



This data brief reports results of the oral health screening survey of third grade schoolchildren conducted by the Ohio Department of Health (ODH) during 2017-18.

Overall Findings

48%
of children

screened had a
**history of
tooth decay**
(at least one filling,
crown, untreated
cavity or tooth
extracted due to
decay).

20%
of children

screened had
**at least
one untreated
cavity.**

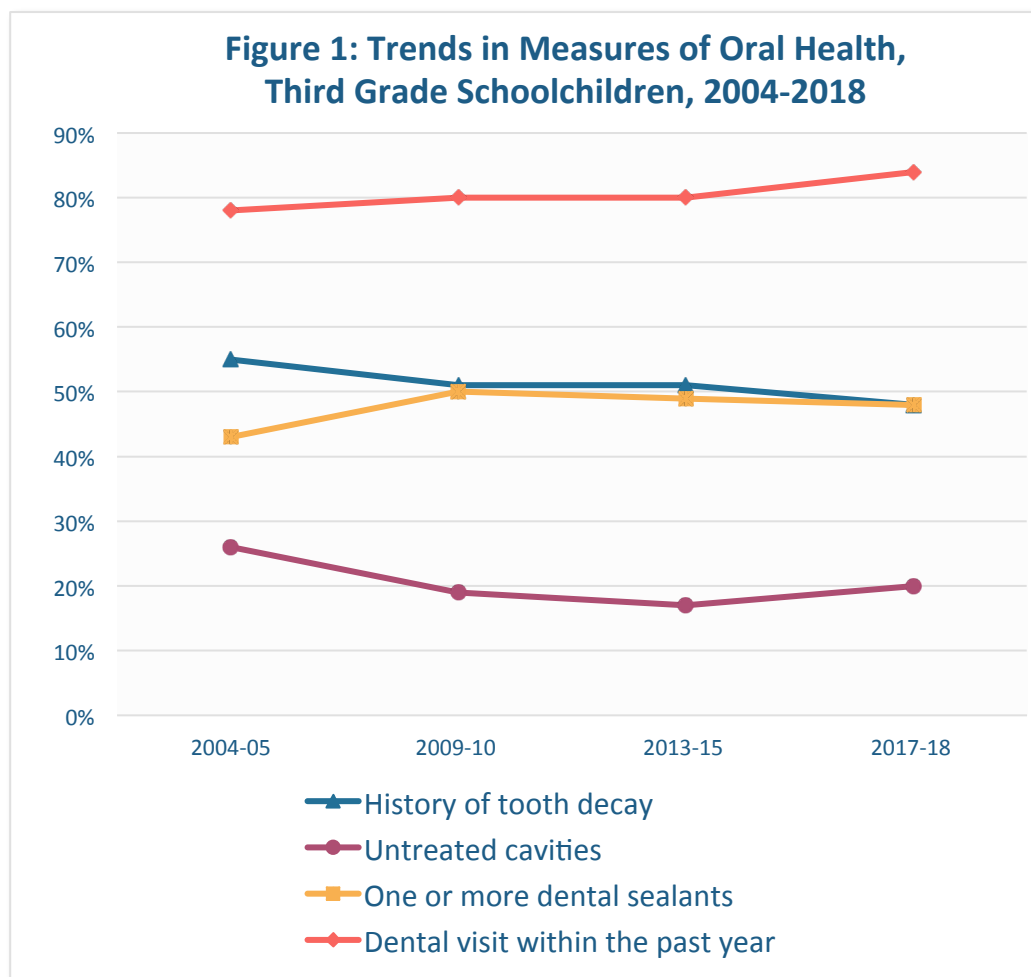
48%
of children

screened had
**one or more
dental sealants**
on a permanent
molar.

84%
of children

reportedly had a
**dental
visit within the
past year.**

Figure 1 shows these results in comparison with previous surveys conducted by ODH. Overall, since 2004, there has been a modest decrease in the percentage of Ohio third graders with a history of tooth decay that is statistically significant. The average decline between each survey is 0.9%. The prevalence of untreated cavities is trending downward, while the prevalence of dental sealants is trending upward. The percentage of children with a dental visit in the past year has slightly increased.

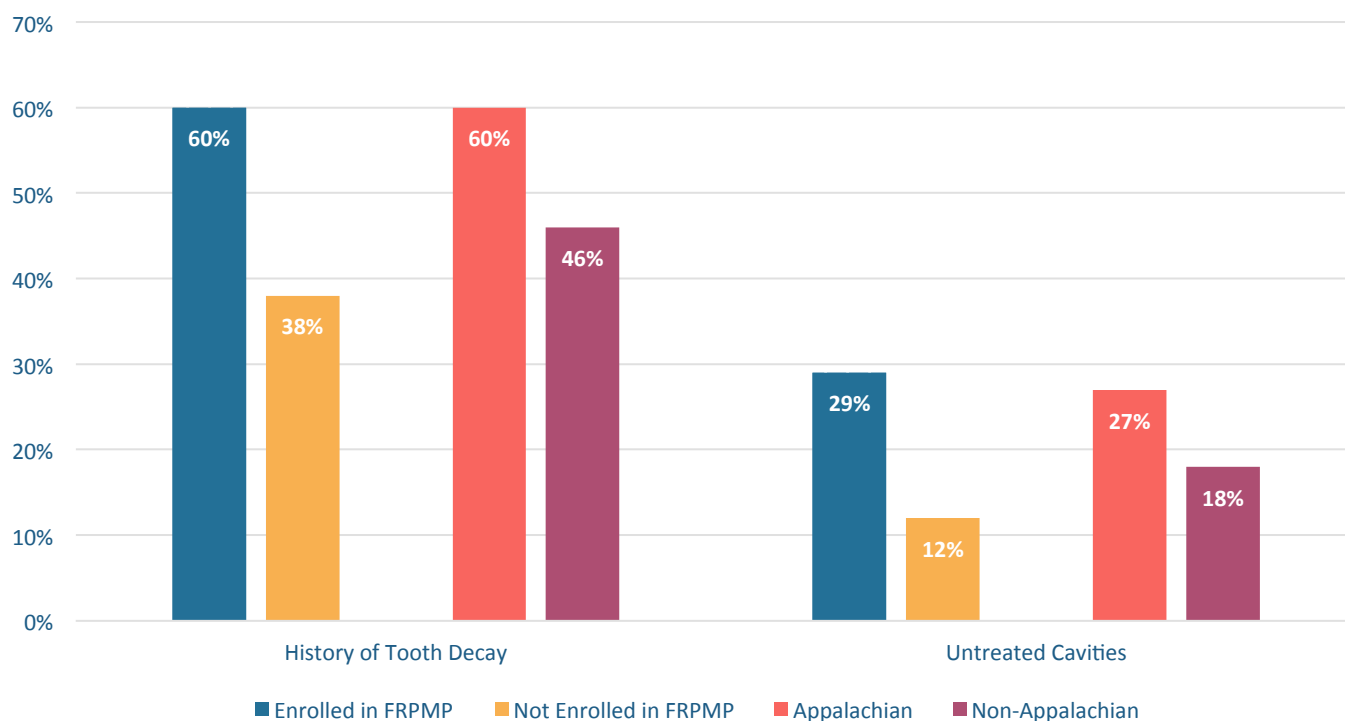


Disparities in Oral Health

Children from families with a lower income and those who live in the Appalachian region had a higher prevalence of history of tooth decay and untreated cavities.

As seen in Figure 2, children from families with a lower income and those who live in the Appalachian region had a higher prevalence of history of tooth decay and untreated cavities. Those who live in Appalachian Ohio had a 24 percent higher prevalence of history of tooth decay and a 34 percent higher prevalence of untreated cavities than children from non-Appalachian counties.

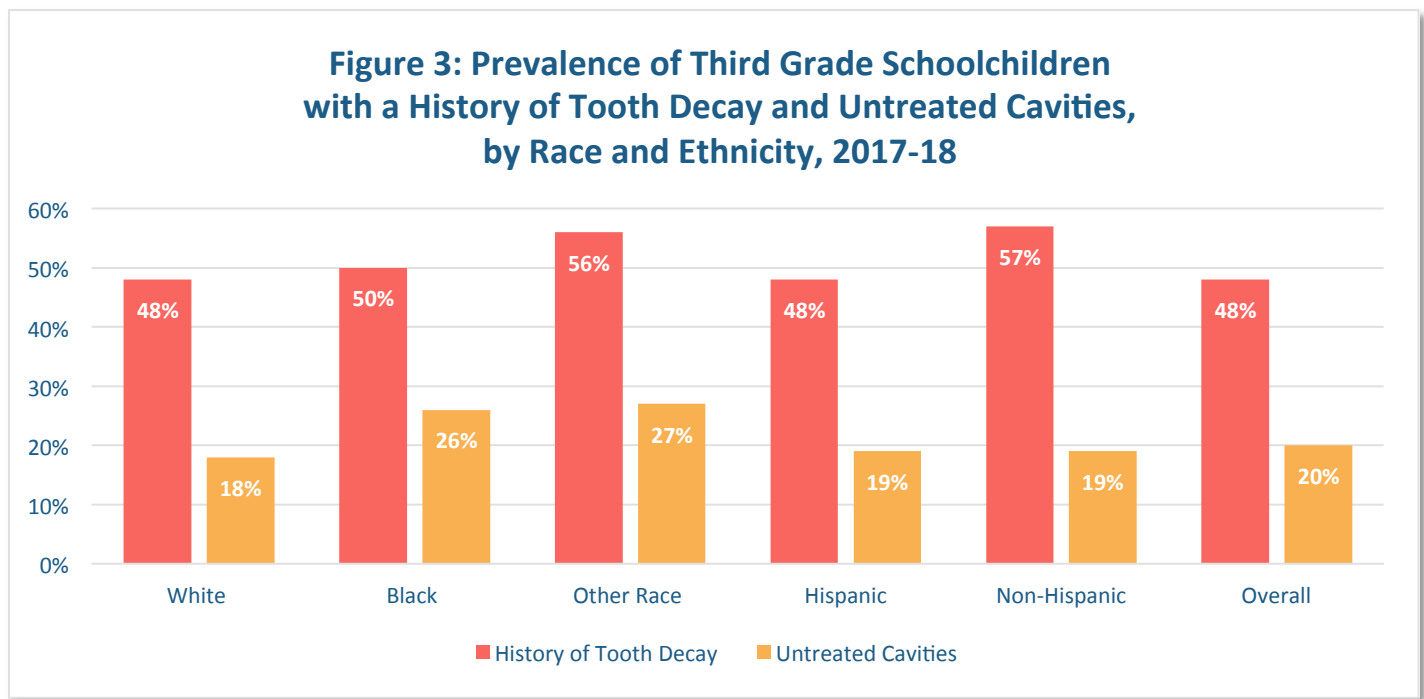
Figure 2: Percentage of Third Grade Schoolchildren with a History of Tooth Decay and Untreated Cavities, By Income* and Geography, 2017-18



*Eligibility for the Free and Reduced-Price Meal Program (FRPMP) is used as a proxy for income.

Statistically significant differences in the prevalence of history of tooth decay and the prevalence of untreated cavities by enrollment in FRPMP ($p < 0.001$ and $p < 0.001$, respectively) and by geography ($p < 0.001$ and $p = 0.002$, respectively), determined by Rao-Scott Chi-Square tests at the 95% confidence level.

Figure 3 shows the prevalence of history of tooth decay and untreated cavities by race and ethnicity. There were no significant differences in the prevalence of history of tooth decay and untreated cavities by race or ethnicity.



No statistically significant differences by race or ethnicity ($p=0.7$ and $p=0.1$, respectively), determined by Rao-Scott Chi-Square tests at the 95% confidence level.



Access to Dental Care

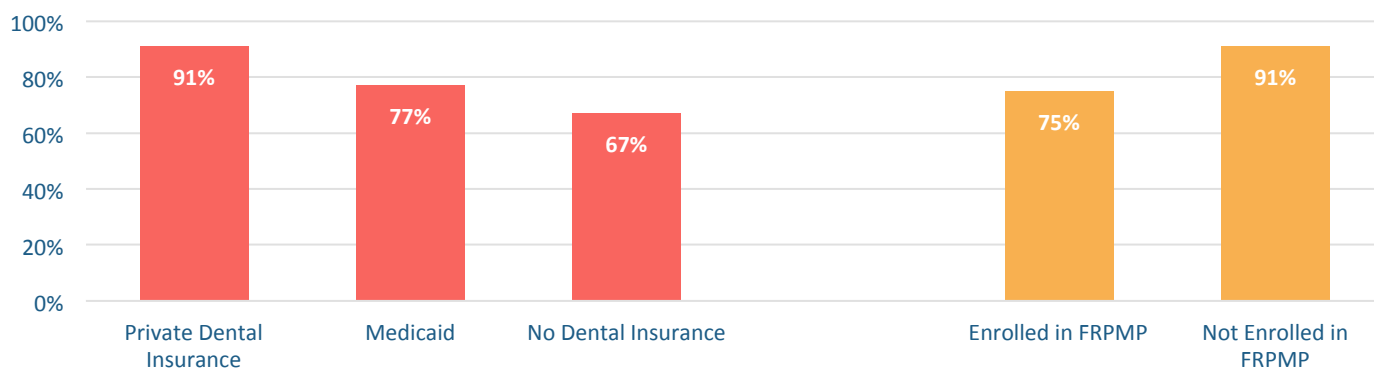
Access to dental care means getting the dental care you need when you need it. According to the 2017 Ohio Medicaid Assessment Survey, getting dental care remains the number one unmet healthcare need among Ohio's children, compared with vision care and the need for prescription drugs.¹

Insurance coverage and family income are two important factors that impact a child getting dental care.

The screening survey showed that 7 percent of parents reported that they have trouble getting dental care for their child, a decrease from 12 percent reported in 2013-15. However, only 3 percent of parents with private dental insurance had trouble, while 11 percent of children on Medicaid and 13 percent of children without dental insurance reportedly had trouble getting dental care.

Access to regular dental care is critical to maintaining oral health. Overall, 84 percent of parents reported that their child had seen a dentist in the past year; however, as seen in Figure 4, children covered by Medicaid or those without any dental insurance were less likely to have seen the dentist in the past year, as were those children in families with lower incomes.

Figure 4: Percentage of Third Grade Schoolchildren with a Dental Visit Within the Past Year, by Insurance Coverage and Income,* 2017-18



*Eligibility for the Free and Reduced-Price Meal Program (FRMP) is used as a proxy for income. The proportion of children with a history of tooth decay differed significantly by type of dental insurance ($p < 0.001$) and by enrollment in FRMP ($p < 0.001$), determined by Rao-Scott Chi-Square tests at the 95% confidence level.

Parents reported several factors that made it hard to get dental care for their children. The cost of dental care was the factor most often cited by parents as a barrier to care (36 percent), followed by the lack of dental insurance (20 percent). Other factors parents reported included that the dental office was too far away (10 percent), the parent was unable to take time off work (9 percent), and the dental office was not open at convenient times (8 percent).

¹ 2017 Ohio Medicaid Assessment Survey. <https://grcapps.osu.edu/omas/>. Accessed 7.18.19.

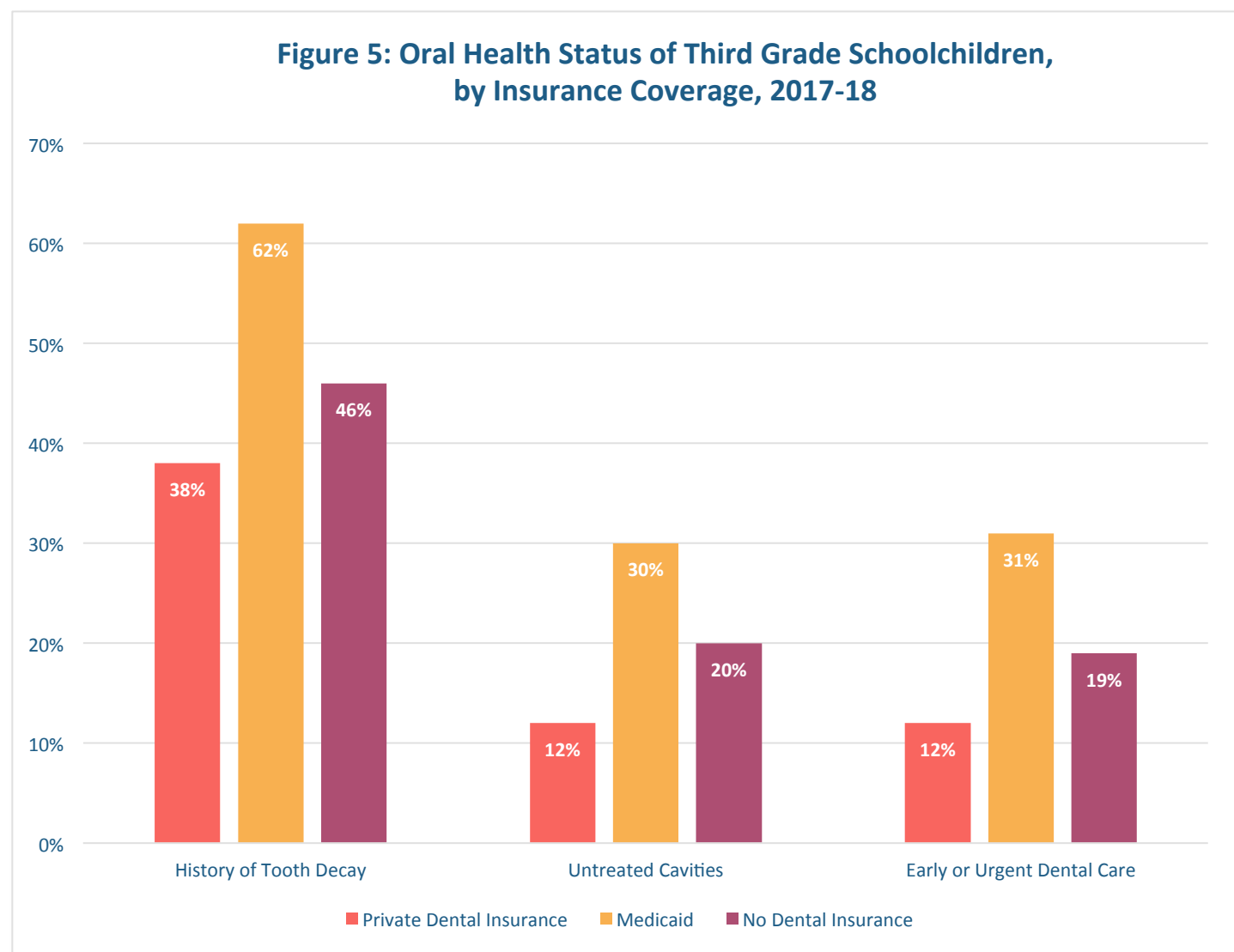
Impact of Access to Dental Care and Insurance Coverage on Oral Health Status

Children who don't go to the dentist on a regular basis have poorer oral health. The survey found that 38 percent of children who had not been to the dentist in the past year had untreated cavities, compared to 15 percent among children who'd had a visit within the past year, a significant difference ($p < 0.001$). Additionally, 30 percent of children who had not been to the dentist in the past year had dental sealants, compared to 51 percent of children who'd had a visit, also a significant difference ($p < 0.001$).

The prevalence of history of tooth decay, untreated cavities, and need for early or urgent dental care differed significantly by insurance coverage. Children covered by Medicaid had the highest prevalence of history of tooth decay, untreated cavities and early or urgent dental care, compared to children covered by private insurance or those without dental insurance.



Figure 5 shows how oral health status of third grade schoolchildren varied depending on their dental insurance coverage. Put simply, children covered by Medicaid had the poorest oral health—more cavities, more fillings and other evidence of past tooth decay, and a greater need for prompt dental care. Children without any dental insurance were also more likely to have untreated cavities than those with private dental insurance.



“Early” dental care means that the child needed to see a dentist within the next few weeks; “Urgent” dental care means the child needed to see the dentist as soon as possible due to pain or infection. The proportions of children with a history of tooth decay, untreated cavities, and need for early or urgent dental care differed significantly by insurance coverage ($p < 0.001$, $p < 0.001$ and $p < 0.001$, respectively), determined by Rao-Scott Chi-Square tests.

Children covered by Medicaid had a significantly higher prevalence of history of tooth decay, untreated cavities and need for early or urgent dental care, determined by pairwise comparisons of insurance coverage categories with Bonferroni corrections.

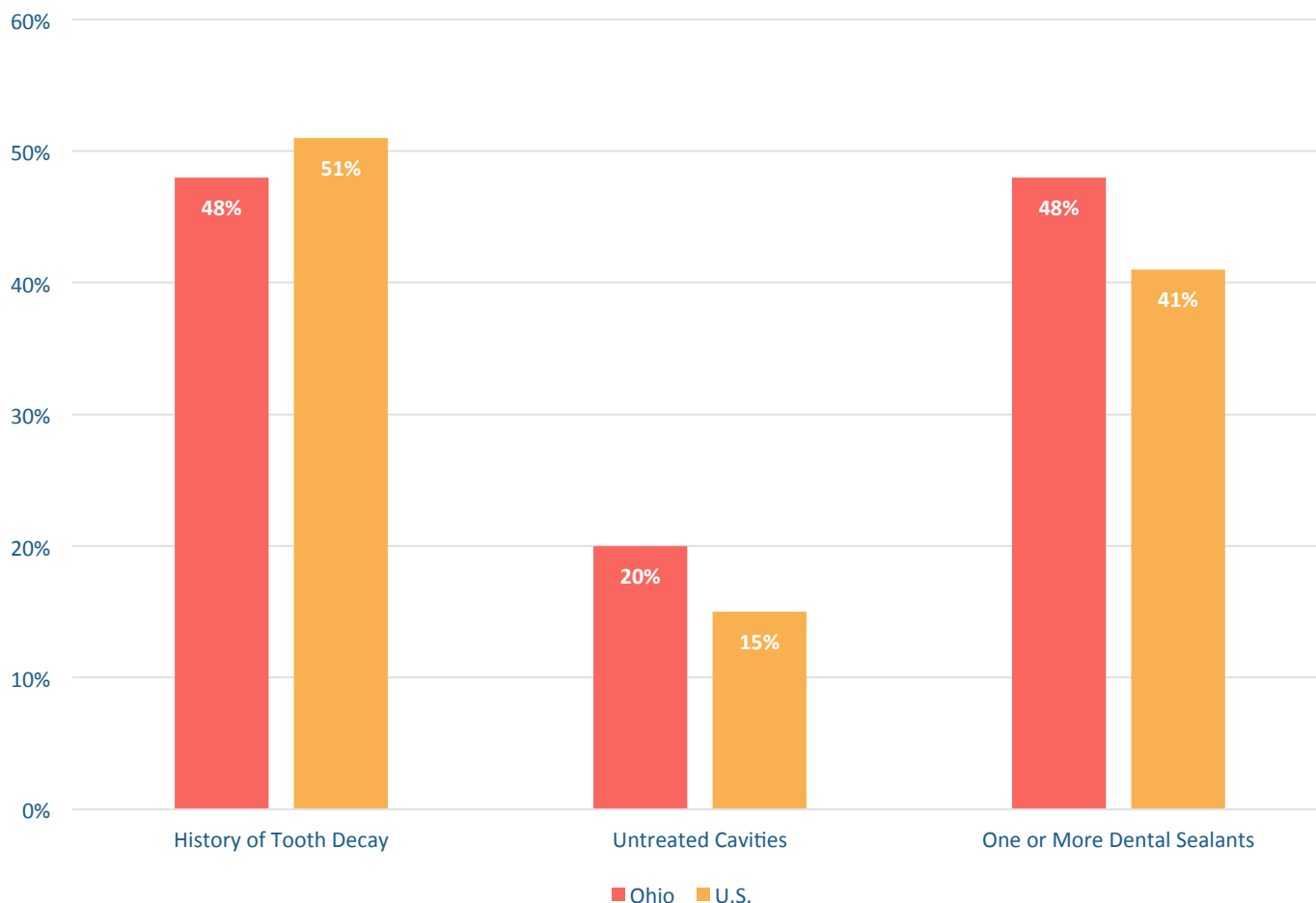
Children without any dental insurance had significantly higher rates of untreated cavities compared to children with private insurance, determined by pairwise comparisons of insurance coverage categories with Bonferroni corrections.

Ohio vs. U.S. Comparisons

Figure 6 shows comparisons between Ohio and U.S. data on the percentage of children with a history of tooth decay, untreated cavities and dental sealants.

For history of tooth decay and the prevalence of dental sealants, data for Ohio's children compare favorably to U.S. data. However, a higher percentage of Ohio's children have untreated cavities compared to children across the U.S.

Figure 6: Comparison of the Oral Health of Third Grade Schoolchildren, Ohio and U.S.*



*Ohio data from Oral Health Screening Survey of Third Grade Schoolchildren, 2017-18. U.S. data on history of tooth decay and untreated cavities based on children ages 6-11, National Health and Nutrition Examination Survey (NHANES), 2015-16. <https://stacks.cdc.gov/view/cdc/53470>. U.S. data on dental sealants based on 2011-2012 NHANES. <https://www.ncbi.nlm.nih.gov/pubmed/25932891>. National data accessed 7.18.19.

Comparison to Healthy People 2020 Objectives

Table 1 compares the results of this survey to the National Health People 2020 oral health objectives.

Ohio has met and exceeded all four national benchmarks for the oral health for this population.

Table 1: Comparison of 2017-18 Ohio Survey Results
to National Targets for 2020²

	National Target	2017-18 Survey	Target Met?
Percentage of children with history of tooth decay	49%	48%	Yes
Percentage of children with untreated cavities	26%	20%	Yes
Percentage of children with one or more dental sealants	28%	48%	Yes
Percentage of children who had visited the dentist within the past year	49%	84%	Yes

² Healthy People 2020. U.S. Department of Health and Human Services.
<https://www.healthypeople.gov/2020/topics-objectives/topic/oral-health>. Accessed 6.25.19.



Significance of Findings

Oral health is crucial at all stages of life and can be particularly important during a child's growth and development. Healthy teeth are needed for chewing nutritious foods, speech development and socialization. Pain from dental disease can impair sleep and the ability to learn. Research shows that children with oral health problems experience more absences from school and have poorer academic performance.³

Dental disease remains a very common condition among Ohio's children, experienced by nearly 50 percent by third grade. This finding has not dramatically changed over the past 15 years. Disparities persist in both oral health status and access to care. Children from lower income families and those covered by Medicaid or who are uninsured experience more tooth decay and have a more urgent need to see the dentist because of pain or infection. However, these children are also those who are less likely to see the dentist on a regular basis. Meanwhile, children with private dental insurance have less tooth decay, but are more likely to see the dentist at least once per year.

Regular access to dental care results in better oral health. This survey found that children who hadn't seen a dentist in the past year had 2.5 times the prevalence of untreated cavities (38 percent vs. 15 percent) and had a substantially lower prevalence of dental sealants (30 percent vs. 51 percent).

Dental sealants continue to be the most effective means of preventing the most common type of tooth decay seen—that found on the biting surfaces of the back teeth. Despite this, the prevalence of dental sealants has also remained essentially unchanged over the past 15 years. ODH supports providing dental sealants to high-risk students through its school-based dental sealant programs (SBSPs), which are operated through grants to local agencies. SBSP grants are targeted to schools with a higher proportion of children from families with lower incomes and to areas of the state where access to dental care is more limited.

This investment has resulted in a higher prevalence of dental sealants among children in Appalachian Ohio (51 percent) and among children covered by Medicaid (53 percent) compared to overall prevalence for the state (48 percent). It has also resulted in Ohio greatly exceeding the national benchmark for the prevalence of dental sealants (48 percent vs. 28 percent.) Continued efforts to promote the use dental sealants and expand their availability through public programs and private dentists are warranted.

That nearly half of children have experienced tooth decay by the third grade emphasizes the need for prevention at younger ages. A study conducted by ODH in 2016-17 of preschool-age children showed that by age 5, nearly one in four children had already had a cavity in their primary (baby) teeth.⁴ Children who experience tooth decay in primary teeth are at higher risk of tooth decay in the permanent (adult) teeth. To reduce the impact of dental disease among Ohio's children, efforts must be directed at ensuring that children, especially those who are at higher risk, have a dental home from birth, where oral health education, preventive care and early treatment can be provided.

³ Carol Cristina Guarnizo-Herreño, DDS, PhD, Wei Lyu, MS, and George L. Wehby, PhD. Children's Oral Health and Academic Performance: Evidence of a Persisting Relationship Over the Last Decade in the United States. *The Journal of Pediatrics*. <https://www.ncbi.nlm.nih.gov/pubmed/30926152>. Accessed 7.25.19.

⁴ Ohio Department of Health. Oral Health Screening Survey of Preschool-Age Children, 2016-17. https://odh.ohio.gov/wps/wcm/connect/gov/77764ffc-75d7-4286-843a-fbe9fe999c2f/Oral+Health+Status+of+Preschool-Age+Children+in+Ohio.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=ROOTWORKSPACE.Z18_M1HGGIK0N0JO00QO9DDDDM3000-77764ffc-75d7-4286-843a-fbe9fe999c2f-mzsjx97. Accessed 7.25.19.

Methodology

The Ohio Department of Health conducted an open-mouth oral health screening survey of third grade schoolchildren during the 2017-18 school years. This survey is the seventh conducted by ODH, dating back to the 1980's. Oral health surveillance of this population has enabled ODH and other state and local partners to monitor trends in oral health status and access to dental care. Third grade students are the target population for these surveys to enable ODH to report data to the Centers for Disease Control and Prevention National Oral Health Surveillance System and to allow comparisons with the Healthy People 2020 national oral health objectives.

A randomized sample of 65 public elementary schools was selected to yield statewide estimates. A total of 3,257 third grade schoolchildren out of 6,497 enrolled received a partial or complete oral health screening, for a response rate of 50 percent. The Basic Screening Survey methodology supported by the Association of State and Territorial Dental Directors was used.⁵ With consent from parents, schoolchildren were screened by a trained team of dental hygienists. Three indicators of oral health were measured: history of tooth decay (cavities, fillings, crowns, or teeth missing due to cavities), untreated tooth decay, and the presence of dental sealants.

The consent form asked parents questions about getting dental care for their child, such as how recently their child had been to the dentist, if they had dental insurance and their ability to get needed dental care. Other data collected on each child were race, ethnicity and enrollment in the Free and Reduced-Price Meal Program (as an estimate of family income.) Children were classified as to whether they lived in a metropolitan, suburban, Appalachian or rural/non-Appalachian county. These data were collected so disparities in oral health status and access to dental care could be studied.

Time trends of oral health metrics (history of tooth decay, untreated cavities, etc.) were evaluated using univariate linear regression analysis. Differences in history of tooth decay and untreated cavities by demographics (income, geography, race and ethnicity) were evaluated using Rao-Scott Chi Square tests at the 95% confidence level. Rao-Scott Chi square tests were also used to investigate the association of having a dental visit within the past year with insurance coverage and income. The association of history of tooth decay, untreated cavities and early or urgent dental care with insurance coverage was evaluated using Rao-Scott Chi square tests at the 95% confidence level, and further investigated by pairwise comparisons of insurance coverage categories with Bonferroni corrections.

⁵ Basic Screening Survey. Association of State and Territorial Dental Directors. <https://www.astdd.org/basic-screening-survey-tool/>. Accessed 7.25.19.