KEEP SMILING VERMONT

THE ORAL HEALTH OF VERMONT'S CHILDREN, 2013-2014

VERMONT
DEPARTMENT OF HEALTH

Vermont Department of Health
Office of Oral Health
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Burlington, VT 05402
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ACKNOWLEDGEMENTS

The Vermont Department of Health sincerely thanks all of the Vermont schools and students that participated in this project. We particularly thank all of the school administrators and school nurses that assisted the oral health screeners in obtaining parental consents, organizing the screening day and helping facilitate the screening process. Without the cooperation of the schools this project would not have been possible.

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EXECUTIVE SUMMARY

With *Keep Smiling Vermont 2013–2014*, Vermont's Oral Health Program takes its fourth look at the oral health status and dental treatment needs of elementary school children in Vermont. The previous oral health surveys, which were completed during the 1993–1994, 2002–2003 and 2009–2010 school years, screened children in first, second and third grade. During the 2013–2014 school year, a total of 1,725 kindergarten and third grade children in 24 public elementary schools received a dental screening. To share what we learned, we have organized the information collected through *Keep Smiling Vermont 2013–2014* into seven key findings. These findings will help support development of state policies and programs to reach the goal of ensuring that all of Vermont's children receive the preventive and restorative oral health services they need.

KEY FINDINGS

1. Vermont's oral health programs are working. Compared to previous surveys, fewer children have experienced tooth decay and fewer have untreated decay.
2. Even though Vermont has seen improvements in oral health, too many children in Vermont have untreated tooth decay and are not getting the dental care they need.
3. About one-third of Vermont's children have experienced tooth decay, suggesting that Vermont needs more primary prevention programs.
4. Almost 50 percent of third grade children in Vermont do not have dental sealants, a well accepted clinical intervention to prevent tooth decay on molar teeth.
5. In Vermont, the percent of third grade children with dental sealants has decreased suggesting the need for a renewed dental sealant effort.
6. There are significant oral health disparities in Vermont with low-income children and minority children having the highest level of tooth decay and the lowest level of dental sealants.
7. Vermont has met the Healthy People 2020 objectives for decreasing the prevalence of decay experience and untreated decay and increasing the prevalence of dental sealants.

NEXT STEPS

The results of *Keep Smiling Vermont 2013–2014* provide important clues to the reasons why some children in Vermont have more decay than others. We know that poor children have more disease and find it more difficult to get dental treatment. We have not succeeded in providing adequate interventions in public health or private health practice that affect dental disease in these children. We have provided sealants, but this preventive procedure is not applied until a child is about 7 years old. We also must work to prevent decay in primary or baby teeth.

KEY STRATEGIES

Several key strategies have been identified to improve the oral health of children in Vermont:

- Expand comprehensive decay prevention to include pregnant women, infants and toddlers.
- Provide anticipatory guidance to prevent dental disease to parents in health and social service settings.
- Teach parents how to use the dental health care system and advocate for oral health for themselves and their children.
- Increase the number of dental insurance (private and public) enrollees who use their annual exam benefits for themselves and their children.
- Promote annual dental exams as a *minimum* standard of dental care, particularly for high-risk children by one year of age.
- Establish access to preschool dental programs and expand community and school-based dental programs.
- Increase the number of dental providers in underserved areas.
- Educate medical care providers about the relationship between oral health and general health.
- Build capacity in dental public health.
- Increase the number of dentists participating in public insurance programs.
- Increase the provision of dental sealants in schools, safety nets and private dental practices.

- Develop an ongoing campaign to promote oral health as part of general health and well-being.
- Increase private and public sector participation in mobilizing resources and developing policy to pursue *and sustain* these strategies.

QUICK FACTS

WHO WAS SCREENED?

- 1,725 kindergarten and third grade children were screened at 24 different public elementary schools in Vermont
- Most of the children were 5, 6, 8 or 9 years of age
- The majority of the children (89%) were non-Hispanic white

DECAY EXPERIENCE:

- Twenty-nine percent (29%) of the kindergarten and 35% of the third grade children have experience tooth decay in their primary or permanent teeth. When combined, 32% of the kindergarten and third grade children have experienced tooth decay.

UNTREATED TOOTH DECAY:

- Thirteen percent (13%) of the kindergarten and 11% of the third grade children have untreated tooth decay in their primary or permanent teeth. When combined, 12% of the kindergarten and third grade children have untreated tooth decay.

DENTAL SEALANTS:

- Fifty-two percent (52%) of third grade children have dental sealants on permanent molar teeth.

NEED FOR DENTAL CARE:

- Eleven percent (11%) of the kindergarten and third grade children screened are in need of dental care including 2% that have an urgent need for dental care because of pain or infection.

NUMBER OF TEETH WITH DECAY EXPERIENCE:

- On average, the kindergarten and third grade children screened have 1.3 teeth with decay experience (treated or untreated decay).

THE IMPORTANCE OF ORAL HEALTH

Tooth decay (dental caries) is a bacterial disease process affecting both children and adults. It is probably the most widespread disease known to man.[1] During childhood, tooth decay is the single most common chronic disease, five times more common than asthma.[2] Tooth decay still affects more than half of all children by the third grade. By the time children are in high school, about 70% have tooth decay.[3] The public perception is largely that tooth decay is a natural and minor occurrence that deserves little attention or dollars. If left untreated, however, tooth decay can lead to difficulty in speaking, chewing, and swallowing, increased cost of care, loss of self-esteem, needless pain, and lost school days.

The results of not treating tooth decay include:

- Pain: Tooth decay can hurt a lot and hurt constantly. Many children do not know that teeth are not supposed to hurt.
- Infection: Infected teeth are reservoirs of bacteria that flood the rest of the body, leaving the child prone to many other childhood infections, including ear infections and sinus infections.
- Nutrition problems: Chronically painful and infected teeth make chewing and swallowing an uncomfortable and difficult chore. Children with dental disease often do not get the nutrition they need to grow.
- Tooth loss: Chronic childhood tooth decay often makes children's "baby" teeth fall out before their adult teeth are ready to take their place.
- Sleep deprivation: Children with chronically painful teeth have trouble getting a good night's sleep.
- Attention problems: Children with infected and painful teeth have a hard time relaxing, sitting still and paying attention in class.
- Slower social development: Ugly or missing teeth can make it difficult to talk and can greatly effect a child's self esteem. When a child's front teeth are damaged or missing in their very crucial early years of development, they often can't form words correctly.
- Missed school days: Children with infected and painful teeth miss more school days than other children, disrupting their educational and social experiences and cost school districts money. In 1996, children between 5 to 17 years of age

missed 1,611,000 school days due to acute dental problems – an average of 3.1 days per 100 students.[4]

While the prevalence and severity of tooth decay has, in fact, declined among U.S. school-aged children, it remains a significant problem in some populations – particularly certain racial and ethnic groups and low-income children.[5] National data indicate that 80% of tooth decay in children is concentrated in 25% of the child population, with low-income children and racial/ethnic minority groups having more untreated decay than the U.S. population as a whole.[6]

We hope that by recognizing and understanding the oral health needs of Vermont's children, we will be able to contribute to policies that will ensure all children receive the oral health care they need. The answers to effective policies to protect children's oral health lie in a few sound principles outlined in the 2000 *Oral Health in America: A Report of the Surgeon General*. Some of the approaches to promote oral health include:

- Change perceptions regarding oral health and disease so that oral health becomes an accepted component of general health.
- Build an effective oral health infrastructure that meets the oral health needs of all Americans and integrates oral health effectively into overall health.
- Remove known barriers between people and oral health services.
- Use public-private partnerships to improve the oral health of those who still suffer disproportionately from oral diseases.

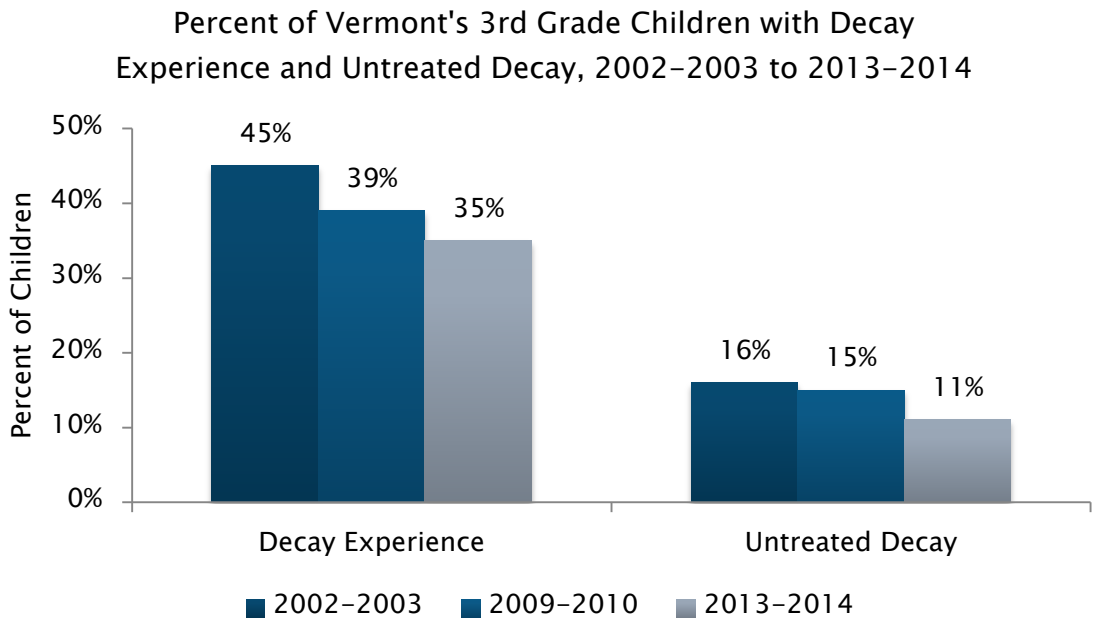
This survey demonstrates that while Vermont has made some progress toward improving the oral health of its children, there are barriers to overcome in order to improve the oral health of all of Vermont's children. We need more effective ways to provide essential preventive and restorative services, especially for low-income children. To continue moving forward we need to mobilize resources, including both the public and private health care sectors.

To describe the oral health of Vermont's children, the Vermont Department of Health conducted *Keep Smiling Vermont 2013-2014*, a statewide oral health survey of kindergarten and third grade children attending Vermont's public schools. During the 2013-2014 school year, a total of 1,725 kindergarten and third grade children in 24 different schools were screened by one dental hygienist. Detailed information on the design of the 2013-2014 oral health survey can be found in the Survey Methods section of this report. Findings from *Keep Smiling Vermont 2013-2014* have been organized into the following seven key findings. These findings highlight the current oral health of Vermont's children and disparities in oral health within Vermont. We hope that you find this information useful as well as informative.

KEY FINDINGS

8. Vermont's oral health programs are working. Compared to previous surveys, fewer children have experienced tooth decay and fewer have untreated decay.
9. Even though Vermont has seen improvements in oral health, too many children in Vermont have untreated tooth decay and are not getting the dental care they need.
10. About one-third of Vermont's children have experienced tooth decay, suggesting that Vermont needs more primary prevention programs.
11. Almost 50 percent of third grade children in Vermont do not have dental sealants, a well accepted clinical intervention to prevent tooth decay on molar teeth.
12. In Vermont, the percent of third grade children with dental sealants has decreased suggesting the need for a renewed dental sealant effort.
13. There are significant oral health disparities in Vermont with low-income children and minority children having the highest level of tooth decay and the lowest level of dental sealants.
14. Vermont has met the Healthy People 2020 objectives for decreasing the prevalence of decay experience and untreated decay and increasing the prevalence of dental sealants.

KEY FINDING #1: VERMONT'S ORAL HEALTH PROGRAMS ARE WORKING. COMPARED TO PREVIOUS SURVEYS, FEWER CHILDREN HAVE EXPERIENCED TOOTH DECAY AND FEWER HAVE UNTREATED DECAY.

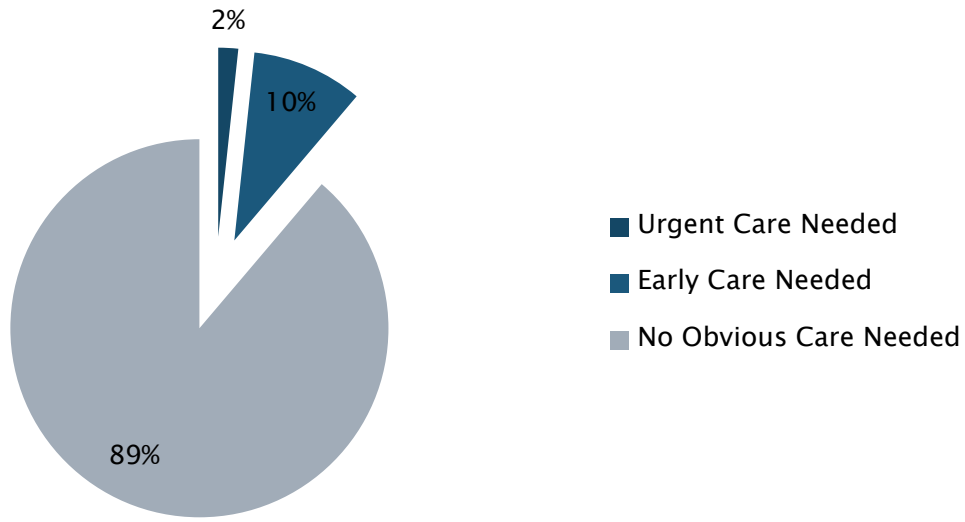


In recent years many different organizations in Vermont, including the Oral Health Program, have worked on improving access to preventive and restorative dental care for children. The efforts are paying off – compared to our 2002-2003 oral health survey, fewer children had decay experience and untreated decay in 2013-2014.

It should be noted that previous oral health surveys screened children in first, second and third grade while the 2013-2014 survey screened children in kindergarten and third grade. Because of this, comparisons across years are limited to children in third grade. The original data file for the 1993-1994 survey is not available so third grade specific information could not be generated for that survey year.

KEY FINDING #2: EVEN THOUGH VERMONT HAS SEEN IMPROVEMENTS IN ORAL HEALTH, TOO MANY CHILDREN IN VERMONT HAVE UNTREATED TOOTH DECAY AND ARE NOT GETTING THE DENTAL CARE THEY NEED.

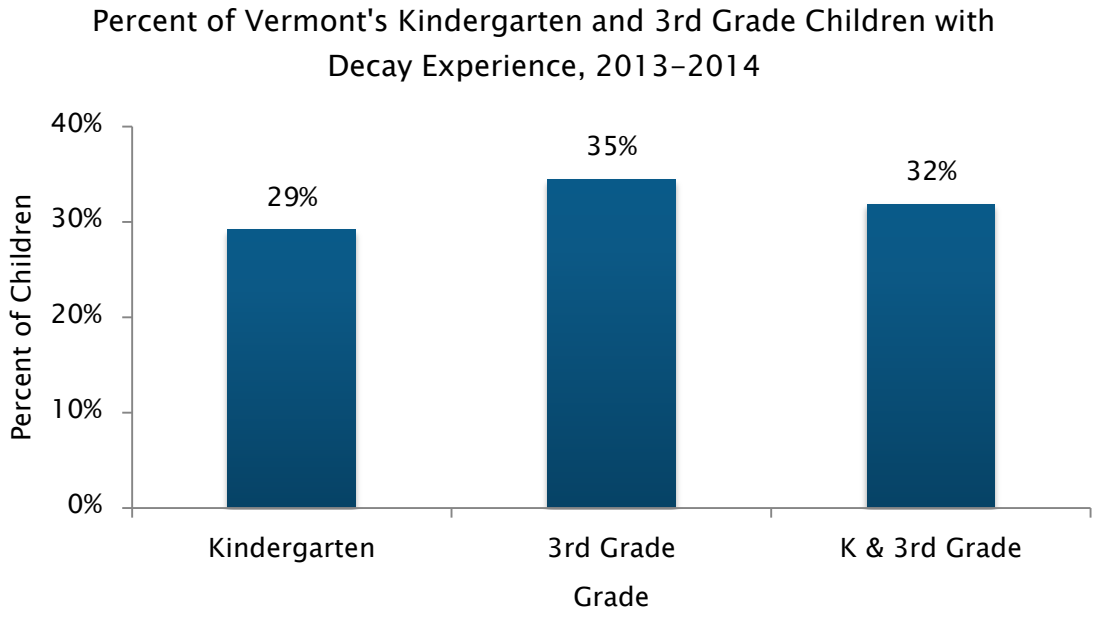
Percent of Vermont's Kindergarten and 3rd Grade Children Needing Dental Care, 2013-2014



About 11% of the kindergarten and third grade children screened had a need for dental care – with about 2% needing urgent dental care because of pain or infection. In 2013-2014 there were about 12,400 kindergarten and third grade children in Vermont. If 11% need dental care, this means that 1,364 kindergarten and third grade children are in the classroom with a cavity and about 250 may be in pain or have an oral infection. Untreated tooth decay can hurt and if left untreated has serious consequences, including needless pain and suffering, difficulty chewing, difficulty speaking, and lost days in school.

For this oral health survey we did not do complete diagnostic dental examinations. We did dental screenings – "Say 'Ah,'" a look inside with a dental mirror, a set of questions, no x-rays, none of the more advanced diagnostic tools. So we probably missed some problems. It is reasonable to assume that these numbers actually *underestimate the proportion of children needing dental care*.

KEY FINDING #3: ABOUT ONE-THIRD OF VERMONT'S CHILDREN HAVE EXPERIENCED TOOTH DECAY, SUGGESTING THAT VERMONT NEEDS MORE PRIMARY PREVENTION PROGRAMS.

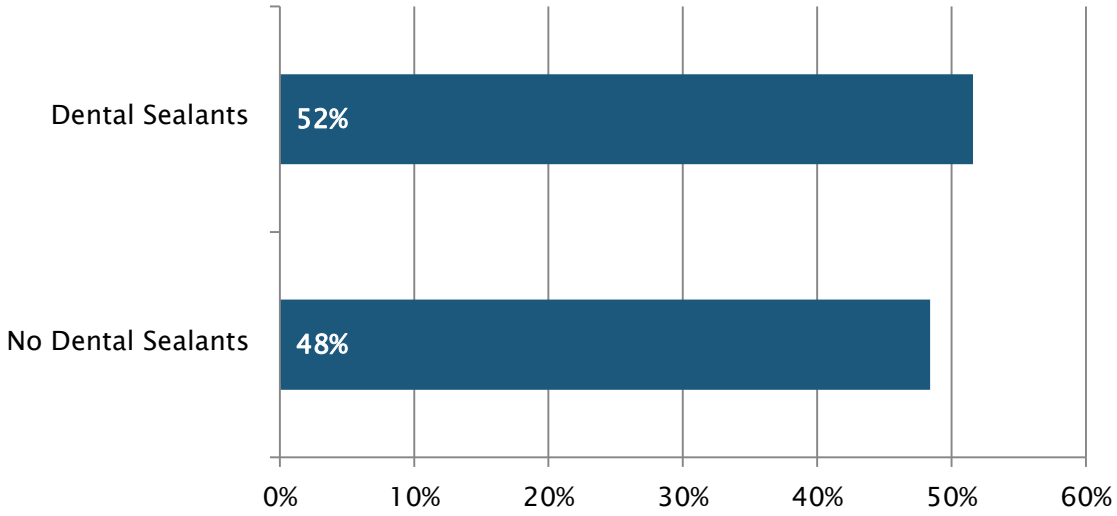


Tooth decay experience means that a child has had tooth decay in the primary (baby) and/or permanent (adult) teeth in his or her lifetime. Decay experience can be past (fillings, crowns, or teeth that have been extracted because of decay) or present (untreated tooth decay or cavities). In Vermont, about 32% of kindergarten and third grade children have experienced tooth decay.

If we want to eradicate tooth decay in Vermont's children, we have to get them started right with early prevention efforts. Medical, dental and public health professionals must focus dental disease prevention efforts on children less than 2 years of age because ***two is too late.*** The American Dental Association, the American Academy of Pediatric Dentistry and the American Association of Pediatricians all recommend preventive dental care and parent education by age one.

KEY FINDING #4: ALMOST 50 PERCENT OF THIRD GRADE CHILDREN IN VERMONT DO NOT HAVE DENTAL SEALANTS, A WELL ACCEPTED CLINICAL INTERVENTION TO PREVENT TOOTH DECAY ON MOLAR TEETH.

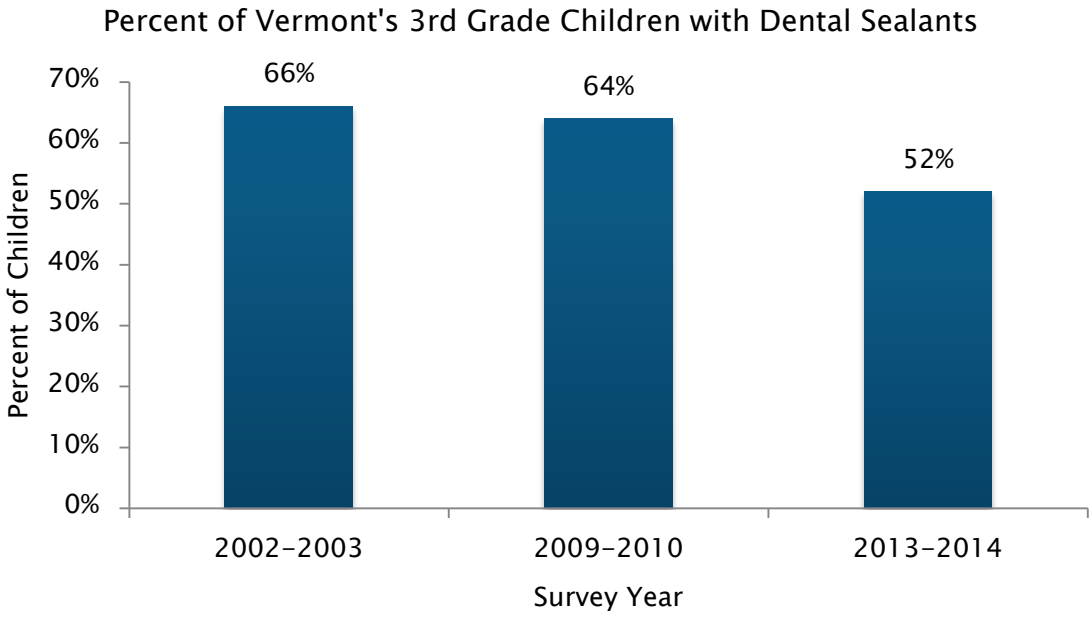
Percent of Vermont's Third Grade Children with and without Dental Sealants, 2013-2014



Dental sealants are a plastic coating applied to the chewing surfaces of the back teeth. They are a safe, effective way to prevent tooth decay among schoolchildren. Sealants have been shown to significantly reduce a child's risk for having untreated decay, In some cases, sealants can even stop tooth decay that has already started.[7] In Vermont, 52% of the third grade children screened had dental sealants while 48% could potentially benefit from this preventive service.

It should be noted that the presence of dental sealants was only assessed in third grade children because most kindergarten children do not have permanent first molars (6 year molars).

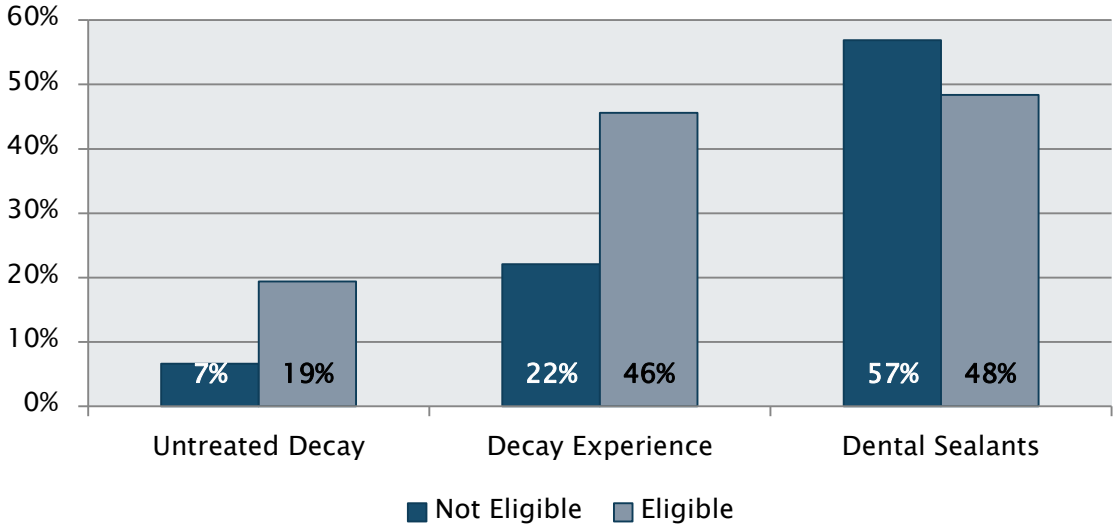
KEY FINDING #5: IN VERMONT, THE PERCENT OF THIRD GRADE CHILDREN WITH DENTAL SEALANTS HAS DECREASED SUGGESTING THE NEED FOR A RENEWED DENTAL SEALANT EFFORT.



Since 2002-2003, there has been a 14 percentage point decrease in the percent of Vermont's third grade children with dental sealants. While the prevalence of sealants in Vermont is higher than the national average, the decline is of concern. Renewed efforts to encourage the placement of dental sealants by private practice dentists and through school-based or school-linked efforts needs to occur to assure that all of Vermont's children have access to this proven method of preventing decay in permanent molar teeth.

KEY FINDING #6: THERE ARE SIGNIFICANT ORAL HEALTH DISPARITIES IN VERMONT WITH LOW-INCOME CHILDREN AND MINORITY CHILDREN HAVING THE HIGHEST LEVEL OF TOOTH DECAY AND THE LOWEST LEVEL OF DENTAL SEALANTS.

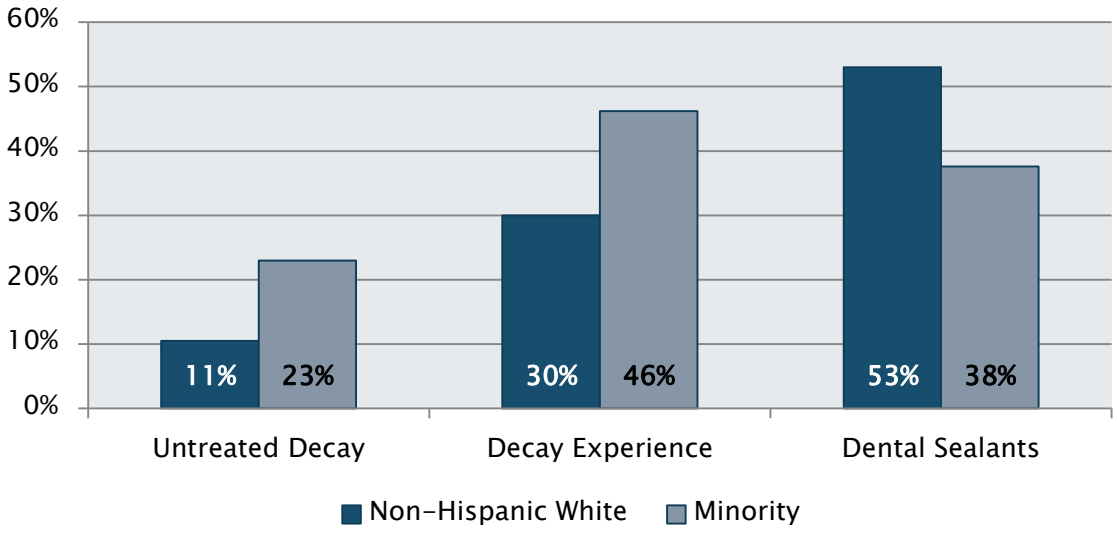
Percent of Kindergarten & 3rd Grade Children with Untreated Decay and Decay Experience and Percent of 3rd Grade Children with Dental Sealants Stratified by Eligibility NSLP, 2013-2014



Eligibility for the free and/or reduced price lunch (FRL) program is often used as an indicator of overall socioeconomic status. To be eligible for the FRL program during the 2013-2014 school year, annual family income for a family of four could not exceed $43,568.[8] Compared to children not eligible for the FRL program, children that participate in the FRL program had a significantly higher prevalence of untreated decay and decay experience. The difference in the prevalence of dental sealants was not statistically significant. This suggests that lower income children are getting the benefit of school- or community-based dental sealant programs but are not getting the benefit of early preventive services and are not able to access a dentist or dental clinic for restorative treatment.

KEY FINDING #6 (CONTINUED): THERE ARE SIGNIFICANT ORAL HEALTH DISPARITIES IN VERMONT WITH LOW-INCOME CHILDREN AND MINORITY CHILDREN HAVING THE HIGHEST LEVEL OF TOOTH DECAY AND THE LOWEST LEVEL OF DENTAL SEALANTS.

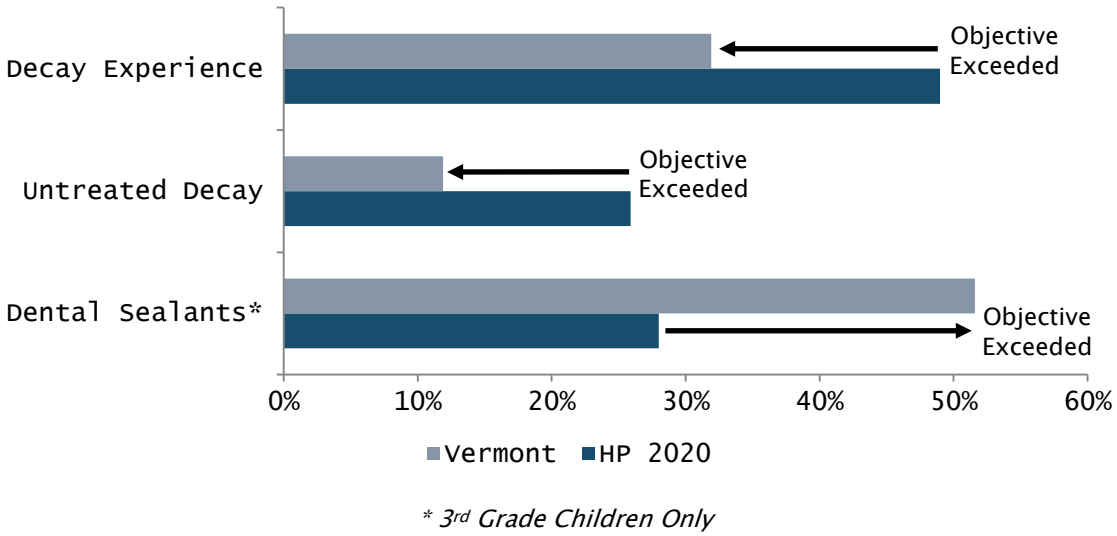
Percent of Kindergarten & 3rd Grade Children with Untreated Decay and Decay Experience and Percent of 3rd Grade Children with Dental Sealants Stratified by Race/Ethnicity, 2013-2014



According to the U.S. Census, the majority (94%) of Vermont's population is non-Hispanic white. Compared to white children, minority children in Vermont are two times more likely to have untreated decay and 1.5 times more likely to have decay experience. Minority, compared to white children, are significantly less likely to have protective dental sealants. Minority children are (1) not getting the benefit of school- or community-based dental sealant programs, (2) not getting the benefit of early preventive services and are (3) not able to access a dentist or dental clinic for restorative treatment.

KEY FINDING #7: VERMONT HAS MET THE HEALTHY PEOPLE 2020 OBJECTIVES FOR DECREASING THE PREVALENCE OF DECAY EXPERIENCE AND UNTREATED DECAY AND INCREASING THE PREVALENCE OF DENTAL SEALANTS.

Percent of Kindergarten & 3rd Grade Children with Untreated Decay and Decay Experience and Percent of 3rd Grade Children with Dental Sealants Compared to HP 2020 Objectives



** 3rd Grade Children Only*

Healthy People 2020 (HP 2020) has three oral health objectives for young children:

- Reduce the proportion of children aged 6–9 years who have dental caries experience in their primary or permanent teeth to 49 percent.
- Reduce the proportion of children aged 6–9 years with untreated dental decay in primary or permanent teeth to 26 percent.
- Increase the proportion of children aged 6–9 years who have received dental sealants on one or more of permanent first molar teeth to 28 percent.

Vermont has exceeded all of the HP 2020 oral health objectives for elementary aged children. It should be noted that the HP 2020 objectives are for children 6–9 years of age while the Vermont children screened were mostly 5, 6, 8 or 9 years of age. Vermont data for sealants is for third grade children who were mostly 8 or 9 years of age.

KEY STRATEGIES

Several key strategies have been identified to improve the oral health of children in Vermont:

SYSTEMS

- Develop preschool dental programs and expand the number of dental programs in community and school-based centers.
- Promote annual dental exams as a minimum standard of dental care, particularly for high-risk children by one year of age.
- Increase the provision of dental sealants in schools and safety net clinics.
- Build capacity in dental public health at the state and local levels.
- Develop an ongoing campaign to promote oral health as part of general health and well-being.

PATIENTS

- Expand comprehensive decay prevention to include pregnant women, infants and toddlers through the lifespan.
- Provide anticipatory guidance to prevent dental disease to parents in health and social service settings.
- Teach parents how to use the dental health care system and advocate for oral health for themselves and their children.
- Increase the number of dental insurance (private and public) enrollees who utilize their annual exam benefits for themselves and their children.

PROVIDERS

- Increase the number of dental providers in underserved areas.
- Educate non-dental health care providers about the relationship of oral health and general health and their role in oral health prevention.
- Increase the number of dentists participating in Medicaid/CHIP.

KEY STRATEGIES

- Increase the number of dentists that have skills in treating young children and vulnerable groups.
- Increase the number of dental professionals providing dental sealants.
- Increase private and public sector participation in mobilizing resources and developing policy to pursue *and sustain* these strategies.

SURVEY METHODS

Keep Smiling Vermont 2013-2014 surveyed children in kindergarten and third grade. All public elementary schools with at least seven children in third grade were included in the sampling frame (200 schools with about 6,100 third grade students). The sampling frame was stratified by geographic region then ordered within the regional strata by the percent of children that participate in the national school lunch program (NSLP). A systematic probability proportional to size sampling scheme was used to select 22 schools. Of the 22 schools, two did not include kindergarten so the appropriate feeder schools were added to the sample. This resulted in a sample of 24 schools representing 22 sampling intervals. If a school refused to participate, a replacement school within the same sampling interval was randomly selected. Of the 24 selected schools, 21 participated and three were replaced. Data is available for all 22 sampling intervals.

The survey used a combination of passive and positive consent. Five sampling intervals (6 schools) used positive consent while 17 sampling intervals (18 schools) used passive consent. Of the 1,127 kindergarten children enrolled in the sample schools, 873 were screened for a response rate of 78%. The response rate for third grade children was 75% (852 of the 1,143 children enrolled). Parents were asked to complete an optional questionnaire. Only 605 parents returned the questionnaire. Because of the low response rate, the results may not be representative of the state.

One dental hygienist completed all of the screenings using an external light source, gloves and disposable mirrors while following standard precautions for infection control. The diagnostic criteria outlined in the Association of State and Territorial Dental Director's publication *Basic Screening Surveys: An Approach to Monitoring Community Oral Health* were used.[9]

Epi Info 7, a public access software package supported by the Centers for Disease Control and Prevention, was used to enter the data. All statistical analyses were performed using the SAS software complex survey procedures (Version 9.3; SAS Institute Inc., Cary, NC). Sample weights were used to produce population estimates based on selection probabilities and indicating the number of children in the sampling interval each screened child represented.

DATA TABLES

Table 1: Grade, age, gender, race/ethnicity, and free or reduced lunch program participation for participating children with a dental screening (n=1,725), 2013-2014

Demographic Characteristic	Number of Children	Weighted Percent
Grade (% of children)		
Kindergarten	873	50.0
3rd grade	852	50.0
Age (% of children)		
5 years	452	24.4
6 years	415	25.0
7 years	7	0.6
8 years	439	25.2
9 years	401	24.0
10 years	10	0.7
11 years	1	0.0
Gender (% of children)		
Female	864	50.1
Male	861	49.9
Race/Ethnicity (% of children)		
White	1507	88.7
Black	85	4.9
Hispanic	29	1.3
Asian	81	4.0
American Indian/Alaska Native	6	0.2
Multiracial	8	0.4
Missing/Unknown	9	0.4
Participates in FRL program (% of children)		
No	570	30.7
Yes	640	37.5
Missing/Unknown	515	31.8
School FRL participation (% of children)		
<= 31% of children participate	614	27.3
>31% of children participate	1,111	72.7

Table 2: Percent of Vermont's kindergarten and 3rd grade children with ***decay experience*** (treated and/or untreated decay) by selected characteristics, 2013-2014

Characteristic (number with data)	Percent with decay experience	Lower 95% confidence limit	Upper 95% confidence limit
All Children (n=1,725)	31.9	27.4	36.3
Grade (% of children)			
Kindergarten (n=873)	29.2	23.3	35.0
Third grade (n=852)	34.5	26.6	42.4
Gender			
Female (n=864)	28.8	24.3	33.4
Male (n=861)	34.9	28.5	41.2
Race/Ethnicity			
White (n=1,507)	*30.0*	*25.7*	*34.4*
Minority or unknown (n=218)	*46.2*	*32.3*	*60.0*
Participates in FRL program			
No (n=570)	*22.1*	*17.7*	*26.5*
Yes (n=640)	*45.6*	*38.6*	*52.6*
Unknown/missing (n=515)	25.0	18.4	31.6
School FRL participation			
<= 31% of children participate (n=614)	*18.6*	*14.3*	*22.9*
>31% of children participate (n=1,111)	*36.8*	*32.1*	*41.6*

Decay experience: Refers to having untreated decay or a dental filling, crown, or other type of restorative dental material. Also includes teeth that were extracted because of tooth decay.

Related Healthy People 2020 Objective

OH-1.2: Reduce the proportion of children aged 6-9 years who have dental caries experience in their primary or permanent teeth

- Baseline: 54.4% of children aged 6 to 9 years had dental caries experience in at least one primary or permanent tooth in 1999-2004
- Target: 49.0%

Current National Estimate (NHANES, 1999-2004)

- 58% of children in 3rd grade had decay experience in 1999-2004

Disparities (highlighted in blue, Rao-Scott chi square, p<0.05)

- In Vermont, minority and low-income children have a higher prevalence of decay experience

DATA TABLES

Table 3: Percent of Vermont's kindergarten and third grade children with ***untreated decay*** by selected characteristics, 2013–2014

Characteristic (number with data)	Percent with untreated decay	Lower 95% confidence limit	Upper 95% confidence limit
All Children (n=1,725)	11.9	9.1	14.8
Grade (% of children)			
Kindergarten (n=873)	13.1	8.7	17.4
Third grade (n=852)	10.8	7.7	13.9
Gender			
Female (n=864)	10.1	5.8	14.4
Male (n=861)	13.8	10.6	17.0
Race/Ethnicity			
White (n=1,507)	*10.5*	*7.9*	*13.1*
Minority or unknown (n=218)	*23.0*	*8.9*	*37.1*
Participates in FRL program			
No (n=570)	*6.6*	*4.4*	*8.9*
Yes (n=640)	*19.4*	*13.6*	*25.2*
Unknown/missing (n=515)	8.3	5.5	11.1
School FRL participation			
<= 31% of children participate (n=614)	*6.2*	*4.9*	*7.5*
>31% of children participate (n=1,111)	*14.1*	*10.2*	*18.0*

Untreated decay: Dental cavities or tooth decay that have not received appropriate treatment

Related Healthy People 2020 Objective

OH-2.2: Reduce the proportion of children aged 6-9 years with untreated dental decay

- Baseline: 28.8% of children aged 6 to 9 years had untreated dental decay in at least one primary or permanent tooth in 1999-2004
- Target: 25.9 %

Current National Estimates (NHANES, 2009-2010 and 1999-2004)

- 17% of children ***aged 6-9 years*** had untreated decay in ***2009-2010***
- 29% of ***3rd grade children*** had untreated decay in ***1999-2004***

Disparities (highlighted in blue, Rao-Scott chi square, p<0.05)

- In Vermont, minority and low-income children have a higher prevalence of untreated decay

Table 4: Percent of Vermont's *third grade* children with *dental sealants* on their *permanent molar* teeth by selected characteristics, 2013–2014

Characteristic (number with data)	Percent with dental sealants	Lower 95% confidence limit	Upper 95% confidence limit
All 3rd Grade Children (n=852)	51.6	45.0	58.2
Gender			
Female (n=429)	50.3	43.6	57.0
Male (n=423)	52.9	45.1	60.7
Race/Ethnicity			
White (n=755)	*53.0*	*46.2*	*59.9*
Minority or unknown (n=97)	*37.6*	*25.2*	*50.0*
Participates in FRL program			
No (n=299)	56.9	49.6	64.2
Yes (n=302)	48.4	36.0	60.8
Unknown/missing (n=251)	50.5	34.8	66.2
School FRL participation			
<= 31% of children participate (n=304)	*59.4*	*51.4*	*67.4*
>31% of children participate (n=548)	*48.7*	*40.5*	*56.9*

Dental sealants: Plastic-like coatings that are applied to the chewing surfaces of back teeth. The applied sealant resin bonds into the grooves of teeth to form a protective physical barrier. NOTE: Most kindergarten students do not have permanent molars so this indicator is limited to 3rd grade children.

Related Healthy People 2020 Objective

OH-12.2: Increase the proportion of children aged 6 to 9 years who have received dental sealants on one or more of their permanent first molar teeth

- Baseline: 25.5% of children aged 6 to 9 years received dental sealants on one or more of their first permanent molars in 1999–2004
- Target: 28.1 %

Current National Estimates (NHANES, 2009–2010 and 1999–2004)

- 32% of children *aged 6–9 years* had dental sealants in *2009–2010*
- 33% of *3rd grade children* had dental sealants in *1999–2004*

Disparities (highlighted in blue, Rao-Scott chi square, p<0.05)

- In Vermont, minority children and children attending a lower-income school (>31% FRL) have a lower prevalence of dental sealants

DATA TABLES

Table 5: Percent of Vermont's kindergarten and third grade children needing ***early or urgent*** dental care by selected characteristics, 2013–2014

Characteristic (number with data)	Percent needing dental care	Lower 95% confidence limit	Upper 95% confidence limit
All Children (n=1,725)	11.2	8.9	13.5
Grade (% of children)			
Kindergarten (n=873)	11.3	7.7	14.9
Third grade (n=852)	11.1	8.3	14.0
Gender			
Female (n=864)	8.8	5.4	12.2
Male (n=861)	13.7	10.9	16.4
Race/Ethnicity			
White (n=1,507)	*10.2*	*7.6*	*12.7*
Minority or unknown (n=218)	*19.4*	*6.3*	*32.6*
Participates in FRL program			
No (n=570)	*6.2*	*3.9*	*8.5*
Yes (n=640)	*17.6*	*12.7*	*22.5*
Unknown/missing (n=515)	8.6	5.4	11.8
School FRL participation			
<= 31% of children participate (n=614)	*5.9*	*4.2*	*7.5*
>31% of children participate (n=1,111)	*13.2*	*10.1*	*16.3*

Disparities (highlighted in blue, Rao-Scott chi square, p<0.05)

- In Vermont, minority and low-income children are more likely to need dental treatment

DATA TABLES

Table 6: Percent of Vermont's kindergarten and third grade children needing ***urgent*** dental care by selected characteristics, 2013–2014

Characteristic (number with data)	Percent needing urgent dental care	Lower 95% confidence limit	Upper 95% confidence limit
All Children (n=1,725)	1.7	0.1	3.4
Grade (% of children)			
Kindergarten (n=873)	2.5	0.0	5.9
Third grade (n=852)	1.0	0.4	1.5
Gender			
Female (n=864)	0.6	0.0	1.2
Male (n=861)	2.8	0.0	6.3
Race/Ethnicity			
White (n=1,507)	*1.0*	*0.2*	*1.8*
Minority or unknown (n=218)	*7.4*	*0.0*	*21.0*
Participates in FRL program			
No (n=570)	1.8	0.0	4.2
Yes (n=640)	1.1	0.1	2.2
Unknown/missing (n=515)	2.4	0.0	7.3
School FRL participation			
<= 31% of children participate (n=614)	*0.2*	*0.0*	*0.5*
>31% of children participate (n=1,111)	*2.3*	*0.0*	*4.7*

Urgent dental care: Child had pain or infection at the time of the screening

Disparities (highlighted in blue, Rao-Scott chi square, p<0.05)

- In Vermont, minority and low-income children are more likely to need urgent dental care

Table 7: Mean number of decayed or treated teeth (primary and permanent) among Vermont's kindergarten and third grade children by selected characteristics, 2013–2014

Characteristic (number with data)	Mean number of decayed teeth		Mean number of treated teeth		Mean number of decayed and treated teeth	
	Mean	SE	Mean	SE	Mean	SE
All Children (n=1,725)	0.27	0.04	1.00	0.13	1.26	0.13
Grade (% of children)						
Kindergarten (n=873)	0.31	0.08	0.90	0.14	1.21	0.17
Third grade (n=852)	0.22	0.04	1.09	0.18	1.31	0.18
Gender						
Female (n=864)	0.18	0.03	0.82	0.14	1.00	0.13
Male (n=861)	0.35	0.08	1.18	0.13	1.52	0.15
Race/Ethnicity						
White (n=1,507)	0.21	0.03	0.97	0.13	1.18	0.12
Minority or unknown (n=218)	0.67	0.31	1.23	0.30	1.89	0.46
Participates in FRL program						
No (n=570)	0.15	0.05	0.68	0.08	0.83	0.09
Yes (n=640)	0.38	0.05	1.57	0.29	1.95	0.26
Unknown/missing (n=515)	0.23	0.10	0.63	0.12	0.86	0.17
School FRL participation						
<= 31% of children participate (n=614)	0.14	0.04	0.36	0.07	0.51	0.07
>31% of children participate (n=1,111)	0.31	0.06	1.23	0.16	1.54	0.14

SE=Standard error

Figure 1: Percent of Vermont's kindergarten and third grade children with 0 to 10+ primary and permanent teeth with untreated or treated decay (number of teeth with decay experience), 2013–2014

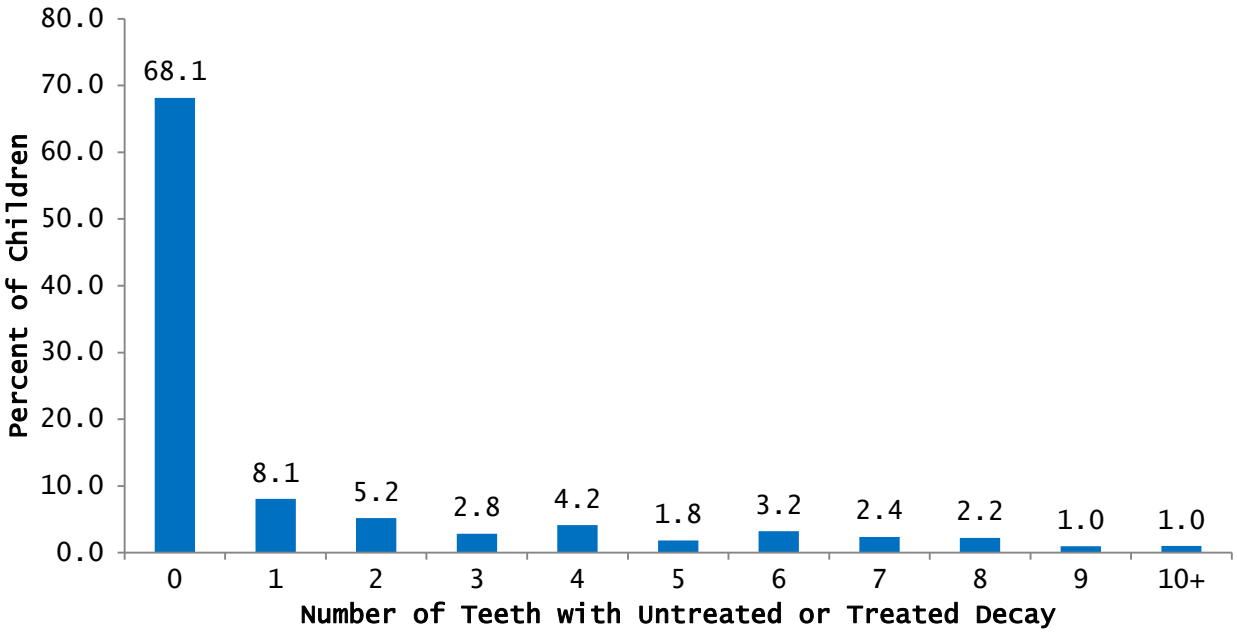


Table 8: Time since last dental visit, dental insurance coverage, and parent education for the children that returned a parent questionnaire (***not adjusted for the complex sampling scheme***), 2013-2014

Characteristic	Number with Data	Percent
Time since child's last dental visit		
1-2 times a year	578	95.5
Every 2 years	6	1.0
Every 3-5 years	2	0.3
When my child has a problem	3	0.5
My child has never been to the dentist	8	1.3
Missing/unknown	8	1.3
Is your child's dental care paid by		
Cash only	43	7.1
Dr. Dynasaur/Medicaid only	148	24.4
Private dental insurance only	341	56.3
Cash & Dr. Dynasaur/Medicaid	6	1.0
Cash & private dental insurance	39	6.4
Dr. Dynasaur/Medicaid & private insurance	13	2.2
Cash, Dr. Dynasaur & private insurance	1	0.2
Missing/unknown	15	2.5
Parent education		
6-8th grade	3	0.5
9-11th grade	7	1.2
High school/GED	69	11.4
Some college	69	11.4
College graduate	441	72.8
Missing/unknown	17	2.8
Frequency of parent dental visit		
1-2 times a year	496	81.9
Every 2 years	32	5.3
Every 3-5 years	12	2.0
When there is a problem	45	7.4
Never been to a dentist	4	0.7
Missing/unknown	17	2.8

Table 9: Reasons for NOT visiting the dentist in the last year (***not adjusted for the complex sampling scheme***). Limited to those who stated that their child had not been to the dentist in the last year (n=27), 2013-2014

Reason	Number of Responses
Cost	4
No reason to go	4
Dentist did not accept Dr. Dynasaur/Medicaid	1
My child is too young	0
Do not have a dentist/difficulty in getting appointment	4
Cannot get to the dental office/no transportation	1
Cannot leave work	2

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APPENDIX

Appendix 1: Prevalence of decay experience and untreated decay among Vermont's kindergarten and 3rd grade children and percent of 3rd grade children with dental sealants by school (unadjusted).

School	# Screened	% with Decay Experience	% with Untreated Decay	% with Dental Sealants (3rd Grade Only)
Allenbrook	73	16.4	5.5	NA
Bennington	72	58.3	23.6	42.9
Bingham Memorial	12	16.7	8.3	80.0
Edmunds	89	43.8	11.2	64.6
Essex	74	23.0	6.8	NA
Founders Memorial	62	29.0	3.2	53.2
Grand Isle	11	27.3	9.1	12.5
John F. Kennedy	110	31.8	8.2	36.7
Killington	13	53.9	7.7	85.7
Middlebury	96	24.0	8.3	43.2
Molly Stark	137	53.3	21.9	34.8
Morristown	127	26.0	11.0	44.1
Newport City	58	25.9	10.3	63.6
Newport Town	22	18.2	4.6	63.6
Shaftsbury	68	51.5	23.5	34.3
Shelburne	85	10.6	3.5	55.0
South Royalton	40	22.5	10.0	40.0
State Street	18	38.9	33.3	50.0
Summit Street	104	21.2	6.7	57.7
Swanton	127	39.4	10.2	55.1
Thatcher Brook	117	18.0	8.6	62.1
Twinfield	48	37.5	18.8	55.0
Vergennes	75	26.7	8.0	52.6
Williston	87	20.7	6.9	48.3

NA: Not applicable, school had kindergarten children only.

Appendix 2: Optional Parent Questionnaire

2014 Vermont Dental Health Consent Form and Survey

Please complete this form and return it to your child's teacher by _____

Child's Name: _____ Child's Birthdate: ____/____/_____

Teacher: _____ Grade: ____Age: _____ Sex: ☐ Female ☐ Male

Parent/guardian name: _____

Address: _____

Which of the following best describes your child? (Check all that apply)

☐ White ☐ Black/African American ☐ Hispanic/Latino
☐ Asian ☐ American Indian/Alaska Native ☐ Native Hawaiian/Pacific Islander

☐ **Yes** I have read the attached letter and understand the information about the dental screening. I give permission for my child to have his/her teeth checked.

☐ **No** I have read the attached letter and understand the information about the dental screening. I do not give permission for my child to have his/her teeth checked.

_____ _____
Signature of Parent or Guardian Date

Please answer these questions to help us learn more about the dental health of Vermont schoolchildren. Your answers will remain private. If you do not want to answer the questions, you may still give permission for your child to have his or her teeth checked. You may also choose to answer the questions even if you do not want to have your child's teeth checked.

1. How often does ***your child*** usually visit the dentist? (Check **one**)
   ☐ 1-2 times a year (go to question 3) ☐ When my child has a problem
   ☐ Every 2 years ☐ My child has never been to a dentist
   ☐ Every 3-5 years

2. What is the **one most important** reason why your child has not visited the dentist in the last year?
   ☐ Cost (No insurance, could not afford)
   ☐ No reason to go (no dental problems)
   ☐ Dentist did not accept Dr. Dynasaur/Medicaid
   ☐ My child is too young to see a dentist
   ☐ Do not have a dentist/Difficulty in getting appointment
   ☐ Cannot get to the dental office/No transportation
   ☐ Cannot leave work to take child to dentist

3. Is your child's dental care paid by: (Please check **all** ways dental care is paid for)
   ☐ Cash ☐ Dr. Dynasaur/Medicaid ☐ Private dental insurance ☐ Don't know

4. What is the highest level of education that **you** have completed?
   ☐ 6th-8th grade ☐ 9th-11th grade ☐ High school/GED ☐ Some College ☐ College graduate

5. How often do **you** visit the dentist? (Check **one**)
   ☐ 1-2 times a year ☐ Every 2 years ☐ Every 3-5 years ☐ When there is a problem
   ☐ Never been to a dentist

For Office Use Only R: ____ D: ____ S: No Yes TxU: 0 1 2 F: 0 1 2