Count Your Smiles

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Executive summary

This summary is intended to highlight important findings on dental disease and dental access for 3rd grade children in Michigan. This summary also addresses important regional concerns for oral health. Additional information is available in the full text of the Count Your Smiles report.

Oral Disease:

- Nearly one in fourteen 3rd grade children in Michigan, 7.0%, have immediate dental care needs with signs or symptoms of pain, infection, or swelling. Children lacking dental insurance, children of lower socioeconomic status, and children who had not visited a dentist in the past year or had problems obtaining dental care were most likely to have immediate dental needs.

- Oral pain can impact a child's learning, nutrition, and sleeping. Over one in nine parents of 3rd grade children in Michigan, 11.3%, reported their child had a toothache when biting or chewing in the past six months. Children with reported toothaches had more untreated disease and treatment needs. Toothaches were more common among children who had difficulty obtaining dental care in the past year, and among minority children and children attending schools in the city of Detroit.

- Over one in four Michigan 3rd grade children, 27.1%, have untreated dental disease. Higher proportions of untreated dental disease were seen in children with public or no dental insurance, children without a dental visit in the past year, children in the Free/Reduced Lunch program, minority children, and children attending Detroit public schools.

Access to Oral Health Services:

- Lack of dental insurance poses a major barrier to obtaining dental care for children. One in nine 3rd grade children, 11.2%, lack dental insurance. Uninsured children had more dental disease and substantially less access to dental services.

- Roughly one in eleven Michigan 3rd grade children, 9.1%, encountered problems that prevented them from obtaining dental care in the past year. Increased difficulty in obtaining dental care was common among all racial and ethnic minorities as well as children not covered by private dental insurance and children eligible for the Free/Reduced Lunch program. Cost, lack of dental insurance, and difficulty finding a dentist accepting insurance/Medicaid were commonly cited reasons for failure to obtain dental care.

- Most children (80.1%) visited a dentist within the past year, as reported by parents. However, one in five Michigan children did not have that access. A lack of dental insurance was strongly associated with failing to visit the dentist, with greater disparities across race/ethnicities among children without dental insurance. Children without a dental visit in the past year, had more untreated dental disease, more dental needs, and were more likely to have experienced a toothache in the past six months.

Executive Summary continued

- Sealants are protective coatings placed on the grooved surfaces of teeth to prevent dental disease. Despite the high percent of dental service utilization, only 26.4% of 3rd grade children in Michigan had sealants present on first molar teeth, below the Healthy People 2020 goal of 28.1%. While the Upper Peninsula had much higher prevalence of sealants (52%), that other regions of the state, the lowest proportions were seen among rural children in the Southern Lower Peninsula, especially among minority children. Hispanic children were much less likely to have sealants present with only 14.6% having sealants present.

Regional Information:

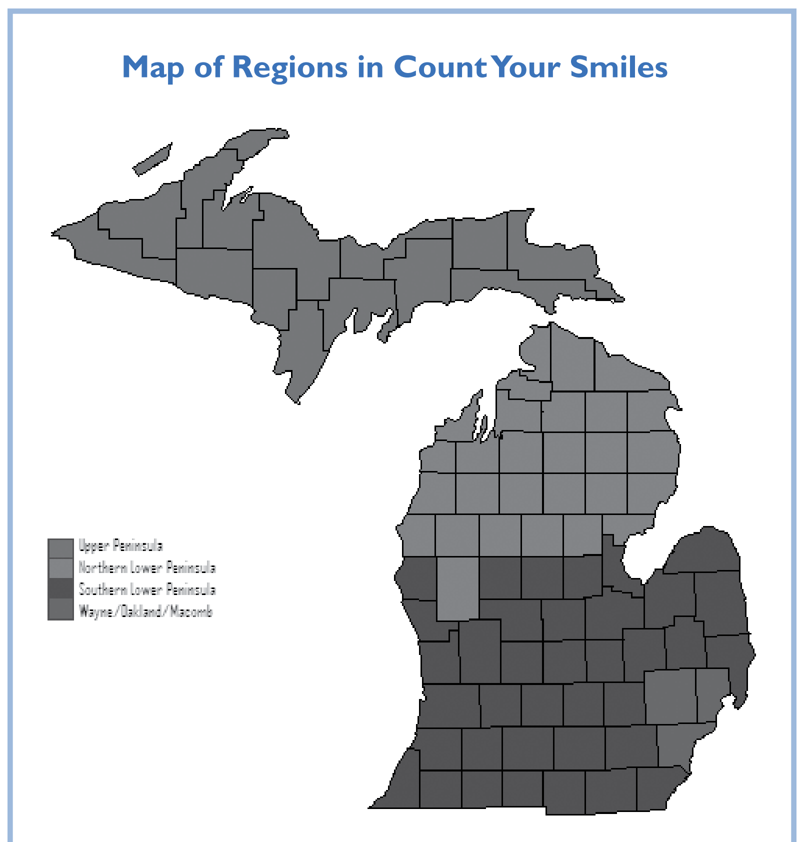
- Although children in the Upper Peninsula and Northern Lower Peninsula had access to dental care and preventive sealants, they had high proportions of caries experience and untreated decay. As community water fluoridation is not readily available here, increased use of topical fluorides and preventivecare could reduce the number of teeth that have been affected by caries in this region.

- Children in the Northern Lower Peninsula had the highest percent of immediate dental needs and a high percent of toothache experience. They also had the poorest dental care access. his region could benefit from education interventions aimed at increasing dental access and providing preventive measures.

- The rural Southern Lower Peninsula region had the lowest rates of sealant placement and high rates of caries experience and untreated decay. In addition, children enrolled in free and reduced lunch programs encountered more dental disease and had lower access to dental care.

- The urban Southern Lower Peninsula had the highest rates of toothache experience and high immediate dental needs. Racial and ethnic disparities in disease burden and dental access were apparent in this region.

- Children who attend school in Wayne County had the highest rates of untreated decay in the state and lower rates of dental insurance compared to children in Macomb or Oakland County. Notable social and racial disparities existed in both dental disease and access all across the Detroit Metropolitan area.



Michigan Department of Community Health

Introduction

In 2000, the United States Surgeon General's Report: *Oral Health in America* documented a "silent epidemic of oral disease affecting our most vulnerable citizens" (*USDHHS 2000a*). This report identified a substantial unmet need for dental care and disparities in oral disease. Oral health care is essential to overall health and well-being. Poor oral health can contribute to difficulties learning, nutritional deficiencies, and low self-esteem (*Moynihan 2004*). Routine denta visits provide opportunities to prevent or delay dental disease. However, substantial disparities exist in the access of routine preventive dental care. (*Yu 2006*)

Additional preventive measures include the use of sealants, which are a transparent or opaque material that covers and protects the pit and fissure surfaces of teeth. Sealants, when retained, provide a cost-effective method of decay prevention (*Kitchens 2005*). Often, children encounter barriers to accessing dental care and preventive dental services. These access-related barriers range from a lack of insurance to the inability to speak English. (*Stevens 2006*)

In an effort to improve dental outcomes, several objectives aimed at preventing and treating oral disease in children as well as improving access to dental services have been included in Healthy People 2020 (HP2020). The "Count Your Smiles" (CYS) survey was designed to address dental outcomes in Michigan that pertain to Healthy People objectives. In addition, CYS provides a follow-up to statewide estimates of child dental disease in Michigan from the first CYS survey conducted in 2005-06. These surveys can track trends of oral health in the state and contribute to Michigan's overall oral health surveillance system. The CYS survey addressed health disparities among children for both dental disease and access to dental care.

Table I: shows a comparison between the HP2020 oral health objectives and the United States and Michigan. Data was collected from 3rd grade students selected to participate in the CYS study.

	Target	Michigan	United States
Healthy People 2020 Objective	%	%	%
OH-1.2: Reduce the proportion of children aged 6 to 9 years with dental caries experience in their primary and permanent teeth	49%	55.9%	54.4
OH-2.2: Reduce the proportion of children aged 6 to 9 years with untreated dental decay in their primary and permanent teeth	25.9%	27.1%	28.8%
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	28.1%	26.4%	25.5%

Methods

Selection Of Schools

Michigan elementary schools were randomly selected through systematic probability proportional to size (PPS) sampling from ordered lists of schools in four regions of the state; the Upper Peninsula, the Northern Lower Peninsula, the Southern Lower Peninsula, and Wayne/Oakland/Macomb counties (metropolitan Detroit). The sampling frame was based upon school enrollment information from the 2008-2009 school year. The number of schools chosen in each region was proportional to state public school 3rd grade school enrollment figures, with the exception of the Upper Peninsula and Northern Lower Peninsula regions, which were over sampled for better representation of these regions. Exclusion criteria included private schools, home-schooled children, schools with fewer than 15 third grade students, and both accelerated and special education classrooms. School sampling varied within each of the study-defined geographic regions in Michigan, with a total of 76 schools selected. In cases of school refusal, school closure, or poor school response rate, replacement schools were selected with a random probability proportional to size school selected from the same sampling interval as the refusing school. Free and reduced lunch enrollment served as a proxy for socioeconomic status. Of the original 76 selected schools, 21 schools refused to participate. Twenty of these refusing schools were successfully replaced with another school from the sampling interval of the refusing school, resulting in 75 schools participating in the survey.

- ***Upper Peninsula***
  This region included all counties of the upper peninsula of Michigan. This large area has a smaller dispersed population. Though this region if sampled proportional to population would only have had two school selections, it is considered an important area of the state to have oral health estimates. To achieve reasonable representation for this area of the state, schools were over sampled to select six schools. The sampling list of schools was sorted geographically by county to provide for implicit stratification geographically in the systematic PPS sampling.

- ***Northern Lower Peninsula***
  This region consisted of all Lower Peninsula counties north of and including Mason, Lake, Osceola, Clare, Gladwin, and Arenac counties. Again, to achieve better representation for this region, the number of schools selected in this region was increased from six to eight to enhance the precision of prevalence estimates for the region. Sampling for the Northern Lower Peninsula again employed the school list being ordered geographically to ensure geographic dispersion of the sampled schools for this region.

- ***Southeast Michigan***
  This region consisted of the three counties (Oakland, Macomb, Wayne) that comprise the metropolitan Detroit area. Ordering of the sample selection list provided for implicit stratification by county for the three counties, and separate selection of Detroit City School District, schools. Within these subdivisions schools were sorted by free/reduced lunch program eligibility to provide for further implicit stratification on socioeconomic status (SES).

- ***Southern Lower Peninsula***
  This region consisted of all remaining Michigan Lower Peninsula counties. This region has a mixture of urban and rural areas, so sample selection employed implicit stratification on urban and rural school district based on Rural Urban Commuting Area (RUCA) codes tied to school district zip codes as designated by the Rural Health Research Center in Washington. Schools were sorted into rural and urban districts, and by percent eligible for free/reduced lunch program to achieve implicit stratification on urbanicity and SES in the sample for this region.

Methods continued

Recruitment Of Participants

Participants were recruited from 75 consenting elementary schools. Consent to work with the schools was first obtained through mailings to district superintendents. Upon confirmation, the school principal was contacted to obtain school consent, classroom selection, and a person to contact for follow-up. Consent forms were sent out to 3756 parents for signed approval to permit their child to participate in the survey. In addition, children in participating classrooms received an oral health kit that included a toothbrush, toothpaste, and oral health education materials. Children who participated in the screening and teachers in participating classrooms also received a Spin brush TM. Overall, 2995 consent forms were returned, and 2545 of these had a positive consent. However, only 2056 children were present at the time of the screening by the hygienists.

Survey Of Parents

Consent forms sent to parents included a short nine-question survey about their child's access to dental care. To maintain confidentiality during data entry and analysis, copies of these surveys were created with blacked-out signatures. Parent responses were linked to child clinical information through confidential identification numbers. Survey questions asked parents about their child's history of a toothache, time since last dental visit, reason for last dental visit, problems in obtaining dental care, source of dental insurance, race/ethnicity of the child, child eligibility for free/reduced lunch program, and whether a language other than English was spoken in the home. Surveys were available in English, Spanish, and Arabic.

Oral Screening Of Children

Volunteer licensed dental hygienists performed the oral screenings while following standard precautions for infection control. Prior to the screenings, the volunteer hygienists attended a training session to standardize measurement of dental disease and to facilitate the school screening. Measures of dental disease included the following:

- ***Cavitated lesion:*** Dental decay in a tooth with a readily observed breakdown of enamel (at least 0.5mm of tooth structure at the enamel surface).
- ***Caries experience:*** The presence of a cavitated lesion or a filling (permanent or temporary), a crown, or a tooth that is missing because it was extracted as a result of caries will be considered caries experience. Only missing permanent first molars were considered missing due to caries.
- ***Untreated decay:*** An untreated cavitated lesion.
- ***Sealants:*** Dental sealants are a transparent or opaque material applied to teeth to protect the pit and fissure surfaces from dental decay. To be considered as having sealants present, a sealant must be present on at least one permanent first molar.
- ***Treatment urgency:*** The examiner's recommendation of how soon the child should visit the dentist for clinical diagnosis and any necessary treatment. "No obvious problem" corresponded to no dental problems observed. "Early dental care is needed" corresponded to a cavitated lesion without accompanying signs or symptoms or when there were suspicious white or red soft tissue areas, with a recommendation that the child should see a dentist soon. "Immediate dental care is needed" corresponded to signs or symptoms of pain, infection, or swelling, with a recommendation that the child should be seen by a dentist as soon as possible.

Methods continued

- ***Fluorosis:*** Below are the fluorosis screening criteria for children participating in Count Your Smiles screening.

Normal	The enamel represents the usual translucent semi-vitriform type of structure. The surface is smooth, glossy, and usually of a pale creamy white color.
Questionable	The enamel discloses slight aberrations from the translucency of normal enamel, ranging from a few white flecks to occasional white spots. This classification is utilized in those instances where a definite diagnosis of the mildest form of fluorosis is not warranted and a classification of "normal" is not justified.
Very mild	Small opaque, paper white areas scattered irregularly over the tooth but not involving as much as 25% of the tooth surface. Frequently included in this classification are teeth showing no more than about 1-2 mm of white opacity at the tip of the summit of the cusps of the bicuspids or second molars.
Mild	The white opaque areas in the enamel of the teeth are more extensive but do not involve as much as 50% of the tooth.
Moderate	All enamel surfaces of the teeth are affected, and the surfaces subject to attrition show wear. Brown stain is frequently a disfiguring feature.
Severe	Includes teeth formerly classified as "moderately severe and severe." All enamel surfaces are affected and hypoplasia is so marked that the general form of the tooth may be affected. The major diagnostic sign of this classification is discrete or confluent pitting. Brown stains are widespread and teeth often present a corroded-like appearance

Analysis

Analysis sample weights were calculated for each child in the survey based on the sampling design employed. Weight calculations were based on the stratification of schools by region, and within region sample stratification based on geography, urbanicity, and/or socio-economic status (using percentage of children on free reduced lunch as a proxy measure) depending on the region. As described in the previous section on selection of schools, sampling intervals were created based on these stratification factors. Screened children were assigned weights based on their probability of selection from children within their sampling interval. Weights therefore reflect the number of Michigan 3rd grade children that each screened child represented.

These analysis weights and sample design stratification and clustering specifications were used with SAS 9.2 statistical software to generate valid population-based estimates of results. The Michigan Department of Community Health Institutional Review Board reviewed this survey.

Population demographics and response rates

A total number of 3756 consent forms were sent to parents of which 2995 i.e., 79.73% were returned. Of those returned, 84.97% (2545) were positive consent forms. However, due to absences, 80.78% (2056) of all selected children participated in the survey. Response rates also varied within geographic strata. Characteristics of CYS participants are presented below (Table II). A total of 2056 children were screened. Variations in the totals below are due to lack of information/no response to the questions asked.

TABLE II: Characteristics of "Count Your Smiles" participants, 2009-10

Characteristic	Number Screened (N)	Sample Proportion (%)
By Age		
Less than 9 years	1343	68.8
9 years or older	609	31.2
By Gender		
Male	935	47.2
Female	1046	52.8
By Race/Ethnicity*		
White**	1407	72.0
African American	312	16.0
Hispanic	107	5.5
Native American	44	2.3
Asian American	40	2.1
Arab American	23	1.2
Other	22	1.1
By Dental Insurance		
Private	998	50.9
Public	677	34.5
Private and Public	50	2.6
Uninsured	216	11.0
Don't Know	20	1.0
Other Characteristics		
Free/Reduced Lunch Program Participation	978	47.6
Non-English-speaking Household	236	12.0
All proportions are for those with a response to the item *Parent may report more than one race and/or ethnicity **Does not include Hispanic or Arab persons		

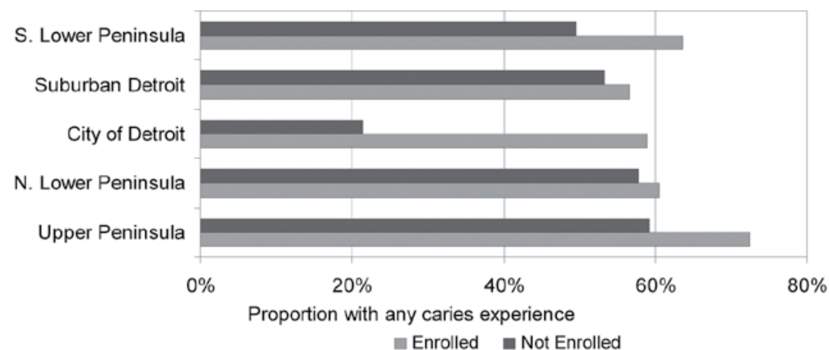
The sample reflects the general population closely with regards to gender and race/ethnicity. Overall, there were a slightly higher percent of free and reduced lunch participants compared to the general population. A slightly higher percent of free and reduced lunch participants in the sample was accounted for by analysis weighting.

Caries experience

- Children who attended school in optimally fluoridated communities had fewer teeth affected by caries than children who attended school in nonfluoridated communities.
- Socioeconomic differences may contribute substantially to caries experience. Free and reduced lunch children and children not covered by private dental insurance had higher rates of caries.

Caries experience (cavities) includes the presence of teeth with fillings, teeth with untreated decay, or the loss of first permanent molars due to caries. In Michigan, over half of all 3rd grade children, 55.9%, had experienced tooth decay. Prevalence of caries was higher outside suburban Detroit with the highest rates occurring in the Upper Peninsula at 70.3%. Hispanic and Native American children, children not covered by private dental insurance, and children in free and reduced lunch programs all experienced higher rates of caries. (Table A1 – see appendix)

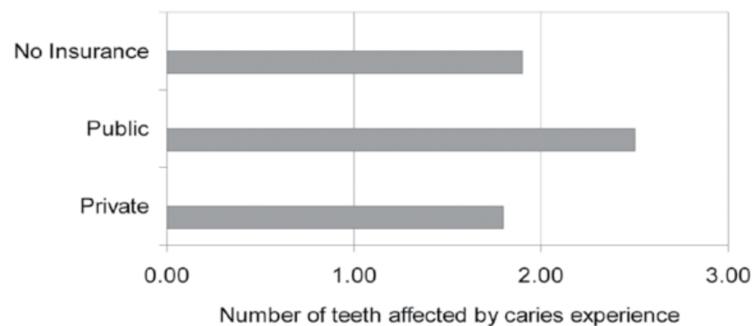
Figure 1: Proportion of Michigan 3rd grade children with caries experience, by free/reduced lunch program participation and geographic region, 2009-10



Children in free and reduced lunch programs experienced higher caries rates in each geographic region except in the Upper Peninsula; the resulting disparity varied in magnitude between the different regions. The largest socioeconomic disparities in caries experience occurred among children from the city of Detroit and children from the Northern Lower Peninsula. (Figure 1)

Caries Experience continued

Figure 2: Average number of teeth affected by caries experience among Michigan 3rd grade children with any caries experience, by type of dental insurance and enrollment in the free and reduced lunch program, 2009-10



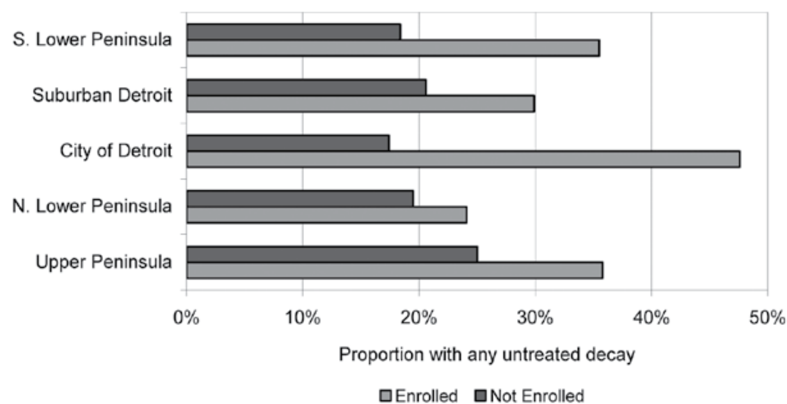
Children with any caries experience averaged 3.8 affected teeth per child. Among children with caries experience in primary teeth, 3.5 primary teeth had on average been affected. Among children with caries experience in permanent teeth, an average of 1.8 permanent teeth had been affected. The average number of total teeth affected by caries experienced varied with type of dental insurance, but did not statistically vary by enrollment in the free and reduced lunch program within each insurance category. (Figure 2).

Untreated dental disease

- Access to dental care is linked to untreated dental disease. Children who did not have an annual dental visit and children not covered by private insurance had more teeth with untreated decay.
- As with caries experience, children in free and reduced lunch programs had higher overall rates of untreated dental decay, and the magnitude of this disparity varied between geographic regions.

Untreated dental disease refers to caries experience (a cavity) that is visible, but had not been filled or treated. One in four 3rd grade children in Michigan, 27.1%, have untreated dental disease. Prevalence of untreated dental disease was highest in the Detroit area (41.9%). A higher prevalence of African American, Arab, and Hispanic school children had untreated dental disease. One in three children who lacked private dental insurance had untreated dental disease compared to one in six children with private insurance. Children in free and reduced lunch programs also had higher rates of untreated dental disease. (Table A2 – see appendix)

Figure 3: Proportion of Michigan 3rd grade children with untreated dental disease, by free/reduced lunch program participation and geographic region, 2009-10

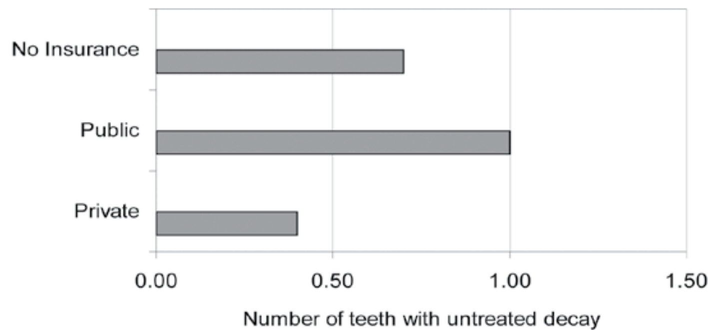


Much like caries experience, socioeconomic differences contributed to disparities in untreated dental disease. This socioeconomic disparity varied in magnitude across Michigan with substantial disparities in the Southern Lower Peninsula and Detroit area.

(Figure 3)

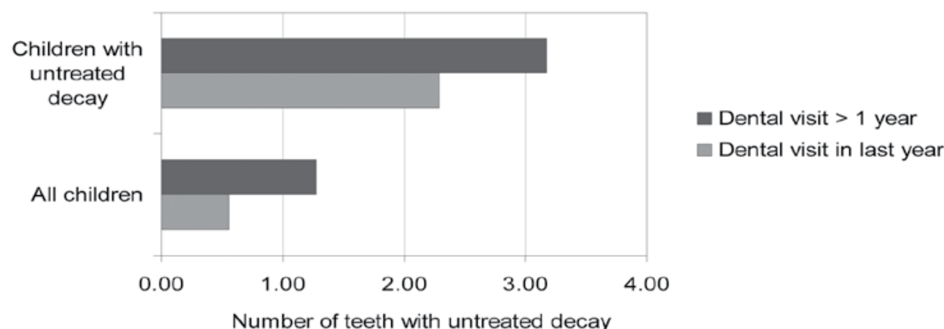
Untreated Dental Disease continued

Figure 4: Average number of teeth with untreated decay among Michigan 3rd grade children, by type of dental insurance and enrollment status in the free and reduced lunch program, 2009-10



Children with untreated dental decay averaged 2.5 untreated teeth. Among children with untreated primary tooth decay, 2.3 primary teeth were untreated on average. On average, children with untreated permanent tooth decay had 1.5 untreated permanent teeth. Publicly insured children averaged more untreated teeth than privately insured or uninsured children. However, there were no statistically significant differences between children enrolled in the free and reduced lunch program and those not enrolled after accounting for type of insurance. (Figure 4). Children who had visited the dentist in the past year had substantially less untreated decay than children who had not. (Figure 5).

Figure 5: Average number of teeth with untreated decay among Michigan 3rd grade children with untreated decay and all Michigan 3rd grade children, for children with and without a dental visit in the past year, 2009-10



Urgency of Needed Dental Care (Treatment Urgency)

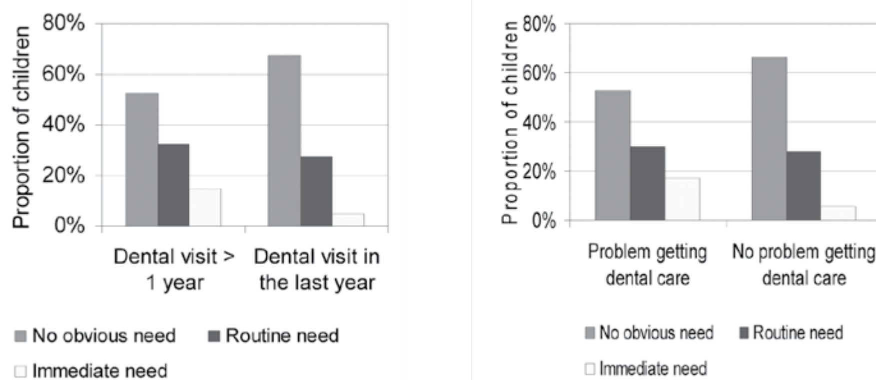
- Uninsured children enrolled in free and reduced lunch programs were nearly three times more likely to have immediate dental needs with signs or symptoms of pain, swelling, or infection than privately insured, non-free and reduced lunch children.
- Barriers to receiving dental care and lack of an annual dental visit were strongly associated with a child having immediate dental needs.

Screening revealed that nearly one in fourteen (7.0%) Michigan 3rd grade children were in need of immediate dental care for signs or symptoms of pain, infection, or swelling. The need for early dental care was found in 28.1% of children while 62.9% of children had no obvious dental problems.

Compared to children living in suburban Detroit, children in the Northern Lower Peninsula were over twice as likely, and Detroit children were nearly four times more likely to have immediate dental care needs involving pain, infection, or swelling.

Hispanic, African American, and Arab American children had about two times higher prevalence of immediate and early dental care needs than white children. (Table A3 – see appendix) However, differences were smaller after accounting for socioeconomic and insurance differences. Male and female children had similar needs for both early and immediate dental care.

Figure 6: Immediacy of dental care needs among Michigan 3rd grade children, by difficulty obtaining dental care and annual dental utilization, 2009-10



Access to care plays an important role in determining dental need. (Figure 6). Children who had not visited the dentist in the past year were almost three times more likely to have immediate dental care needs. Likewise, children who experienced difficulty in obtaining dental care were three times more likely to have immediate dental care needs than children who did not experience a problem in obtaining dental care.

Urgency Of Needed Dental Care continued

Immediacy of dental care needs was strongly associated with socioeconomic status as reflected by free/reduced lunch program eligibility. Immediate care needs (needing to see a dentist as soon as possible) were also higher among those with no dental insurance or public dental insurance than those with private dental insurance. Variation in treatment needs was also seen across the regions of the state. (Table III).

Table III: Percent (CIs) of having a need for early or immediate dental care in Michigan 3rd grade children, 2009-10, Count Your Smiles

	Routine Care Needed		Immediate Care Needed	
	Percent	95% CI	Percent	95% CI
Upper Peninsula	23.8	16.2-31.3	4.1	0.0-8.2
Northern Lower Peninsula	26.3	3.1-49.5	10.3	1.5-19.0
City of Detroit	26.6	11.3-41.9	16.8	1.8-31.8
Greater Detroit	30.6	19.5-41.6	4.5	0.9-8.2
Southern Lower Peninsula	27.1	18.0-36.1	6.9	3.8-10.0
Female	28.9	22.2-35.7	6.9	4.4-9.5
Male	27.3	21.4-33.1	7.2	4.5-10.0
Toothache in the past 6 months when biting and chewing	35.3	25.4-45.2	20.0	9.4-30.6
No Toothache in past 6 months	27.3	21.1-33.4	4.7	3.0-6.4
Visited a dentist in the past year	27.3	21.0-33.5	5.1	3.2-7.1
Dental visit more than one year ago	32.5	24.4-40.1	14.8	9.1-20.1
Had a problem obtaining dental care in the past year	30.1	20.6-39.6	17.1	7.0-27.3
No problem obtaining dental care	27.9	21.8-34.0	5.6	3.7-7.5
Free/Reduced Lunch - Eligible	31.0	25.7-36.2	9.8	6.4-13.2
Free/Reduced Lunch - Not Eligible	25.1	17.3-33.0	4.1	1.9-6.3
No Dental Insurance	30.0	21.1-39.0	9.9	4.5-15.4
Public Dental Insurance	30.7	24.7-36.7	10.3	6.5-14.0
Private Dental Insurance	26.1	18.2-33.9	3.6	1.9-5.4

95%CI=The true population value lies within this range with 95% confidence

Fluorosis

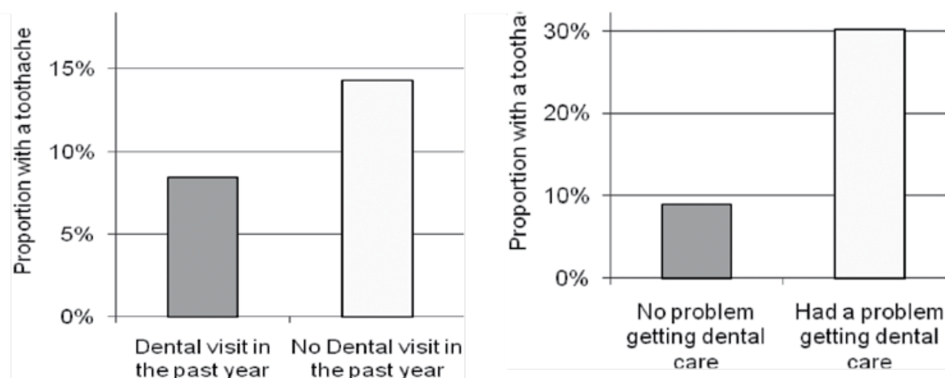
It is difficult to achieve standardization of screeners in screening for fluorosis. In the course of the survey, screeners only indicated twenty children with moderate fluorosis and one child with severe fluorosis. Children without fluorosis, or with questionable, very mild, or mild fluorosis, are not considered to have deleterious esthetic effects of fluorosis. Because of the extremely small number of children indicated as having fluorosis with important esthetic effects, and because of the typical lack of good standardization of screeners in assessing fluorosis, results are not presented on possible associations of fluorosis with other factors, as such associations could well be erroneous. The primary finding on fluorosis is that very few Michigan children seem to be affected.

Toothache when biting or chewing

- Children reported by their parents as having a toothache in the past six months when biting or chewing had less access to needed dental care and more teeth affected by untreated dental disease. Children with toothaches were 4.4 times more likely to have immediate dental needs than children without toothaches.
- African American, Arab American and Hispanic children had higher rates of toothaches than White children. Children who attended school in the city of Detroit had the highest rate of toothaches.

Oral pain can impact a child's nutrition, learning, and sleeping. Unfortunately, 11.3% of Michigan parents reported their child had a toothache when biting or chewing in the past six months. Toothaches were more prevalent among 3rd grade children who attended school in the city of Detroit, with nearly one in four parents reporting their child experienced a toothache in the past six months. African American and Hispanic children had higher rates than Whites, and females had slightly higher rates than males. Children in free and reduced lunch programs and children covered by public dental insurance also had elevated rates of toothaches in the past six months. (Table A4 – see appendix).

Figure 7: Proportion of Michigan 3rd grade children with toothache in the past six months when biting or chewing, by annual dental visit and by difficulty obtaining dental care in the past year, 2009-10

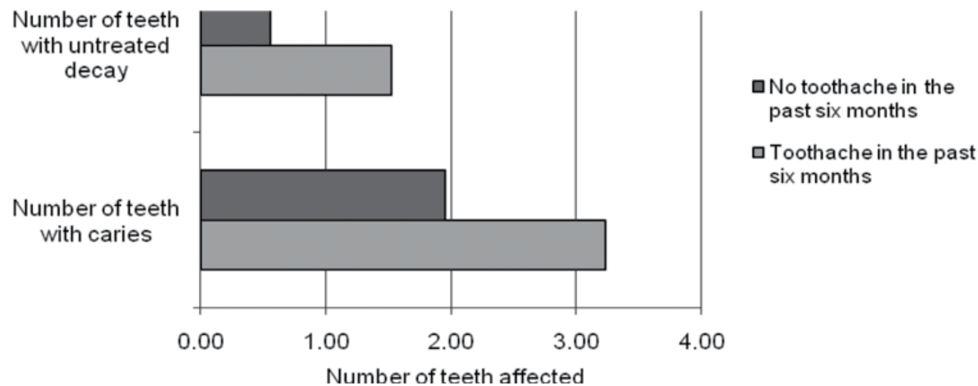


Access to dental care plays a vital role in determining whether a child experiences oral pain. In addition to the association between toothaches, dental insurance and socioeconomic status, strong links existed between toothaches, annual dental visits and difficulty obtaining dental care.

Children who had not visited the dentist in the past year had slightly higher rates of toothaches. However, among children who had difficulty obtaining dental care in the past year, the rate of toothaches in the past six months was 30.2% compared to 8.9% among children who did not encounter difficulties in obtaining dental care. (Figure 7). A child with a toothache in the past six months was 4.1 times more likely to need immediate dental care and 1.3 times more likely to need early dental care than a child without report of a toothache in the past six months.

Toothache When Biting Or Chewing continued

Figure 8: Average number of teeth affected by caries and number of teeth with untreated decay among Michigan 3rd grade children with and without a toothache in the past six months when biting or chewing, 2009-10



Report of a toothache in the previous six months corresponded to both a higher number of teeth affected by caries and a higher number of teeth with untreated decay. (Figure 8). Children with a toothache averaged 3.2 teeth affected by caries and 1.5 teeth with untreated decay while children without a toothache averaged 1.9 teeth affected by caries and 0.6 teeth with untreated decay. Children with a toothache had lower overall rates of dental access and higher rates of untreated dental disease, thus demonstrating a painful consequence for children with untreated disease who do have access problems to needed dental care.

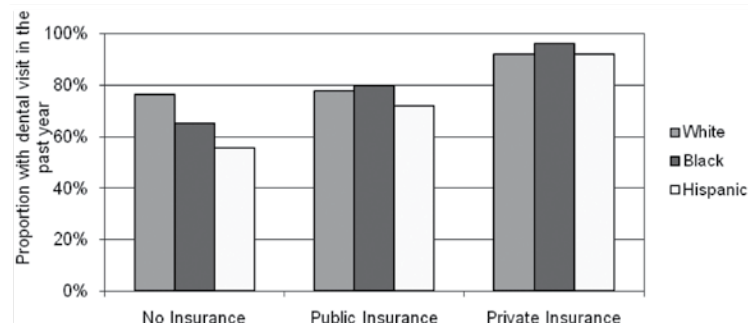
Dental visit in the past year

- Children who visited the dentist in the past year had less untreated dental disease and fewer immediate dental needs than children who had not visited the dentist in the past year.
- Type of dental insurance plays an important role in accessing dental care. Hispanics without insurance were the least likely group to have a dental visit in the past year.

Children should have their teeth examined regularly. At a minimum, every child should visit the dentist at least once per year. Among CYS participants, 84% of responding parents reported that their child had visited the dentist in the past year.

Dental utilization rates (DDS visit in past year) ranged from 74% in the northern Lower Peninsula region to 91% in the Upper Peninsula. Racial and ethnic minorities had lower rates of dental utilization compared to Whites (86%) with Arab Americans (68%) and Native Americans (69%) having the lowest percents for seeing a dentist in the past year. Compared to 92.0% of privately insured children who had a dental visit in the past year, only 71.2% of children without insurance and 77.3% of children on public insurance had visited the dentist in the past year. Children enrolled in the free and reduced lunch program also had lower rates of utilization. (Table A5 – see appendix)

Figure 9: Proportion of Michigan 3rd grade children with a dental visit in the past year, by type of insurance and race/ethnicity, 2009-10

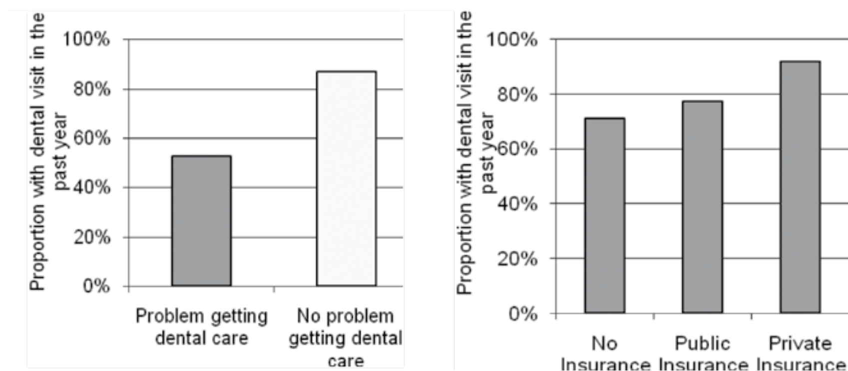


Annual dental service utilization also varied within type of insurance by race. A lack of dental insurance contributed strongly to a disparity in dental access between Hipanics and Non Hispanics.
(Figure 9)

Dental Visit in the Past Year continued

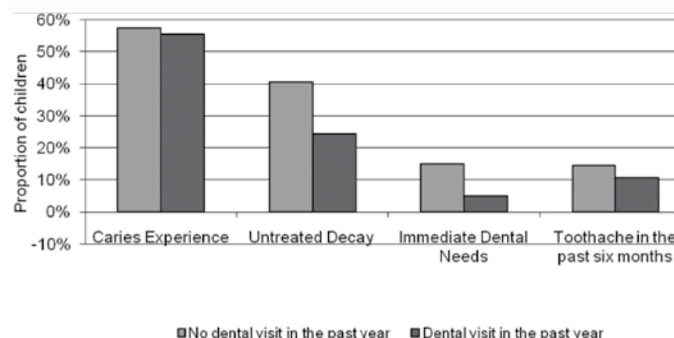
Problems obtaining dental care also led to lower annual dental utilization. (Figure 10)

Figure 10: Proportion of Michigan 3rd grade children with a dental visit in the past year by difficulty in obtaining dental care and type of dental insurance, 2009-10



Access to dental care is important for prevention of dental disease and halting the progression of existing dental disease. Children who had visited the dentist in the past year had less untreated dental decay and fewer immediate dental needs than children who did not have a dental visit in the past year.

Figure 11: Proportion of Michigan 3rd grade children with a dental visit in the past year by difficulty in obtaining dental care and type of dental insurance, 2009-10



Problem obtaining dental care in past year

Like other health services, access to oral health services can be difficult to obtain. Parents of 9.1% of Michigan 3rd grade children reported having difficulty when trying to find dental care for their child. Difficulty obtaining care was reported the least in the Upper Peninsula (5.2%) and Detroit (5.3%) compared to Wayne/Oakland/Macomb (9.6%) and the southern Lower Peninsula (9.8%) regions of the state.

Racial and ethnic minorities reported more difficulty when trying to obtain dental care, especially Hispanics (17.3%) and Arab Americans (14.1%), as did children in free and reduced lunch programs (12.7%). Type of dental insurance was strongly associated with difficulty obtaining dental care. Almost one in four (23.3%) uninsured children had reported difficulties obtaining dental care compared to 12.1% of publicly insured children and just 3.4% of privately insured children. (Table A6 - see appendix).

Of parents reporting problems in obtaining care, half (49.5%) cited a lack of dental insurance as a main reason. The second most frequent response (39.1%) was inability to afford dental care. Other common responses contributing to their inability to obtain dental care for their child were finding a dentist, difficulty getting an appointment, inconvenient dental hours, and dentists not accepting insurance/Medicaid. Transportation barriers also contributed to inability to obtain dental care. (Table IV).

Table IV: Response Frequencies and Percents for Reasons Why Child Could Not Get All the Dental Care He/She Needed in the Past 12 Months Among Those Responding, 2009-10

Reason for not receiving care	N	%
No insurance	95	49.5
Could not afford it	75	39.1
Dentist did not take insurance	33	17.2
Difficulty getting an appointment	25	13.0
Didn't know where to go	17	8.9
Dentist hours not convenient	15	7.8
Not a serious enough problem	14	7.3
No way to get there	12	6.3
No dentist available	8	4.2
Don't trust/believe in dentists	6	3.1
Other family health problems	4	2.1
Too long of a wait for appointment	4	2.1
Other non-specified reason	15	7.8

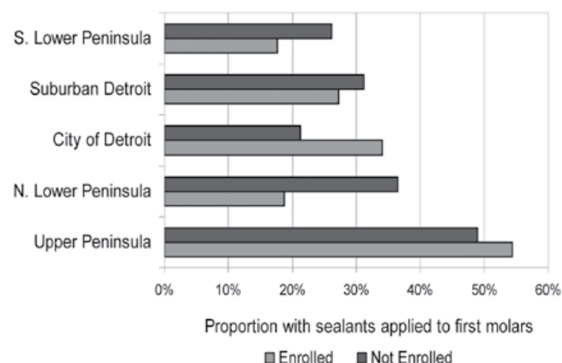
SEALANTS PRESENT ON FIRST MOLARS

- Michigan ranks 37th out of 42 reporting states in the percent of 3rd grade children with sealants present on first molars. (National Oral Health Surveillance System)
- The Southern Lower Peninsula had the lowest proportion of sealants present on first molars, with particularly low rates among minorities.
- Nearly one in ten 3rd grade children lack both the application of sealants to first molars and access to an optimally fluoridated community water supply.

Sealants are protective coatings placed on the grooved surfaces of teeth to prevent tooth decay. Despite high annual dental utilization, just 26.4% of Michigan 3rd grade children had sealants present on their first molars.

Sealant rates varied geographically with the lowest percent occurring in the Southern Lower Peninsula (22%), and the highest percent in the Upper Peninsula (52%). Sealant rates ranged between 22% and 32% for most racial and ethnic groups, but were lower in Hispanic children (17%) and Arab American children (8%). Uninsured children had a lower percent of sealants (22.6%), compared to those who were publicly insured (26.5%) or privately insured (27.5%). (Table A7– see appendix)

Figure 12: Proportion of Michigan 3rd grade children with sealants present on first molars, by free/reduced lunch program participation and geographic region, 2009-10

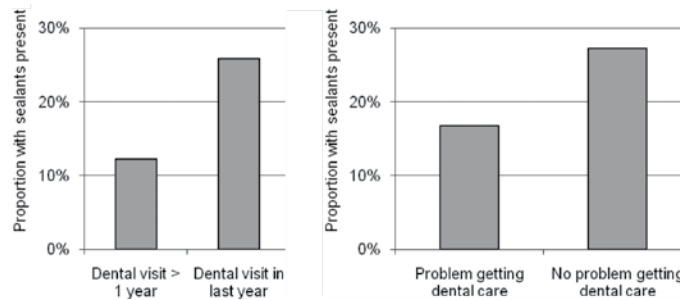


Socioeconomic disparities in sealant presence varied among geographic regions. Sealant presence was higher among children eligible for the free/reduced lunch program in the Detroit and the Upper Peninsula, but lower in the other regions, particularly in the Northern Lower Peninsula region.

(Figure 12)

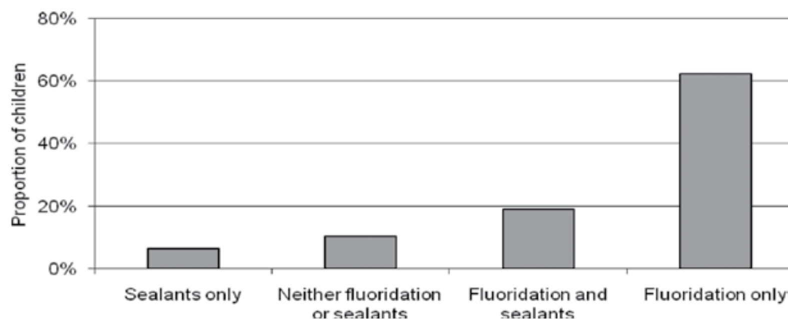
Sealants Present On First Molars continued

Figure 13: Proportion of Michigan 3rd grade children with sealants present on first molars by annual dental utilization and difficulty obtaining dental care, 2009-10



Children who visited the dentist in the past year had about twice the prevalence of sealants compared to children who had not visited the dentist in the past year. A lower percent of children experiencing difficulties getting dental care had sealants compared to children not having dental care access problems. (Figure13). Community water fluoridation remains the primary source of evidence based caries prevention. Still, one in ten children (10.2%) did not have sealants present on first molars or attend school in an optimally fluoridated community. (Figure 14)

Figure 14: Evidence-based caries prevention measures: the proportion of Michigan 3rd grade children by presence of sealants and attendance at a school located in an optimally fluoridated community, 2009-10



Upper peninsula

- Children in the Upper Peninsula have the highest proportion of caries experience and among the highest rates of untreated dental caries in Michigan, while having the highest proportion of sealants.
- Progress on application of sealants and expansion of community water fluoridation are needed to reduce the percentage of caries experience and untreated dental disease in the Upper Peninsula.

Overall, children in the Upper Peninsula had a higher proportion of dental disease compared to the rest of Michigan. Fortunately, these high rates did correspond to higher rates of severe dental disease. Access to preventive dental sealants has increased in this region to a level substantially higher than the rest of the state. However, with the high levels of disease experience and untreated disease, continued expansion of prevention efforts are needed in this region.

Table V: Healthy People 2020 Oral Health indicators, target levels, and current status in Michigan and the Upper Peninsula

Healthy People 2020 Objective	Target %	Michigan %	Upper Peninsula %
OH-1.2: Reduce the proportion of children aged 6 to 9 years with dental caries experience in their primary and permanent teeth	49.0%	55.9%	66.0%
OH-2.2: Reduce the proportion of children aged 6 to 9 years with untreated dental decay in their primary and permanent teeth	25.9%	27.1%	30.6%
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	28.1%	26.4%	51.7%

Oral Disease

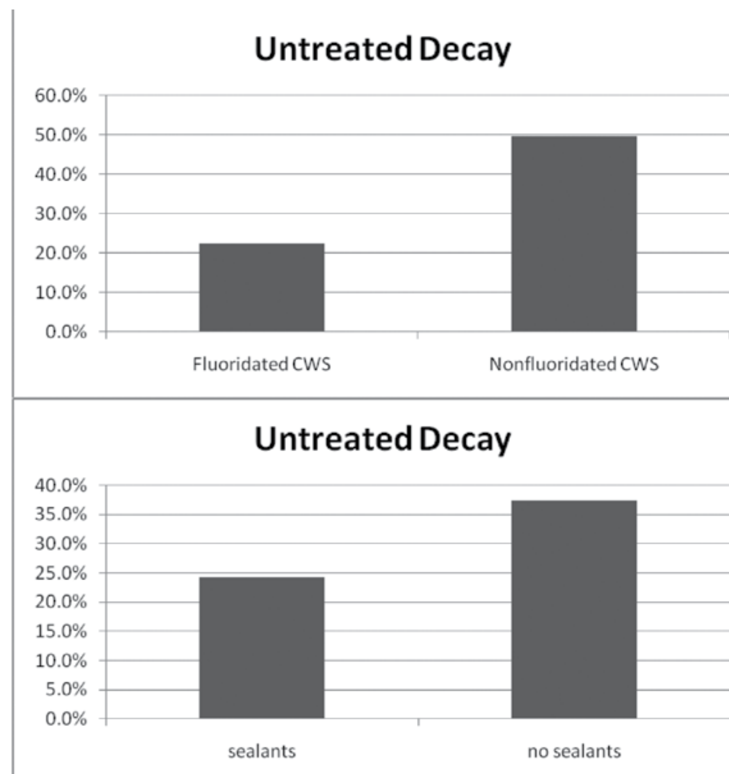
Two thirds of the children in the Upper Peninsula had caries experience and almost one third had untreated dental disease upon clinical examination, among the highest of the geographic regions in Michigan. The prevalence rate of untreated decay was higher among children attending school in communities with non-fluoridated community water supplies (36.4%) compared to children attending school in communities with fluoridated community water supplies (29.7%). Fortunately, only 4.1% of children had immediate dental care needs showing signs or symptoms of pain or swelling. Early dental care was needed by 23.8% of the population while 72.1% exhibited no obvious dental problem upon examination. Among participating children, 6.1% of parents reported their child had a toothache when chewing or biting in the past six months.

Upper Peninsula continued

Access to Oral Health Services

Within the past year, 90.9% of Upper Peninsula 3rd grade children had visited the dentist. Just 5.2% of parents encountered a barrier that prevented their child from obtaining dental care in the past year. Private dental insurance covered 51.6% of the population, public dental insurance covered 28.6%, and 10.2% were uninsured for dental services (the remainder didn't know, or reported combinations of coverage). Over one half, 51.7%, had sealants present on first molars. Figure 16 displays levels of untreated decay by community fluoridation status and presence of sealants in children. These preventive measures were associated with lower untreated disease.

Figure 15: Proportion of Upper Peninsula & Northern Lower Peninsula 3rd grade children with untreated dental decay by community water supply (CWS) fluoridation status and by presence of sealants, 2009-10



Northern Lower Peninsula

- Children in the Northern Lower Peninsula had the highest proportion of immediate dental treatment needs and the second highest proportion of children who experienced a toothache in the past 6 months among the regions of Michigan. Children in the Northern Lower Peninsula were also the least likely to have seen a dentist in the past year, despite having the second lowest percent of parents who reported experiencing difficulties in obtaining dental care for their children.
- The Northern Lower Peninsula had socioeconomic disparities in caries experience, untreated dental decay, and urgent dental needs.
- Programs focusing on education, access to care, and increased preventive measures, especially for children with lower socioeconomic status, could reduce the prevalence of severe dental problems in this region.

Children in the Northern Lower Peninsula had the highest rate of severe oral treatment needs and close to the highest reported toothaches among regions of Michigan. Socioeconomic differences in the Northern Lower Peninsula contributed to disparities in oral disease, as well as the lowest rates of dental visits in the past year. Expansion in community water fluoridation and increased use of sealants, along with education and efforts to increase access to dental care could provide important reductions in severe oral needs and unnecessary dental pain.

Table VI: Healthy People 2020 Oral Health indicators, target levels, and current status in Michigan and the Northern Lower Peninsula

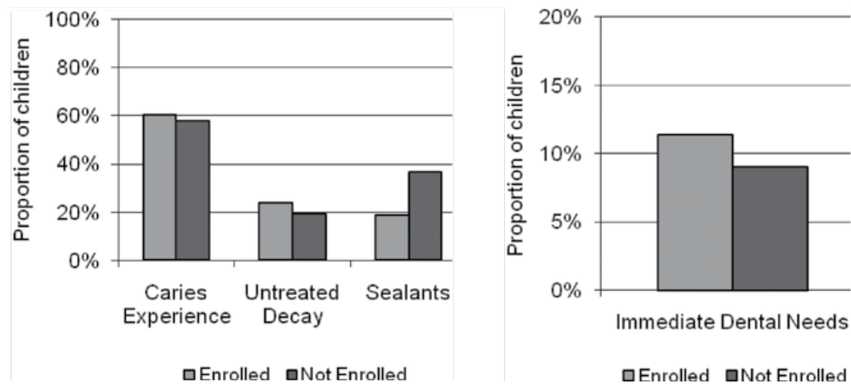
	Target	Michigan	Northern Lower Peninsula
Healthy People 2020 Objective	%	%	%
OH-1.2: Reduce the proportion of children aged 6 to 9 years with dental caries experience in their primary and permanent teeth	49.0%	55.9%	59.2%
OH-2.2: Reduce the proportion of children aged 6 to 9 years with untreated dental decay in their primary and permanent teeth	25.9%	27.1%	21.9%
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	28.1%	26.4%	27.2%

Northern Lower Peninsula continued

Oral Disease

Three out of every five children had experienced dental decay by the 3rd grade in the Northern Lower Peninsula, and over one in five had untreated dental disease. The proportions of caries experience, untreated dental disease, and immediate dental care needs were higher among children enrolled in the free and reduced lunch program. (Figure 16) Over one in ten children were in need of immediate dental care involving pain, infection, or swelling. Toothaches in children during the past six months were reported by 13.2% of Northern Lower Peninsula parents.

Figure 16: Proportion of Northern Lower Peninsula 3rd grade children with caries experience, untreated dental decay, sealants present on first molars and immediate dental needs by enrollment in the free and reduced lunch program, 2009-10



Access to Oral Health Services

In the past year, 73.9% of Northern Lower Peninsula 3rd grade children had visited the dentist, the lowest rate among Michigan regions. However, only 6.6% of children encountered barriers to receiving dental care, the second lowest percentage in the state. The low rates of dental access, along with low reporting of problems obtaining dental care might indicate a need for educational interventions to stress the importance of dental care for children and increase dental visits. Private insurance covered 46.3% of children in the Northern Lower Peninsula, 45.9% were covered by public insurance, and 12.8% lacked dental insurance altogether. Sealants were present on first molars in 27.2% of Northern Lower Peninsula 3rd grade children.

Southern lower peninsula - urban

- Urban 3rd grade children in the Southern Lower Peninsula had the highest prevalence of reported toothaches and were high in immediate dental needs, while having the lowest rates of sealants, and highest reported problems obtaining dental care.
- Racial and ethnic disparities contributed substantially to dental disease, with Hispanic and African American children experiencing most forms of dental disease at higher rates when compared to Whites.
- Racial and ethnic disparities were also present in measures of dental access. Whites had higher rates of annual dental utilization than Native Americans or African Americans. However, a higher proportion of Native American and African American children had sealant compared to Hispanics or Whites.

Third grade children in the urban Southern Lower Peninsula had the highest prevalence of reported toothaches and were among the highest for immediate and early dental needs. There were racial and ethnic disparities in both dental disease and dental access in this region. Hispanics in this region had the lowest rates of sealants as well as the lowest rates of access to dental care.

Table VII: Healthy People 2020 Oral Health indicators, target levels, and current status in Michigan and the urban Southern Lower Peninsula

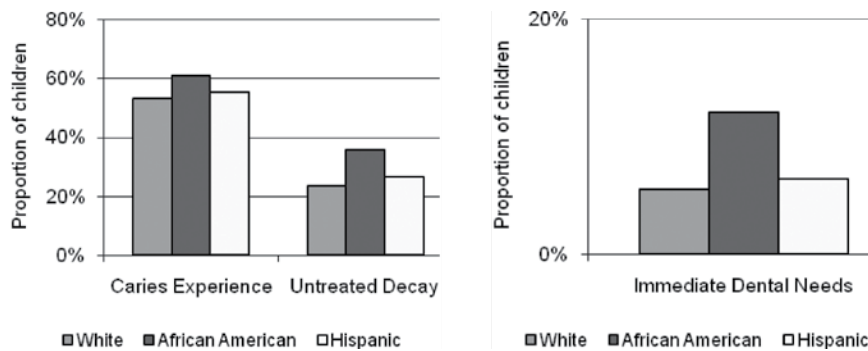
Healthy People 2020 Objective	Target %	Michigan %	Southern Lower Peninsula - Urban %
OH-1.2: Reduce the proportion of children aged 6 to 9 years with dental caries experience in their primary and permanent teeth	49.0%	55.9%	54.9%
OH-2.2: Reduce the proportion of children aged 6 to 9 years with untreated dental decay in their primary and permanent teeth	25.9%	27.1%	25.8%
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	28.1%	26.4%	22.0%

Oral Disease

Caries experience and untreated dental disease were widely present in urban Southern Lower Peninsula 3rd grade children (54.9% and 25.8% respectively). The urban Southern Lower Peninsula had the highest prevalence for reported toothaches in the previous six months at 13.4% of children. There were racial and ethnic disparities in dental disease, with all caries experience and untreated dental disease occurring more often in minorities. (Figure 17)

Southern Lower Peninsula - Urban continued

Figure 17: Proportion of urban Southern Lower Peninsula 3rd grade children with caries experience, untreated dental decay and immediate dental needs by race/ethnicity, 2009-10



Access to Oral Health Services

Among participating children, 84.2% in the urban Southern Lower Peninsula visited the dentist in the past year. However, racial and ethnic disparities existed for annual dental utilization. (Figure 18)

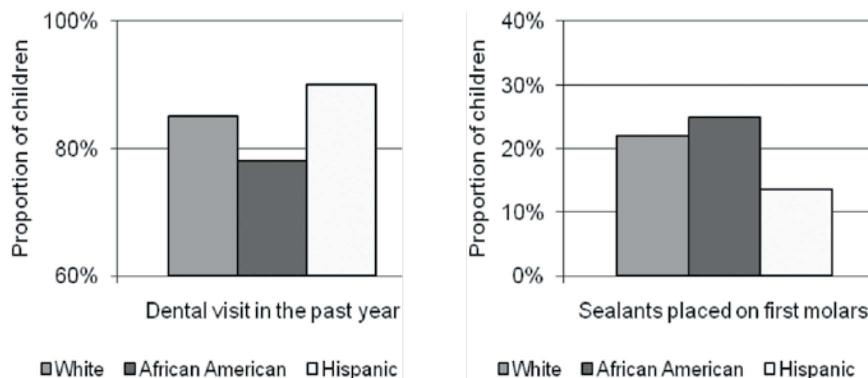
Barriers to accessing dental care were reported by 10.0% of parents in this region,and included:

- lack of insurance
- failure to find a dentist that accepted their insurance
- difficulty getting an appointment
- affordability of dental care.

Private insurance covered 52.6% of children while 37.4% of children had public insurance and 11.0% had no dental insurance.

Although sealants were present on first molars in 22.0% of children, the proportion was lower in Hispanics.

Figure 18: Proportion of urban Southern Lower Peninsula 3rd grade children with a dental visit in the past year and with sealants present on permanent first molars, by race/ethnicity, 2009-10



Southern Lower Peninsula - Rural

- Children in the rural Southern Lower Peninsula were least likely to have sealants present when compared to all other regions in Michigan.
- Children in the rural Southern Lower Peninsula had the second highest rates of caries experience and untreated decay.
- Socioeconomic differences in this population contribute to disparate dental disease and dental utilization in this region.

Among rural Southern Lower Peninsula children, over 10% lacked dental insurance. These children had the lowest prevalence of sealants compared to all other geographic regions in the state, while ranking second highest in caries experience and untreated dental caries. In addition, dental care access issues contribute to substantial disparities in untreated dental disease and immediate dental needs.

Table VIII: Healthy People 2020 Oral Health indicators, target levels, and current status in Michigan and the rural Southern Lower Peninsula

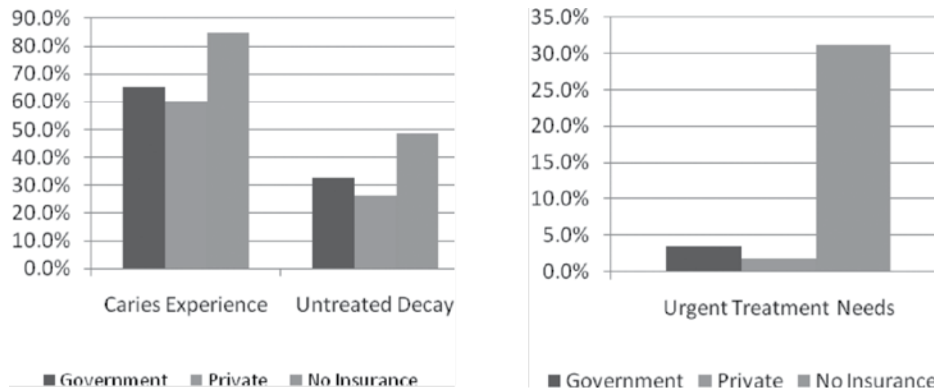
	Target	Michigan	Southern Lower Peninsula - Rural
Healthy People 2020 Objective	%	%	%
OH-1.2: Reduce the proportion of children aged 6 to 9 years with dental caries experience in their primary and permanent teeth	49.0%	55.9%	63.3%
OH-2.2: Reduce the proportion of children aged 6 to 9 years with untreated dental decay in their primary and permanent teeth	25.9%	27.1%	31.0%
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	28.1%	26.4%	22.2%

Oral Disease

Among rural Southern Lower Peninsula 3rd grade children, 63.3% had caries experience and 31.0% had untreated dental disease. Immediate needs for dental care were observed for 5.9% of children while 22.3% were in need of early dental care. Children with no dental insurance had a higher prevalence of caries experience, untreated dental decay, and immediate dental needs than children who had dental insurance. (Figure 19). Experience of a toothache in the past six months when biting or chewing was reported by parents of 5.6% of 3rd grade children.

Southern Lower Peninsula - Rural continued

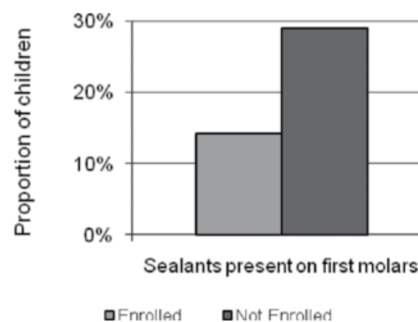
Figure 19: Proportion of rural Southern Lower Peninsula 3rd grade children with caries experience, untreated dental disease and urgent dental needs by dental insurance status, 2009-10



Access to Oral Health Services

Annual dental visits were reported for 85.8% of 3rd grade children in the rural Southern Lower Peninsula. Problems obtaining dental care were reported for 8.8% of children. Of those reporting a problem getting dental care, lacking dental insurance and not being able to afford dental care were the most commonly cited reasons. Private insurance covered 51.6% of 3rd grade children, public insurance covered 29.8%, and 10.1% were uninsured for dental services. Sealants were present on first molars in just 22.2% of children. A lower percent of children in free and reduced lunch programs had sealants present compared to those who were not enrolled. (Figure 20)

Figure 20: Proportion of rural Southern Lower Peninsula 3rd grade children with sealants present on first molars by enrollment in the free and reduced lunch program, 2009-10



Macomb county

- Macomb County 3rd grade children met the Healthy People 2020 objective for untreated decay, but fall just short of meeting the Healthy People 2020 objective for caries experience.
- Socioeconomic disparity does not appear to be a significant problem for dental disease among 3rd grade children in Macomb County.

Macomb County 3rd grade children had untreated caries levels below the Healthy People 2020 target goal, but did not meet the HP2020 goals for caries experience and sealants. Of children in free and reduced lunch programs, 23.0% had untreated decay compared to 21.2% of children not enrolled in this program. Over half of Macomb County children had private dental insurance, while 11.9% lacked any dental insurance coverage.

Table IX: Healthy People 2020 Oral Health indicators, target levels, and current status in Michigan and Macomb County

	Target	Michigan	Macomb County
Healthy People 2020 Objective	%	%	%
OH-1.2: Reduce the proportion of children aged 6 to 9 years with dental caries experience in their primary and permanent teeth	49.0%	55.9%	51.9%
OH-2.2: Reduce the proportion of children aged 6 to 9 years with untreated dental decay in their primary and permanent teeth	25.9%	27.1%	21.9%
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	28.1%	26.4%	26.7%

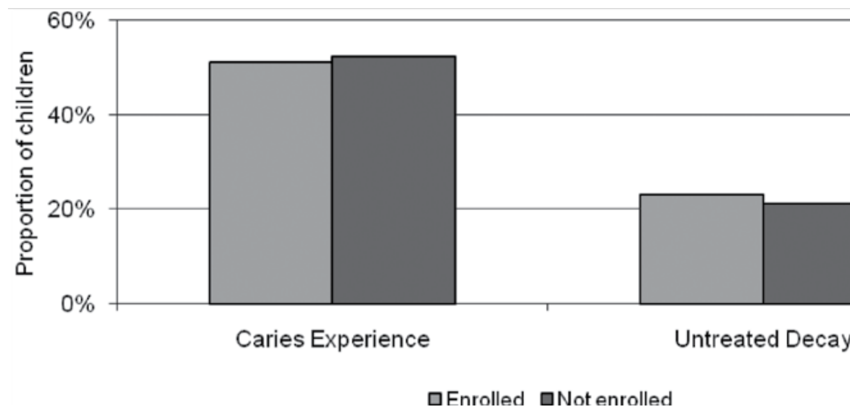
Oral Disease

Macomb County 3rd grade children had the lowest percent of caries experience and untreated dental disease of Michigan regions. The caries experience prevalence of 51.9% was slightly higher than the Healthy People 2020 target of 49.0%. Untreated dental disease was present in 21.9% of Macomb County 3rd grade children, lower than the Healthy People 2020 target of 25.9%. Children in free and reduced lunch programs had slightly less caries experience, but a greater degree of untreated dental decay. (Figure 21).

Less than half (42.1%) of Macomb County children had no obvious dental problems at the time of examination. Urgent dental needs were seen in only 2.6% of children, while 55.3% were in need of early dental care, the highest percent for this category in the state. Parents reported a toothache in the past six months when chewing or biting for 11.8% of Macomb County children.

Macomb County continued

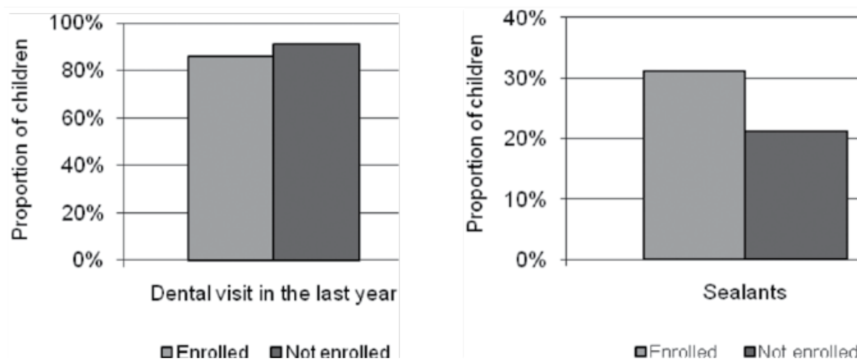
Figure 21: Proportion of Macomb County 3rd grade children with caries experience and untreated dental decay, by enrollment in the free and reduced lunch program, 2009-10



Access to Oral Health Services

Within the past year, 89.3% of Macomb County 3rd grade children had visited the dentist. Meanwhile, 9.1% of parents reported a barrier to their child receiving needed dental care. Among parents who reported a problem, the most common reasons cited were lack of dental insurance, inability to afford care, and difficulties with dentists accepting insurance/Medicaid or making appointments. Over half (52.8%) were covered by private dental insurance, 32.5% by public insurance, and 11.9% were uninsured for dental services. Sealants were present on first molars in 26.7% of Macomb County children. Access was slightly lower for children enrolled in the free and reduced lunch program while sealants were higher. (Figure 22).

Figure 22: Proportion of Macomb County 3rd grade children with a dental visit in the past year and with sealants present on first molars, by enrollment in the free and reduced lunch program, 2009-10



Oakland county

- The Healthy People 2020 Objective for caries experience has not been met for Oakland County 3rd grade children. However, the objective for untreated decay has been exceeded in these children. Oakland County 3rd grade children have almost met the objective for sealants.
- There are substantial racial and socioeconomic disparities in untreated dental in Oakland County. Likewise, there are racial and socioeconomic disparities in measures of access such as annual dental visits, difficulty obtaining care, and resence of sealants.

Oakland County 3rd grade children performed well on Healthy People 2010 measures of untreated decay and sealants. However, they fell short of the Healthy People 2020 measure on caries experience. Children in free and reduced lunch programs had more dental disease and less dental care access than children not enrolled in the free and reduced lunch program.

Table X: Healthy People 2020 Oral Health indicators, target levels, and current status in Michigan and Oakland County

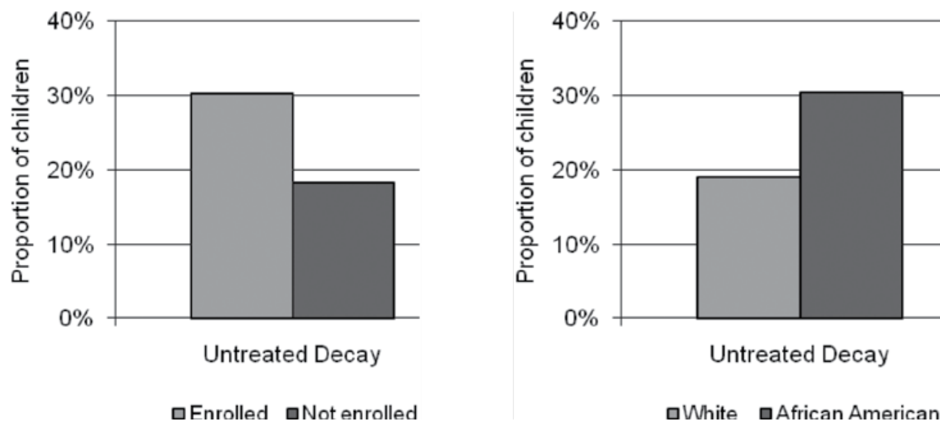
	Target	Michigan	Oakland County
Healthy People 2020 Objective	%	%	%
OH-1.2: Reduce the proportion of children aged 6 to 9 years with dental caries experience in their primary and permanent teeth	49.0%	55.9%	58.5%
OH-2.2: Reduce the proportion of children aged 6 to 9 years with untreated dental decay in their primary and permanent teeth	25.9%	27.1%	23.1%
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	28.1%	26.4%	28.0%

Oral Disease

Oakland County fell short of meeting Healthy People 2020 objectives for caries experience. However, Oakland County had a low level of untreated dental decay, 23.1%, which exceeded the Healthy People 2010 target. Oakland County also had a relatively low percent of children in immediate need of dental care, 4.4%, and the lowest percent in need of early dental care, 18.8%. There were substantial racial and socioeconomic differences in most measures of dental disease in Oakland County. African American children and children in free and reduced lunch programs had higher rates of untreated dental disease than other children. (Figure 23). Parents of 6.9% of children reported that their child had a toothache in the past six months when biting or chewing.

Oakland County continued

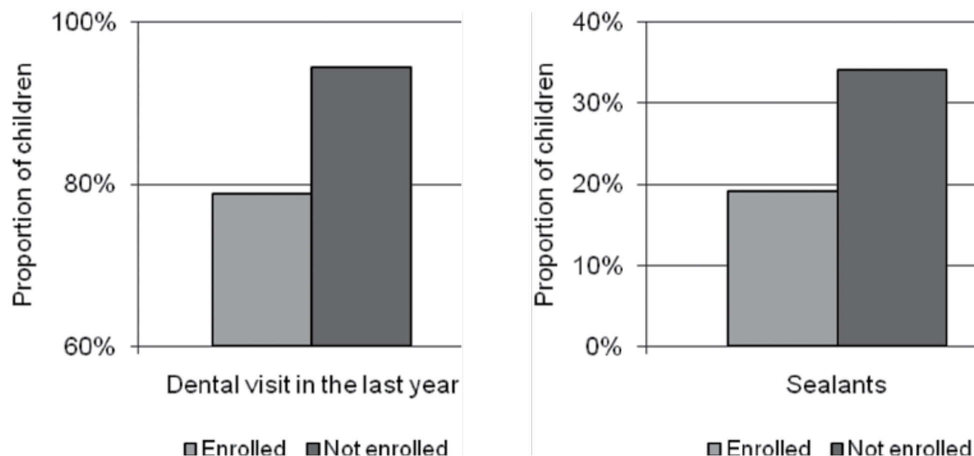
Figure 23: Proportion of Oakland County 3rd grade children with untreated dental decay by enrollment in the free and reduced lunch program and race/ethnicity, 2009-10



Access to Oral Health Services

Among Oakland County children, 88.4% visited the dentist in the past year. Problems obtaining dental care for their child in the past year were reported by 9.0% of parents. Among parents who reported a problem, most reported a lack of insurance and/or could not afford dental care. Nearly two in three children, 58.2%, were covered by private insurance while 26.3% were covered through public insurance and 12.4% were uninsured for dental care. Sealants were present on first molars in 28.0% of Oakland County 3rd grade children. Children in free and reduced lunch programs had fewer dental visits in the past year and lower rates of sealants present on first molars. (Figure 24)

Figure 24: Proportion of Oakland County 3rd grade children with a dental visit in the past year and sealants present on first molars, by enrollment in the free and reduced lunch program, 2009-10



Wayne County

- Wayne County 3rd grade children fell short of meeting Healthy People 2010 objectives for caries experience, untreated dental decay, and sealants, and had the highest proportion of untreated caries.
- There were substantial socioeconomic disparities in both dental disease and dental access among Wayne County 3rd grade children.
- One in nine Wayne County 3rd grade children lacked dental insurance. Lack of insurance was the primary reason cited for not getting needed dental care.

Wayne County 3rd grade children had higher rates of caries experience and untreated dental decay compared to Michigan 3rd grade children as a whole. The percent of children with sealants, however, was slightly higher in Wayne County children than in all Michigan children. Children in free and reduced lunch programs had substantially higher proportions of caries experience and untreated decay in addition to less access to dental care.

Table X: Healthy People 2020 Oral Health indicators, target levels, and current status in Michigan and Wayne County

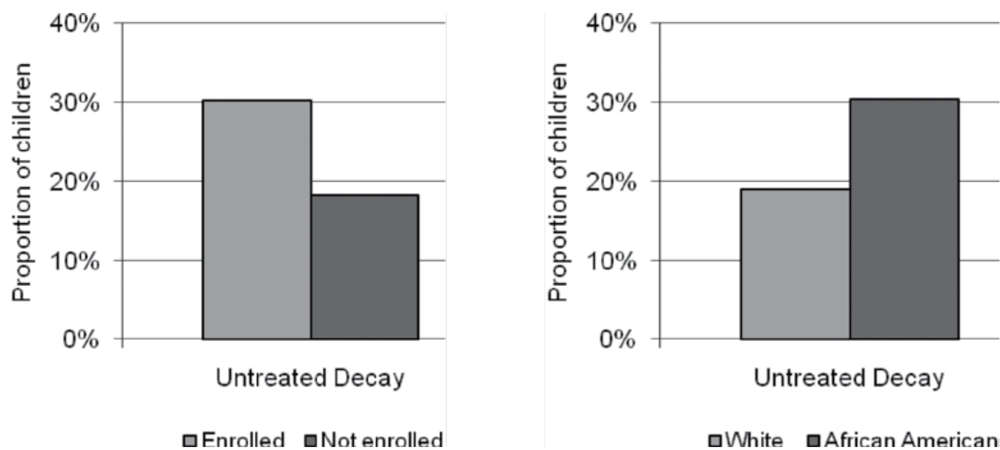
	Target	Michigan	Wayne County
Healthy People 2020 Objective	%	%	%
OH-1.2: Reduce the proportion of children aged 6 to 9 years with dental caries experience in their primary and permanent teeth	49.0%	55.9%	52.9%
OH-2.2: Reduce the proportion of children aged 6 to 9 years with untreated dental decay in their primary and permanent teeth	25.9%	27.1%	33.8%
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	28.1%	26.4%	32.0%

Oral Disease

Caries experience was present in 52.9% of Wayne County 3rd grade children, and untreated dental disease was present in 33.8%, the highest percent in the state. There were substantial disparities in both caries experience and untreated dental disease between children enrolled in free and reduced lunch programs and children who were not enrolled. (Figure 25). About two thirds of Wayne County children, 65.0%, had no immediate dental needs, but 25.0% were in need of early care and 10.0% had urgent dental needs. Parents reported a toothache in the past six months when chewing or biting for 11.7% of Wayne County children.

Wayne County continued

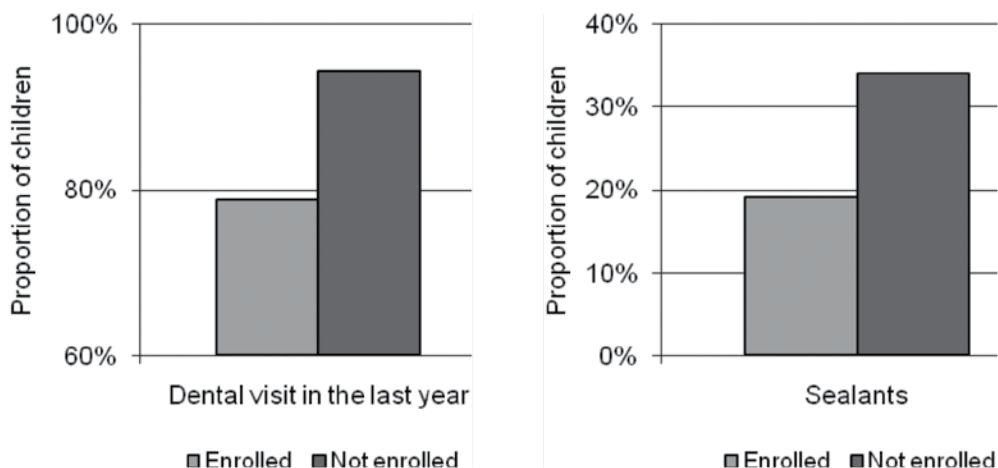
Figure 25: Proportion of Wayne County 3rd grade children with caries experience and untreated dental decay by enrollment in the free and reduced lunch program, 2009-10



Access to Oral Health Services

Among Wayne County 3rd grade children, 80.0% had visited a dentist in the past year according to parents. However, 8.7% reported a barrier to obtaining needed dental care for their child. For those who reported a barrier, reasons cited were lack of insurance, could not afford care, transportation problems, and difficulties making an appointment or finding a dentist taking insurance/Medicaid. Public insurance covered dental services for 53.7% of Wayne County children, 35.2% of children were covered by private insurance, and 10.9% of children lacked dental insurance altogether. Sealants were present for 32.0% of Wayne County 3rd grade children. Children in free and reduced lunch programs had lower rates of annual dental visits, but nearly equal rates of sealants. (Figure 26).

Figure 26: Proportion of Wayne County 3rd grade children with a dental visit in the past year and sealants present on first molars by enrollment in the free and reduced lunch program, 2009-10



Conclusion

Dental disease in Michigan children is a significant yet preventable problem. As a result of this survey, populations with an elevated proportion of dental disease have been identified. Programs and policies targeting the specific needs of these populations may now be developed to reduce their burden of disease.

Access to needed dental services is limited by insurance, affordability, and availability. Disparate access to services corresponded to a disparate burden of oral disease in Michigan children. Improved access to needed dental care can reduce the burden of the associated pain of living with untreated dental disease.

Expanding fluoridation of water systems and increased use of sealants could benefit children all across Michigan. Michigan is among one of a small number of states that lacks a statewide sealant program, perhaps the primary reason for Michigan's low ranking among states for children having a sealant placed on first molars.

Statewide, access to dental care appears positive, yet there are still pockets of the population who do not have access to needed services. These results suggest that many opportunities exist to reduce dental disease in children all across Michigan.

For more information about this document or other oral health information, contact the Michigan Department of Community Health, Oral Health Program at 517-335-8879, or visit the State of Michigan's Oral Health Website at http://www.michigan.gov/oralhealth.

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Appendix

Table A1: Proportion of Michigan 3rd Grade Children with Caries experience, 2009-10 – Count Your Smiles

	Primary Caries Experience		Permanent Caries Experience		Primary or Permanent Caries Experience	
	N	**% (SE)**	**N**	**% (SE)**	**N**	**% (SE)**
Michigan (All Children)	1032	51.3 (1.6)	384	19.1 (1.8)	1117	55.9 (1.8)
Upper Peninsula	104	62.9 (5.9)	30	20.0 (4.0)	107	66.0 (4.3)
Norther Lower Peninsula	131	56.1 (3.0)	55	19.9 (4.6)	140	59.2 (3.5)
City of Detroit	29	45.6 (5.8)	15	24.9 (9.4)	33	51.7 (6.7)
Suburban Detroit	309	51.5 (3.0)	107	17.4 (2.9)	330	54.9 (3.4)
Southern Lower Peninsula	459	50.9 (2.3)	177	19.2 (2.5)	507	56.3 (2.5)
By Age						
Less than 9 years	674	51.2 (2.1)	235	17.7 (2.0)	728	55.2 (2.3)
9 years or older	331	53.1 (3.3)	141	23.5 (2.9)	360	59.1 (3.4)
By Gender						
Male	498	51.5 (2.2)	186	18.7 (2.1)	537	56.8 (2.2)
Female	529	50.7 (1.9)	193	19.3 (1.9)	565	54.6 (2.0)
By Race/Ethnicity*						
White**	697	50.9 (2.2)	254	18.3 (2.0)	758	55.4 (2.2)
African American	151	51.3 (3.3)	62	20.7 (4.0)	163	55.2 (3.7)
Hispanic	57	57.0 (4.5)	23	21.7 (4.5)	58	59.1 (4.5)
Native American	22	46.6 (12.3)	6	9.7 (4.6)	24	50.4 (12.5)
Asian American	16	36.1 (8.8)	7	27.9 (12.2)	20	55.7 (11.2)
Arab American	15	67.4 (9.1)	4	14.6 (3.2)	16	70.8 (9.3)
By Dental Insurance						
Private	426	45.5 (2.5)	142	15.7 (2.0)	470	51.0 (2.8)
Public	383	57.0 (1.9)	163	24.3 (3.0)	409	61.1 (2.2)
No Insurance	119	53.1 (4.1)	38	13.1 (3.0)	129	56.1 (4.0)
By Free/Reduced Lunch						
Enrolled	561	57.0 (1.7)	214	21.6 (2.7)	600	60.7 (2.2)
Not Enrolled	471	45.4 (2.3)	170	16.4 (1.8)	517	50.8 (2.6)
Language Spoken at Home						
English	875	51.0 (1.7)	309	18.4 (1.9)	929	55.3 (2.0)
Other	121	52.3 (4.0)	54	23.2 (4.1)	133	59.2 (4.3)
All proportion estimates include standard errors, N=number of positive respondents						

Appendix continued

Table A2: Proportion of Michigan 3rd Grade Children with Untreated Dental Decay, 2009-10 – Count Your Smile

	Untreated Primary Decay		Untreated Permanent Decay		Untreated Primary or Permanent Care	
	N	**% (SE)**	**N**	**% (SE)**	**N**	**% (SE)**
Michigan (All Children)	457	23.6 (1.9)	169	9.6 (1.1)	520	27.1 (1.8)
Upper Peninsula	45	27.9 (2.3)	10	7.8 (3.5)	47	30.6 (3.8)
Norther Lower Peninsula	56	20.7 (4.4)	17	5.8 (2.0)	59	21.9 (4.7)
City of Detroit	21	35.8 (8.2)	9	18.9 (8.6)	25	41.9 (6.8)
Suburban Detroit	121	21.5 (2.7)	52	8.8 (1.70	143	25.1 (2.9)
Southern Lower Peninsula	214	23.2 (3.0)	81	9.3 (1.9)	246	26.7 (2.9)
By Age						
Less than 9 years	297	22.9 (2.2)	118	9.9 (1.50	342	26.6 (2.2)
9 years or older	146	26.2 (3.7)	47	9.5 (2.1)	161	29.5 (3.7)
By Gender						
Male	217	23.9 (2.0)	80	9.8 (1.7)	251	28.2 (2.0)
Female	236	23.4 (2.3)	89	9.6 (1.4)	265	26.4 (2.3)
By Race/Ethnicity*						
White**	298	21.5 (2.3)	101	8.4 (1.3)	338	24.9 (2.3)
African American	83	30.3 (3.9)	35	13.4 (3.5)	95	34.2 (3.6)
Hispanic	25	25.9 (6.3)	12	9.1 (2.9)	28	27.9 (5.9)
Native American	13	17.1 (6.0)	3	5.0 (3.6)	14	20.4 (7.0)
Asian American	5	11.4 (6.1)	2	6.4 (4.8)	6	13.5 (6.0)
Arab American	4	20.3 (15.2)	3	11.1 (4.8)	6	28.4 (15.8)
By Dental Insurance						
Private	157	17.0 (2.0)	55	7.0 (1.2)	185	20.8 (2.1)
Public	198	31.7 (2.6)	80	13.7 (2.4)	225	35.7 (2.4)
No Insurance	60	25.1 (3.6)	19	8.1 (2.3)	65	27.1 (3.5)
By Free/Reduced Lunch						
Enrolled	288	31.2 (2.4)	102	11.6 (2.0)	321	34.5 (2.3)
Not Enrolled	169	15.6 (1.9)	67	7.5 (1.2)	199	19.4 (1.9)
Language Spoken at Home						
English	377	23.3 (1.8)	129	9.3 (1.3)	426	26.7 (1.8)
Other	57	25.9 (4.6)	30	11.8 (3.0)	69	30.4 (4.7)
All proportion estimates include standard errors, N=number of positive respondents						

Appendix continued

Table A3: Urgency of dental treatment needs in Michigan 3rd grade children, 2009-10 – Count Your Smiles

	No Obvious Problem		**Early Dental Care Neded**		**Immediate Dental Care Needed**	
	N	**% (SE)**	**N**	**% (SE)**	**N**	**% (SE)**
Michigan (All Children)	1281	64.9 (3.0)	563	28.1 (2.9)	133	7.0 (1.1)
Upper Peninsula	117	72.1 (3.7)	41	23.8 (2.7)	5	4.1 (1.5)
Norther Lower Peninsula	122	63.5 (11.3)	67	26.3 (9.5)	28	10.3 (3.6)
City of Detroit	44	56.6 (6.3)	16	26.6 (5.5)	11	16.8 (5.4)
Suburban Detroit	401	64.9 (5.3)	198	30.6 (5.2)	23	4.5 (1.7)
Southern Lower Peninsula	597	66.0 (4.6)	241	27.1 (4.4)	66	6.9 (1.5)
By Age						
Less than 9 years	854	64.8 (3.5)	392	28.9 (3.3)	81	6.3 (1.1)
9 years or older	400	63.4 (4.2)	156	27.4 (3.2)	48	9.2 (2.2)
By Gender						
Male	612	65.5 (3.3)	247	27.3 (2.9)	66	7.2 (1.4)
Female	657	64.1 (3.3)	311	28.9 (3.4)	67	6.9 (1.3)
By Race/Ethnicity*						
White**	885	65.5 (3.9)	387	29.6 (3.7)	70	4.9 (1.1)
African American	197	63.7 (3.4)	79	25.1 (3.1)	28	11.2 (2.9)
Hispanic	68	66.3 (8.0)	23	22.9 (5.5)	13	10.9 (5.1)
Native American	25	70.7 (9.4)	16	23.9 (8.8)	2	5.4 (4.5)
Asian American	24	67.5 (11.0)	12	24.3 (9.9)	3	8.2 (5.3)
By Dental Insurance						
Private	672	70.3 (4.0)	246	26.1 (3.9)	28	3.6 (0.9)
Public	396	59.0 (3.0)	199	30.7 (3.0)	64	10.3 (1.9)
No Insurance	117	60.0 (5.1)	72	30.0 (4.5)	21	9.9 (2.9)
By Free/Reduced Lunch						
Enrolled	567	59.3 (3.0)	296	31.0 (2.6)	90	9.8 (1.7)
Not Enrolled	714	70.8 (3.9)	2677	25.1 (3.9)	43	4.1 (1.1)
Language Spoken at Home						
English	1105	65.5 (3.0)	462	27.9 (2.9)	98	6.6 (1.1)
Other	134	60.6 (6.6)	76	30.5 (5.6)	20	8.9 (3.3)
All proportion estimates include standard errors, N=number of positive respondents						

Appendix continued

Table A4: Proportion of Michigan 3rd grade children who had a toothache when biting or chewing in the past six months, 2009-10 – Count Your Smiles

	Proportion with a toothache when biting or chewing, past 6 months	
	N	**% (SE)**
Michigan (All Children)	1968	11.2 (1.0)
Upper Peninsula	10	6.1 (1.3)
Norther Lower Peninsula	22	13.2 (4.3)
City of Detroit	13	18.3 (5.6)
Suburban Detroit	62	8.7 (1.3)
Southern Lower Peninsula	94	12.1 (1.5)
By Age		
Less than 9 years	133	10.8 (1.6)
9 years or older	59	13.2 (2.5)
By Gender		
Male	86	10.2
Female	108	12.4 (1.4)
By Race/Ethnicity*		
White**	124	9.3 (1.1)
African American	43	15.5 (3.3)
Hispanic	13	14.1 (4.4)
Native American	4	7.5 (3.7)
Asian American	4	9.6 (4.3)
Arab American	8	34.9 (9.0)
By Dental Insurance		
Private	69	7.1 (1.1)
Public	90	15.0 (1.9)
No Insurance	30	13.0 (2.6)
By Free/Reduced Lunch		
Enrolled	136	15.3 (1.8)
Not Enrolled	65	7.0 (1.2)
Language Spoken at Home		
English	165	10.5 (1.1)
Other	35	16.0 (3.0)
All proportion estimates include standard errors, N=number of positive respondents		

Appendix continued

Table A5: Time since last dental visit for Michigan 3rd grade children, 2009-10 – Count Your Smiles

	Less than 1 year		More than 1 year, less than 3 years		More than 3 years or never	
	N	**% (SE)**	**N**	**% (SE)**	**N**	**% (SE)**
Michigan (All Children)	1654	84.0 (1.1)	217	11.3 (1.0)	83	4.6 (0.6)
Upper Peninsula	142	90.9 (2.2)	13	7.2 (1.5)	3	1.9 (1.4)
Norther Lower Peninsula	141	73.9 (5.1)	42	21.2 (5.9)	4	4.9 (3.9)
City of Detroit	45	81.0 (8.5)	11	9.4 (6.5)	7	9.6 (4.7)
Suburban Detroit	563	85.2 (1.6)	55	9.5 (1.4)	30	5.3 (1.0)
Southern Lower Peninsula	763	84.4 (1.5)	96	12.0 (1.3)	39	3.5 (0.6)
By Age						
Less than 9 years	1110	84.3 (1.1)	132	11.3 (1.0)	55	4.4 (0.7)
9 years or older	463	83.6 (2.3)	76	11.7 (2.0)	23	4.8 (1.0)
By Gender						
Male	742	82.3 (1.7)	103	12.0 (1.3)	46	5.7 (1.0)
Female	845	84.8 (1.6)	112	11.4 (1.4)	34	3.8 (1.0)
By Race/Ethnicity*						
White**	1200	86.1 (1.1)	143	10.3 (0.9)	50	3.6 (0.7)
African American	243	82.2 (3.0)	40	11.8 (2.5)	18	6.0 (1.8)
Hispanic	83	76.7 (4.9)	13	13.7 (3.8)	8	9.6 (2.4)
Native American	34	69.3 (15.1)	7	26.7 (15.5)	1	4.1 (4.0)
Asian American	32	82.5 (6.2)	5	11.4 (4.7)	2	6.1 (4.5)
By Dental Insurance						
Private	922	92.0 (1.1)	54	6.0 (1.0)	20	2.0 (0.5)
Public	505	77.3 (2.1)	109	15.8 (2.0)	41	6.9 (1.1)
No Insurance	149	71.2 (3.8)	42	19.2 (3.2)	21	9.5 (2.3)
By Free/Reduced Lunch						
Enrolled	738	77.8 (1.9)	150	15.1 (1.6)	62	7.0 (0.9)
Not Enrolled	916	90.4 (1.1)	67	7.4 (1.1)	21	2.2 (0.6)
Language Spoken at Home						
English	1456	84.4 (1.2)	192	11.6 (1.1)	63	4.1 (0.7)
Other	186	81.1 (2.9)	24	9.9 (2.1)	20	9.0 (1.9)

All proportion estimates include standard errors, N=number of positive respondents

Appendix continued

Table A6: Proportion of Michigan 3rd grade children who experienced difficulty in obtaining dental care in the past year, 2009-10 – Count Your Smiles

	Proportion who experienced difficulty obtaining dental care	
	N	**% (SE)**
Michigan (All Children)	183	9.1 (1.0)
Upper Peninsula	8	5.2 (1.3)
Norther Lower Peninsula	16	6.6 (2.0)
City of Detroit	5	5.3 (2.6)
Suburban Detroit	60	9.6 (1.9)
Southern Lower Peninsula	94	9.8 (1.4)
By Age		
Less than 9 years	114	8.2 (1.0)
9 years or older	58	11.0 (1.8)
By Gender		
Male	83	9.9 (1.2)
Female	93	8.4 (1.2)
By Race/Ethnicity*		
White**	123	9.3 (1.2)
African American	32	8.6 (2.2)
Hispanic	18	17.3 (4.3)
Native American	4	3.0 (1.7)
Asian American	1	16.1 (1.7)
Arab American	2	14.1 (9.2)
By Dental Insurance		
Private	34	3.4 (0.6)
Public	83	12.1 (1.7)
No Insurance	52	23.3 (3.9)
By Free/Reduced Lunch		
Enrolled	132	12.7 (1.5)
Not Enrolled	51	5.3 (1.0)
Language Spoken at Home		
English	153	8.7 (1.0)
Other	29	13.2 (2.8)
All proportion estimates include standard errors, N=number of positive respondents		

Appendix continued

Table A7: Proportion of Michigan 3rd grade children with sealants present on permanent first molars, 2009-10 – Count Your Smiles

	Proportion with sealants present on first molars	
	N	**% (SE)**
Michigan (All Children)	544	26.4 (2.2)
Upper Peninsula	80	51.7 (6.8)
Norther Lower Peninsula	71	27.2 (6.4)
City of Detroit	10	31.7 (12.5)
Suburban Detroit	178	29.3 (3.9)
Southern Lower Peninsula	205	22.0 (2.6)
By Age		
Less than 9 years	356	24.8 (2.2)
9 years or older	173	30.0 (3.8)
By Gender		
Male	241	23.7 (2.2)
Female	296	28.4 (2.6)
By Race/Ethnicity*		
White**	392	27.0 (2.1)
African American	67	28.0 (5.1)
Hispanic	22	17.0 (5.2)
Native American	14	32.5 (10.6)
Asian American	11	21.3 (5.9)
Arab American	2	7.8 (2.1)
By Dental Insurance		
Private	282	27.5 (2.4)
Public	164	26.5 (3.9)
No Insurance	49	22.6 (3.6)
By Free/Reduced Lunch		
Enrolled	225	23.9 (3.2)
Not Enrolled	319	29.1 (2.4)
Language Spoken at Home		
English	479	28.0 (2.3)
Other	39	15.4 (3.5)
All proportion estimates include standard errors, N=number of positive respondents		

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