



# Keep Smiling Vermont

Oral Health Survey

2009-2010



The Vermont Department of Health, Office of Oral Health, wishes to thank the Vermont Child Health Improvement Program in the College of Medicine at the University of Vermont, the Vermont Department of Education, and the participating superintendents, principals, teachers, school nurses, parents and children for the support of this survey.



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## Executive Summary

### Introduction

Throughout the United States, assessing the oral health of school age children has become a priority. Oral health is a priority area in Healthy Vermonters 2010, the State's road map for improving public health. Healthy Vermonters 2010 includes specific oral health objectives outlined in the U.S. Department of Health and Human Services document entitled Healthy People 2020. With these two documents we:

- Identify health priorities for Vermont;
- Measure where we are compared to where we want to be;
- Measure where we are compared to the nation;
- Build on the success of Healthy Vermonters 2010;
- Emphasize prevention;
- Encourage Vermonters to take an active role in managing and improving their health.

The Vermont Department of Health, Office of Oral Health in cooperation with the Vermont Department of Education conducted its third statewide assessment of the oral health status and treatment needs of children in the State of Vermont in school year 2009-2010.

An oral health survey was last conducted in Vermont during the 2002-2003 academic year. At that time, 1238 children in grades 1, 2 and 3 were screened from 22 elementary schools. For the 2009-2010 oral health survey, 788 children in grades 1, 2 and 3 were screened from the sample of 22 elementary schools. Results for the 2009-2010 oral health survey indicate an improvement in caries experience, untreated decay and sealant utilization. This information, along with national data, will assist the Department of Health to identify disease trends, plan programs, prioritize needs, and support policy development to effectively meet the oral health needs of the children of Vermont. This document is available electronically at [www.healthvermont.gov](http://www.healthvermont.gov)

## Key Findings

***Caries Experience: 34 percent of the children surveyed in grades 1-3 had a history of caries which is better than the Healthy People 2020 objective of 49 percent.***

Caries experience indicates there is active decay and/or restorations present in the mouth. The percent of children in grades 1-3 having caries experience decreased from 40% in 2002-2003 to the 2009-2010 rate of 34%.

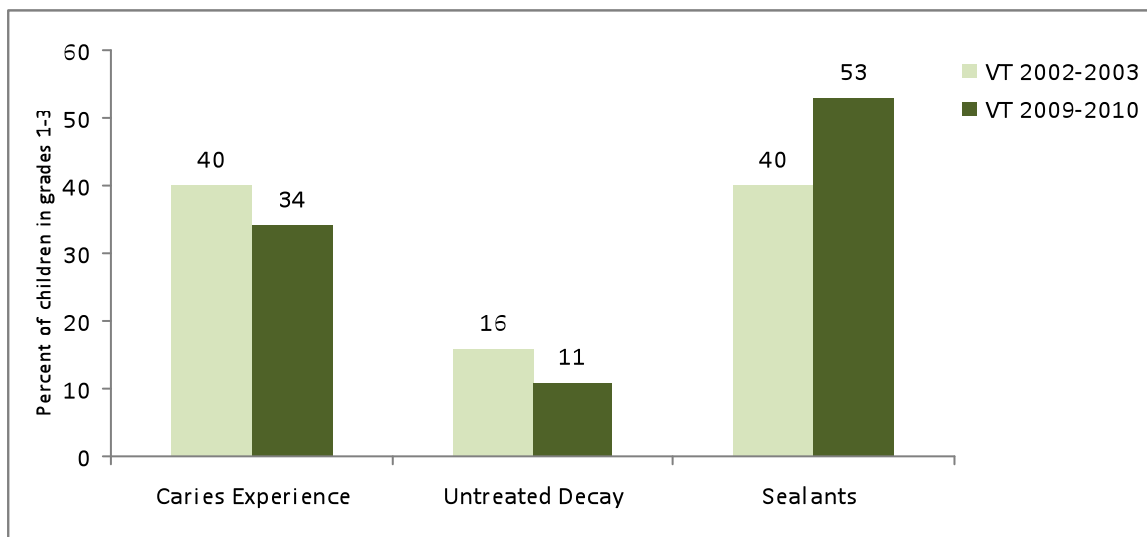
***Untreated decay: 11 percent of the children surveyed in grades 1-3 had untreated decay present in their mouth. The Healthy People 2020 objective for untreated decay is 26 percent.***

Untreated dental decay can result in needless pain and suffering, difficulty speaking and chewing, increased cost of care, and loss of self-esteem. The 2009-2010 rate of untreated decay for children in grades 1-3 (11%) declined from the 2002-2003 survey level of 16%. Of the 88 children with untreated decay, each child averaged 1.5 teeth with untreated decay.

***Sealants: 53 percent of children in grades 1-3 had sealants on at least one of their permanent molars, which exceeded the Healthy People 2020 goal of 28 percent.***

Sealants have been shown to reduce decay in the pits and fissures of teeth. Among 3<sup>rd</sup> graders alone, 64% had sealants on at least one permanent molar. Maintaining this high level of sealant utilization may be due to:

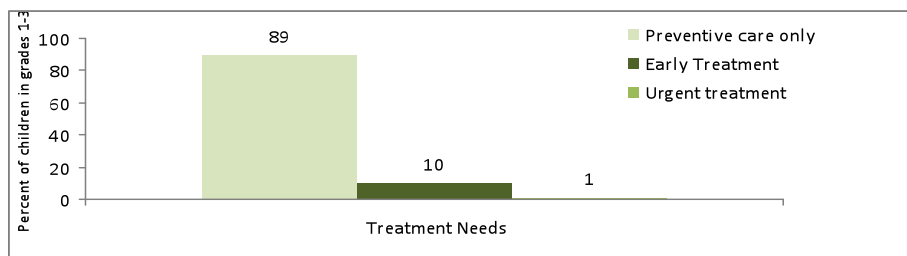
- recognition by Vermont dentists of the importance of sealant placement;
- high utilization levels by children in Vermont's Medicaid program;
- emphasis by the Tooth Tutor Program on sealant placement.



***Treatment Needs: 89 percent of the children surveyed in grades 1-3 required preventive dental care only.***

Only 1.0% of the children were in need of urgent dental treatment because of pain and/or infection.

- Criteria for preventive dental care only: no obvious problems.
- Criteria for early dental treatment: caries without accompanying signs or symptoms, spontaneous bleeding of the gums, or suspicious white or red soft tissue areas.
- Criteria for urgent dental treatment: signs or symptoms that include pain, infection, swelling, or soft tissue ulceration of more than two weeks duration (determined by questioning.)



***Concentration of decay: 18 percent of the children surveyed in grades 1-3 experienced 80 percent of the decay found in primary and permanent teeth.***

The majority of Vermont children in grades 1-3 were found to be in good dental health. This was evidenced by the 66% of children with no decayed or filled teeth. Only 34% of children in grades 1-3 had decay or fillings:

- 16% had 1-2 teeth with decay or fillings;
- 17% had 3-8 teeth with decay or fillings;
- Only 1% had 9-12 teeth with decay or fillings.

***Dental Fluorosis: 69 percent of the children surveyed in grades 1-3 had no dental fluorosis.***

Fluorosis is a disturbance of enamel due to excessive fluoride intake during the development period. Based on the limitations of this survey, it is not possible to detect a change from 2002-2003.

- No fluorosis (69%).
- Very mild or mild fluorosis (27.5%). With very mild fluorosis, small white spots are present which are barely visible. With mild fluorosis, white opaque areas involve less than 50% of the tooth surface in at least one tooth.
- Moderate to severe fluorosis (3.5%). With moderate fluorosis, more than 50% of the tooth surface is affected in at least one tooth. With severe fluorosis, brown stain and pitting may be present.

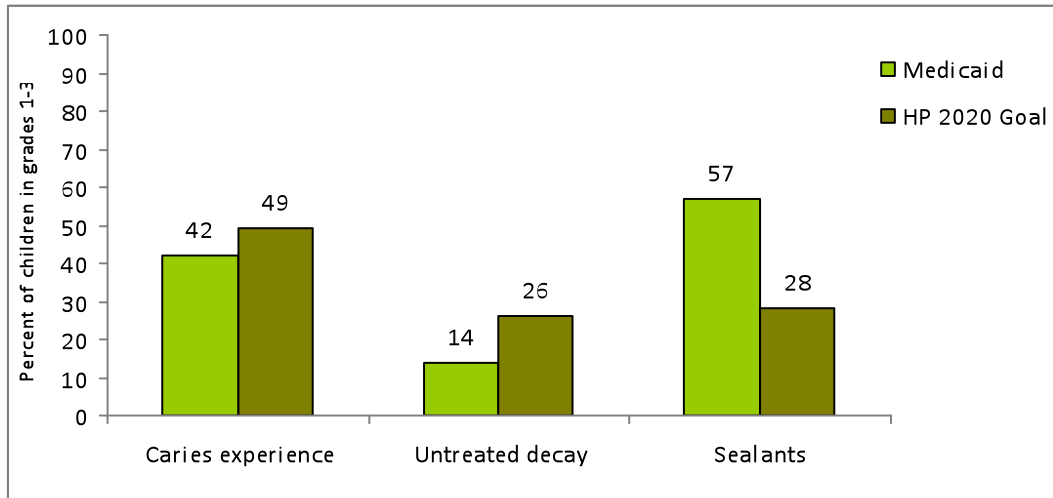
## Survey Results 2002-2003 compared to 2009-2010

The percent of children in grades 1-3 with dental caries experience decreased by six percentage points. The 2002-2003 rate was 40 percent compared to the 2009-2010 rate of 34 percent. The percent of children in grades 1-3 with untreated decay decreased from 16 percent in 2002-2003 to 11 percent in 2009-2010. The percentage of children with at least one sealant on a permanent molar increased to 53 percent in 2009-2010, compared to 40 percent in 2002-2003. The percentage of children covered by Medicaid with at least one sealant on a permanent molar increased from the 2002-2003 level of 37 percent to a 2009-2010 level of 57 percent.

The National Oral Health objectives for the Year 2020 (Healthy People 2020) outline several oral health status objectives for young children. For 6- to 9-year-old children, there are three primary oral health status objectives.

- To decrease the proportion of children with dental caries experience in primary or permanent teeth to 49 percent.
- To decrease the proportion of children with untreated dental decay in primary or permanent teeth to 26 percent.
- To increase the proportion of children who have received dental sealants on one or more of permanent first molar teeth to 28 percent.

The State of Vermont has exceeded the Healthy People 2020 objectives as evidenced by the data collected during the 2009-2010 oral health survey. Even children covered by Medicaid exceeded the Healthy People 2020 objectives by 7 percentage points for caries experience, by 12 percentage points for untreated decay, and by 28 percentage points for sealants.



Possible reasons for improvement in the oral health status of Vermont children since the 2002-2003 survey:

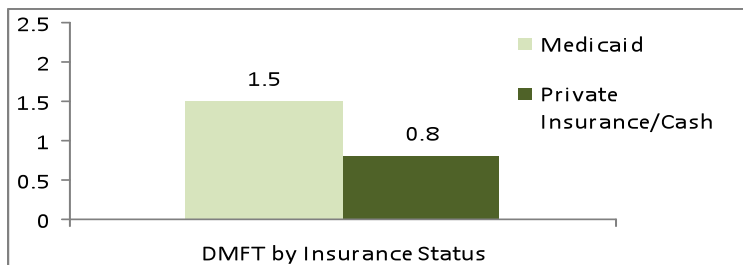
- Commitment by Vermont dentists to provide care for children;
- One of the highest rates of utilization by Medicaid children in the United States;
- Tooth Tutor Dental Access Program with its emphasis on the concept of establishing a dental home;
- Sealant placement in the dental office on younger children;
- Overall increase in the use of fluorides.



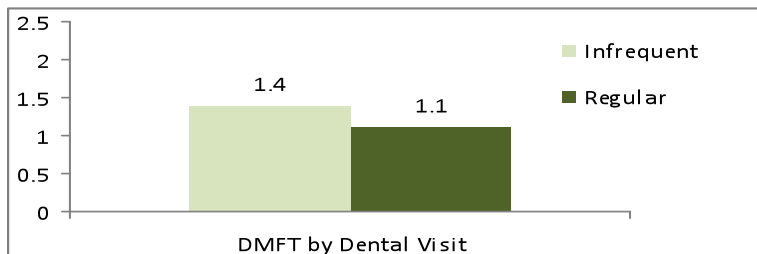
## Decayed, Missing and Filled Teeth (DMFT)

The number of Decayed, Missing and Filled Teeth (DMFT) declined from 1.5 in 2002-2003 to 0.9 in 2009-2010. Of the 788 children in the 2009-2010 survey, 520 had a DMFT of 0.

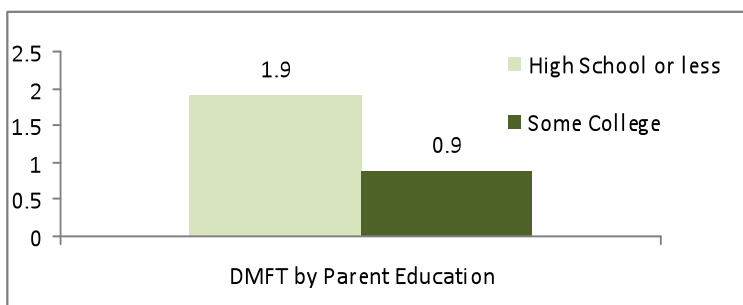
- Children covered by Medicaid had almost double the rate of decayed, missing and filled teeth (1.5) compared to those children covered by private insurance (0.8).



- Children with regular dental visits had a lower DMFT (1.1) than those with infrequent dental visits (1.4), although this difference is not statistically significant. An infrequent dental visit is defined as not visiting yearly and a regular dental visit is defined as one to two visits a year.



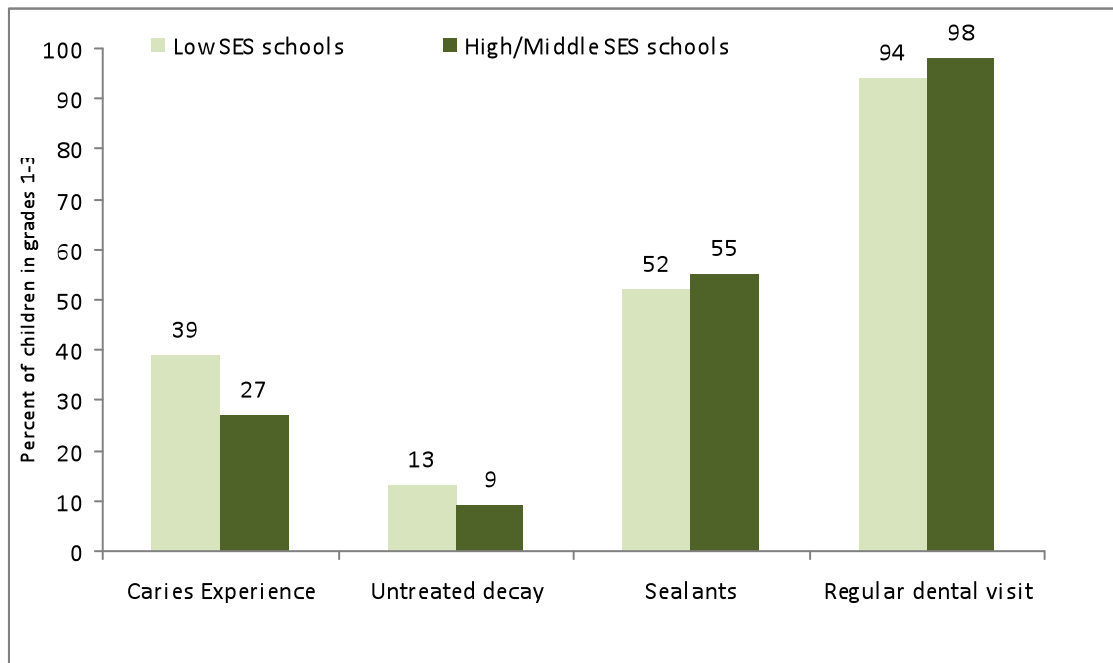
- Those children whose parents/guardians reported having a high school degree or less had more decayed and/or filled teeth (1.9) than those whose parents/guardians reported having some college education (0.9).



## Low SES Schools Compared to High/Middle SES Schools

Participation in or eligibility to participate in the Vermont Free and Reduced Lunch Program is a reliable indicator of socioeconomic status (SES).

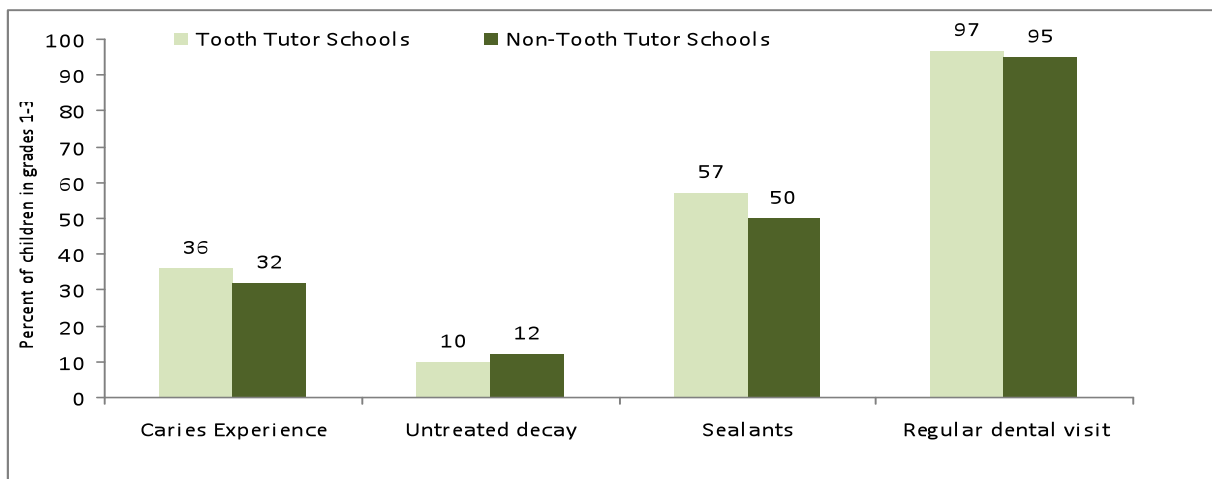
- Eligibility for the Free and Reduced Price Lunch Program (FRL) is defined as up to 130% of the Federal Poverty Level (FPL) for free lunch and between 130%-185% of the FPL, or \$28,665-\$40,793 for a family of four (2010), for reduced price lunch.
- The percentage of eligible children for the Free and Reduced Price Lunch Program in participating schools was 39%, and the State as a whole was 41%.
- For comparability with the previous survey, low SES was defined as schools having FRL Program eligibility greater than 31%. The high/middle SES schools had Free and Reduced Meal Program eligibility of less than or equal to 31%.
- Children in low SES schools had a significantly higher level of caries experience than children in high/middle SES schools. The percent with untreated decay, regular dental visits, and sealants was not significantly different between low and high SES schools.
- Children in both low SES schools and high/middle SES schools showed substantial improvement over the benchmarks set by high/middle SES schools in 2003.
- The data suggest that the oral health of children in high/middle SES schools is improving faster than for children in low SES schools.



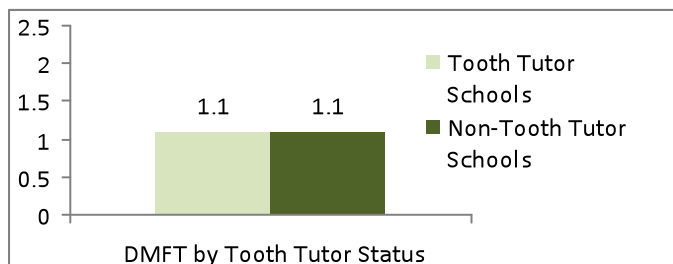
## Tooth Tutor Schools Compared to Non-Tooth Tutor Schools

Vermont's Tooth Tutor Dental Access Program gives schools a realistic and effective approach to improving dental health by employing a dental hygienist to assist parents/guardians in finding a dental home for their child. A dental home is a usual place of care that provides preventive, comprehensive and continuous care in a dental office.

- Tooth Tutor Schools and non-Tooth Tutor Schools both had Free and Reduced Meal Program eligibility of 38%.
- In Tooth Tutor Schools, children had more caries experience and untreated decay compared to non-Tooth Tutor Schools, although the gap had closed since 2003. This may be attributed to children in Tooth Tutor schools having more sealants and regular dental visits than those in non-Tooth Tutor schools.

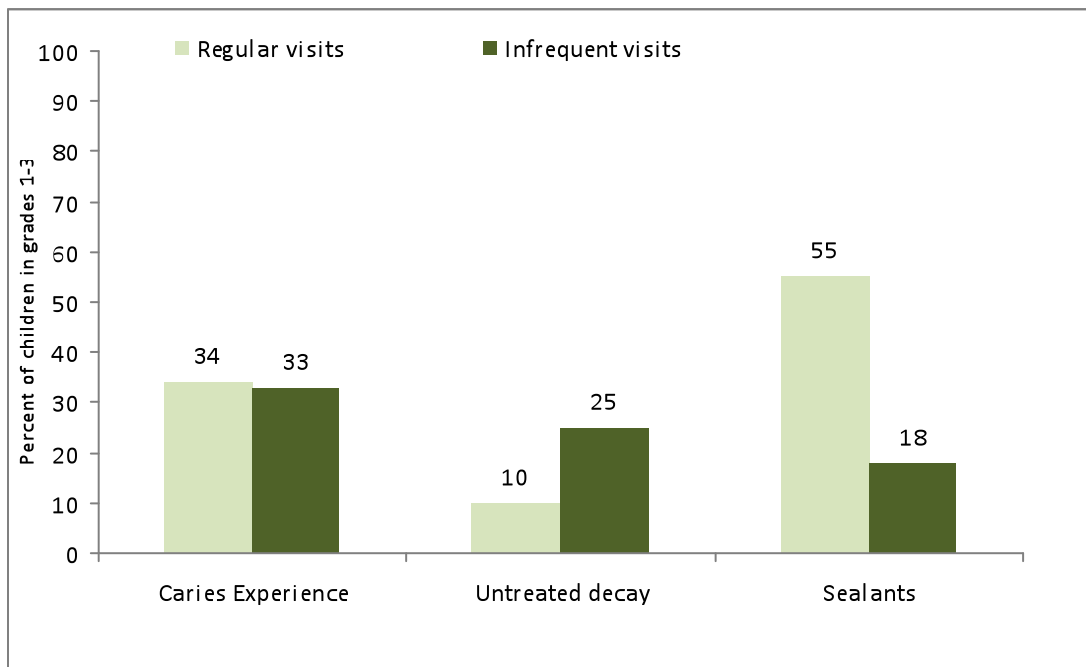


- The DMFT was 1.12 in the Tooth Tutor schools compared to 1.13 in the non-Tooth Tutor schools.



## Regular Dental Visits Compared to Infrequent Dental Visits

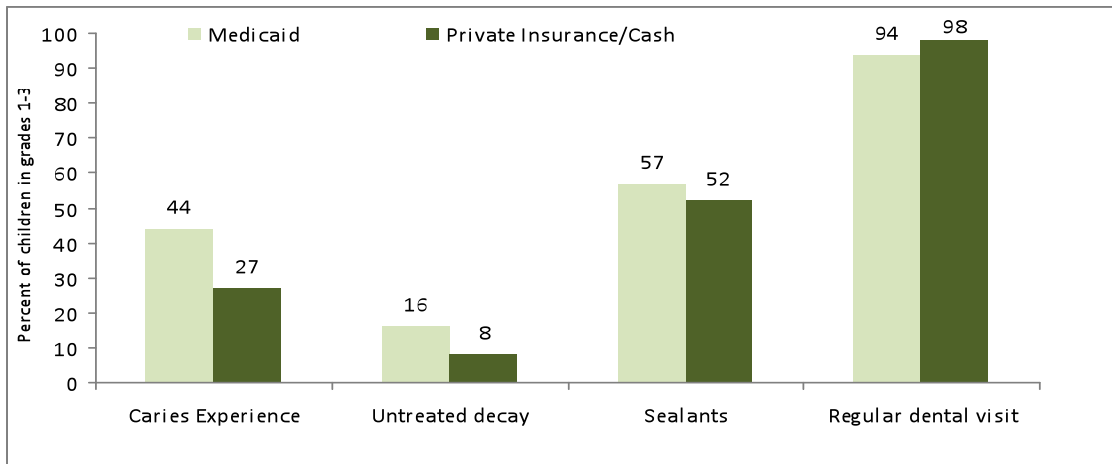
- A regular dental visit is defined as one to two visits a year and an infrequent dental visit is defined as not visiting yearly. Among children whose parents completed the survey, 95% were reported as having a regular dental visit compared to the five percent who visited infrequently.
- Among children whose parents completed the survey, only two percent were reported as having never been to the dentist.
- Children who did not have a regular dental visit had similar caries experience as those children who had a regular dental visit.
- Children who were reported to have regular dental visits were less likely to have untreated decay and more likely to have sealants compared to children who did not have regular dental visits.



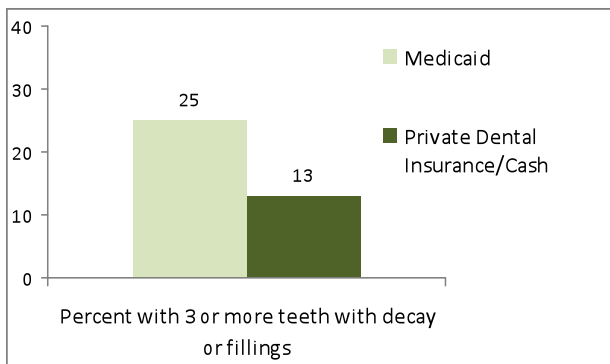
## Medicaid Compared to Private Dental Insurance/Cash

In the 2009-2010 oral health survey, 39% of the children participating were reported as having Medicaid coverage.

- Children covered by Medicaid were more likely to have caries experience (44% vs. 27%).
- Among children covered by Medicaid, 16% presented with untreated decay compared to 8% of the children covered by private insurance/cash, though this difference was not significant.
- The children in grades 1-3 covered by Medicaid had similar rates of sealants and regular dental visits as those covered by private dental insurance/cash.
- Both the children with Medicaid and those children covered by private dental insurance/cash exceeded the Healthy People 2020 objectives.



- Among the children paid by private dental insurance/cash, fewer (13%) had three or more teeth with decay or fillings than children with Medicaid (25%).

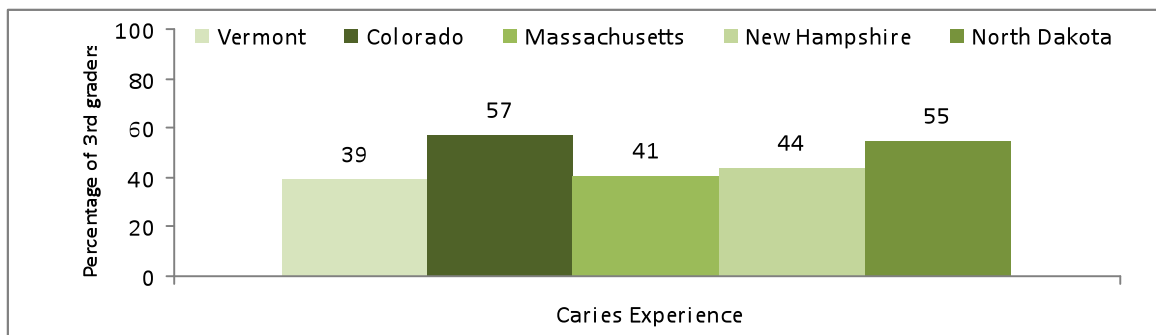
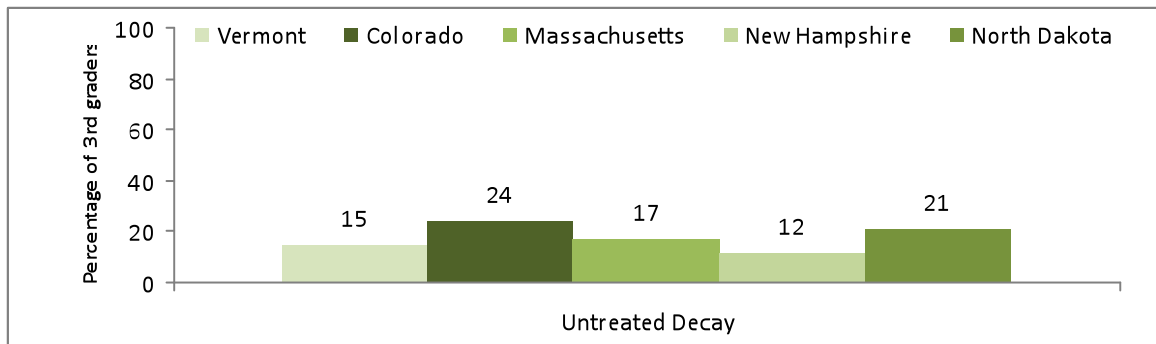
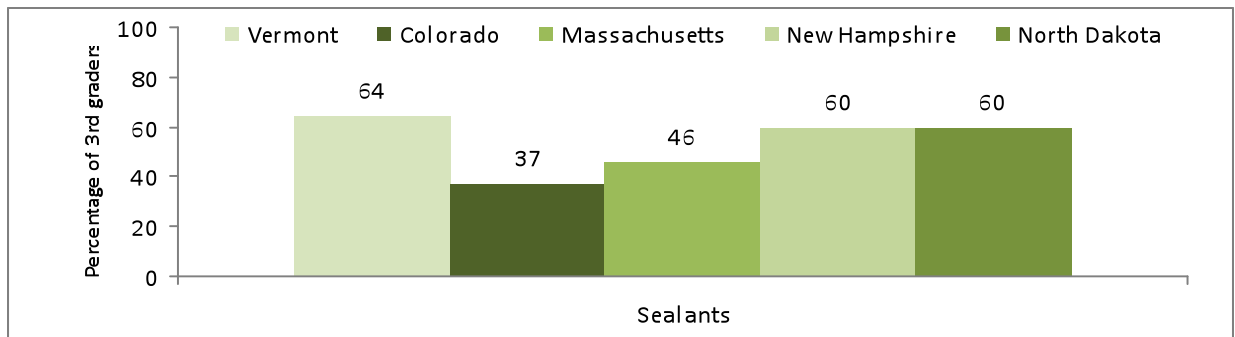


## Vermont Compared to Other States

Colorado, Massachusetts, New Hampshire, and North Dakota were chosen as comparison states because they recently completed similar surveys on third grade children and they are regionally or demographically similar to Vermont.

Sealants were identified on sixty-four percent of third grade children in Vermont. This was four percentage points higher than New Hampshire and North Dakota, the second best states.

Vermont ranked second among comparison states for the number of 3<sup>rd</sup> graders with untreated decay at 15 percent, behind New Hampshire which had untreated decay in 12 percent of third graders. Vermont also had the lowest rate of third graders with caries experience (39 percent).



## Survey Method

The survey method used was an epidemiological survey utilizing standardized criteria and equipment necessary for conducting oral screening of Vermont children in grades 1-3. The screenings were conducted by a licensed dental hygienist using gloves, mask, eye protection, portable light, and disposable mirror. The screener used diagnostic criteria outlined in the Association of State and Territorial Dental Directors Basic Screening Surveys, 2008 Revision. Socio-demographic information was obtained from the survey form that was completed by the parent/guardian. Completion of the questions was not required for the child to participate in the screening. The parent/guardian had to provide active consent for their child's participation in the screening activity. Parents/guardians were also encouraged to return the survey form whether or not they gave consent for the oral screening. The following data was collected during the screening:

- Child's grade, date of birth, age and gender;
- Caries experience: number of primary and permanent teeth;
- Untreated decay: number of primary and permanent teeth;
- Sealants on permanent molars: yes/no;
- Fluorosis: none, very mild or mild, moderate to severe;
- Treatment needs: preventive dental care only, need for early dental treatment, need for urgent dental treatment;
  - Criteria for preventive dental care only: no obvious problems;
  - Criteria for early dental treatment: caries without accompanying signs or symptoms, spontaneous bleeding of the gums, or suspicious white or red soft tissue areas;
  - Criteria for urgent dental treatment: signs or symptoms that include pain, infection, swelling, or soft tissue ulceration of more than two weeks duration (determined by questioning.)

These data items correspond to the objectives outlined in the Healthy People 2020 and Healthy Vermonters 2010 documents.

### Data Items: Objectives

**Caries Experience:** Reduce the proportion of children aged 6 to 9 years with dental caries experience in their primary and permanent teeth.

**Untreated Decay:** Reduce the proportion of children aged 6 to 9 years with untreated dental decay in their primary and permanent teeth.

**Sealants Present:** 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.

Parent/guardian reported information from the survey (this information includes both those parents/guardians who gave consent for their child to be screened and those who only completed the survey questionnaire):

- Regular dental visit by the parent/guardian: 74 percent;

- Most important reasons that the child was not taken to the dentist in the last year: Did not have a dentist/difficulty getting an appointment and Cost;
- Highest level of education completed by the parent/guardian: College graduate (57%), Some college (19%), High school/GED (19%), Less than high school (3%) and No response (2%).

## Sampling

The oral health survey was based on methodology outlined in the Association of State and Territorial Dental Directors (ASTDD) Basic Screening Survey guide. This guide contains nationally standardized information and techniques that can be used to collect data for monitoring the national oral health objectives of 2010. At the time of the survey, the national 2020 objectives were not available, and publication was delayed to accommodate inclusion of these goals. A data coordinator made available through the ASTDD technical assistance program, Dr. Kathy Phipps, selected the sample and performed the weighted analysis using SAS, version 9.2. Based on the number of schools available for sample selection, we were 95 percent sure that the oral health estimates would be within 2.5 percentage points for first, second, and third grade children in the State of Vermont.

School specific enrollment information for the 2008-2009 school year was downloaded from the Vermont Department of Education website. Also downloaded was the percent of children participating in the free or reduced price school lunch program (FRL) during the 2009-2010 school year. In 2008-2009 there were 232 schools with at least one child enrolled in first, second or third grade with a total 1<sup>st</sup>-3<sup>rd</sup> grade enrollment of 18,638 children. Of these 232 schools, 22 had less than 20 students enrolled in all three grades. These 22 schools were deleted from the sampling frame. The final sampling frame included 210 schools with 20 or more children in first, second or third grade. These 210 schools had a total 1<sup>st</sup>-3<sup>rd</sup> grade enrollment of 18,333.

To assure that the sample was representative of the state in terms of both geographic distribution and socioeconomic status, the sampling frame was ordered by geographic region then school FRL participation. Within each region the 4<sup>th</sup> school was selected followed by every 10<sup>th</sup> school thereafter. If a school refused to participate, a school within the same sampling frame was randomly selected as the replacement. A total of 22 schools agreed to participate with a 1<sup>st</sup>-3<sup>rd</sup> grade enrollment of 1,633. In order for a child within the selected school and grade to be screened, the child had to return a completed permission form from a parent. A total of 788 children were given permission to be screened. While the majority of children ranged in age from 6-9 years, 28 children, or 1.5% of the total screened, were 10 years old. Because of the small number, the 10-year-olds were included in all of the results. The participation rate was 48 percent and was lower than the 2002-2003 survey. Reasons for the lower participation rate included timing of the survey near the end of the school year, the short time available for the survey, and the fact that this age group had been targeted for other Department of Health interventions earlier in the school year, before funding for the survey had been secured.



## Analysis

Data were weighted for probability of selection and for non-response. Crosstabs and frequencies with corresponding confidence intervals were run in SAS (version 9.2). All differences are statistically significant based on 95% confidence intervals unless noted.

## Limitations

**Small Sample Size:** The participation rate for the survey was 48% (788 children). In 2003, the survey included 1228 children with a response rate of 67%. The 2009-2010 survey was conducted in the last 2 months of the school year and the screener had difficulty getting written parental consent. Small sample size limits the statistical analysis of the results.

**More highly educated parents among participants:** The educational level of participant parents was higher than in the previous survey. In 2003, 66% of parents had some college education versus 75% in 2009-2010. The educational level of parents in the survey is similar to higher income adults in Vermont according to The Health Disparities of Vermonters 2010, VDH.

**Race/ethnicity:** Small numbers in race/ethnicity subgroups in Vermont prevent analysis by race and ethnicity.

**Low tech screenings:** Screenings were conducted in schools without the help of radiographs. The observed findings of decay and sealants may differ from those obtained in a clinical setting.