

## The Oral Health of West Virginia's Third Grade Children Trends and Comparisons to the General U.S. Population

### Key Findings

*The oral health of WV's children has improved.* Since 2013-2014, the percentage of third grade children who have ever had tooth decay decreased by 18%, while the percentage with untreated tooth decay decreased by 38%.

*More children have protective dental sealants – a safe, simple, and cost-effective way to prevent decay in molar teeth.* Since 2013-2014, the percentage of third grade children with protective dental sealants has more than doubled, increasing from 28% to 62%.

*Despite improvements in the oral health of WV's children, disparities persist.* Children at low-income schools are more likely to have untreated tooth decay and are less likely to have protective dental sealants.

*Compared to the United States as a whole, WV's children have better oral health.* The percentage of children with decay experience and untreated decay is lower in WV while the percentage with dental sealants is higher than the national average.

Tooth decay is a serious public health problem that can affect a child's overall health and well-being. It can lead to pain and disfigurement, low self-esteem, nutritional problems, and lost school days. Children with oral health problems are three times more likely to miss school due to dental pain. Unfortunately, absences caused by pain are associated with poorer school performance.<sup>1</sup>

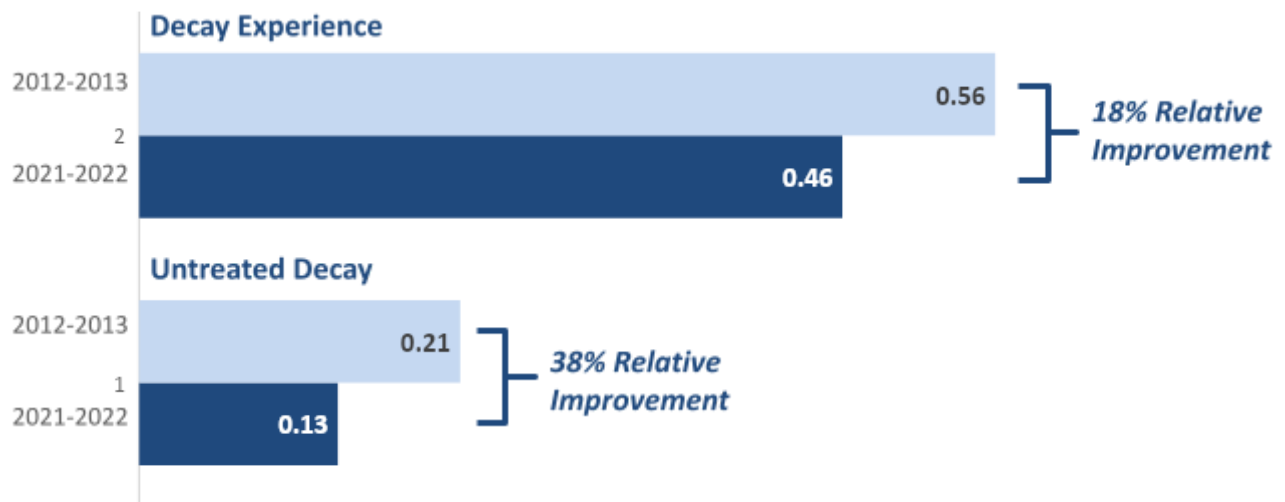
The good news is that tooth decay can be prevented. Evidence based strategies for preventing tooth decay in children include fluoride varnish, brushing with fluoride toothpaste, community water fluoridation, good eating habits, early and regular dental visits, dental sealants, and improved family oral health. Preventing tooth decay not only improves a child's health it also saves money for both the family and society. Medicaid-enrolled children who received their first preventive dental visit by age 1 had 40% lower dental care costs over five years than children who received their first preventive visit at a later age.<sup>2</sup>

As part of the state's ongoing oral health surveillance system, the West Virginia Department of Health and Human Services coordinated three statewide oral health surveys of third grade children attending West Virginia's public schools. Previous surveys were completed during the 2013-2014 and 2017-2018 school years while the current survey was completed during the 2021-2022 school year. In 2021-2022, a total of 1,428 third grade children received a dental screening at 37 schools. This data brief presents information on the prevalence of tooth decay in the primary and permanent teeth of West Virginia's third grade children, describes oral health trends, and compares West Virginia's children to the general U.S. population screened between 2011-2016 as part of the National Health and Nutrition Examination Survey (NHANES). It also describes the prevalence of protective dental sealants, a plastic-like coating applied to the chewing surfaces of children's teeth to prevent tooth decay. The results of the 2021-2022 oral health survey are presented as four key findings (sidebar).

**Key Finding #1: The oral health of West Virginia’s children has improved.**

Since 2013-2014, the percentage of third grade children who have ever had tooth decay decreased by 18%, while the percentage with untreated tooth decay decreased by 38%.

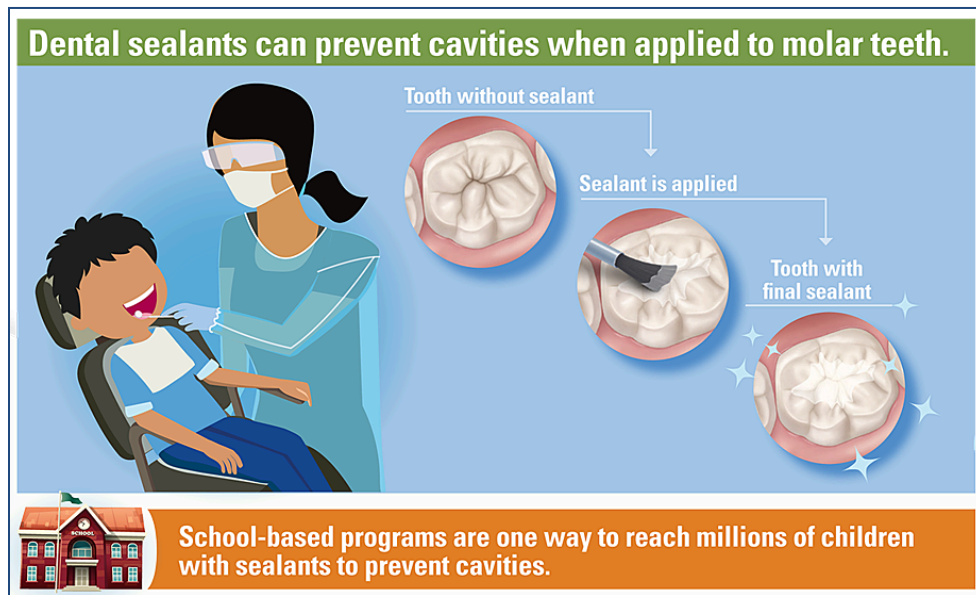
Figure 1: Percentage of West Virginia's Third Grade Children with Decay Experience and Untreated Decay, 2013-2014 vs. 2021-2022



Since 2013-2014, there has been substantial progress in reducing decay experience and untreated decay among West Virginia’s third grade children. As shown in Figure 1, the percentage of third graders with evidence of ever having tooth decay (decay experience) declined from 56% to 46%, which represents a relative improvement of 18%. Untreated tooth decay declined from 21% to 13%, a 38% relative improvement in untreated decay. The reductions in decay experience noted in this report are important because they signal progress in reducing the proportion of West Virginia’s children affected by tooth decay. Less tooth decay experience means fewer children need fillings, crowns, or tooth extractions; fewer trips to the dentist; lower dental costs; and fewer missed school days. Less untreated decay means fewer children have cavities that can cause pain, infection, loss of teeth, and related problems, such as difficulty eating or lowered self-esteem. During the last eight years, several programs were implemented that may account for the reductions in decay experience and untreated decay including, but not limited to, implementation of school-based prevention programs, such as fluoride varnish and dental sealant programs. Although we have seen substantial improvements, almost half of West Virginia’s third grade children still have tooth decay experience. To continue the downward trend, we must help children, families, and caregivers understand what causes tooth decay and what they can do to prevent it. In addition, we must ensure that families have access to the resources needed for optimal oral health, such as healthy foods and affordable dental care. Proven strategies for reducing tooth decay include drinking fluoridated water, daily brushing with fluoride toothpaste, fluoride varnish applications, a healthy diet, and dental sealants. Efforts to prevent tooth decay need to begin early in life. Guidelines from dental, medical, and public health organizations recommend that children have their first dental visit by age one and get regular dental check-ups throughout childhood.

**Key Finding #2: More children have protective dental sealants – a safe, simple, and cost-effective way to prevent decay in molar teeth.**

Since 2013-2014, the percentage of third grade children with protective dental sealants has more than doubled, increasing from 28% to 62%.

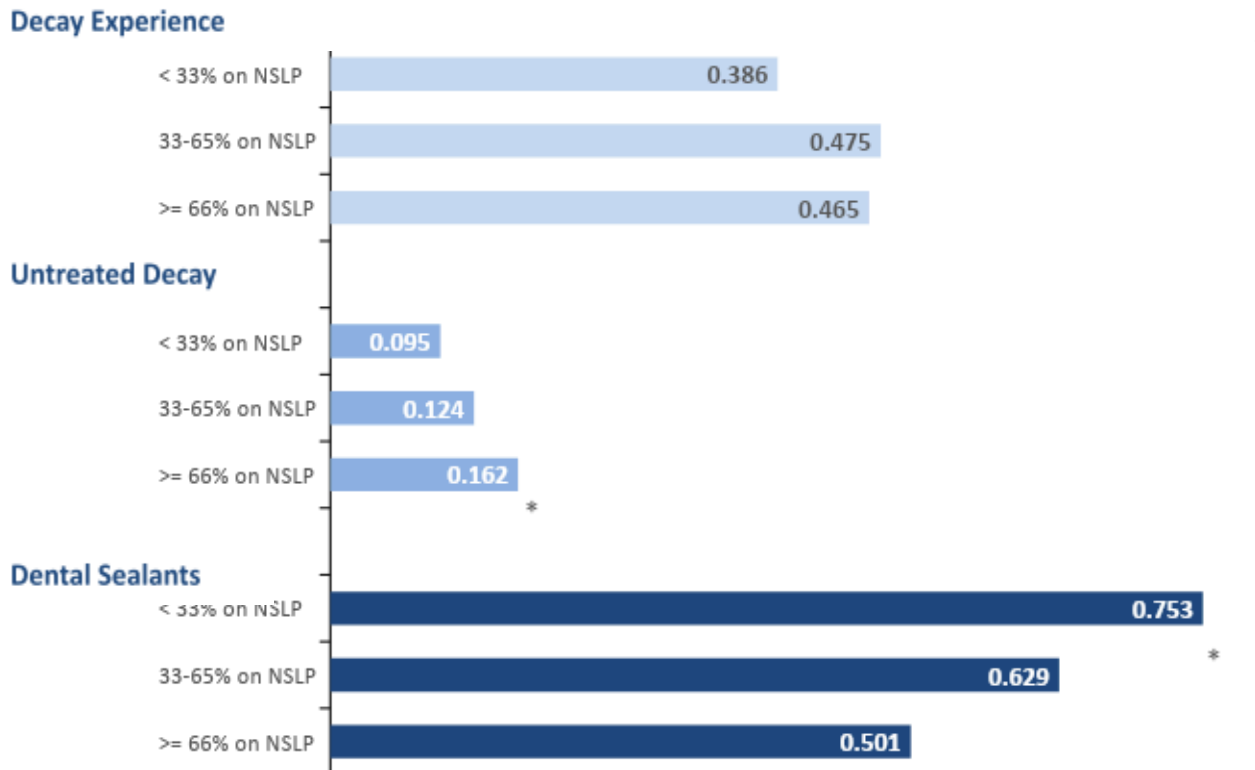


Dental sealants — thin coatings that are painted on the chewing surface of the back teeth (permanent molars) — can prevent tooth decay for many years. If placed shortly after the permanent molars appear in the mouth, at about 6 years of age, sealants protect the chewing surfaces by covering them with a protective shield that blocks out germs and food. Sealants are a highly effective but often underused method for preventing decay on the chewing surfaces of permanent molars. They are cheaper than fillings and can be done quickly with less equipment than fillings. Protecting permanent molar teeth from decay is a critical goal for children’s oral health because these molars must last a lifetime. Permanent molars account for a high percentage of decayed teeth and sealants can reduce decay in these vulnerable, important teeth by 50%–80%. Sealants are generally provided in dental offices or through school-based sealant programs that target high-risk children in second grade. School-based sealant programs are especially important for reaching children from families with limited resources who are less likely to have access to private dental care. The West Virginia Department of Health and Human Services began funding school-based oral health programs in 2013 and since that time has continued to expand the number of schools and children served. During the 2020-2021 school year, the West Virginia Department of Health and Human Services funded school-based oral health programs at 221 schools, providing services to over 3,300 children.

**Key Finding #3: Despite improvements in the oral health of West Virginia’s children, disparities persist.**

Children attending low-income schools are more likely to have untreated tooth decay and are less likely to have protective dental sealants.

Figure 2. Prevalence of Decay Experience, Untreated Tooth Decay and Dental Sealants Among West Virginia’s Third Grade Children by Percent of Children in a School Eligible for the National School Lunch Program (NSLP), 2021-2022



\* Significantly different than < 33% on NSLP (p<0.05)

In West Virginia, low-income schools – schools with a high percentage of the students eligible for the National School Lunch Program (NSLP)<sup>1</sup> – have a significantly higher prevalence of untreated decay and a significantly lower prevalence of protective dental sealants compared to higher income schools with a low percent of students eligible for NSLP. Our findings demonstrate that, despite overall improvements in children’s oral health, disparities persist. Addressing disparities in oral health is important not only from an equity standpoint, but also for improving overall population health. To make strides towards better oral health, we must recognize the underlying societal conditions at the core of these disparities, including unequal access to resources such as healthy foods and preventive dental care. These findings point to the need for additional targeted strategies to reduce tooth decay among socioeconomically

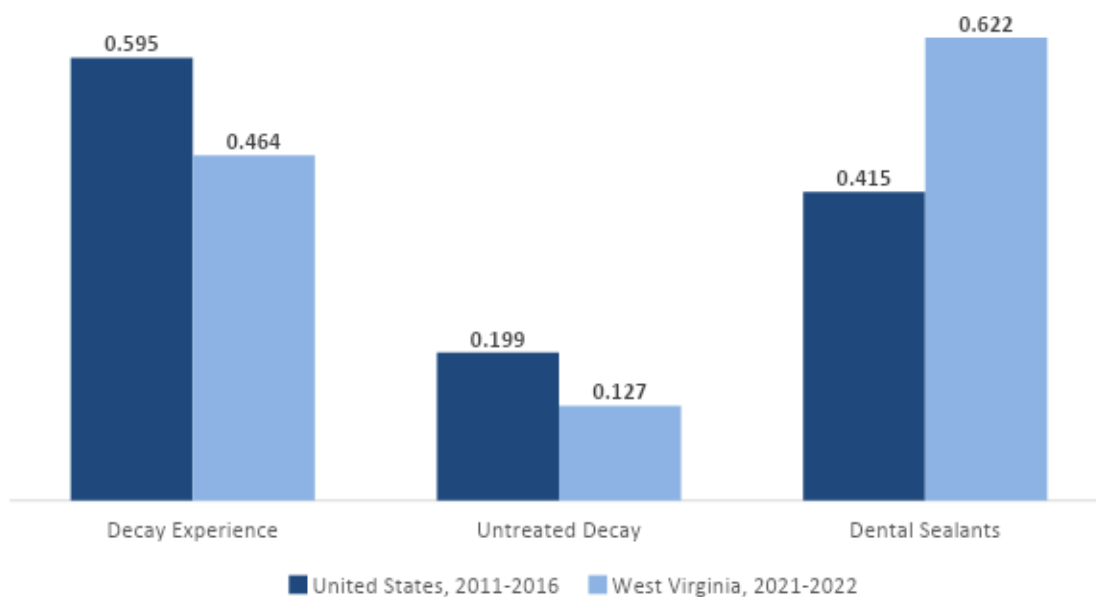
<sup>1</sup> To be eligible for the NSLP, the child must be from a household whose income is below 185% of the federal poverty level.

disadvantaged children. Examples include expansion of school-based, school-linked, and preschool oral health programs in areas with high numbers of lower-income families.

**Key Finding #4: Compared to the United States as a whole, West Virginia’s children have better oral health.**

The percentage of children with decay experience and untreated decay is lower in West Virginia while the percentage with protective dental sealants is higher than the national average.

Figure 2. Prevalence of Decay Experience, Untreated Tooth Decay and Dental Sealants Among West Virginia’s Third Grade Children (2021-2022) Compared to National Averages (NHANES, 2011-2016)



**Data source and methods.**

This data brief is based on data from the West Virginia Oral Health Survey which was conducted during the 2021-2022 school year. The West Virginia survey screened children in third grade from a representative sample of public elementary schools in West Virginia. The sampling frame consisted of all public schools with 15 or more children in third grade. The sampling frame was stratified by health region then by percent of children in the school eligible for the National School Lunch Program. A systematic probability proportional to size sampling scheme was used to select 37 schools of which 37 participated. Of the 2,046 children invited to participate, a total of 1,428 received a dental screening for a response rate of 70%.

Trained dental professionals completed the screenings at the participating schools. The following information was collected for each child: age, gender, race/ethnicity, presence of untreated decay in the primary (baby) or permanent (adult) teeth, presence of treated decay in the primary or permanent teeth, urgency of need for dental care, and presence of dental sealants in the permanent first molar

teeth. We used the Association of State and Territorial Dental Director’s *Basic Screening Survey* clinical indicator definitions and data collection protocols.<sup>3</sup>

All statistical analyses were performed using the complex survey procedures within SAS (Version 9.4; SAS Institute Inc., Cary, NC). Sample weights were used to produce population estimates based on selection probabilities. It should be noted that the National Health and Nutrition Examination Survey (NHANES) data for third grade children is from 2011-2016.

## Definitions.

**Untreated decay:** Describes dental cavities or tooth decay that have not received appropriate treatment.

**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.

**Dental sealants:** Describes plastic-like coatings applied to the chewing surfaces of back teeth. The applied sealant resin bonds into the grooves of teeth to form a protective physical barrier.

## Data table.

Table 1. Prevalence of decay experience and untreated tooth decay in the primary and permanent teeth and prevalence of dental sealants on permanent molar teeth among West Virginia’s third grade children by selected characteristics, 2021-2022

Characteristic (Number of Children Screened)	Decay Experience			Untreated Decay			Dental Sealants		
	Percent Yes	Lower CL	Upper CL	Percent Yes	Lower CL	Upper CL	Percent Yes	Lower CL	Upper CL
All Children (n=1,428)	46.4	41.4	51.4	12.7	9.2	16.1	62.2	55.5	68.8
Gender									
Female (n=697)	45.0	39.1	50.8	12.3	8.7	15.9	62.4	54.3	70.5
Male (n=731)	47.8	39.9	55.8	13.0	8.5	17.5	61.9	55.4	68.3
Race/Ethnicity									
White (n=1,229)	45.9	40.3	51.5	13.4	9.5	17.2	61.0	53.9	68.1
Black/African American (n=127)	45.7	37.5	53.9	8.2	2.7	13.7	74.8	64.7	85.0
Another race or Hispanic (n=71)	55.1	37.9	72.4	6.4	1.9	10.9	66.0	54.0	78.1
NSLP Participation of School									
< 33% on NSLP (n=173)	38.6	25.2	51.9	9.5	7.9	11.0	75.3	66.8	83.8
33-66% on NSLP (n=1,096)	47.5	41.0	54.1	12.4	7.8	16.9	62.9	55.3	70.5
≥ 66% on NSLP (n=159)	46.5	39.6	53.3	16.2	11.9	20.5	50.1	33.5	66.6

NSLP: National school lunch program; Lower CL: Lower 95% confidence limit; Upper CL: Upper 95% confidence limit

## References.

1. Jackson SL, Vann WF Jr, Kotch JB, Pahel BT, Lee JY. Impact of poor oral health on children's school attendance and performance. *Am J Public Health* 2011;101:1900-6.

2. Sinclair SA, Edelstein B. Cost effectiveness of Preventive Dental Services. Washington, DC: Children's Dental Health Project, February 2005.
3. Association of State and Territorial Dental Directors. Basic screening surveys: an approach to monitoring community oral health. (WWW document). URL: <http://www.ahdd.org/basic-screening-survey-tool>.