7	4.0

SOURCE: Statistics Canada, 2006 Census of Population.[38]
1. Adjusted Nipissing District only includes Nipissing District CSDs served by the NBPSDHU

Family Income

In general, economic families in the NBPSDHU area have a lower reported income compared to Ontario (see Table 7). A higher percentage of families in NBPSDHU area earn less than $40,000 after-tax (35.6%) than Ontario (25.1%), and a lower percentage earn $80,000 and over after-tax (19.2% compared to 32.9% for Ontario).

Table 7. Distribution of family income in 2005 before and after tax for economic families, 2006 Census

Family Income	Parry Sound District		Adjusted Nipissing District [1]		NBPSDHU		Ontario	
	Before	After	Before	After	Before	After	Before	After
Under $10,000	2.2	2.5	2.4	2.5	2.2	2.5	2.4	2.5
$10,000-$39,000	30.2	37.3	28.1	34.6	30.2	33.1	19.4	22.6
$40,000-$79,000	40.6	45.8	37.9	44.6	40.6	45.0	33.9	42.0
$80,000 and Over	27.0	17.0	31.2	20.6	27.0	19.3	44.2	32.9

SOURCE: Statistics Canada, 2006 Census of Population. [38]
1. Adjusted Nipissing District only includes Nipissing District CSDs served by the NBPSDHU

GLOSSARY

Composition of total income: Refers to the relative share of each income source or group of sources, expressed as a percentage of the total income. Employment Income = wages and salaries and self-employment income. Other = Dividends, interest, and investment income; Retirement pensions, superannuation and annuities; other money income. Government transfer payments = Old Age Security pension; Canada and Quebec Pension Plan benefits; Employment Insurance benefits; Child benefits, and other income from government sources)

Family Income status after tax

According to the 2006 Census almost 10% of the families with children aged less than 6 years fall under the low income cut-off (after-tax). The proportion is lower for families with older children (6 to 17 years) but almost 7% for families with both young children and youth (see table 8).

Table 8. Prevalence of low income after-tax (2005) for economic families with children, 2006 census.

	Parry Sound District	Adjusted Nipissing District[1]	NBPSDHU Area
Children aged under 6 years only	6.6	10.9	9.9
Children aged 6 to 17 years only	5.6	4.0	4.5
Children aged under 6 & 6 to 17 years	7.1	7.4	6.9

SOURCE: Statistics Canada, 2006 Census of Population.[38]
1. Adjusted Nipissing District only includes Nipissing District CSDs served by the NBPSDHU.

Family Income Composition

The composition of family income in 2005 for economic families also differs between NBPSDHU area and Ontario (see Table 9). Employment income accounts for a larger percent of total family income for all economic families in Ontario compared to NBPSDHU area (79.5% compared to 68.5%, respectively), regardless of family structure. Furthermore, the percentage of family income from government transfer payments in 2005 was lower for all family structures in Ontario, compared to the NBPSDHU area.

Composition of total family income for male-lone parents in NBPSDHU area was markedly different from Ontario in 2005. The percent of total family income derived from employment income was 16.5% less than Ontario, and the percent from government transfer payments was 11.6% higher than Ontario. The percent of total family income derived from employment income for couple economic families was also less in the NBPSDHU area, 68.7% compared to 80.2% for Ontario.

Table 9. Composition of family income in 2005 for economic families

Economic Family Structure	NBPSDHU			Ontario		
	Empl. Income %	Gov transfer paym'ts %	Other %	Empl. Income %	Gov transfer paym'ts %	Other %
All economic families	68.5	14.4	17.1	79.5	8.8	11.8
Couple	68.7	13.7	17.6	80.2	7.9	11.9
Male lone-parent	63.2	22.3	14.6	79.7	10.7	9.6
Female lone-parent	66.6	23.8	9.6	71.2	18.4	10.4

SOURCE: Statistics Canada, 2006 Census of Population [38]

4.

Oral health status of school-aged children

GLOSSARY

Age-restricted decay:
A carious lesion on a primary tooth that will soon exfoliate.

Non-urgent decay:
A carious lesion on a permanent or crucial primary tooth (not close to exfoliation) which requires treatment, but does not qualify for treatment through the CINOT program.

Urgent decay:
Open and obvious carious lesion on a permanent or primary tooth (not close to exfoliation), that qualifies for urgent treatment through the CINOT program.

The Canadian Dental Association recommends oral health assessments regularly commencing as early as age 1 or within 6 months of the eruption of the first tooth[39] (see Appendix A for an eruption chart).

4.1 Elementary School Screening Statistics (2008/09)

A total of 83 schools are located within the NBPSDHU area, 69 (83.1%) of which comprise elementary and kindergarten students eligible to be screened by the health unit Oral Health Program. In the 2008/2009 school year, 68 (98.6%) of 69 schools consented to having screenings conducted by the NBPSDHU Oral Health Program.

Target Grade Screenings (JK, SK, Grades 2 & 8):

Oral health screenings were conducted on junior kindergarten (JK), senior kindergarten (SK), and grades 2 and 8 students in all 68 consenting schools throughout the region. A total of 4,313 students in these grades were screened for an overall completion rate of 91.2% (see Table 9 for a breakdown by grade).

Presence of Decay

Of the standard grades screened, the incidence of decay (regardless of decay type) was highest in grade 2 students followed by JK and SK students (see Table 10). Overall, 297 (6.9%) of JK, SK, and grades 2 and 8 students were identified as having non-urgent decay, and 343 (7.9%) were identified with urgent decay.

The decay rate (# of teeth decayed / # of children screened*100) for grade 2 students was 42% and the average number of teeth decayed per child screened was 1.9.

Table 9. Completion rates for target[1] oral health screenings of JK, SK, grades 2 and 8 students, NBPSDHU area, 2008/2009 school year.

Outcome	JK & SK	2	8	Total
Screenings to be conducted	2,125	1,158	1,410	4,692
% Screenings completed	92.6	93.1	89.9	91.2

Data Source: NBPSDHU Oral Health Program Screening Database extracted October 26, 2009.

Table 10. Decay identified through oral health screenings of JK, SK, grades 2 and 8 students, NBPSDHU area, 2008/2009 school year.

Outcome	JK & SK	2	8	Total
% Decay (all)	19.3	22.5	8.0	16.6
% Age-restricted	58.3	2.0	1.0	2.0
% Non-urgent	7.3	10.1	3.6	6.9
% Urgent	9.5	10.5	3.4	7.9

Data Source: NBPSDHU Oral Health Program Screening Database extracted October 26, 2009.

Presence of Decay by NBPSDHU Municipal Geographic Planning Areas

Presence of decay was mapped by residential postal code for students in JK and SK, grades 2, and 8. Appendix B, C, and D illustrate the proportion (in quartiles) of screened students by NBPSDHU municipal geographic planning area with urgent and non-urgent decay.

South East Parry Sound area was consistently in the fourth quartile having the highest proportion of screened kindergarten students (25.9%), and grades 2 (29.4%) and 8 (12%) students with urgent and non-urgent decay. For grade 2 students, West Nipissing area was also in the fourth quartile with 27.4% of students screened identified with urgent and non-urgent decay.

Eligibility for Preventive Treatment

As mentioned in chapter 2 the health unit offers a number of clinical preventive services to students aged less than 18 years. Of the JK, SK, and grades 2 and 8 students screened, 4.2%, 6.1% and 12.3% were identified as being eligible for scaling, sealants and topical fluoride, respectively (see Table 11).

Fluorosis

Presence of fluorosis was minimal with each target grade having an average fluorosis score of less than 0.5 (on a scale of 0 to 4).

Table 11. Percent (%) eligible for preventive treatment for JK, SK, and grades 2 and 8 students, NBPSDHU area, 2008/2009 school year.

Outcome	JK & SK	2	8	Total
Scale	1.7	5.7	6.9	4.2
Sealants	0.8	14.2	7.2	6.1
Topical Fluoride	10.3	19.4	8.1	12.3

Data Source: NBPSDHU Oral Health Program Screening Database extracted October 26, 2009.

Additional Screenings for Higher Risk Schools

Additional grades were also screened in 43 (63%) schools where the percentage of JK and SK students in the 2007/08 year with two or more areas of decay exceeded 9.5% (medium risk) or 14.0% (high risk).

Grades 4 and 6 were screened in addition to JK, SK, and grades 2 and 8 in the high risk schools. Over 1,170 additional screenings were completed (91% completion rate) by the Oral Health Program for students in medium and high risk schools.

Presence of Decay for Grades 4 & 6 in Higher Risk Schools

Approximately 24% of grade 4 students screened in higher risk schools were identified with some form of decay. Over 7% of students were identified with non-urgent decay, and 9.2% with urgent decay.

For grade 6 students in higher risk schools 12% were identified with decay, 1% of which had non-urgent decay and 4.4% with urgent decay.

Previous Year Students Requiring Follow-up

1,087 students from the previous year (2007/08) were followed up and screened in the 2008/09 school year. A majority (876; 81%) of students to be follow-up were previously diagnosed with either non-urgent or urgent decay in the 2007/08 school year. A majority of the students with urgent decay in the 2007/08 school year were in SK (19%) and grade 2 (17%).

Treatment Received

Treatment for decay was received for 168 (57%) of the non-urgent cases, and 394 (69%) of the students with urgent decay in the 2007/08 school year. Consequently, 314 students in the 2007/08 did not receive treatment for their decay, 181 (58%) of which had required urgent treatment.

Of the children treated for urgent decay 39.7% had their treatment costs paid through the CINOT program.

Progression of Decay& New Decay

Fifty-five (18%) students who were diagnosed with non-urgent decay in the 2007/08 school year progressed to urgent decay in the 2008/09 school year. Additionally, 473 (54%) of students diagnosed previously with either non-urgent or urgent decay were identified with new decay in the 2008/09 school year. A majority of students whose condition had progressed or who had acquired new decay were in grade 1.

Proportion of Medium & High Risk Schools

Classification criteria: Up to and including the 2007/08 school year, schools were classified as medium risk or high risk when the percentage of *JK & SK students* from the previous year, with two or more areas of decay, exceeded 9.5% or 14.0%, respectively. As of the 2008/09 school year schools are now classified based on the percentage of *grade 2 students* from the previous year with two or more areas of decay.

In 2007/08 of the 69 consenting schools, 18 (26%) were classified as medium risk and 25 (36%) were high risk.

Although the criteria changed for 2008/09 year, the number of schools meeting the medium and high classifications did not vary substantially. In the 2008/09 school year of the 68 consenting schools 14 (40%) were classified as medium risk and 21 (60%) were high risk.

Oral Health Behaviours

Behaviours such as teeth brushing and regular visits to the dentist play a key role in the prevention of dental diseases. Students screened in the target grades (JK, SK, and grades 2 and 8) were asked two questions: 1) "How frequently did they brush their teeth?"; and, 2) "When was the last time they visited their dentist?".

Overall, just over half of students reported brushing their teeth two or more times per day (see Table 12). Only 40% of JK and SK students reported brushing their teeth two or more times per day. The rate however increased to over 60% for grade 2 and 8 students.

Sixty-five percent of students reported last visiting the dentist less than one year ago. The rate was highest for grade 8 students (80.7%) and lowest for JK and SK students (see table 13). Over 12% of students reported never seeing a dentist; a majority of those were JK and SK students.

Table 12. Frequency (%) of teeth brushing for JK, SK, and grades 2 and 8 students, NBPSDHU area, 2008/09 school year .

Outcome	JK & SK	2	8	Total
More than twice a day	1.7	3.2	4.5	2.9
Twice per day	38.4	60.2	61.1	51.3
Once per day	47.8	27.4	28.7	38.2
Less than once per day, but more than once per week	5.5	7.5	4.5	6.6
Once per week	0.3	0.5	0.4	0.4
Less than once per week	1.7	1.2	0.8	1.4
Never	0.1	0	0	0.05

Data Source: NBPSDHU Oral Health Program Screening Database extracted October 26, 2009.

Table 13. Last time visited a dentist (%) for JK, SK, and grades 2 and 8 students, NBPSDHU area, 2008/09 school year.

Outcome	JK & SK	2	8	Total
Less than 1 year ago	55.6	65.1	80.7	65.0
1 year to less than 2 years ago	6.9	9.6	6.7	7.6
2 years to less than 3 years ago	1.4	2.8	2.6	2.1
3 years to less than 4 years ago	0.1	1.0	1.4	0.7
4 years to less than 5 years ago	0.1	0.94	1.7	0.8
5 or more years	0	0	0	0
Never	22.8	6.1	0.5	12.4
Don't know	12.9	14.4	6.3	11.5

Data Source: NBPSDHU Oral Health Program Screening Database extracted October 26, 2009.

4.2 Clinic Screenings

As described in Chapter 2, the health unit also offers screening services at a health unit clinic for children and youth aged 17 years and younger. This provides an opportunity for students who are not screened in school, those not enrolled in school, and those experiencing pain to be seen by an oral health care professional.

In the 2008/09 school year the health unit screened over 260 children and youth within the clinic. The greatest proportion of youth presenting to the clinic to be screened were aged 7 to 13 years (33%).

Presence of Decay for Youth Aged 14 to 17 years

A total of 58 (21.8%) youth aged 14 to 17 years were also screened within the clinic. These are youth who are in grades not typically screened by the health unit in school. Of these, 56 (97%) were identified as having decay, 50 (86%) of which were classified with urgent decay.

Eligibility for Preventive Treatment for Youth Aged 14 to 17 years

Of the youth aged 14 to 17 years screened, 47%, 15% and 31% were identified as being eligible for scaling, sealants and topical fluoride, respectively.

4.3 CINOT Treatment Costs

Tables 14 and 15 present the treatment costs associated with treating children and youth who were eligible for urgent care in 2008/2009 school year and the previous 2007/08 and 2006/07 school years. Over 100 more children aged 0 to 13 years were treated in 2008/09 school year compared to the 2007/08 school year.

With the eligibility of the CINOT program expanded in January 2009 to include youth aged 14 to 17 years, an additional 63 youth in this age group were treated in 2008/09 (see Table 14).

In terms of the average treatment costs per case, the cost is almost 1.5 times higher for youth aged 14 to 17 years compared to those aged 0 to 13 years. This is typically because more extensive treatment is required for children who have decay at an older age.

Table 14. Average CINOT treatment costs per client by type of year and eligible age group.

Age (years)	2008/09 School Year Sept 1, 08 – Aug 31, 09		2009 Calendar Year (Jan 1 – Dec 31)*[1]	
	# treated	Av. Cost ($)	# treated	Av. Cost ($)
0 to 13	572	295.72	560	308.55
14 to 17*[2]	63	473.90	104	471.30

Data Source: Ontario Ministry of Health and Long-Term Care, Oral Health Information Support System (OHISS) database, extracted Feb. 2010
*Note: 1) Fee schedule changed in April 2009; 2) Eligibility for CINOT program expanded in January 2009 to include youth aged 14 to 17 years.

Table 15. Historical average CINOT treatment costs per client by eligible age group.

Age (years)	2006/07 School Year Sept 1, 06 – Aug 31, 07[1]		2007/08 School Year Sept 1, 07 – Aug 31, 08[2]	
	# treated	Average Cost ($)	# treated	Average Cost ($)
0 to 13	532	219.34	441	249.87

Data Source: 1) Ontario Ministry of Health and Long-Term Care, Children In Need of Treatment (CINOT) database, extracted November 2009; **2)** Ontario Ministry of Health and Long-Term Care, Oral Health Information Support System (OHISS) database, extracted Feb. 2010

4.4 Oral Health Related Emergency Visits

Emergency room visits for oral health related problems and injuries in the 0 to 19 year old population comprise approximately 2% of the total number of emergency room visits within the NBPSDHU area and Ontario for this age group.

The average number of age standardized emergency room visits for oral health related problems and injuries in the 0 to 19 year old population is significantly higher in the NBPSDHU area compared to Ontario (see Tables 16 & 17).

In terms of oral health related problems, abscess with a toothache account for the largest proportion of visits followed by miscellaneous problems (see Table 16).

The majority (92%) of visits for oral injuries are minor, with only 5% being for severe injuries. This is consistent with Ontario (see Table 17).

Table 16. Average (2006 to 2008) number of emergency room visits for oral health related problems (excluding injury) for children aged 0 to 19 years, NBPSDHU & Ontario.

Oral Health Problem	NBPSDHU area			Ontario		
	Av. # of visits		% Total Oral Visits	Av. # of visits		% Total Oral Visits
	Unstandardized	Age Standardized		Unstandardized	Age Standardized	
Cavities	12	3,137	6	366	864	4
Abscess with toothache	48	12,334	24	1,803	4,297	21
Gum problems	10	2,608	5	479	1,115	6
TMJ (Jaw joint)	11	2,541	5	323	725	4
Toothache	37	9,260	18	1,405	3,245	16
Jaw	4	867	2	276	629	3
Salivary glands	7	1,883	3	363	860	4
Ulcers	33	9,182	16	1,326	3,053	15
Life threatening abscess	1	177	0	109	252	1
Tongue problems	5	1,394	2	286	657	3
Miscellaneous oral health problems	41	11,280	20	2132	4,901	25
TOTAL	**203**	**53,269**	**100**	**8,581**	**19,943**	**100**

Data Source: Ambulatory Visits 2006-2008, & Population Estimates 2007, Ontario Ministry of Health and Long-Term Care, Provincial Health Planning Database (PHPDB), Extracted December 2009.

Table 17. Average (2006 to 2008) number of emergency room visits for oral health related injuries for children aged 0 to 19 years by severity for NBPSDHU & Ontario.

Oral Health Injury	NBPSDHU area			Ontario		
	Av. # of visits		% Total Oral Visits	Av. # of visits		% Total Oral Visits
	Unstandardized	Age Standardized		Unstandardized	Age Standardized	
Severe	9	2,079	5	845	1,895	7
Intermediate	4	1,010	2	337	764	3
Minor	152	42,654	92	10,501	24,951	90
TOTAL	**165**	**45,743**	**100**	**11,683**	**27,610**	**100**

Data Source: Ambulatory Visits 2006-2008, & Population Estimates 2007, Ontario Ministry of Health and Long-Term Care, Provincial Health Planning Database (PHPDB), Extracted December 2009.

5.

Discussion & Conclusion

5.1 Discussion

This report provides a snap shot of the incidence and severity of dental decay in kindergarten and elementary students within the NBPSDHU area. In the 2008/09 school year oral health screenings were completed for all students in JK, SK, and grades 2 and 8 across the district. In order to give an accurate picture of the oral health of youth throughout the district, these grades were the predominant focus of this report. Including screenings from all grades can skew the data particularly when certain grades are only screened in schools classified as being medium or high risk.

Presence of decay

Despite the change in the high risk school classification criterion (introduced with the Ontario Public Health Standards) the proportion of schools classified as medium and high risk did not substantially change from previous years. Thirty – five schools met the risk classification representing just over half of the elementary schools in the NBPSDHU area.

Decay in the 2008/09 school year was found to be highest in grade 2 students followed by kindergarten students with approximately 20% of students identified with some form of decay. The proportion of grade 8 students with decay was found to be substantially lower at around 8%. This finding is not unusual however, as typically baby teeth have fallen out (through the process of exfoliation) by age 12; any previously decayed non-permanent teeth would no longer be present. Additionally, any decayed 6-year molars may have been filled by grade 8, and the pre-molars and 12-year molars have not been in the mouth long enough to have undergone decay. The proportion of students with urgent decay, however, was fairly consistent across the grades ranging from 49% (grade 8) to 57% (JK and SK). In terms of preventive treatment, eligibility for scaling appeared to increase with age, whereas eligibility for sealants and topical fluoride was higher for kindergarten and grade 2 students compared to grade 8 students.

Mapping presence of decay by residential postal code for students in JK and SK, and grades 2, and 8, indicated that the South East Parry Sound area had the highest proportion of students with urgent and non-urgent decay for each of the respective grades. For grade 2 students, West Nipissing area also had a high proportion of students identified with urgent and non-urgent decay.

Treatment, progression of decay, & new decay

Follow-up on students identified in the previous year (2007/08) with non-urgent or urgent decay revealed that over 310 clients did not receive treatment, 58% of which had urgent decay. Treatment rates varied depending on whether a student was eligible for urgent care or not; treatment was received for 57% of the non-urgent cases versus 69% of those with urgent decay.

The progression of decay was also observed through the 2008/09 school screenings with 18% of students with non-urgent decay in 2007/08 being identified with urgent decay in the 2008/09 school year. Additionally, 54% of students identified previously with either non-urgent or urgent decay were found to have new decay in the 2008/09 school year.

CINOT treatment cost

The number of children in the NBPSDHU area treated through the Children In Need of Treatment (CINOT) program has fluctuated over the past 3 school years, and in the 2008/09 year 100 more children were treated compared to the 2007/08 school year. These fluctuations may be explained by a number of factors, including the number of parents who do not have dental insurance or financial means to pay for treatment, as well as the number of dentists available to treat CINOT patients. Based on the 2008/09 screening outcomes, the treatment rate for children identified with urgent decay in the previous year was 69%. Almost 40% of the children treated for urgent decay had their treatment costs paid through the CINOT program. This indicates that over one-third of the students who have urgent decay require the assistance of the CINOT program to support their treatment costs. Increased funding to support the CINOT program is important to ensure that children receive the treatment they require.

In 2009, the Ontario Ministry of Health and Long-Term Care extended treatment coverage eligibility to

youth aged 14 to 17 years. In the NBPSDHU area, it is expected based on the number of children with low-income status and higher cost to treat youth, that the funding require to support treatment of youth will be even greater than that for children. Average treatment costs per client, for 2009, have shown that the cost of treating youth is 1.5 times higher than for treating children. This is likely due to several reasons: 1) According to the fee schedule the cost to repair permanent teeth is higher than to repair primary teeth; 2) If the cavity is extensive it may lead to a root-canal in order to save the tooth (alternatively, the less costly option is to extract the tooth); 3) The type of filling used in youth and adults is usually white resin, which is more expensive than silver amalgam ; and, 4)If previous decay has been left untreated, the extent of the decay may be much greater resulting in more costly treatment. For example the cost to repair one surface with white resin is $25, compared to $123 to treat five surfaces (based on the CINOT fee schedule).

Oral Health Behaviours

Questions on oral health behaviours were introduced for the first time with the 2008/09 screenings. Until this year, it was unknown as to what proportions of students follow the recommended guidelines for frequency of tooth brushing or visits to the dentist. Although just over half of students in JK, SK, and grades 2 and 8 combined reported brushing their teeth two or more times per day, only 40% of JK and SK students reported following the recommendations. Given that this data is based on self-reported responses it is expected that the actual proportion is even less than that reported. This information indicates that there needs to be more oral health promotion, in particular oral hygiene instruction directed towards younger children in the NBPSDHU area and their parents. The evidence supporting the role of past behaviours, and parental modeling on future behaviours of youth, supports education initiatives targeting this population.

In terms of their last visit to the dentist, 65% of students reported last visiting the dentist less than one year ago. Over 12% of students reported never seeing a dentist; a majority of those were JK and SK students. Additional questions were not asked to determine why the dentist had not been visited more frequently. Based on research conducted on adults however, it may be due to a lack of access to affordable dental care, or lack of pressing oral health concerns. For JK and SK students, it may also be an unawareness of parents as to when to begin initiating dental care at this early age.

Burden to the hospital emergency room

The overall burden of oral health to the emergency room is relatively small for children and youth aged 0 to 19 years, accounting for approximately 2% of all emergency room visits. The average number of age standardized emergency room visits for oral health problems and injuries in this population in the NBPSDHU area however, are significantly higher than that for Ontario. In terms of oral health related problems, abscess with a toothache accounted for the largest proportion of visits and minor injuries accounted for a majority of the visits for oral health injuries. Reasons as to why the average numbers of visits are higher in NBPSDHU compared to the province need to be studied. Access to dental care and affordability of care, however, may be possible contributors to the difference.

5.2 Conclusion

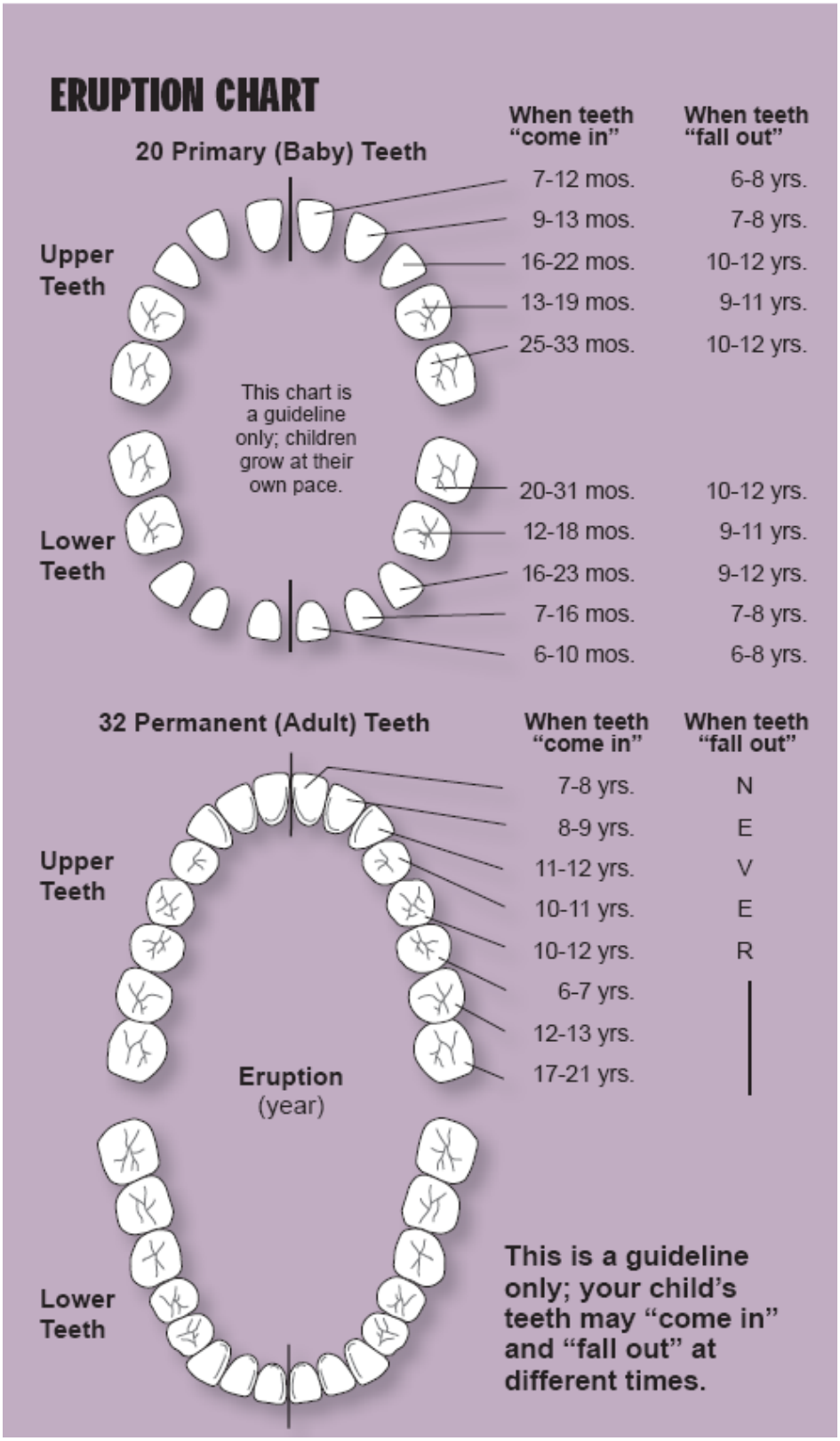
This report has provided a summary of demographic indicators for children and youth in the NBPSDHU as well as families with children residing at home. Oral health status outcomes from school screenings of children and clinic screenings of youth have also been summarized. Based on the information presented recommendations to be further considered include: 1) Enhanced oral hygiene instruction targeting younger children in the NBPSDHU area and their parents; 2) Increased funding to support the CINOT program; and, 3) Increased access to treatment for low-income children and youth who may not be eligible for the CINOT program.

6.

Appendices

A. Eruption Chart

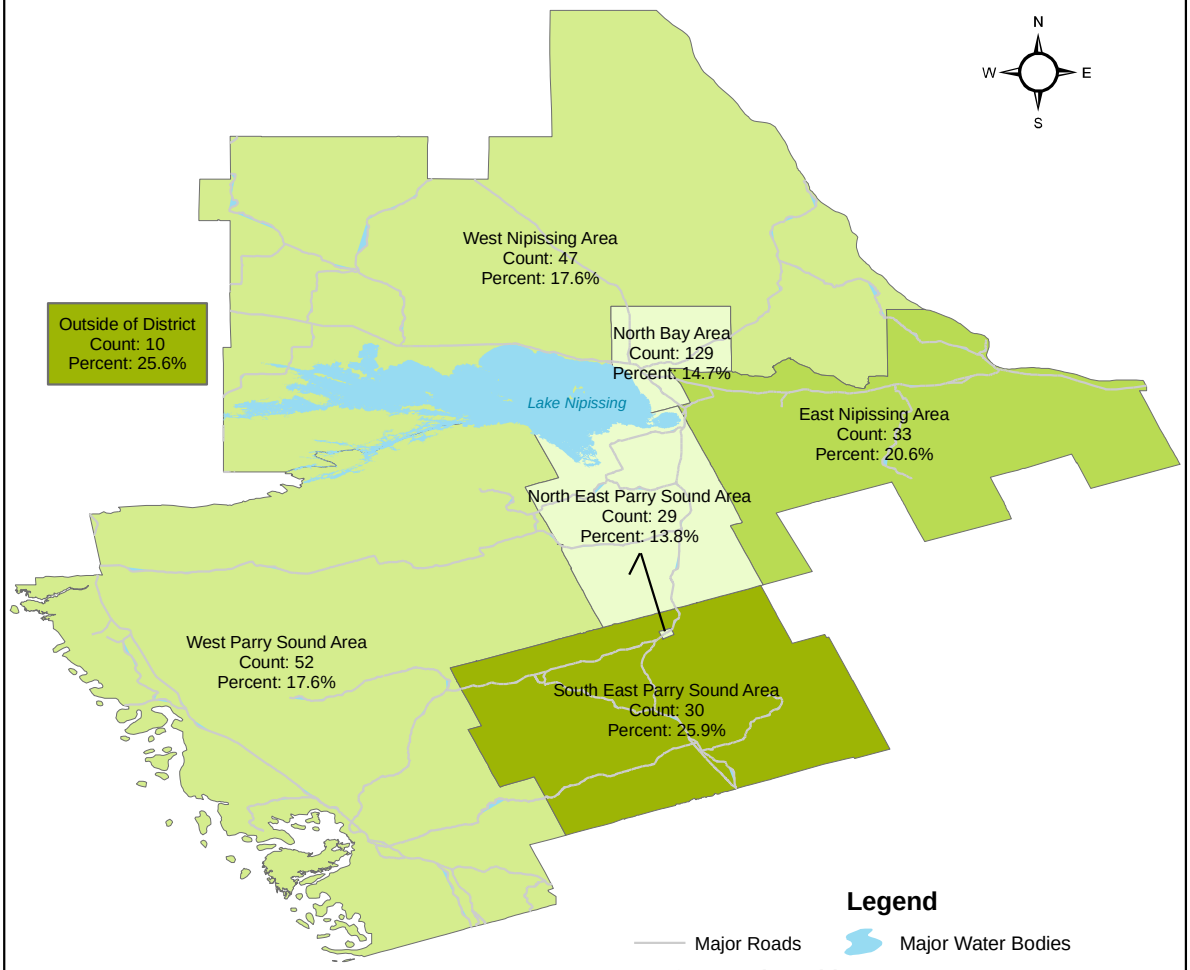
Appendix A:
Eruption Chart



SOURCE: Government of Ontario. *Oral Health Different ages/different stages: Birth to 12 years*. March 2009, Pg 13.

Appendix B:

Urgent and Non-Urgent Decay by NBPSDHU Planning Areas: 2008-09 Junior Kindergarden and Senior Kindergarden Students n=1966

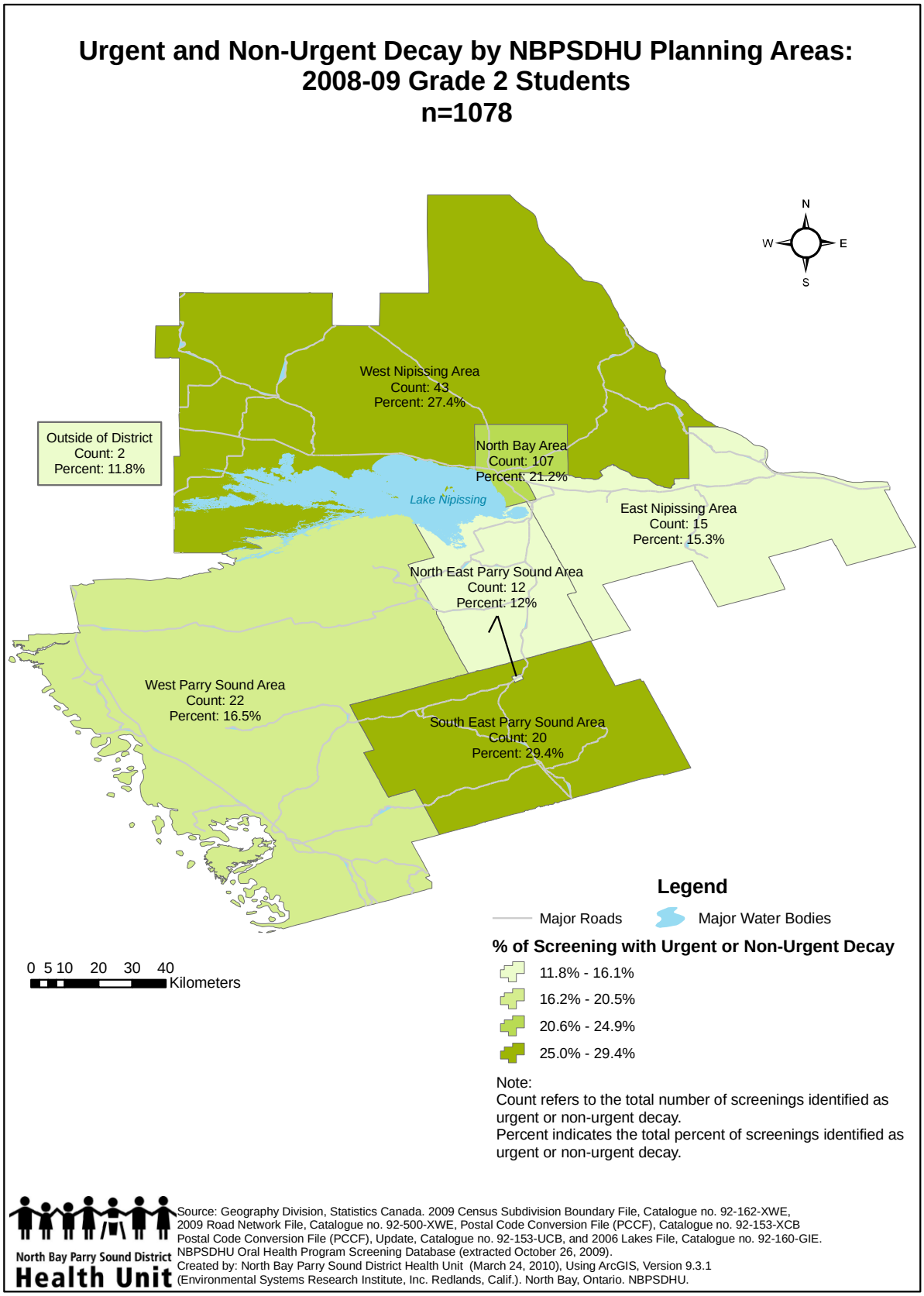


Note:
Count refers to the total number of screenings identified as urgent or non-urgent decay.
Percent indicates the total percent of screenings identified as urgent or non-urgent decay.

North Bay Parry Sound District Health Unit

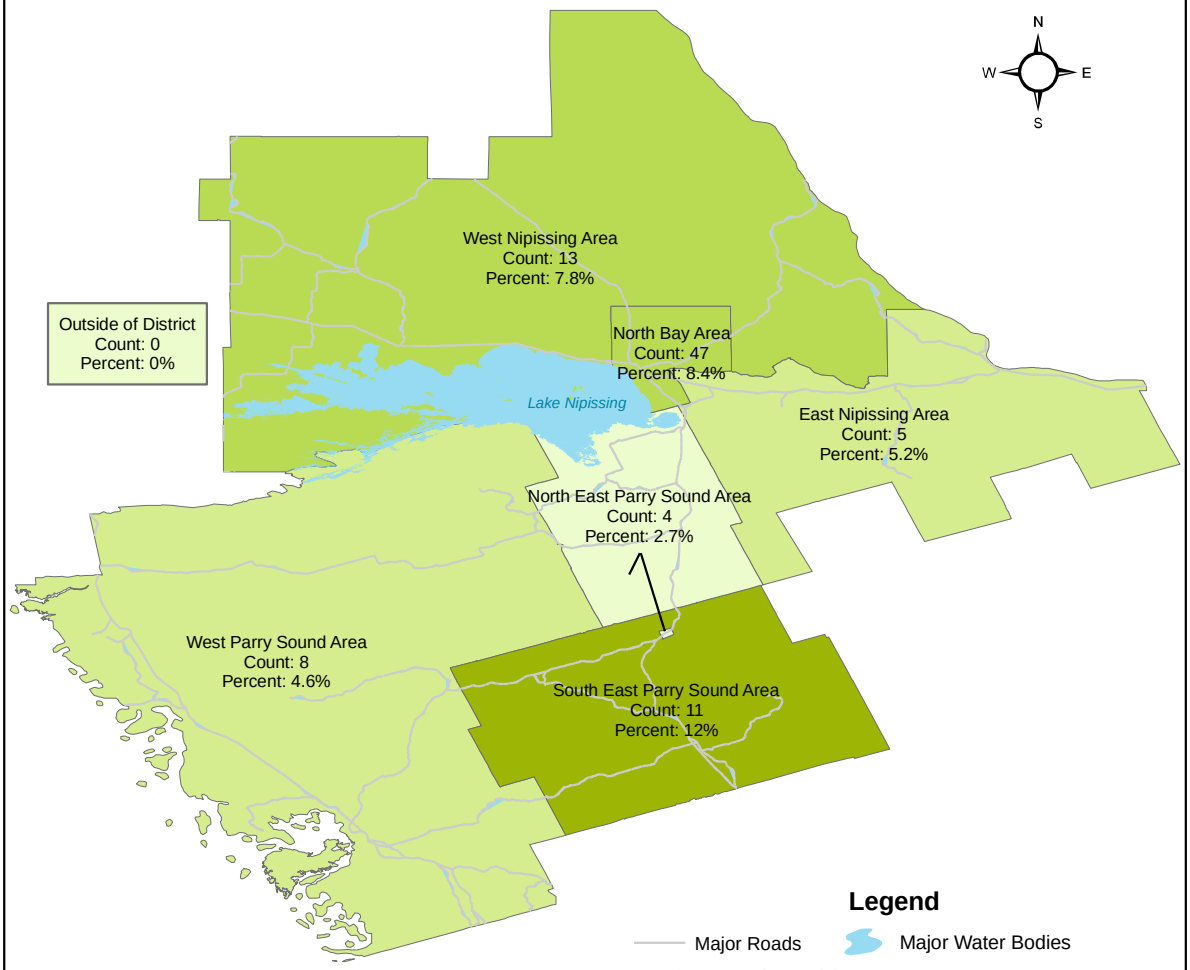
Source: Geography Division, Statistics Canada. 2009 Census Subdivision Boundary File, Catalogue no. 92-162-XWE, 2009 Road Network File, Catalogue no. 92-500-XWE, Postal Code Conversion File (PCCF), Catalogue no. 92-153-XCB Postal Code Conversion File (PCCF), Update, Catalogue no. 92-153-UCB, and 2006 Lakes File, Catalogue no. 92-160-GIE. NBPSDHU Oral Health Program Screening Database (extracted October 26, 2009). Created by: North Bay Parry Sound District Health Unit (March 24, 2010), Using ArcGIS, Version 9.3.1 (Environmental Systems Research Institute, Inc. Redlands, Calif.). North Bay, Ontario. NBPSDHU.

Appendix C:


Urgent and Non-Urgent Decay by NBPSDHU Planning Areas:
2008-09 Grade 2 Students
n=1078
N
W
E
S
West Nipissing Area
Count: 43
Percent: 27.4%
Outside of District
Count: 2
Percent: 11.8%
North Bay Area
Count: 107
Percent: 21.2%
Lake Nipissing
East Nipissing Area
Count: 15
Percent: 15.3%
North East Parry Sound Area
Count: 12
Percent: 12%
West Parry Sound Area
Count: 22
Percent: 16.5%
South East Parry Sound Area
Count: 20
Percent: 29.4%
0 5 10 20 30 40
Kilometers
Legend
Major Roads
Major Water Bodies
% of Screening with Urgent or Non-Urgent Decay
11.8% - 16.1%
16.2% - 20.5%
20.6% - 24.9%
25.0% - 29.4%
Note:
Count refers to the total number of screenings identified as urgent or non-urgent decay.
Percent indicates the total percent of screenings identified as urgent or non-urgent decay.
North Bay Parry Sound District Health Unit
Source: Geography Division, Statistics Canada. 2009 Census Subdivision Boundary File, Catalogue no. 92-162-XWE, 2009 Road Network File, Catalogue no. 92-500-XWE, Postal Code Conversion File (PCCF), Catalogue no. 92-153-XCB Postal Code Conversion File (PCCF), Update, Catalogue no. 92-153-UCB, and 2006 Lakes File, Catalogue no. 92-160-GIE.
NBPSDHU Oral Health Program Screening Database (extracted October 26, 2009).
Created by: North Bay Parry Sound District Health Unit (March 24, 2010), Using ArcGIS, Version 9.3.1 (Environmental Systems Research Institute, Inc. Redlands, Calif.). North Bay, Ontario. NBPSDHU.

Appendix D:

Urgent and Non-Urgent Decay by NBPSDHU Planning Areas: 2008-09 Grade 8 Students n=1268



Note:
Count refers to the total number of screenings identified as urgent or non-urgent decay.
Percent indicates the total percent of screenings identified as urgent or non-urgent decay.

North Bay Parry Sound District Health Unit

Source: Geography Division, Statistics Canada. 2009 Census Subdivision Boundary File, Catalogue no. 92-162-XWE, 2009 Road Network File, Catalogue no. 92-500-XWE, Postal Code Conversion File (PCCF), Catalogue no. 92-153-XCB Postal Code Conversion File (PCCF), Update, Catalogue no. 92-153-UCB, and 2006 Lakes File, Catalogue no. 92-160-GIE. NBPSDHU Oral Health Program Screening Database (extracted October 26, 2009). Created by: North Bay Parry Sound District Health Unit (March 24, 2010), Using ArcGIS, Version 9.3.1 (Environmental Systems Research Institute, Inc. Redlands, Calif.). North Bay, Ontario. NBPSDHU.

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