



# ORAL HEALTH OF RHODE ISLAND CHILDREN 2015



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# SUMMARY

During the 2013-2014 school year, the Oral Health Program at the Rhode Island Department of Health conducted a statewide oral health survey of third grade children enrolled in Rhode Island's public elementary schools. Screenings were completed at 60 systematically selected elementary schools; a total of approximately one quarter of Rhode Island's third grade children (2,529 of 10,676 children) were screened. Resulting estimates describe the oral health status of the state's third grade children with high statistical power and accuracy.

## Key Findings

- **Dental decay is a significant public health problem for Rhode Island's children.**
  - Half of third grade children have experienced decay (treated and/or untreated).
- **Many children in Rhode Island do not get the dental care they need.**
  - One out of four third graders has untreated tooth decay and needs dental treatment.
- **Less than 40 percent of children in Rhode Island have dental sealants. Sealants are a well-accepted, evidence-based clinical intervention to prevent tooth decay on permanent molar teeth.**
- **The prevalence of decay experience and untreated tooth decay did not reach the Healthy People 2020 objectives for Rhode Island third grade school children, particularly among racial/ethnic minority children.**
- **There are significant oral health disparities in Rhode Island by race/ethnicity and socioeconomic status.**
  - Minority children (reported as Black/African American, Hispanic, or other race/ethnicity) and children in schools with more students eligible for the free or reduced price school meals (FRSM) program are more likely than their peers to have untreated tooth decay. These children have not received optimal dental treatment in a timely manner.
  - Minority children and children attending schools with higher FRSM eligibility are more likely to experience dental decay than their counterparts. Rampant decay, defined as more than six teeth that have experienced decay, is twice as prevalent among these subgroups of Rhode Island children.
- **However, there is no noticeable difference in the receipt of dental sealants between children of different racial/ethnic groups or socioeconomic status.**
  - The Rhode Island Department of Health has supported school-based dental programs that provide or facilitate the delivery of sealants, with particular focus on serving high-risk children in underserved communities. The lack of a disparity in sealant prevalence among minority children or children from schools with higher FRSM eligibility suggests that the programs can reduce gaps in children's receipt of preventive oral health services. Close evaluation of these programs is recommended to ensure more effective sealant delivery and better ability to meet high-risk children's needs.

## INTRODUCTION

Tooth decay is an infectious disease process affecting both children and adults. Tooth decay is the most common chronic disease of childhood, five times more common than asthma, and is likely the most widespread known disease.<sup>1</sup> Although preventable, tooth decay affects more than half of US children aged 6-8 years, and by the time children finish high school about two-thirds of them have decay.<sup>2</sup> If ignored, the pain and disability caused by tooth decay may limit children's ability to focus and perform in the classroom. This can lead them to miss school days and fall behind their peers.

While the prevalence and severity of tooth decay have declined in recent years among US school-aged children, tooth decay remains a significant problem—particularly for certain racial and ethnic groups and low-income children.<sup>1,2</sup> Two prior reports by the Rhode Island Department of Health documented disparities in the prevalence of tooth decay among these children.<sup>3,4</sup> To continue its surveillance efforts, the Rhode Island Oral Health Program conducted a statewide survey of third grade school children during the 2013-2014 school year. The Program will use these data to facilitate collaborative efforts of decision makers and stakeholders to improve oral health and reduce disparities among Rhode Island children.



# METHODS

## School Sampling

A representative sample of schools was selected from all Rhode Island public elementary schools with third grade classrooms. The data file of eligible schools, obtained from the Rhode Island Department of Education (RIDE), contained the following information for each school and district: enrollment numbers of third graders and all elementary school children, enrollment by gender and race/ethnicity, and percent of children eligible for the free or reduced price school meals (FRSM) program.

The sampling frame was based on the concept of stratified systemic sampling of two-stage clusters. Schools were first stratified by urban/non-urban area and then ordered by the percentage of enrolled children eligible for the FRSM program (using an implicit stratification method).<sup>5</sup> Schools were selected using a selection interval from the list of schools in each stratum. Designation of “urban” areas was based on state standard criteria: Central Falls, Pawtucket, Providence, and Woonsocket are designated as urban core cities where more than 25% of children live in families with incomes below the federal poverty level.<sup>6</sup> The remaining 35 cities and towns are designated as “non-urban.”

As summarized in Table 1, urban areas have a higher percentage of children who are racially/ethnically diverse and who are eligible for the FRSM program. To obtain a sufficient number of racial/ethnic minority children and children living in lower-income families, schools were disproportionately oversampled from urban areas. If a school was closed or refused to participate, a replacement school within the same sampling stratum was randomly selected. Closed and refusing schools were taken into account in the calculation of selection probability and sampling weight.

**TABLE 1. RACE/ETHNICITY AND FREE OR REDUCED PRICE SCHOOL MEALS (FRSM) PROGRAM ELIGIBILITY AMONG THIRD GRADE CHILDREN BY GEOGRAPHIC AREA, RHODE ISLAND, 2013-2014**

		Urban*		Non-Urban	
		Number	Percent (%)	Number	Percent (%)
<b>Race/Ethnicity</b>	White	719	19.2	5,633	81.3
	Hispanic	2,023	54.0	599	8.6
	Black	653	17.4	234	3.4
	Other†	353	9.4	462	6.7
<b>FRSM Eligibility</b>		3,125	83.4	2,204	31.8
<b>Total Third Grade Children</b>		3,748		6,928	

Data Source: Rhode Island Department of Education (RIDE), RI Education Data-Enrollment, Dropout & Graduation Data, 2013–14 School Year (Available at <http://www.eride.ri.gov/reports/reports.asp>)

\*The urban core cities of Central Falls, Pawtucket, Providence, and Woonsocket as defined by the population statistics of more than 25% of the children living in families with incomes below the federal poverty level.

† Includes Native American, Asian/Pacific Islander and multi-racial children

## Data Management and Analysis

Screening data were entered into a customized Microsoft Access database which included edit checks for logic and data entry errors. Analysis was completed using the survey analysis procedures in SAS 9.3. The following sample design information was used for all procedures: strata (urban/non-urban and FRSM program eligibility), primary sampling unit (school), and weight variable. Outcome data presented in this report have been weighted (adjusted) for the sampling probability and response rate.

Outcome prevalence data is presented with 95% confidence intervals (CI). These are presented in tables and marked in figures using vertical error bars (I). Since percentages from survey data are population estimates, the 95% CI indicates the range of values within which the “true” value lies 95% of the time. In other words, if the same exact survey was conducted 100 times for the same target population, the 95% CI represents the range of values that 95 of the surveys would produce. The narrower a CI is, the closer estimation one would expect to get to that observed in the population. Generally, wider CI are due to small numbers of people in a sample.

Additionally, bivariate analyses using the chi-square test were done to identify any significant differences in children’s oral health outcomes between the subgroups of children and the survey years (at  $p < .05$ ).

## Screening Methods

The 2013-2014 Third Grade Oral Health Screening Form (Appendix B) was adapted from the Basic Screening Survey developed by the Association of State and Territorial Dental Directors.<sup>7</sup> The primary purpose of the Basic Screening Survey is to provide a framework for obtaining oral health data that is inexpensive and easy to implement, yet always consistent. By collecting data in a consistent manner, communities and states can compare their data over time and with data collected by other organizations. Surveys are cross sectional (looking at a population at a point in time), and descriptive (intended to determine estimates of oral health status for a defined population).

An oral health screening is not a thorough clinical examination and does not involve making a clinical diagnosis resulting in a treatment plan. A screening is intended to identify gross dental or oral lesions and is conducted by dentists, dental hygienists, or other appropriate healthcare workers, in accordance with an applicable state law. A total of 25 school dentists completed the 2013-2014 school year screenings, using gloves, a light source, and disposable mouth mirrors. To ensure consistency, the examiners (school dentists) reviewed the diagnostic criteria outlined in Basic Screening Surveys: An Approach to Monitoring Community Oral Health before the screenings.<sup>7</sup>

To measure prevalence and severity of tooth decay among children, examiners assessed treated decay (presence of fillings or crowns), untreated (unrestored) decay, rampant decay (presence of more than six teeth with treated and/or untreated decay), and treatment urgency. They also looked for a dental sealant on at least one permanent molar tooth, an indicator of a child’s access to preventive services. These indicators are consistent with the *Rhode Island Rules and Regulations for School Health Programs*,<sup>8</sup> as well as the National Oral Health Surveillance System standards,<sup>9</sup> allowing for comparisons with other states and with the nation.

Screenings were conducted anonymously; no identifying information, such as name or date of birth, was obtained. The child provided his or her age, while examiners or recorders determined gender and race/ethnicity (Non-Hispanic White, Hispanic, Black/African American, or other). If the screeners could not easily determine the race/ethnicity of the child, they were asked to code the race/ethnicity of the child as “unknown.”

A passive consent process was used; all third grade children in the participating schools were screened unless the parent/guardian returned a form indicating that the child has an established dental home and requesting that the child not participate.

# RESULTS

## Screening Participation

A stratified systemic sampling, as described in the methods section, generated a sampling pool of 74 public elementary schools with 4,272 enrolled third graders. Only 1 of the 74 contacted schools declined to participate. Fifteen schools could not participate due to scheduling difficulties and other administrative reasons.

A total of 2,529 third grade children from 60 schools were screened from September 2013 to May 2014. The overall screening rate per participating school was 59% (2,529 children out of 4,272 enrolled third graders), varying from 55% to 67% by stratification (Table 2). Outcome data in this report have been adjusted for these response rates by sampling scheme.

**TABLE 2. CHILDREN'S SCREENING PARTICIPATION BY GEOGRAPHIC AREA AND FREE OR REDUCED PRICE SCHOOL MEALS (FRSM) PROGRAM ELIGIBILITY, RHODE ISLAND, 2013-2014**

Geographic Area	FRSM %	Total Number of Third Graders in Participating Schools*	Number of Children Screened (Response Rate)
<b>Non-Urban</b>	Low FRSM % (<33.3%)	978	592 (60.5%)
<b>Urban/Non-Urban</b>	Middle FRSM % (33.3%-66.6%)	1,000	671 (67.1%)
	High FRSM % (≥66.7%)	2,294	1,266 (55.2%)
<b>Total</b>		4,272	2,529 (59.2%)

\* Enrollment numbers were obtained from school nurses when each school's screening was conducted.

## Demographic Characteristics of Children

Table 3 compares the distribution of screened children with all Rhode Island third grade children by gender, age, and race/ethnicity. As in the general population, slightly more than one half of screened children were male. The children screened ranged in age from 7–10 years with the majority (97%) aged 8–9 years. The estimated distribution of children by race/ethnicity was close to that of population.

Overall, about a quarter (24%) of Rhode Island third grade children were screened in the survey. The estimates describe the oral health status of the state’s third grade children with high statistical power and accuracy.

**TABLE 3. ALL THIRD GRADE CHILDREN VS. SCREENED CHILDREN BY GENDER, AGE, AND RACE/ETHNICITY  
RHODE ISLAND, 2013-2014**

		All RI Third Grade Children*		Screened Third Grade Children	
		Number	Percent (%)	Unweighted Number	Weighted % (95% CI)
<b>Gender</b>	Male	5,496	51.5	1,284	50.8 (48.8-52.8)
	Female	5,180	48.5	1,243	49.2 (47.2-51.2)
<b>Age</b>	7	N/A		8	0.3 (0.1–0.5)
	8	N/A		1,417	55.3 (50.0–60.6)
	9	N/A		1,031	41.5 (36.4–46.7)
	10	N/A		72	2.8 (1.8–3.8)
<b>Race/Ethnicity</b>	White†	6,352	59.5	1,201	56.0 (49.4–62.5)
	Other	4,324	41.5	1,328	44.0 (37.5–50.6)
<b>Total</b>		10,676		2,529§	

\* Data Source: Rhode Island Department of Education (RIDE), RI Education Data-Enrollment, Dropout & Graduation Data, 2013–14 School Year (Available at <http://www.eride.ri.gov/reports/reports.asp>)

† “White” children do not include children with Hispanic origin.

§ Numbers in each category may not add up to total of 2,529 due to missing or unknown records.

N/A: Data are not available.

## Oral Health Outcomes

### TOOTH DECAY

Children who have experienced tooth decay may have treated decay, untreated (unrestored) decay, or both. Treated decay is measured by the presence of fillings or crowns in the mouth. Approximately half of screened third grade children (49%) had decay experience in their primary and/or permanent teeth, and one child in four (25%) had untreated decay (Table 4). The screening results likely underestimate the percent of children with untreated decay, because examiners did not take radiographs (x-rays) or use dental instruments for tactile assessment.

Among Rhode Island’s third grade children, decay is largely limited to the primary teeth. Thirty-six percent of third grade children have experienced decay in their primary teeth only, while 12 percent have had decay in their permanent teeth (Table 4).

Children who have experienced decay in more than six teeth are considered to have rampant decay. Five percent of the third grade children in Rhode Island have rampant decay. About two percent of children need urgent dental treatment because of signs of infection and/or pain associated with decay (Table 4).

### DENTAL SEALANTS

Thirty-seven percent of third grade children have a dental sealant on at least one permanent molar (Table 4). Dental sealants provide an effective way to prevent decay on the chewing surfaces of molars (back teeth), which are the most vulnerable to decay. It is recommended that children receive dental sealant treatments as soon as their teeth are fully erupted. This keeps cavity-causing bacteria from reaching difficult-to-clean areas and helps topical fluoride to penetrate and protect the teeth.

**TABLE 4. ORAL HEALTH STATUS OF THIRD GRADE CHILDREN, RHODE ISLAND, 2013-2014**

	Weighted Number	Weighted % (95% CI)
<b>Treated decay</b>	2,944	33.6 (30.6–36.7)
<b>Untreated decay</b>	2,211	25.3 (21.7–28.9)
<b>Decay experience*</b>	4,249	48.6 (44.9–52.2)
<b>Primary teeth only</b>	3,166	36.2 (33.1–39.4)
<b>Permanent teeth only</b>	321	3.7 (2.5–4.8)
<b>Primary and permanent teeth</b>	747	8.5 (6.9–10.2)
<b>Rampant decay†</b>	442	5.1 (3.8–6.3)
<b>Urgent treatment need¶</b>	140	1.6 (1.0–2.2)
<b>Dental sealants</b>	3,221	36.8 (32.0–41.6)

\* Measured by treated decay (presence of fillings/crowns) and/or untreated (unrestored) decay

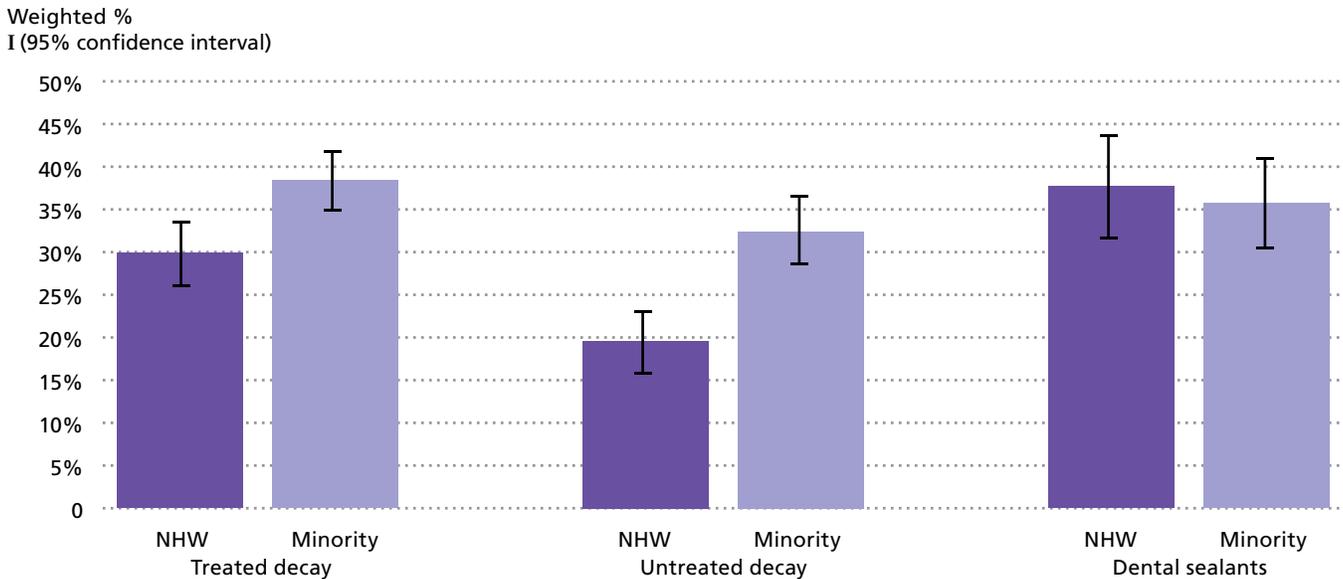
† More than six teeth with decay experience

¶ Urgent or immediate referral recommended due to signs of infection and/or pain associated with decay

## Impact of Race and Ethnicity

Figure 1 and Table 5 describe the oral health status of Rhode Island third graders by race and ethnicity. Compared to non-Hispanic White (NHW) children, racial/ethnic minority children (Hispanic, Black/African American, “other” and “unknown” race/ethnicity combined into one category) are more likely to have treated decay, untreated decay, decay experience (defined as treated and/or untreated decay), rampant decay, and urgent dental treatment needs. There is no statistically significant difference between NHW and other children in the percentage of children who have at least one sealant on permanent molar teeth.

**FIGURE 1. ORAL HEALTH STATUS OF THIRD GRADE CHILDREN BY RACE/ETHNICITY, RHODE ISLAND, 2013-2014**



**TABLE 5. ORAL HEALTH STATUS OF THIRD GRADE CHILDREN BY RACE/ETHNICITY, RHODE ISLAND, 2013-2014**

	Non-Hispanic White (NHW) Weighted % (95% CI)	Racial/Ethnic Minority* Weighted % (95% CI)
Treated decay <sup>†</sup>	29.9 (25.6–34.1)	38.4 (35.0–41.9)
Untreated decay <sup>†</sup>	19.6 (15.6–23.6)	32.4 (28.4–36.4)
Decay experience <sup>†</sup>	42.4 (37.8–46.9)	56.4 (52.1–60.7)
Rampant decay <sup>†</sup>	3.3 (1.9–4.7)	7.3 (5.3–9.2)
Urgent treatment need <sup>†</sup>	1.2 (0.5–2.0)	2.1 (1.1–3.0)
Dental sealants	37.7 (31.1–44.2)	35.7 (30.0–41.4)

\* Black/African American, Hispanic, “other” and “unknown” race/ethnicity combined

† Indicates statistical significance between groups at the p-value = 0.05 level

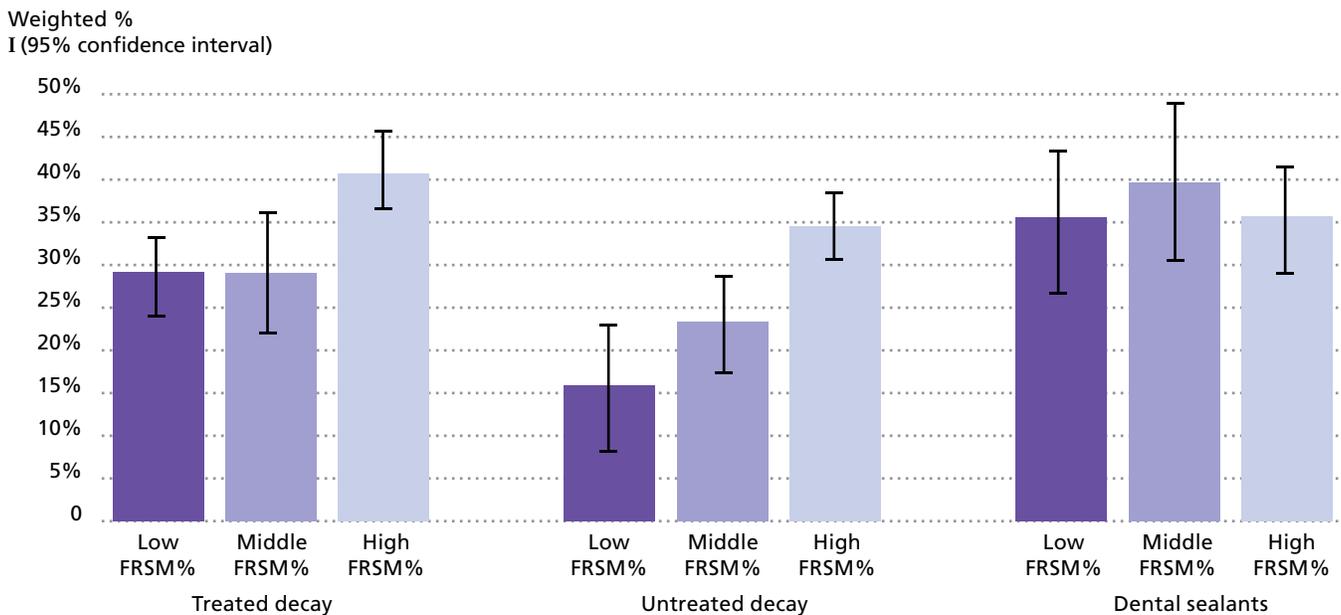
## Impact of Socioeconomic Status

Rhode Island uses the percentage of children eligible for free or reduced price school meals (FRSM) in each school as a proxy indicator of a school's concentration of low-income students. The FRSM program eligibility is determined by federal guidelines based on family income and size. Children from families with incomes at or below 130% of the poverty level are eligible for free meals, and children from families with incomes between 130% and 185% of the poverty level are eligible for reduced price meals. About half of all third grade children in Rhode Island public schools are eligible for free or reduced price meals. Child-level data on FRSM participation was not available; however, the Rhode Island Department of Education (RIDE) provided the total number and percent of FRSM-eligible children in each school.

Figure 2 and Table 6 present the oral health of third grade children by percentage of school's FRSM-eligible children. Rhode Island children who attend schools with a higher proportion of FRSM-eligible students have more treated decay, untreated decay, decay experience, rampant decay, and urgent treatment need than their counterparts at other schools. There is no statistically significant difference in children's receipt of at least one sealant by a school's FRSM eligibility.

The Rhode Island Department of Health has supported school-based/school linked dental programs that provide or facilitate the delivery of sealants, with particular focus on serving high-risk children in underserved communities and schools with higher FRSM eligibility. The survey sealant outcomes suggest that the Rhode Island school-based/school linked dental programs can reduce gaps in children's receipt of preventive dental services.

**FIGURE 2. ORAL HEALTH STATUS OF THIRD GRADE CHILDREN BY SCHOOL FRSM %, RHODE ISLAND, 2013-2014**



Schools are grouped into three categories based on the percentage of students eligible for the FRSM program: "Low FRSM % School" (<33.3%), "Middle FRSM % School" (33.3%-66.6%), and "High FRSM % School" (≥66.7%).

**TABLE 6. ORAL HEALTH STATUS OF THIRD GRADE CHILDREN BY SCHOOL FRSM %, RHODE ISLAND, 2013-2014**

	Low FRSM % Weighted % (95% CI)	Middle FRSM % Weighted % (95% CI)	High FRSM % Weighted % (95% CI)
<b>Treated decay<sup>†</sup></b>	29.2 (24.1–34.4)	29.1 (22.1–36.1)	40.7 (36.3–45.1)
<b>Untreated decay<sup>†</sup></b>	15.9 (8.3–23.4)	23.3 (17.1–29.4)	34.5 (30.5–38.6)
<b>Decay experience<sup>†</sup></b>	39.2 (32.1–46.2)	43.2 (36.5–49.9)	60.3 (55.8–64.8)
<b>Rampant decay<sup>†</sup></b>	3.0 (0.9–5.1)	3.4 (1.2–5.6)	8.0 (5.8–10.1)
<b>Urgent treatment need<sup>†</sup></b>	0.5 (0.0–1.3)	1.8 (0.7–3.0)	2.3 (1.2–3.5)
<b>Dental sealants</b>	35.6 (26.5–44.7)	39.7 (30.1–49.3)	35.7 (29.3–42.1)

Schools are grouped into three categories based on the percentage of students eligible for the FRSM program: “Low FRSM % School” (<33.3%), “Middle FRSM % School” (33.3%-66.6%), and “High FRSM % School” (≥66.7%).

† Indicates statistical significance among groups at the p-value = 0.05 level



## COMPARISON TO *HEALTHY PEOPLE 2020* OBJECTIVES

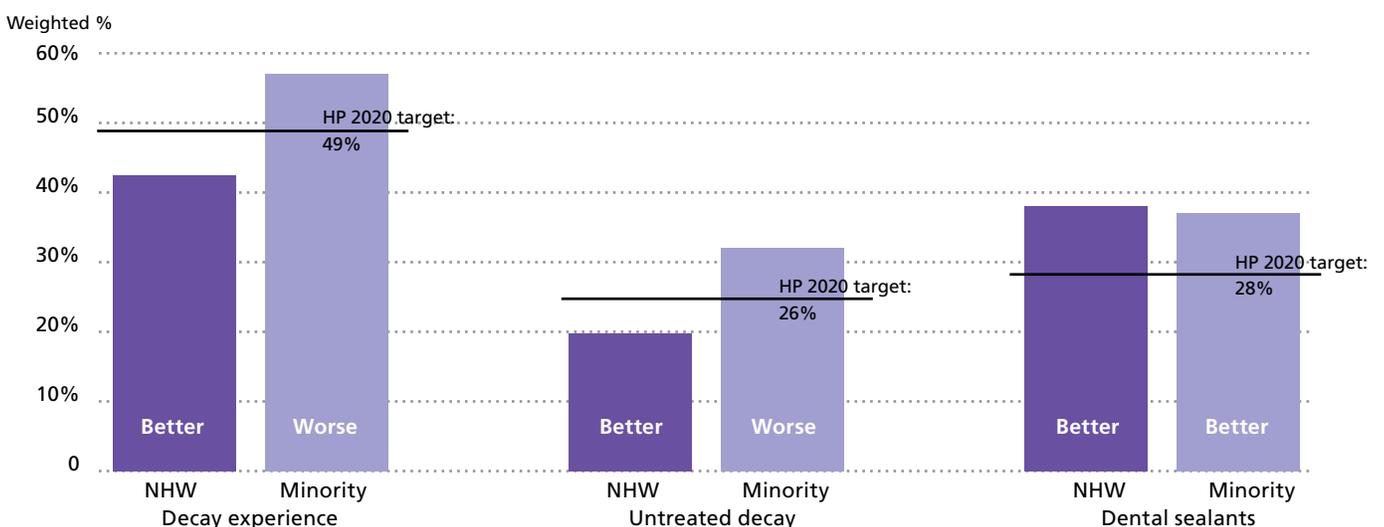
*Healthy People 2020* outlines several oral health status objectives for school children. For children age six through nine, there are three primary objectives:

1. To reduce the proportion of children aged 6-9 years with dental caries experience in their primary and permanent teeth to 49 percent (OH-1.2)
2. To reduce the proportion of children aged 6-9 years with untreated dental decay in their primary and permanent teeth to 26 percent (OH-2.2)
3. To increase the proportion of children aged 6-9 years who have received dental sealants on one or more of their permanent first molar teeth to 28 percent (OH-12.2)

It should be noted that the Rhode Island oral health survey was not designed to be representative of children age six through nine; the majority of screened children were eight through nine years of age.

Compared to the national benchmarks, disparities in oral health status among Rhode Island children by racial and ethnic background are apparent (Figure 3). The proportion of non-Hispanic White children with dental decay experience and untreated decay is better (lower) than the corresponding *Healthy People 2020* objectives. A higher percentage of minority third graders, however, experienced dental decay and have untreated decay than the *Healthy People 2020* objectives. Meanwhile, proportions of Rhode Island children who have at least one molar sealant exceed the related objective, both among non-Hispanic White and minority children.

**FIGURE 3. HEALTHY PEOPLE (HP) 2020 COMPARISON TO ORAL HEALTH STATUS OF THIRD GRADE CHILDREN, RHODE ISLAND 2013-2014**



NHW=Non-Hispanic White children; HP = Healthy People

## COMPARISON TO 2007-2008 AND 2010-2011 SURVEYS

Rhode Island conducted its first statewide third grade oral health survey during the 2007-2008 school year. The same diagnostic criteria, screening indicators, and type of consent were used in the current survey. Sampling stratification also was identical, but the 2010-2011 and 2013-2014 surveys included disproportionately more children from urban areas as described in the methodology section. The 2007-2008 survey design used a proportionate sampling strategy for urban and non-urban areas.

### Tooth Decay

Third graders surveyed in the 2013-2014 school year had a significantly higher rate of treated tooth decay than those surveyed in the 2007-2008 school year (34% versus 28%, respectively, Table 7). The prevalence of children who had treated decay did not change from the survey three years ago. The difference between the 2013-2014 and 2007-2008 surveys is attributed to the increased prevalence of treated decay among subgroups of children, particularly among racial/ethnic minority children (Table 9). In accordance with this finding, a significantly higher proportion of minority children had rampant decay during the 2013-2014 school year compared to those surveyed during the 2007-2008 school year (Table 9). A higher decay experience rate associated with a greater percentage of children who completed restorative treatment implies an improved access to dental care, particularly among minority children and children living in lower-income communities. The uneven burden of dental decay in a subpopulation of children, however, also suggests a missed opportunity for prevention.

Needs for urgent dental treatment continuously decreased, among all children, from 4% (2007-2008) to 2% (2013-2014) (Table 7). Meanwhile, the percentage of racial/ethnic minority children who needed urgent dental care due to signs and symptoms of infection remained virtually unchanged from 2007-2008 (4%) to 2010-2011 (5%), and then reduced to 2% in 2013-2014 (Table 9).

A persistent gap still exists in dental disease severity among Rhode Island children; twice as many minority children were reported having rampant decay or urgent dental care needs in the 2013-2014 school year when compared with their non-Hispanic White peers (Table 8 & Table 9).

### Dental Sealants

No statistically significant change in dental sealant prevalence occurred among Rhode Island children over the six-year period, between the 2007-2008 and 2013-2014 school years (36% versus 37%, respectively, Table 7). Some increases in receipt of dental sealants among racial/ethnic minority children occurred over the past six years; however, the difference is not statistically significant (Table 9).

**TABLE 7. ORAL HEALTH STATUS OF THIRD GRADE CHILDREN BY SURVEY YEAR, RHODE ISLAND**

	2007-08* (n = 1,303) Weighted % (95% CI)	2010-11† (n = 3,266) Weighted % (95% CI)	2013-14 (n = 2,529) Weighted % (95% CI)
Treated decay	28.4 (24.4–32.4)	35.2 (32.3–38.2) <sup>§</sup>	33.6 (30.6–36.7) <sup>¶</sup>
Untreated decay	28.2 (22.5–33.9)	26.3 (23.2–29.3)	25.3 (21.7–28.9)
Decay experience	47.6 (42.5–52.8)	50.0 (46.4–53.5)	48.6 (44.9–52.2)
Rampant decay	3.3 (1.7–4.9)	5.0 (3.7–6.2)	5.1 (3.8–6.3)
Urgent treatment need	4.1 (2.3–5.9)	2.6 (1.7–3.5)	1.6 (1.0–2.2) <sup>¶</sup>
Dental sealants	36.3 (27.7–44.9)	39.1 (35.5–42.7)	36.8 (32.0–41.6)

\* 2007-08 Data Source: The Oral Health of Rhode Island’s Children. Rhode Island Department of Health, April 2008.

† 2010-11 Data Source: The Oral Health of Rhode Island’s Children. Rhode Island Department of Health, August 2011.

§ Indicates significant difference at p=0.05 level between 2007-2008 and 2010-2011

¶ Indicates significant difference at p=0.05 level between 2007-2008 and 2013-2014

**TABLE 8. ORAL HEALTH STATUS OF NON-HISPANIC WHITE THIRD GRADE CHILDREN BY SURVEY YEAR, RHODE ISLAND**

	2007-08* (n = 746) Weighted % (95% CI)	2010-11† (n = 1,645) Weighted % (95% CI)	2013-14 (n = 1,201) Weighted % (95% CI)
Treated decay	27.6 (23.0–32.2)	32.3 (28.4–36.3)	29.9 (25.6–34.1)
Untreated decay	25.6 (19.0–32.1)	18.6 (15.4–21.8)	19.6 (15.6–23.6)
Decay experience	45.6 (39.8–51.3)	43.1 (38.1–48.2)	42.4 (37.8–46.9)
Rampant decay	2.8 (0.8–4.8)	2.4 (1.1–3.8)	3.3 (1.9–4.7)
Urgent treatment need	4.0 (1.7–6.4)	1.3 (0.6–2.0) <sup>§</sup>	1.2 (0.5–2.0) <sup>¶</sup>
Dental sealants	39.0 (29.4–48.6)	39.5 (34.6–44.5)	37.7 (31.1–44.2)

\* 2007-08 Data Source: The Oral Health of Rhode Island’s Children. Rhode Island Department of Health, April 2008.

† 2010-11 Data Source: The Oral Health of Rhode Island’s Children. Rhode Island Department of Health, August 2011.

§ Indicates significant difference at p=0.05 level between 2007-2008 and 2010-2011

¶ Indicates significant difference at p=0.05 level between 2007-2008 and 2013-2014

**TABLE 9. ORAL HEALTH STATUS OF RACIAL/ETHNIC MINORITY THIRD GRADE CHILDREN BY SURVEY YEAR, RHODE ISLAND**

	2007-08* (n = 557) Weighted % (95% CI)	2010-11† (n = 1,621) Weighted % (95% CI)	2013-14 (n = 1,328) Weighted % (95% CI)
Treated decay	29.8 (23.9–35.7)	39.8 (36.2–43.4) <sup>§</sup>	38.4 (35.0–41.9) <sup>¶</sup>
Untreated decay	32.6 (24.1–41.1)	38.6 (34.6–42.6)	32.4 (28.4–36.4) <sup>‡</sup>
Decay experience	51.1 (43.5–58.6)	61.0 (58.0–64.0) <sup>§</sup>	56.4 (52.1–60.7)
Rampant decay	4.1 (1.8–6.3)	9.1 (7.1–11.1) <sup>§</sup>	7.3 (5.3–9.2) <sup>¶</sup>
Urgent treatment need	4.2 (2.4–6.0)	4.6 (2.9–6.3)	2.1 (1.1–3.0) <sup>¶‡</sup>
Dental sealants	31.8 (20.0–43.5)	38.4 (34.9–41.9)	35.7 (30.0–41.4)

\* 2007-08 Data Source: The Oral Health of Rhode Island’s Children. Rhode Island Department of Health, April 2008.

† 2010-11 Data Source: The Oral Health of Rhode Island’s Children. Rhode Island Department of Health, August 2011.

§ Indicates significant difference at p=0.05 level between 2007-2008 and 2010-2011

¶ Indicates significant difference at p=0.05 level between 2007-2008 and 2013-2014

‡ Indicates significant difference at p=0.05 level between 2010-11 and 2013-2014

## RECOMMENDATIONS

- Continue collaborating with statewide early childhood healthcare and educational programs and schools to promote oral health education and disease prevention efforts starting in early childhood. Early prevention is the best strategy to reduce the burden of oral disease for Rhode Island school-aged children.
- Continue to promote the regular preventive dental visit and age-appropriate preventive dental services (topical fluoride and dental sealants), particularly among high-risk children such as RIte Smiles and Medicaid-enrolled children.
- Continue to support school-based dental programs that provide or facilitate the delivery of dental sealants, with particular focus on high-risk children in underserved communities and schools with higher FRSM eligibility. Since 2007-2008, dental sealant prevalence rates continuously suggest that the programs can reduce gaps in children's receipt of preventive dental services. However, close evaluation of these programs is recommended to ensure more effective sealant delivery and better ability to meet high-risk children's needs.
- Continue collaboration between the Rhode Island Department of Health and the Rhode Island Department of Education to standardize and improve the mandatory annual school dental screening protocol and reporting process to make the data available for oral health surveillance. Rhode Island Rules and Regulations for School Health Programs require that every student receive an annual dental screening by a licensed dentist or dental hygienist through the fifth grade and at least one screening between the sixth and tenth grades.



# APPENDICES

## **A. Acknowledgements**

We would like to thank our partners: school district superintendents, school principals, classroom teachers, school nurses, school dentists, and parents and guardians for assisting us in completing this survey.

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## **B. Resources**

The Third Grade Oral Health Screening Form appears on the following page.

## RI DENTAL SCREENING (THIRD GRADERS) 2013-2014 SCHOOL YEAR

(a) SCHOOL (CODE):	(b) CITY/TOWN:	(c) ZIP:
(d) SCREENER:	(e) DATE:	(f) CLASSROOM:

### STUDENT DEMOGRAPHICS

(g) AGE	(h) GENDER	(i) RACE
— —	<input type="checkbox"/> Male (1) <input type="checkbox"/> Female (2)	<input type="checkbox"/> Non-Hispanic, White (1) <input type="checkbox"/> Hispanic (2) <input type="checkbox"/> Non-Hispanic, Black/African American (3) <input type="checkbox"/> Other (4)

### SCREENING FINDINGS

1. TREATED CARIES	2. UNTREATED CARIES	3. RAMPANT CARIES (7 or more teeth with treated and/or untreated caries)	4. SEALANT(S) on PERMANENT MOLARS
<input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1) <input type="checkbox"/> Primary Teeth (2) <input type="checkbox"/> Permanent Teeth (3)	<input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1) <input type="checkbox"/> Primary Teeth (2) <input type="checkbox"/> Permanent Teeth (3)	<input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1)	<input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1)
5. ABNORMAL SOFT TISSUE	6. TREATMENT URGENCY		
<input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1) <small>Gross gingival inflammation or soft tissue lesions (fistulas, abscesses, etc.)</small>	<input type="checkbox"/> No Apparent Need for Care (0) <input type="checkbox"/> Apparent Need for Routine, Non-Urgent Care/ Referral Recommended (1) <input type="checkbox"/> Apparent Emergency Need/ <b>Immediate</b> Referral Recommended (2)		
7. COMMENTS			

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## RI DENTAL SCREENING (THIRD GRADERS) 2013-2014 SCHOOL YEAR

Student Name:	Screening Date:
---------------	-----------------

	Yes	No
Suspected Tooth Decay		
Dental Abscess / Infection		
Swollen Gums / Needs Cleaning		
Needs Better Brushing & Flossing		
Needs Dental Sealant		

Treatment Urgency	
<input type="checkbox"/>	No Apparent Need for Care
<input type="checkbox"/>	Apparent Need for Routine, Non-Urgent Care Referral Recommended
<input type="checkbox"/>	Apparent Emergency Need <b>Immediate</b> Referral Recommended

## REFERENCES

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- <sup>3</sup> Rhode Island Department of Health. The Oral Health of Rhode Island’s Children. August 2011.
- <sup>4</sup> Rhode Island Department of Health. The Oral Health of Rhode Island’s Children. April 2008.
- <sup>5</sup> Association of State and Territorial Dental Directors Association (ASTDD). Guidance on Selecting A Sample For A School-Based Oral Health Survey. May 2013.
- <sup>6</sup> Rhode Island Department of Health. Epidemiologist and Evaluator Group. Guidelines for Adoption of New Core City Designation. December 2012.
- <sup>7</sup> Association of State and Territorial Dental Directors Association (ASTDD). Basic Screening Surveys: An Approach to Monitoring Community Oral Health. December 2008.
- <sup>8</sup> The Rhode Island Rules and Regulations for School Health Programs (R16-21-SCHO)
- <sup>9</sup> Centers for Disease Control and Prevention (CDC). Oral Health Data–National Oral Health Surveillance System (NOHSS). <http://www.cdc.gov/oralhealthdata/overview/nohss.html>



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