

Count Your Smiles



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*Michigan Department
of Community Health*



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Table of Contents

Executive Summary	1
Introduction	3
Methods	4
Selection of Schools	4
Recruitment of Participants	4
Survey of Parents	5
Oral Screening of Children	5
Analysis	6
Population Demographics & Response Rates	7
Caries Experience	8
Untreated Dental Disease	10
Urgency of Needed Dental Care	12
Toothache When Biting or Chewing	15
Dental Visit in the Past Year	17
Problem Obtaining Dental Care in Past Year	19
Sealants Present on First Molars	20
Upper Peninsula	22
Northern Lower Peninsula	24
Southern Lower Peninsula—Urban	26
Southern Lower Peninsula—Rural	28
Macomb County	30
Oakland County	32
Wayne County	34
Conclusion	36
References	37
Appendix	38

Executive Summary

This summary is intended to highlight important findings on dental disease and dental access for children in Michigan. This summary also addresses important regional concerns for oral health. Additional survey information is available in the full text of the *Count Your Smiles* report. For additional information about participant recruitment, an informational manual is available at <http://www.michigan.gov/oralhealth>.

Oral Disease

- Nearly one in 10 third grade children in Michigan (9.6%) 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 were most likely to have immediate dental needs.
- Oral pain can impact a child's learning, nutrition, and sleeping. Over one in eight parents of third grade children in Michigan (13.0%) reported their child had a toothache when biting or chewing in the past six months. Toothaches were more common among children attending schools in the city of Detroit and among children who had difficulty obtaining dental care in the past year.
- One in four Michigan third grade children (25.0%) has untreated dental disease. Hispanic and African American schoolchildren had higher rates of untreated dental disease. Lower socioeconomic status and lack of dental insurance were also associated with untreated dental disease.
- Michigan third grade children who attended schools in optimally fluoridated communities had significantly fewer teeth affected by caries (cavities) than children who attended schools in communities that lack optimally fluoridated community water supplies.

Access to Oral Health Services

- Lack of dental insurance is a significant barrier to obtaining dental care for children. Nearly one in six third grade children (15.1%) lack dental insurance—twice the number of Michigan children who lack medical insurance. Uninsured children had significantly more dental disease and substantially less access to dental services.
- Roughly one in nine Michigan third grade children (11.2%) 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. Cost and a lack of dental insurance were the two most frequently cited reasons for failure to obtain dental care.

- A substantial number of children visit the dentist every year, with 84.4% of parents reporting that their child had visited the dentist in the past year. A lack of dental insurance was strongly associated with failing to visit the dentist, particularly among Hispanics.
- Sealants are protective coatings placed on the grooved surfaces of teeth to prevent dental disease. Despite the high rate of dental service utilization, only 23.3% of third grade children in Michigan had sealants present on first molar teeth, far below the *Healthy People 2010* goal of 50%. Hispanic children were much less likely to have sealants present (14.6%).

Regional Information

- Upper Peninsula and Northern Lower Peninsula children had the highest rates of caries experience and untreated decay. Expansion of community water fluoridation could significantly reduce the number of teeth that have been affected by caries in the region.
- The rural Southern Lower Peninsula had the lowest rates of sealant placement and the highest proportion of uninsured children. In addition, free and reduced lunch children encountered significantly more dental disease.
- The urban Southern Lower Peninsula had the highest rates of immediate dental needs with 17.4% of children showing signs or symptoms of pain, swelling, or infection. The disease burden was substantially higher for African American and Hispanic children in this region.
- Children who attend school in Wayne County experience dental disease at higher rates compared to children who attend school in either Macomb or Oakland County. Significant social and racial disparities exist in both dental disease and access all across the Detroit Metropolitan area.



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 significant unmet need for dental care and delineated substantial disparities in oral disease.

In an effort to improve dental outcomes, *Healthy People 2010* (HP2010) included several health objectives aimed at preventing and treating disease, as well as improving access to dental services (USDHHS 2000b). The *Count Your Smiles* (CYS) survey was designed to address dental outcomes in Michigan that pertain to those HP2010 objectives. In addition, CYS provides the first statewide estimates of child dental disease in Michigan, and will contribute to Michigan's oral health surveillance system. Comparisons between the United States and Michigan can be found below (Table I).

Oral health 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 dental visits provide opportunities to prevent or delay dental disease. However, substantial disparities exist in the access to routine preventive dental care (Yu 2006).

Additional preventive measures include the use of sealants and community water fluoridation. Sealants are a transparent or opaque material that covers and protects the pit and fissure surfaces of teeth. When retained, they provide a cost-effective method of decay prevention (Kitchens 2005). Community water fluoridation remains the primary source of evidence-based caries prevention.

Often, people 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). The *Count Your Smiles* survey addresses health disparities among children for both dental disease and access to dental care.

Table I: *Healthy People 2010* Oral Health indicators, target levels, and current status in the United States and Michigan

	Target	Michigan	United States
Healthy People 2010 Objective	%	%	%
21-1b: Reduce the proportion of children who have dental caries experience in their primary or permanent teeth, age 6-8 years.	42%	58%	52%
21-2b: Reduce the proportion of children who have untreated dental decay, age 6-8 years.	21%	25%	29%
21-8: Increase the proportion of children who have received sealants on their molar teeth, age 8 years.	50%	23%	23%

Methods

Selection of Schools

Michigan elementary schools were randomly selected through ordered probability proportional to size sampling. The sampling frame was based upon school enrollment information from the 2003-2004 school year. The number of schools chosen in each region was proportional to total district and school enrollment figures. Exclusion criteria included private schools, home-schooled children, schools with fewer than 20 third grade students, and both accelerated and special education classrooms. School sampling varied within each study-defined geographic region in Michigan. Replacement schools were selected due to school refusal, closure, or poor response rate. Free and reduced lunch enrollment was a proxy for socioeconomic status.

- *Upper Peninsula and Northern Lower Peninsula*

This region consisted of all counties north of and including Mason, Lake, Osceola, Clare, Gladwin, and Arenac counties. The number of schools selected in this region was increased to enhance the precision of prevalence estimates for the region. Sampling was stratified between the Upper Peninsula and Northern Lower Peninsula. Schools were ordered geographically and by the percentage of free and reduced lunch students within the school to ensure geographic dispersion as well as adequate variation in socioeconomic indicators.

- *Southeast Michigan*

This region consisted of the three counties (Oakland, Macomb, Wayne) that comprise the major metropolitan Detroit area. Within this region, schools were further subdivided between the city of Detroit and outlying areas (suburban Detroit). Schools were then ordered by percentage of free and reduced lunch participants.

- *Southern Lower Peninsula*

This region consisted of all remaining Michigan counties. School districts were divided into rural and urban districts, with urban school districts having 285 or more third grade children. Within the urban and rural classifications, schools were ordered geographically and by percentage of free and reduced lunch participants.

Recruitment of Participants

Participants were recruited from 76 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 2,337 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 Spinbrush™. Overall, 1,866 consent forms were returned, and 1,687 of these had a positive consent. However, only 1,586 children were present at the time of the screening by the hygienist. Two schools that chose to not participate were not replaced in the sample.

Survey of Parents

Consent forms sent to parents included a 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 included a history of a toothache, time since last dental visit, reason for last dental visit, problems in obtaining dental care, and source of dental insurance. 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*: A loss of at least 0.5mm of tooth structure at the enamel surface with brown to dark brown coloration of the walls of the lesion.
- *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 were 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. To be considered as having a sealant, one 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. "Immediate dental care is needed" corresponded to signs or symptoms of pain, infection, or swelling.

Participants were recruited from 76 elementary schools. Consent to work with the schools was first obtained through mailings to district superintendents. Upon confirmation, school principals were contacted to obtain school consent, classroom selection, persons to contact for follow-up. Consent forms were sent out to 2,337 parents for signed approval to permit their children to participate in the survey.

Analysis

Sample weights were applied to participant observations and responses to achieve population-based estimates of results. These sample weights correspond to the child's probability of selection and participation in the survey. Statistical analysis was performed in SAS version 9.1 using survey procedures that account for the complex sampling design. The Michigan Department of Community Health Institutional Review Board reviewed this survey.

Population Demographics & Response Rates

Positive consent forms were returned for 72% of children. However, due to absences, 68% of all targeted children participated in the survey. Response rates also varied within geographic strata. In the Upper Peninsula, 80.4% of targeted children were screened compared to 76.8% in the Northern Lower Peninsula, 72.1% in the Southern Lower Peninsula, 68.8% in suburban Detroit, and 63.3% in Detroit. Characteristics of *Count Your Smiles* participants are available below (Table II).

The population reflects the general population closely with regard to gender and race/ethnicity. Overall, there was a slightly higher percentage of free and reduced lunch participants compared to the general population.

Table II: Characteristics of *Count Your Smiles* participants, 2005-06

Characteristic	Number Screened (N)	Estimated Proportion (%)
By Age		
Less than 9 years	1,187	75.9 +/- 2.7
9 years or older	393	24.1 +/- 2.7
By Gender		
Male	746	48.1 +/- 2.6
Female	828	51.9 +/- 2.6
By Race/Ethnicity*		
White**	1,200	70.7 +/- 5.9
African American	194	19.5 +/- 7.1
Hispanic	84	6.8 +/- 2.5
Native American	42	1.7 +/- 0.9
Asian American	33	2.7 +/- 1.6
Arab American	23	2.2 +/- 3.0
Other	20	1.5 +/- 0.4
By Dental Insurance		
Private	883	57.8 +/- 5.2
Public	415	27.1 +/- 5.0
Uninsured	219	15.1 +/- 2.4
Other Characteristics		
Free/Reduced Lunch Program Participation	588	41.0 +/- 6.1
Non-English-speaking household	163	13.5 +/- 4.1
<small>All proportion estimates include 95% confidence intervals *Parent may report more than one race and/or ethnicity **Does not include Hispanic or Arab persons</small>		

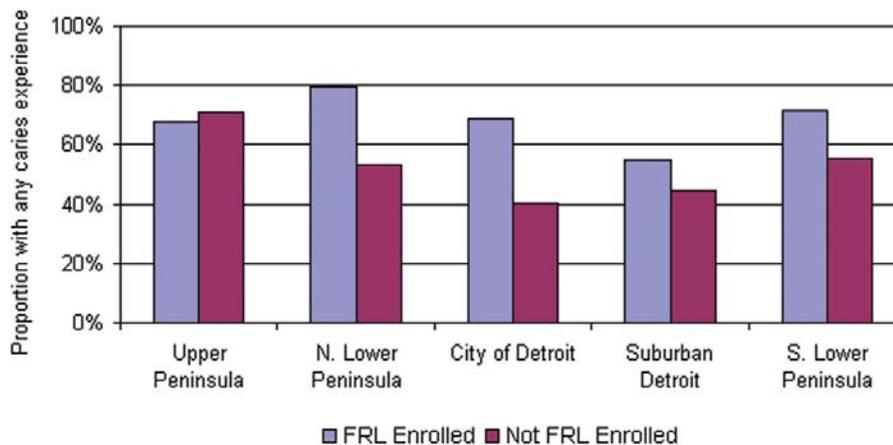
Caries Experience

- Twenty-eight percent of children bear 75% of teeth affected by dental caries.
- 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 participants 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 third grade children (58.0%) had experienced tooth decay. Prevalence of caries was higher outside suburban Detroit with the highest rates occurring in the Upper Peninsula. Hispanic and Native American children, children not covered by private dental insurance, and free and reduced lunch participants all experienced higher rates of caries (Table A1 - see appendix).

Free and reduced lunch participants experienced higher caries rates in each geographic region except in the Upper Peninsula. The resulting disparity varies in magnitude between the different regions. The largest socioeconomic disparities in caries experience occurred among children from Detroit and children from the Northern Lower Peninsula (Figure 1).

Figure 1: Proportion of Michigan third grade children with caries experience, by free/reduced lunch(FRL) program participation and geographic region, 2005-06



Children with any caries experience averaged 3.8 affected teeth per child. Among children with caries experience in primary teeth, 3.5 primary teeth on average had been affected. Among children with caries experience in permanent teeth, an average of 1.8 permanent teeth had been affected. The average number of teeth affected by caries varied between types of dental insurance, but did not statistically vary by free and reduced lunch program participation within each insurance category (Figure 2). Children who attended school in communities with fluoridated community water supplies had fewer teeth affected by caries than children who attended school in communities with nonfluoridated community water supplies (Figure 3).

Figure 2: Average number of teeth affected by caries experience among Michigan third grade children with any caries experience, by type of dental insurance and enrollment in the free and reduced lunch (FRL) program, 2005-06

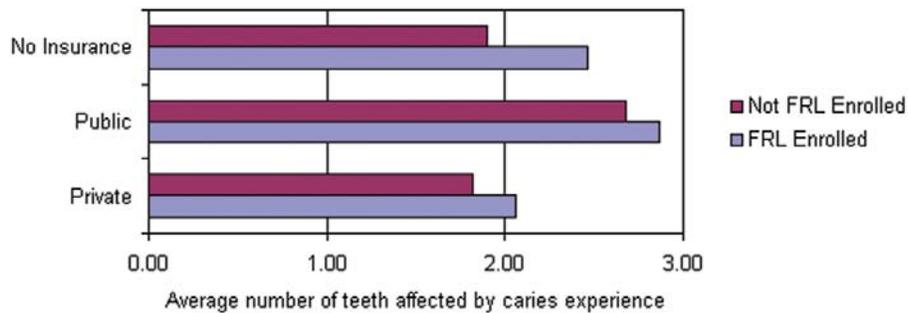
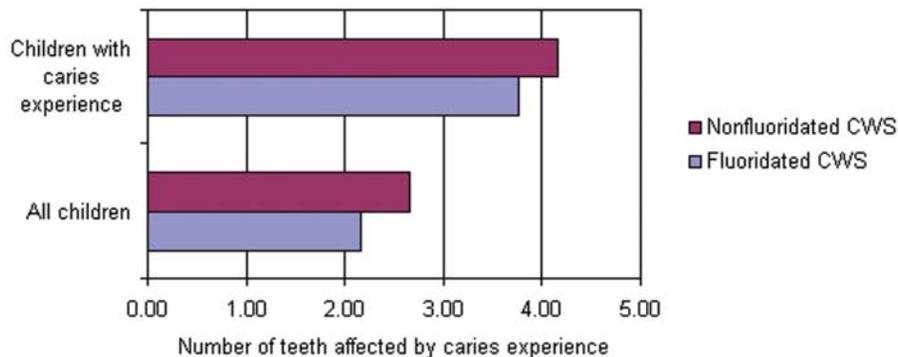


Figure 3: Average number of teeth affected by caries among all third grade Michigan children and among third grade Michigan children with any caries experience, by community water supply (CWS) fluoridation status, 2005-06



Untreated Dental Disease

- Access to dental care is significantly linked to untreated dental disease. Children who did not have an annual dental visit and children not covered by private insurance had significantly more teeth with untreated decay.
- As with caries experience, free and reduced lunch participants had higher 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 has not been filled or treated. One in four third grade children in Michigan (25.0%) have untreated dental disease. Prevalence of untreated dental disease was higher in all areas outside suburban Detroit. African American and Hispanic schoolchildren both had higher prevalence rates of 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. Free and reduced lunch participants also had higher rates of untreated dental disease (Table A2 - see appendix).

Much like caries experience, socioeconomic differences contribute to disparities in untreated dental disease. This socioeconomic disparity varies in its magnitude across Michigan with substantial disparities in the Southern Lower Peninsula and suburban Detroit (Figure 4).

Figure 4: Proportion of Michigan third grade children with untreated dental disease, by free/reduced lunch (FRL) program participation and geographic region, 2005-06

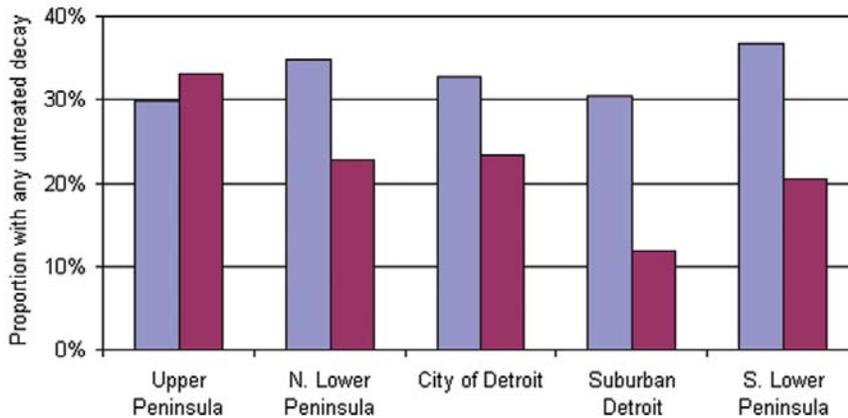


Figure 5: Average number of teeth with untreated decay among Michigan third grade children, by type of dental insurance and enrollment status in the free and reduced lunch (FRL) program, 2005-06

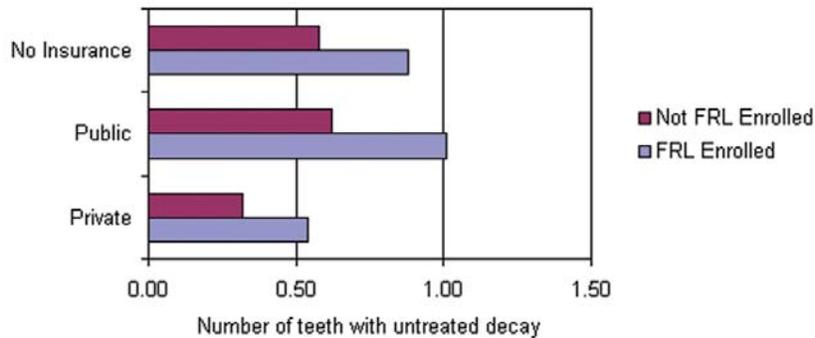
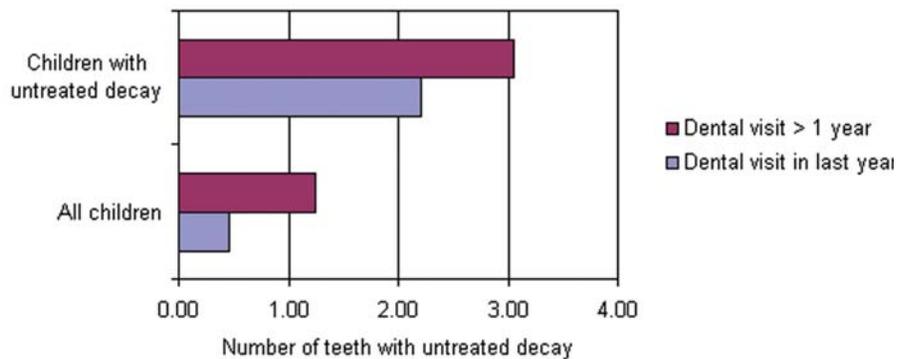


Figure 6: Average number of teeth with untreated decay among Michigan third grade children with untreated decay and all Michigan third grade children, for children with and without a dental visit in the past year



Children with untreated dental decay averaged 2.4 untreated teeth. Among children with untreated primary tooth decay, 2.3 primary teeth were untreated on average. Among children with untreated permanent tooth decay, 1.5 permanent teeth were untreated on average. 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 5). Children who had visited the dentist in the past year had substantially less untreated decay than children who had not (Figure 6).

Urgency of Needed Dental Care

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

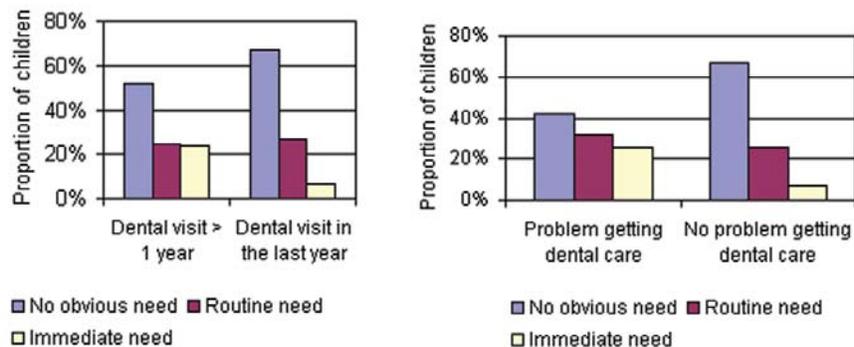
Screening revealed that nearly one in ten (9.6%) Michigan third grade children are in need of immediate dental care for signs or symptoms of pain, infection, or swelling. The need for routine dental care was found in 27.5% of children, while 62.9% of children had no obvious dental problems.

Compared to children living in suburban Detroit, children in the Northern Lower Peninsula were five times more likely to have immediate dental care needs and 4.4 times more likely to have routine dental care needs while children in the Southern Lower Peninsula were 6.4 times more likely to need immediate dental care and four times more likely to need routine dental care.

Hispanic children had a higher prevalence of immediate and routine dental care needs (Table A3 - see appendix). However, after accounting for socioeconomic and insurance differences, there were no statistically significant racial or ethnic disparities associated with the immediacy of dental care needs among Michigan third grade children. Male children were more likely to need both routine and immediate dental care than female children.

Access to care plays an important role in determining dental need (Figure 7). Children who visited the dentist in the past year were 73% less likely to have immediate dental care needs. Meanwhile, children who experienced difficulty in obtaining dental care were three times more likely to have immediate dental care needs and 1.7 times more likely to have routine dental care needs than children who did not experience a problem in obtaining dental care.

Figure 7: Immediacy of dental care needs among Michigan third grade children, by difficulty obtaining dental care and annual dental utilization, 2005-06





Nearly one in 10 Michigan third grade children are in need of immediate dental care for signs or symptoms of pain, infection, or swelling. The need for routine dental care was found in 27.5% of children, while 62.9% of children had no obvious dental problems.

Immediacy of dental care needs was strongly associated with socioeconomic status, but this association varied with the type of dental insurance. Uninsured free and reduced lunch participants were six times more likely to need immediate care and 2.6 times more likely to need routine dental care compared to privately insured free and reduced lunch non-participants. However, uninsured children not enrolled in the free and reduced lunch program were three times more likely to need immediate dental care than privately insured free and reduced lunch non-participants (Table III).

Table III: Adjusted odds of having a need for routine or immediate dental care in Michigan third grade children, 2005-06, *Count Your Smiles*

	Routine Care Needed		Immediate Care Needed	
	Odds Ratio ¹	95% CI	Odds Ratio ¹	95% CI
Upper Peninsula	2.1	0.8-5.2	1.1	0.2-5.1
Northern Lower Peninsula	4.4	1.3-14.6	5.0	1.5-16.2
City of Detroit	2.5	1.3-4.8	*	*
Greater Detroit	1.0	Reference	1.0	Reference
Southern Lower Peninsula	4.0	2.3-7.1	6.4	2.4-17.0
Female vs. Male	0.8	0.6-1.0	0.5	0.3-1.0
Toothache in the past six months when biting or chewing	1.6	0.9-2.7	4.4	2.1-9.1
Visited a dentist in the past year	1.0	0.6-1.6	0.3	0.2-0.5
Had a problem obtaining dental care in the past year	1.7	1.0-3.0	3.0	1.5-5.9
Enrolled in Free/Reduced Lunch				
No Dental Insurance	2.6	1.6-4.1	6.0	3.5-10.2
Public Dental Insurance	1.4	1.1-1.8	5.9	1.9-18.7
Private Dental Insurance	1.5	0.9-2.5	4.6	1.8-11.5
Not Enrolled in Free/Reduced Lunch				
No Dental Insurance	1.0	0.8-1.4	3.0	1.3-7.2
Public Dental Insurance	1.3	0.8-2.0	*	*
Private Dental Insurance	1.0	Reference	1.0	Reference
¹ Odds Ratio = Odds child needed routine or immediate dental care, 1.0 = similar odds, Below 1.0 = reduced odds, Above 1.0 = increased odds. Estimates also adjusted for age and race. 95% CI = The true value estimated by the odds ratio lies within this range with 95% confidence. Results were obtained through multivariable polytomous logistic regression *Data not statistically reliable due to limited information				

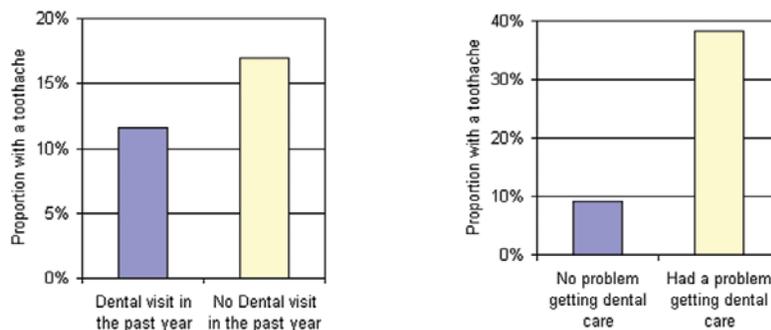
Toothache When Biting or Chewing

- Children with a toothache in the past six months when biting or chewing had less access to needed dental care and significantly 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 and Hispanic children had higher rates of toothaches than White children. Children who attend school in the city of Detroit had the highest rate of toothaches.

Oral pain can impact a child's nutrition, learning, and sleeping. Unfortunately, 12.9% of Michigan parents reported their child had a toothache when biting or chewing in the past six months. Toothaches were more prevalent among third grade children who attend school in 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. Free and reduced lunch participants and children covered by public dental insurance also had elevated rates of toothaches in the past six months (Table A4 - see appendix).

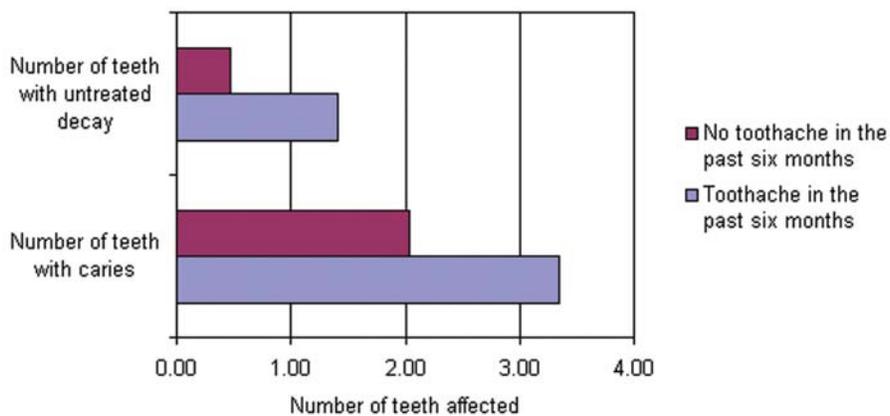
Access to dental care plays a vital role in determining whether a child experiences oral pain. In addition to the association between toothaches and both dental insurance and socioeconomic status, strong links exist between toothaches and both annual dental visits and difficulty obtaining dental care. 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 37.2% compared to 9.4% among children who did not encounter difficulties in obtaining dental care (Figure 8). A child with a toothache in the past six months was 4.4 times more likely to need immediate dental care and 1.9 times more likely to need routine dental care than a child without report of a toothache in the past six months.

Figure 8: Proportion of Michigan third 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, 2005-06



Report of a toothache in the previous six months corresponded to both a significantly higher number of teeth affected by caries and a significantly higher number of teeth with untreated decay (Figure 9). Children with a toothache averaged 3.3 teeth affected by caries and 1.4 teeth with untreated decay while children without a toothache averaged two teeth affected by caries and 0.5 teeth with untreated decay. Children with a toothache had lower overall rates of dental access and significantly higher rates of untreated dental disease, thus demonstrating a painful consequence for children with untreated disease who do not have access to needed dental care.

Figure 9: Average number of teeth affected by caries and number of teeth with untreated decay among Michigan third grade children with and without a toothache in the past six months when biting or chewing, 2005-06



Children with a toothache had lower overall rates of dental access and significantly higher rates of untreated dental disease, thus demonstrating a painful consequence for children with untreated disease who do not have access to needed dental care.

Dental Visit in the Past Year

- Children who visited the dentist in the past year had significantly less untreated dental disease and fewer immediate dental needs than children who had not visited the dentist in the past year.
- 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 *Count Your Smiles* participants, 84.8% of parents reported that their child had visited the dentist in the past year. When compared to other studies, *Count Your Smiles* participants were more likely to use dental services than those who chose not to participate in *Count Your Smiles*. Still, substantial trends in use of dental services can be gained from the survey.

Dental utilization rates were similar across the state except in the city of Detroit where children had significantly fewer recent dental visits than the rest of Michigan. Racial and ethnic minorities had lower rates of dental utilization compared to Whites. Compared to 91.7% of privately insured children who had a dental visit in the past year, only 66.6% of children without insurance and 80.0% 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).

Annual dental service utilization also varied within type of insurance by race. A lack of dental insurance contributed strongly to disparate access to Hispanics (Figure 10).

Figure 10: Proportion of Michigan third grade children with a dental visit in the past year, by type of insurance and race/ethnicity, 2005-06

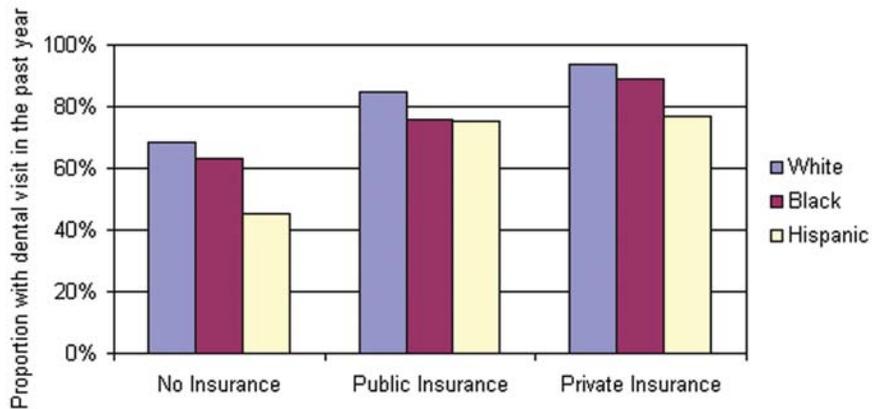


Figure 11: Proportion of Michigan third grade children with a dental visit in the past year by difficulty in obtaining dental care and type of dental insurance, 2005-06

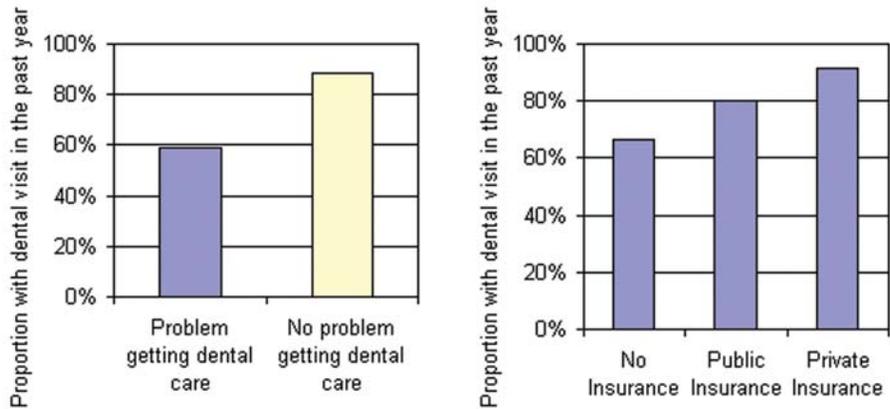
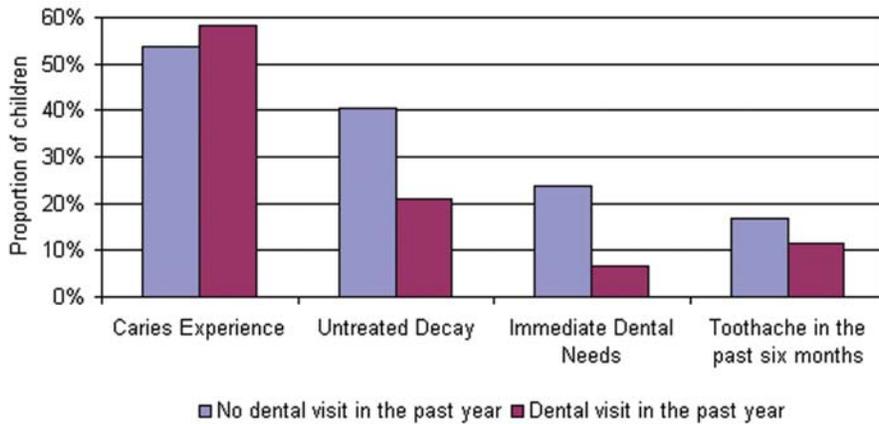


Figure 12: Proportion of Michigan third grade children with caries experience, untreated decay, immediate dental needs, and a toothache in the past six months among children with and without a dental visit in the past year, 2005-06



Problems obtaining dental care also led to lower annual dental utilization (Figure 11).

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

Problem Obtaining Dental Care in Past Year

As with other health services, people can encounter difficulties when trying to access oral health services. Parents of 10.9% of Michigan third grade children reported difficulty when trying to obtain dental care for their child. Difficulty obtaining care was less frequent in the Upper Peninsula compared to other regions of the state. Racial and ethnic minorities reported more difficulty when trying to obtain dental care, as did free and reduced lunch participants. Type of dental insurance was strongly associated with difficulty obtaining dental care. One in four uninsured children (25.9%) reported difficulties obtaining dental care compared to 13.2% of publicly insured children and just 5.6% of privately insured children (Table A6 - see appendix).

Half of all parents who reported an inability to obtain dental care for their child cited a lack of dental insurance as a main reason. Type of dental insurance and the inability to afford dental care were also frequently cited. Many parents also reported that finding a dentist, difficulty getting an appointment, or inconvenient dental hours contributed to their inability to obtain dental care for their child. Transportation barriers also contributed to inability to obtain dental care (Table IV).

Table IV: Reasons why child could not get all the dental care he/she needed among those able and unable to obtain dental care in the past 12 months, 2005-06

Reason for not receiving care	Able to get care in past 12 months		Unable to get care in past 12 months	
	N	%	N	%
No insurance	55	3.9+/-1.4	74	50.7+/-8.5
Could not afford it	21	1.4+/-0.8	53	36.6+/-9.7
Dentist did not take insurance	10	0.7+/-0.5	22	13.7+/-7.4
Difficulty getting an appointment	*	*	16	10.6+/-6.0
Dentists hours not convenient	7	0.6+/-0.6	8	6.6+/-4.2
No way to get there	*	*	8	5.7+/-5.5
Not a serious enough problem	8	0.5+/-0.5	6	5.4+/-4.0
Didn't know where to go	6	0.5+/-0.4	6	4.9+/-4.5
No dentist available	*	*	5	2.1+/-2.0
Other non-specified reason	16	1.2+/-0.7	10	8.1+/-5.4
All proportion estimates include 95% confidence intervals *Minimum of five respondents, information suppressed				

Sealants Present on First Molars

- Michigan ranks next to last among states in the percentage of third grade children with sealants present on first molars.
- The Southern Lower Peninsula had the lowest rate of sealants present on first molars, particularly in rural areas and among Hispanics.
- Nearly one in 10 third 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 23.3% of Michigan third grade children had sealants present on their first molars. Sealant rates varied geographically with the lowest rate of 19.2% occurring in the Southern Lower Peninsula. Sealant rates were similar across racial and ethnic groups except in Hispanic children whose sealant rate was 14.6%. Uninsured children had significantly lower sealant rates (16.8%) compared to publicly insured (26.7%) or privately insured (24.3%) (Table A7 - see appendix).

Socioeconomic disparity in sealant presence varied among geographic regions. There was little socioeconomic disparity in sealant presence in the Southern Lower Peninsula, the region with the lowest overall rate of sealant presence (Figure 13).

Children experiencing difficulties getting dental care did not have a lower prevalence of sealants compared to other children. However, children who visited the dentist in the past year had a higher prevalence of sealants

Figure 13: Proportion of Michigan third grade children sealants present on first molars, by free/reduced lunch (FRL) program participation and geographic region, 2005-06

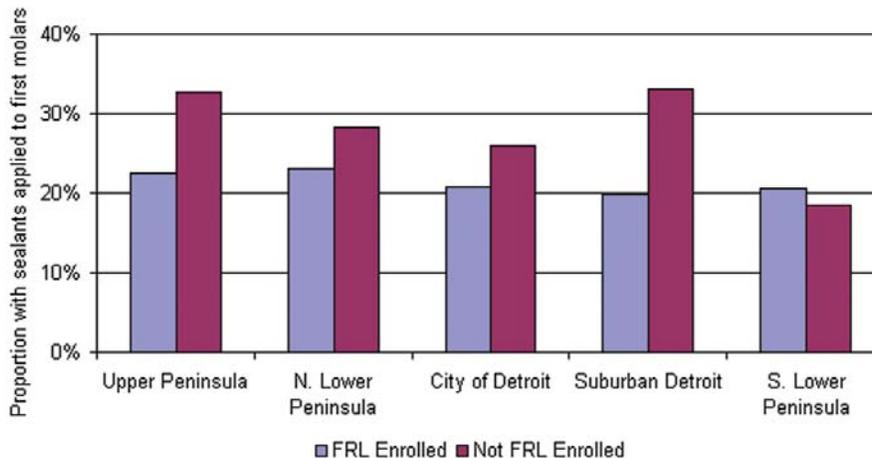


Figure 14: Proportion of Michigan third grade children with sealants present on first molars by annual dental utilization and difficulty obtaining dental care, 2005-06

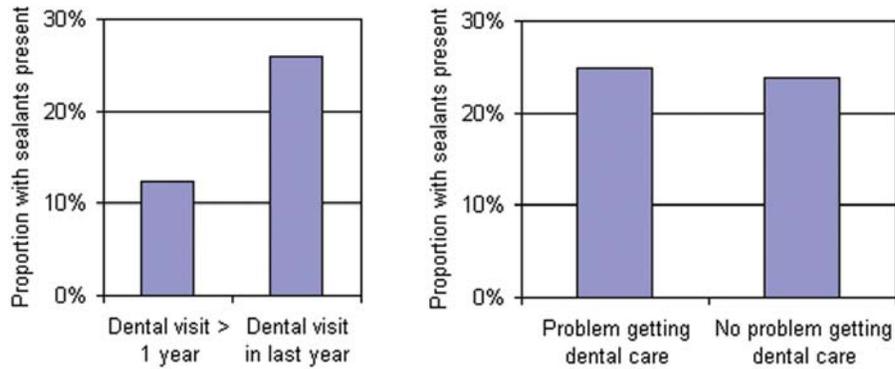
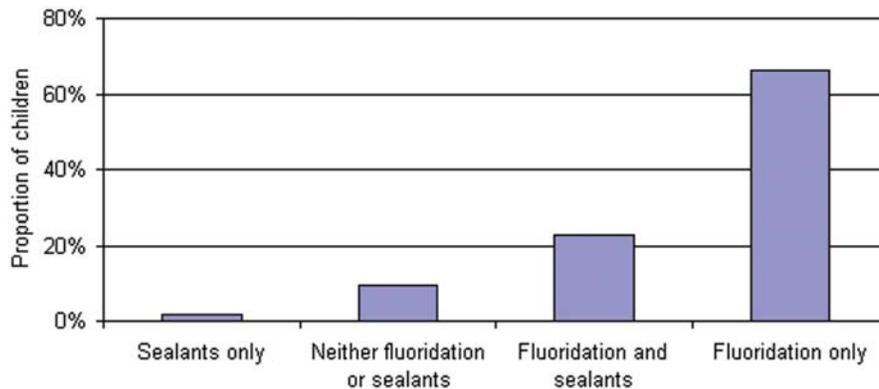


Figure 15: Evidence-based caries prevention measures: the proportion of Michigan third grade children by presence of sealants and attendance at a school located in an optimally fluoridated community



compared to children who had not visited the dentist in the past year (Figure 14). Community water fluoridation remains the primary source of evidence-based caries prevention. Still, nearly one in ten children (9.4%) neither have sealants present on first molars nor attend school in an optimally fluoridated community (Figure 15).

Upper Peninsula

- Children in the Upper Peninsula experience the highest rates of caries experience (cavities) and untreated dental disease in Michigan.
- Increased application of sealants and expansion in community water fluoridation could significantly reduce the rates of caries experience and untreated dental disease in the Upper Peninsula.

Overall, children in the Upper Peninsula have higher rates of dental disease compared to the rest of Michigan. Fortunately, these high rates do not correspond to higher rates of severe dental disease. Access to preventive dental services such as sealants and community water fluoridation could significantly reduce dental disease in this region.

Table V: *Healthy People 2010* Oral Health indicators, target levels, and current status in Michigan and the Upper Peninsula

	Target	Michigan	Upper Peninsula
<i>Healthy People 2010 Objective</i>	%	%	%
21-1b: Reduce the proportion of children who have dental caries experience in their primary or permanent teeth, age 6-8 years.	42%	58%	70%
21-2b: Reduce the proportion of children who have untreated dental decay, age 6-8 years.	21%	25%	33%
21-8: Increase the proportion of children who have received sealants on their molar teeth, age 8 years.	50%	23%	26%

Oral Disease

Seven out of 10 children in the Upper Peninsula had caries experience and one in three had untreated dental disease upon clinical examination, the highest among all geographic regions in Michigan. There were no significant differences in untreated decay or caries experience between Whites and Native Americans (Figure 16). Prevalence rates of caries experience and untreated decay were higher among children attending school in communities with non-fluoridated community water supplies compared to children attending school in communities with fluoridated community water supplies (Figure 17). Fortunately, only 4.4% of children have immediate dental care needs showing signs or symptoms of pain or swelling. Routine dental care was needed by 27.3% of the population while 68.3% exhibited no obvious dental problem upon examination. Among participating children, 11.2% of parents reported their child had a toothache when chewing or biting in the past six months.

Figure 16: Proportion of Upper Peninsula third grade children with caries experience, untreated dental decay, and sealants present by race/ethnicity, 2005-06

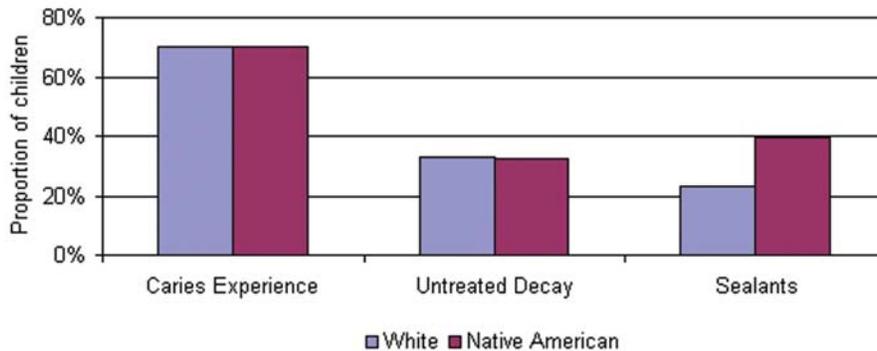
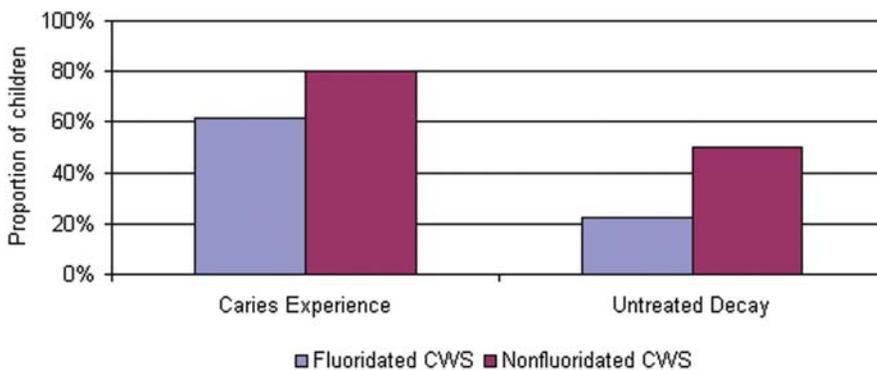


Figure 17: Proportion of Upper Peninsula and Northern Lower Peninsula third grade children with caries experience and untreated dental decay by community water supply (CWS) fluoridation status, 2005-06



Access to Oral Health Services

Within the past year, 81.2% of Upper Peninsula third grade children who participated in this survey had visited the dentist. Just 5.6% of parents reported encountering a barrier that prevented their child from obtaining dental care in the past year. A lack of dental insurance was the primary reason for 47.3% of children who were unable to obtain dental care in this region, and 38.4% were unable to obtain care because the dentist did not accept their insurance. Private dental insurance covered 45.9% of the population, public dental insurance covered 42.7%, and 11.4% were uninsured for dental services. Over one quarter (26.3%) had sealants present on first molars.

Northern Lower Peninsula

- Children in the Northern Lower Peninsula experience caries and untreated dental disease at higher rates than the rest of Michigan. Unfortunately, children in the Northern Lower Peninsula are also more likely to have immediate and routine dental needs than children in most areas of Michigan.
- The Northern Lower Peninsula has significant socioeconomic disparities in caries experience, untreated dental decay, and urgent dental needs.
- Expansion of community water fluoridation and increased use of sealants could significantly reduce dental disease in the Northern Lower Peninsula.

Children in the Northern Lower Peninsula have oral disease rates that are higher than the state of Michigan as a whole. Unfortunately, this region also encounters some of the most substantial rates of severe oral disease. Socioeconomic differences in the Northern Lower Peninsula contribute substantially to disparities in oral disease. Expansion in community water fluoridation and increased use of sealants could significantly reduce oral disease.

Table VI: *Healthy People 2010* Oral Health indicators, target levels, and current status in Michigan and the Northern Lower Peninsula

	Target	Michigan	Northern Lower Peninsula
<i>Healthy People 2010</i> Objective	%	%	%
21-1b: Reduce the proportion of children who have dental caries experience in their primary or permanent teeth, age 6-8 years.	42%	58%	66%
21-2b: Reduce the proportion of children who have untreated dental decay, age 6-8 years.	21%	25%	28%
21-8: Increase the proportion of children who have received sealants on their molar teeth, age 8 years.	50%	23%	30%

Oral Disease

Two out of every three children had experienced dental decay by the third grade in the Northern Lower Peninsula, and three out of 10 had untreated dental disease. Rates of caries experience and untreated dental disease were higher among children enrolled in the free and reduced lunch program (Figure 18). Half of all children were in need of immediate dental care or routine dental care, thus having signs of an easily visible dental

Figure 18: Proportion of Northern Lower Peninsula third 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, 2005-06

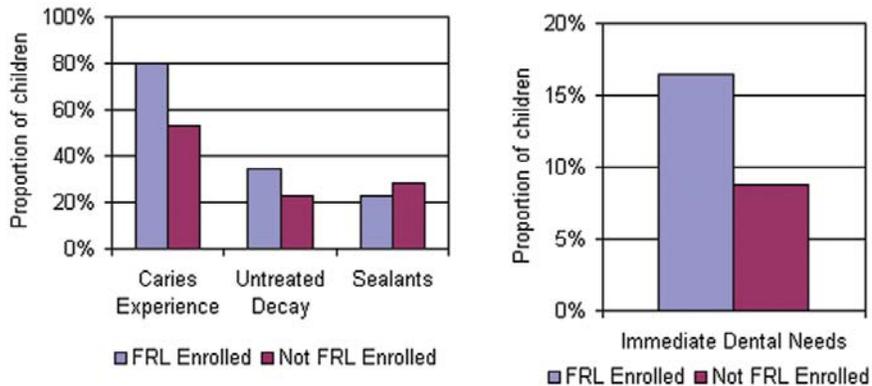
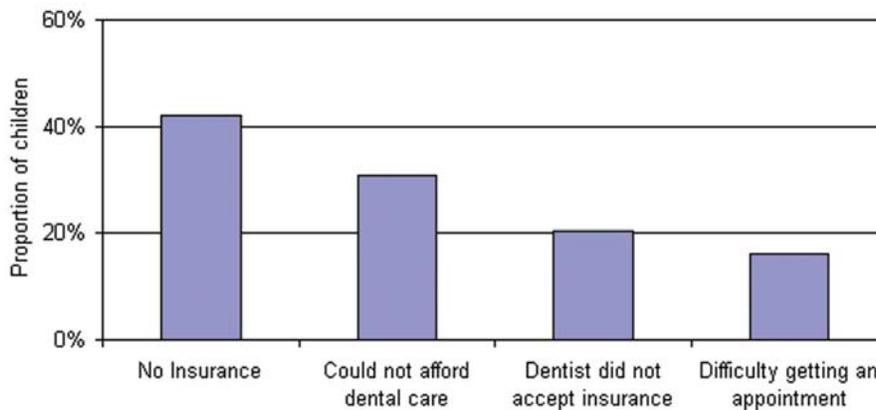


Figure 19: Reason for not obtaining dental care among children whose parent reported a barrier to obtaining dental care in the past year, 2005-06



problem. Immediate dental care needs were higher among free and reduced lunch participants. In the past six months, 13.3% of children living in Northern Lower Peninsula had a toothache according to parental report.

Access to Oral Health Services

In the past year, 84.3% of Northern Lower Peninsula third grade children had visited the dentist. However, 13.6% of children encountered barriers to receiving dental care. There were several reasons cited why children failed to obtain dental care in this region, including a lack of insurance and difficulty in getting a dental appointment (Figure 19). Private insurance covered 46.9% of children in the Northern Lower Peninsula, 36.2% were covered by public insurance, and 16.9% lacked dental insurance altogether. Sealants were present on first molars in 29.9% of Northern Lower Peninsula children.

Southern Lower Peninsula—Urban

- Urban third grade children in the Southern Lower Peninsula had the highest prevalence of immediate dental needs in Michigan.
- Racial and ethnic disparities contribute 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 Hispanics or African Americans. However, African American children had higher rates of sealant application than Hispanics or Whites.

Urban Southern Lower Peninsula children had the highest prevalence of immediate dental needs with signs or symptoms of pain, infection, or swelling. There are significant racial and ethnic disparities in both dental disease and dental access in this region. Hispanics in this region had the highest prevalence of disease as well as the lowest rates of access.

Table VII: *Healthy People 2010* Oral Health indicators, target levels, and current status in Michigan and urban Southern Lower Peninsula

	Target	Michigan	Urban Southern Lower Peninsula
<i>Healthy People 2010 Objective</i>	%	%	%
21-1b: Reduce the proportion of children who have dental caries experience in their primary or permanent teeth, age 6-8 years.	42%	58%	60%
21-2b: Reduce the proportion of children who have untreated dental decay, age 6-8 years.	21%	25%	31%
21-8: Increase the proportion of children who have received sealants on their molar teeth, age 8 years.	50%	23%	21%

Oral Disease

Caries experience and untreated dental disease were widely present in urban Southern Lower Peninsula third grade children, 59.8% and 31.3% respectively. The urban Southern Lower Peninsula had the highest prevalence for an immediate need for dental care due to signs or symptoms of pain, infection, or swelling at 17.4% of children. There were significant racial and ethnic disparities in dental disease, with all classifications of disease occurring at higher rates in African Americans and Hispanics (Figure 20).

Figure 20: Proportion of urban Southern Lower Peninsula third grade children with caries experience, untreated dental decay, and immediate dental needs by race/ethnicity, 2005-06

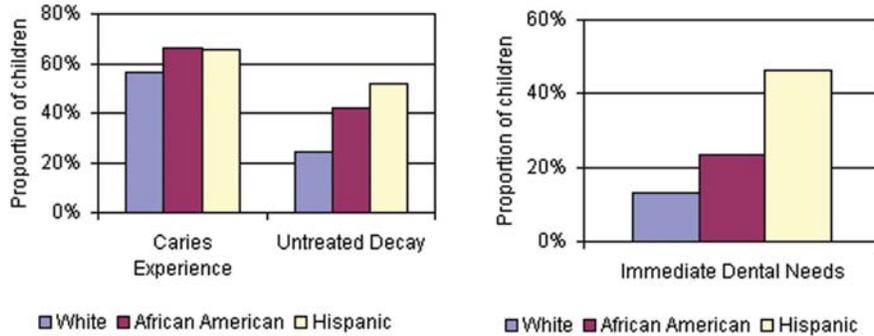
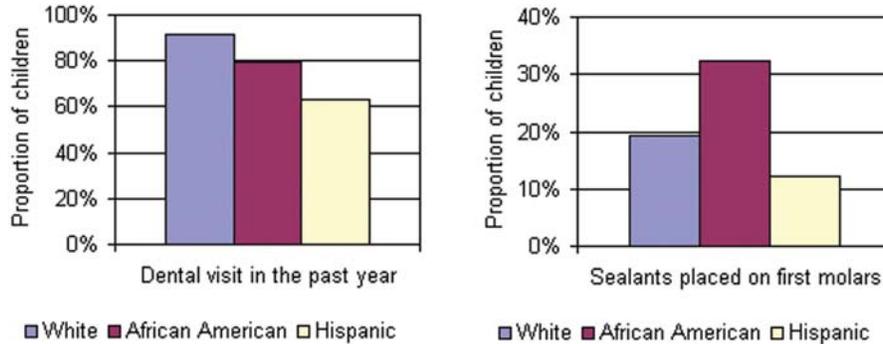


Figure 21: Proportion of urban Southern Lower Peninsula third grade children with a dental visit in the past year and with sealants present on permanent first molars, by race/ethnicity, 2005-06



Parents reported their child had a toothache in the past six months when biting or chewing for 15.7% of urban Southern Lower Peninsula children.

Access to Oral Health Services

Among participating children, 86.6% of urban Southern Lower Peninsula children visited the dentist in the past year. However, significant racial and ethnic disparities existed for annual dental utilization (Figure 21). Barriers to accessing dental care were reported by 12.2% of parents in this region, including lack of insurance (32.1%), failure to find a dentist that accepted their insurance (25.7%), difficulty getting an appointment (24.8%), and affordability of dental care (20.5%). Private insurance covered 48.3% of children, while 39.5% of children had public insurance and 12.2% had no dental insurance. Sealants were present on first molars in 21.2% of children, but rates were lower among both Whites and Hispanics.

Southern Lower Peninsula—Rural

- Children in the rural Southern Lower Peninsula were most likely to lack dental insurance and least likely to have sealants present when compared to all other areas in Michigan. The proportion of children who lack dental insurance is higher than the proportion with sealants present on their first molars.
- Socioeconomic differences in this population contribute significantly to disparate dental disease and dental utilization in this region.
- Nearly half (44.6%) of all rural Southern Lower Peninsula third grade children have a visible need for either immediate or routine dental care.

Lack of dental insurance is a significant problem among rural Southern Lower Peninsula children. The proportion of children who lack dental insurance is higher than the proportion with sealants present on their first molars. These rural children have the lowest prevalence of sealants among geographic regions in the state. In addition, socioeconomic differences contribute to substantial disparities in untreated dental disease and immediate dental needs.

Table VIII: *Healthy People 2010* Oral Health indicators, target levels, and current status in Michigan and rural Southern Lower Peninsula

	Target	Michigan	Rural Southern Lower Peninsula
<i>Healthy People 2010 Objective</i>	%	%	%
21-1b: Reduce the proportion of children who have dental caries experience in their primary or permanent teeth, age 6-8 years.	42%	58%	64%
21-2b: Reduce the proportion of children who have untreated dental decay, age 6-8 years.	21%	25%	24%
21-8: Increase the proportion of children who have received sealants on their molar teeth, age 8 years.	50%	23%	18%

Oral Disease

Among rural Southern Lower Peninsula third grade children, 64.3% have caries experience and 24.2% have untreated dental disease. Immediate needs for dental care were observed for 12.5% of children, while 32.1% were in need of routine dental care. Children enrolled in the free and reduced lunch program had a higher prevalence of caries experience, untreated dental decay, and immediate dental needs than children who were not enrolled (Figure 22). A toothache in the past six months when biting or chewing was reported by parents of 11.0% of third grade children.

Figure 22: Proportion of rural Southern Lower Peninsula third grade children with caries experience, untreated dental disease and immediate dental needs by enrollment in the free and reduced lunch (FRL) program, 2005-06

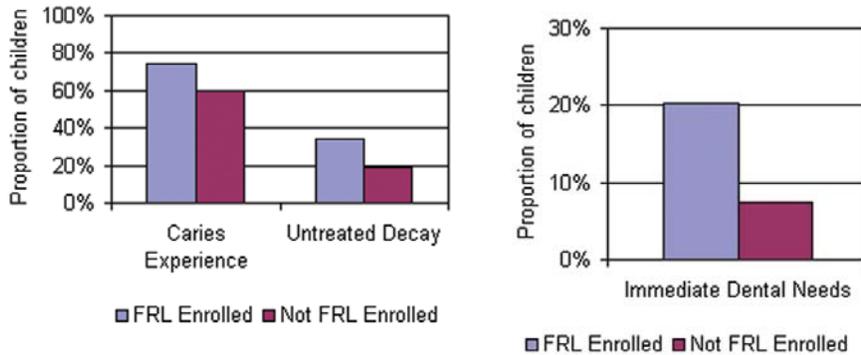
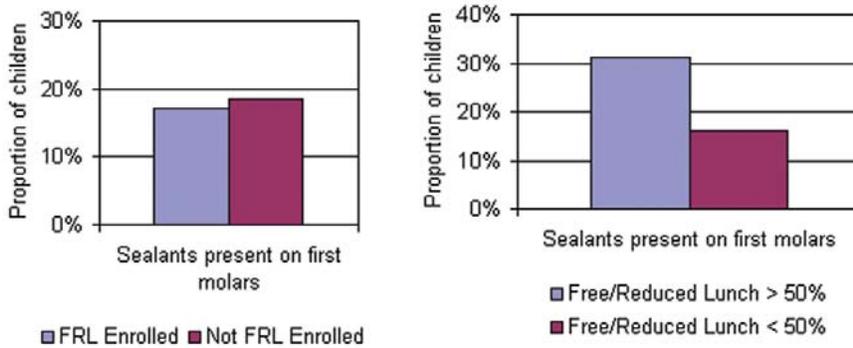


Figure 23: Proportion of rural Southern Lower Peninsula third grade children with sealants present on first molars by enrollment in the free and reduced lunch (FRL) program and by percent of children enrolled in the free and reduced lunch program within the school



Access to Oral Health Services

Annual dental visits were reported for 85.5% of third grade children in the rural Southern Lower Peninsula. Problems obtaining dental care were reported for 11.0% of children. Of those reporting a problem getting dental care, 51.2% lacked dental insurance, 39.7% could not afford dental care, and 16.3% could not find a dentist who accepted their insurance. Private insurance covered 62.1% of third grade children, public insurance covered 18.3%, and 19.6% were uninsured for dental services. Sealants were present on first molars in just 18.1% of children. While free and reduced lunch participants had similar prevalence of sealants as those not enrolled, children attending schools with a high percentage of free and reduced lunch participation had higher rates of sealants present than children attending schools with a low percentage of free and reduced lunch participation (Figure 23).

Macomb County

- Macomb County third grade children meet the *Healthy People 2010* objective for untreated decay, but fall just short of meeting the *Healthy People 2010* objective for caries experience.
- Socioeconomic disparity appears to be a significant problem for dental disease among third grade children in Macomb County.

Macomb County third grade children perform well on *Healthy People 2010* measures for caries experience and untreated decay, but fall well short of the *Healthy People 2010* goal for sealants. Free and reduced lunch participants had more caries experience and untreated decay than children not enrolled in this program, which is suggestive of socioeconomic disparities in dental disease. Lack of dental insurance was also a significant problem in Macomb County with nearly one in five children lacking any dental coverage.

Table IX: *Healthy People 2010* Oral Health indicators, target levels, and current status in Michigan and Macomb County

	Target	Michigan	Macomb County
<i>Healthy People 2010</i> Objective	%	%	%
21-1b: Reduce the proportion of children who have dental caries experience in their primary or permanent teeth, age 6-8 years.	42%	58%	46%
21-2b: Reduce the proportion of children who have untreated dental decay, age 6-8 years.	21%	25%	13%
21-8: Increase the proportion of children who have received sealants on their molar teeth, age 8 years.	50%	23%	28%

Oral Disease

Macomb County third grade children had significantly lower rates of caries experience and untreated dental disease than the rest of Michigan. Caries were present in 46.4% of children, but this was not statistically different than the *Healthy People 2010* target of 42%. Untreated dental disease was present in 12.9% of Macomb County third grade children, statistically lower than the *Healthy People 2010* target of 21%. Free and reduced lunch participants appear to experience a greater degree of dental decay (Figure 24). A substantial majority of children (87.5%) had no obvious dental problems at screening. Urgent dental needs were visible in 3.4% of children, while 9.1% were in need of routine dental care. Parents reported a toothache in the past six months when chewing or biting for 9.1% of Macomb County children.

Figure 24: Proportion of Macomb County third grade children with caries experience and untreated dental decay, by enrollment in the free and reduced lunch (FRL) program, 2005-06

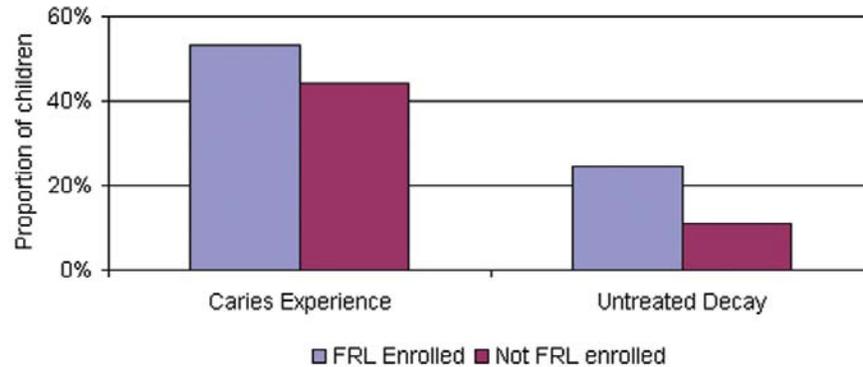
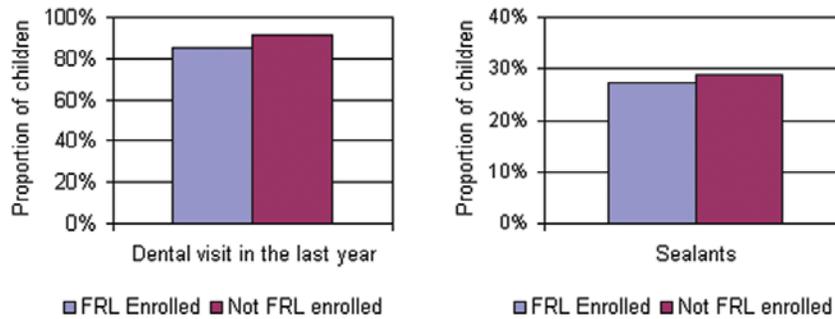


Figure 25: Proportion of Macomb County third grade children with a dental visit in the past year and with sealants present on first molars, by enrollment in the free and reduced lunch (FRL) program, 2005-06



Access to Oral Health Services

Within the past year, 90.6% of Macomb County third grade children had visited the dentist. Meanwhile, 6.0% of parents reported a barrier to their child receiving needed dental care. Among parents who reported a problem, 91.1% reported a lack of dental insurance as a reason for the child not getting dental care, and similarly, 91.1% also reported they could not afford dental care. Nearly two out of every three children (68.2%) were covered by private dental insurance, 13.4% by public insurance, and 18.4% were uninsured for dental services. Sealants were present on first molars in 28.5% of Macomb County children. Unlike disease, access was similar between children enrolled in the free and reduced lunch program and those not enrolled (Figure 25).

Oakland County

- Oakland County third grade children meet the *Healthy People 2010* objective for caries experience and exceed the *Healthy People 2010* objective for untreated decay. However, Oakland County third grade children fall significantly short of meeting the *Healthy People 2010* objective for sealants.
- There are significant racial and socioeconomic disparities in untreated dental disease and immediacy of dental needs in Oakland County. Likewise, there are significant racial and socioeconomic disparities in measures of access such as annual dental visits, difficulty obtaining care, and presence of sealants.

Oakland County third grade children perform well on *Healthy People 2010* measures of caries experience and untreated decay. Similar to Macomb County children however, Oakland County children fall significantly short of the *Healthy People 2010* measure on sealants. Free and reduced lunch participants appear to have more dental disease and less dental care access than children not enrolled in the free and reduced lunch program.

Table X: *Healthy People 2010* Oral Health indicators, target levels, and current status in Michigan and Oakland County

	Target	Michigan	Oakland County
<i>Healthy People 2010</i> Objective	%	%	%
21-1b: Reduce the proportion of children who have dental caries experience in their primary or permanent teeth, age 6-8 years.	42%	58%	42%
21-2b: Reduce the proportion of children who have untreated dental decay, age 6-8 years.	21%	25%	16%
21-8: Increase the proportion of children who have received sealants on their molar teeth, age 8 years.	50%	23%	29%

Oral Disease

Oakland County has a much lower prevalence of caries experience (41.9%) compared to Michigan, thus meeting *Healthy People 2010* objectives for this measure. Oakland County also has a substantially lower prevalence of untreated dental decay (16.2%) which exceeds the *Healthy People 2010* target. Oakland County also had a relatively low prevalence of children in immediate need of dental care (4.7%) and in need of routine dental care (12.4%). However, there were substantial racial and socioeconomic differences in most measures of dental disease in Oakland County. African American children and free and reduced lunch participants had higher rates of

Figure 26: Proportion of Oakland County third grade children with untreated dental decay by enrollment in the free and reduced lunch (FRL) program and race/ethnicity, 2005-06

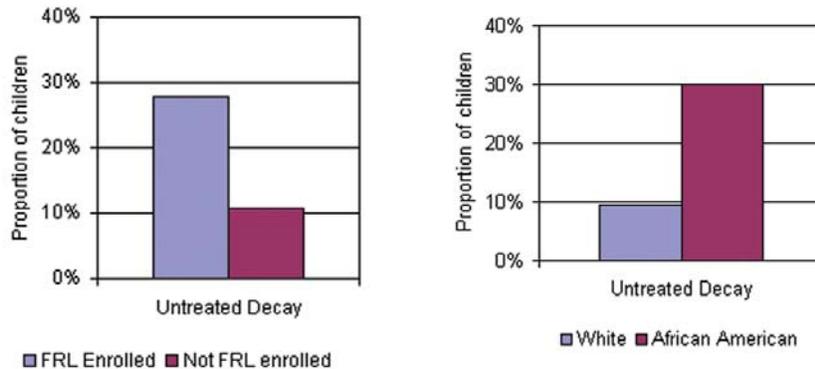
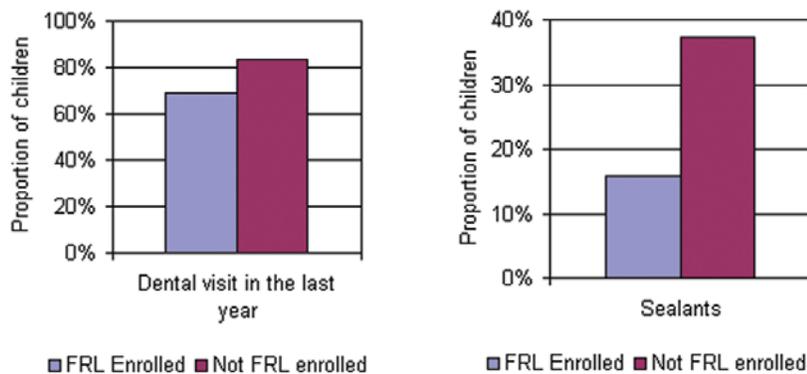


Figure 27: Proportion of Oakland County third grade children with a dental visit in the past year and sealants present on first molars, by enrollment in the free and reduced lunch (FRL) program, 2005-06



untreated dental disease than other children (Figure 26). Parents of 11.6% of children reported their child had a toothache in the past six months when biting or chewing.

Access to Oral Health Services

Despite the low prevalence of disease, 78.8% of Oakland County children visited the dentist in the past year. Problems obtaining dental care for their child in the past year were reported by 11.9% of parents. Among parents who reported a problem, 53.2% reported a lack of insurance and 38.7% could not afford dental care. Nearly two in three children (65.5%) were covered by private insurance while 19.5% were covered through public insurance and 15.1% were uninsured for dental care. Sealants were present on first molars in 29.1% of Oakland County third grade children. Free and reduced lunch participants had fewer dental visits in the past year and lower rates of sealants present on first molars (Figure 27).

Wayne County

- Wayne County third grade children fall short of meeting *Healthy People 2010* objectives for caries experience, untreated dental decay, and sealants.
- There are substantial socioeconomic disparities in both dental disease and dental access among Wayne County third grade children.
- One in nine Wayne County third grade children lack dental insurance. Lack of insurance was the primary cited reason for not getting needed dental care.

Wayne County third grade children have higher rates of caries experience and untreated dental decay than Michigan third grade children as a whole. Sealant rates, however, are slightly higher in Wayne County children than in all Michigan children. Free and reduced lunch participants have substantially higher rates of caries experience and untreated decay, less access to dental care, and a lower rate of sealants applied to first molars.

Table XI: *Healthy People 2010* Oral Health indicators, target levels, and current status in Michigan and Wayne County

	Target	Michigan	Wayne County
<i>Healthy People 2010 Objective</i>	%	%	%
21-1b: Reduce the proportion of children who have dental caries experience in their primary or permanent teeth, age 6-8 years.	42%	58%	60%
21-2b: Reduce the proportion of children who have untreated dental decay, age 6-8 years.	21%	25%	26%
21-8: Increase the proportion of children who have received sealants on their molar teeth, age 8 years.	50%	23%	26%

Oral Disease

Caries experience was present in 59.6% of Wayne County third grade children, and untreated dental disease was present in 26.0%. There were substantial disparities in both caries experience and untreated dental disease between free and reduced lunch participants and non-participants (Figure 28). Three out of four children (73.9%) had no immediate dental needs, but 23.2% were in need of routine care and 2.8% had immediate dental needs. Parents reported a toothache in the past six months when chewing or biting for 16.6% of children, the highest level among the geographic regions.

Figure 28: Proportion of Wayne County third grade children with caries experience and untreated dental decay by enrollment in the free and reduced (FRL) lunch program, 2005-06

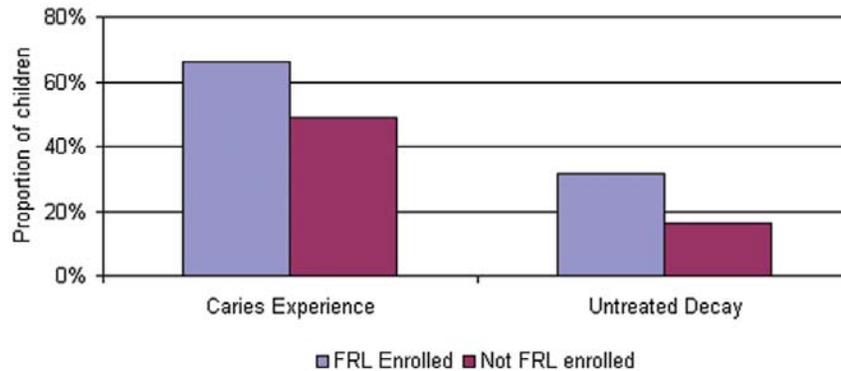
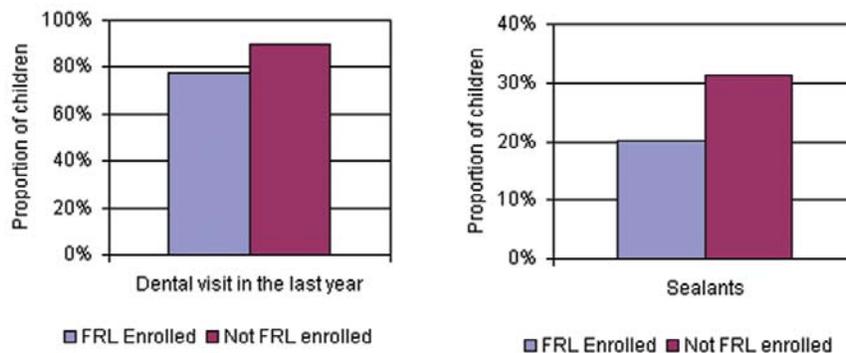


Figure 29: Proportion of Wayne County third grade children with a dental visit in the past year and sealants present on first molars by enrollment in the free and reduced lunch (FRL) program, 2005-06



Access to Oral Health Services

Among Wayne County third grade children, 84.1% had visited a dentist in the past year according to parents. However, 10.3% reported a barrier to obtaining needed dental care for their child. For those who reported a barrier, 64.3% cited a lack of insurance and 44.7% cited an inability to afford dental care. Public insurance covered dental services for 30.7% of Wayne County children, and 58.2% of children were covered by private insurance with the remaining 11.1% of children lacking dental insurance altogether. Sealants were present for 25.7% of Wayne County third grade children. Free and reduced lunch participants had lower rates of annual dental visits and sealants (Figure 29).

Conclusion

Dental disease in Michigan children is a significant yet preventable problem. As a result of this survey, populations with elevated rates of dental disease have been identified. Programs and policies targeting the specific needs of these populations must 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.

Community water fluoridation can significantly reduce dental caries. Expansion of water fluoridation to all communities, particularly communities in northern Michigan, could have a significant impact on caries reduction. Also, increased use of sealants could benefit children statewide. Michigan is currently one of 11 states nationally that lacks a statewide sealant program, perhaps the primary reason for Michigan's next-to-last 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. 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 517/335-8388. Or visit the State of Michigan's Oral Health website at <http://www.michigan.gov/oralhealth> or e-mail oralhealth@michigan.gov.



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Appendix

Table A1:

Proportion of Michigan third grade children with caries experience, 2005-06—*Count Your Smiles*

	Primary Caries Experience		Permanent Caries Experience		Primary or Permanent Caries Experience	
	N	%	N	%	N	%
Michigan (All children)	871	53.5+/-3.4	294	17.5+/-2.9	943	58.0+/-3.2
Upper Peninsula	120	65.3+/-12.9	53	29.3+/-8.3	132	70.3+/-12.9
Northern Lower Peninsula	151	63.8+/-10.6	48	20.6+/-5.9	157	66.2+/-11.3
City of Detroit	48	61.2+/-13.2	19	22.7+/-13.0	50	63.2+/-12.8
Suburban Detroit	201	43.9+/-5.9	57	11.5+/-3.4	218	47.9+/-5.1
Southern Lower Peninsula	351	56.8+/-4.8	117	19.7+/-4.9	386	62.1+/-4.6
By Age						
<9 years	629	51.7+/-3.7	210	16.9+/-2.9	686	56.5+/-3.5
9 years or older	238	59.1+/-6.7	82	19.5+/-5.7	253	62.7+/-6.6
By Gender						
Male	429	54.2+/-4.0	131	16.3+/-3.2	464	58.7+/-3.8
Female	435	52.7+/-4.4	162	18.8+/-3.9	472	57.1+/-4.2
By Race/Ethnicity						
White	650	52.7+/-4.1	217	16.7+/-3.1	706	57.3+/-3.8
African American	101	51.2+/-6.0	44	22.0+/-7.2	111	56.5+/-5.6
Hispanic	57	69.9+/-10.4	17	22.0+/-10.0	58	71.6+/-10.2
Native American	31	75.9+/-13.5	12	17.1+/-12.7	32	76.4+/-13.5
Asian American	16	46.0+/-18.2	*	*	18	50.2+/-17.6
By Dental Insurance						
Private	416	47.5+/-4.4	114	12.6+/-2.7	451	51.6+/-3.9
Public	271	63.5+/-5.0	114	25.7+/-4.5	291	67.8+/-4.8
No Insurance	118	51.1+/-7.7	46	20.5+/-7.6	131	57.7+/-7.6
By Free/Reduced Lunch						
Enrolled	375	62.5+/-4.7	148	24.3+/-4.6	401	67.2+/-4.3
Not Enrolled	418	46.4+/-4.4	122	13.1+/-2.6	458	50.8+/-3.6
Language Spoken at Home						
English	729	52.6+/-3.7	252	17.7+/-3.1	791	57.3+/-3.5
Other	97	55.4+/-10.1	24	14.4+/-6.9	101	57.3+/-9.2
All proportion estimates include 95% confidence intervals, N=number of positive respondents						
*Fewer than five events, information suppressed						

Table A2:Proportion of Michigan third grade children with untreated dental decay, 2005-06—*Count Your Smiles*

	Untreated Primary Decay		Untreated Permanent Decay		Untreated Primary or Permanent Decay	
	N	%	N	%	N	%
Michigan (All children)	352	21.+/-3.2	124	7.3+/-2.2	403	25.0+/-3.6
Upper Peninsula	52	28.7+/-15.9	21	10.0+/-4.3	63	33.0+/-15.2
Northern Lower Peninsula	58	25.9+/-14.6	23	9.6+/-4.5	64	28.1+/-13.9
City of Detroit	22	26.7+/-9.7	8	8.7+/-9.3	25	29.6+/-9.9
Suburban Detroit	77	16.6+/-5.4	24	4.5+/-2.2	85	18.3+/-5.5
Southern Lower Peninsula	143	23.6+/-4.5	48	8.5+/-3.8	166	27.9+/-5.7
By Age						
<9 years	241	19.6+/-3.3	89	6.7+/-2.3	281	23.0+/-3.8
9 years or older	110	28.9+/-6.6	34	9.2+/-3.7	121	31.6+/-7.1
By Gender						
Male	168	21.0+/-3.8	58	6.9+/-2.9	195	24.8+/-4.7
Female	181	22.5+/-4.2	65	7.7+/-2.3	205	25.3+/-4.6
By Race/Ethnicity						
White	229	17.2+/-3.3	83	6.2+/-2.4	267	20.5+/-3.9
African American	62	30.7+/-6.3	26	11.3+/-5.2	71	34.7+/-5.7
Hispanic	32	40.5+/-12.2	11	13.5+/-6.6	34	42.6+/-12.2
Native American	12	20.7+/-15.1	6	9.0+/-10.4	15	23.7+/-15.1
Asian American	9	29.6+/-29.3	*	*	11	33.8+/-28.7
By Dental Insurance						
Private	136	15.0+/-3.3	35	3.3+/-1.4	154	16.8+/-3.5
Public	126	31.8+/-4.8	52	10.7+/-3.3	144	35.5+/-4.8
No Insurance	56	23.4+/-6.7	25	13.1+/-5.2	68	31.2+/-6.8
By Free/Reduced Lunch						
Enrolled	174	29.7+/-4.5	70	11.5+/-4.3	198	34.2+/-5.2
Not Enrolled	142	15.3+/-3.3	39	3.9+/-1.6	163	17.5+/-3.6
Language Spoken at Home						
English	286	20.3+/-3.0	106	7.2+/-2.4	331	23.8+/-3.6
Other	43	26.6+/-8.7	9	5.5+/-3.6	46	27.9+/-9.0
All proportion estimates include 95% confidence intervals, N = number of positive respondents						
*Fewer than five events, information suppressed						

Table A3:Urgency of dental treatment needs in Michigan third grade children, 2005-06—*Count Your Smiles*

	No Obvious Problem		Routine Dental Care Needed		Immediate Dental Care Needed	
	N	%	N	%	N	%
Michigan (All children)	1001	62.9+/-5.5	438	27.5+/-4.2	147	9.6+/-2.4
Upper Peninsula	135	68.3+/-15.8	52	27.3+/-13.5	8	4.4+/-3.4
Northern Lower Peninsula	128	50.0+/-23.6	77	39.3+/-25.5	26	10.7+/-5.3
City of Detroit	49	69.4+/-7.7	26	30.6+/-7.7	*	*
Suburban Detroit	352	82.0+/-5.2	60	13.8+/-4.3	24	4.2+/-2.7
Southern Lower Peninsula	337	50.8+/-9.8	223	34.4+/-6.9	89	14.7+/-4.3
By Age						
<9 years	768	65.2+/-4.9	324	26.6+/-3.9	95	8.3+/-2.4
9 years or older	231	56.2+/-9.9	111	30.1+/-6.6	51	13.7+/-4.9
By Gender						
Male	449	60.8+/-6.0	213	27.7+/-4.9	84	11.5+/-4.0
Female	543	64.7+/-6.1	223	27.4+/-4.6	62	7.9+/-2.8
By Race/Ethnicity						
White	778	65.1+/-6.4	322	26.7+/-5.5	100	8.2+/-2.2
African American	108	57.4+/-10.0	67	33.4+/-7.1	19	9.3+/-5.6
Hispanic	42	48.8+/-13.0	24	25.6+/-10.9	18	25.5+/-14.4
Native American	25	64.2+/-13.8	14	25.9+/-12.4	*	*
Asian American	19	54.6+/-30.2	8	23.9+/-14.3	6	21.5+/-21.9
By Dental Insurance						
Private	596	71.5+/-5.7	208	22.8+/-4.7	49	5.7+/-2.2
Public	231	53.5+/-7.0	132	32.9+/-5.2	52	13.7+/-4.5
No Insurance	123	54.2+/-10.2	64	30.4+/-8.4	32	15.4+/-5.3
By Free/Reduced Lunch						
Enrolled	336	54.6+/-6.6	177	32.2+/-5.3	75	13.2+/-4.1
Not Enrolled	598	70.9+/-6.0	213	22.4+/-4.8	58	6.6+/-2.4
Language Spoken at Home						
English	860	63.8+/-5.8	372	27.6+/-4.9	118	8.6+/-2.2
Other	108	66.8+/-10.7	37	20.3+/-6.7	18	12.9+/-7.5
All proportion estimates include 95% confidence intervals, N = number of positive respondents						
*Fewer than five events, information suppressed						

Table A4:

Proportion of Michigan third grade children who had a toothache when biting or chewing in the past six months, 2005-06—*Count Your Smiles*

	Proportion with a toothache when biting or chewing, past 6 months	
	N	%
Michigan (All children)	172	12.9+/-2.7
Upper Peninsula	21	11.2+/-5.0
Northern Lower Peninsula	31	13.3+/-9.2
City of Detroit	18	21.4+/-3.8
Suburban Detroit	46	11.4+/-9.9
Southern Lower Peninsula	68	12.6+/-4.3
By Age		
<9 years	128	13.0+/-2.8
9 years or older	43	12.6+/-4.9
By Gender		
Male	73	11.0+/-3.1
Female	97	14.7+/-3.5
By Race/Ethnicity		
White	112	9.7+/-2.5
African American	32	20.7+/-6.8
Hispanic	15	21.8+/-8.2
Native American	*	*
Asian American	7	20.9+/-19.9
By Dental Insurance		
Private	59	8.2+/-2.3
Public	76	21.7+/-5.4
No Insurance	24	10.2+/-4.5
By Free/Reduced Lunch		
Enrolled	107	18.9+/-5.1
Not Enrolled	61	7.9+/-2.6
Language Spoken at Home		
English	146	11.8+/-2.6
Other	31	17.0+/-6.7
All proportion estimates include 95% confidence intervals, N = number of positive respondents		
*Fewer than five events, information suppressed		

Table A5:Time since last dental visit for Michigan third grade children, 2005-06—*Count Your Smiles*

	Less than 1 year		More than 1 year, less than 3 years		More than 3 years or never	
	N	%	N	%	N	%
Michigan (All children)	1277	84.8+/-2.2	178	11.9+/-2.1	42	3.3+/-1.0
Upper Peninsula	165	81.2+/-11.3	27	17.8+/-10.9	*	*
Northern Lower Peninsula	185	84.3+/-5.5	27	12.6+/-6.3	7	3.2+/-1.8
City of Detroit	54	79.2+/-8.2	11	15.6+/-12.0	*	*
Suburban Detroit	351	84.7+/-3.6	58	13.0+/-3.5	10	2.3+/-1.2
Southern Lower Peninsula	522	86.0+/-3.4	55	10.2+/-2.7	19	3.8+/-1.6
By Age						
<9 years	973	85.7+/-2.5	125	11.1+/-2.3	32	3.2+/-1.0
9 years or older	298	81.5+/-3.6	53	14.8+/-3.9	10	3.7+/-2.5
By Gender						
Male	603	84.5+/-3.3	88	12.0+/-2.7	19	3.5+/-1.7
Female	662	84.8+/-3.1	90	12.1+/-3.0	23	3.1+/-1.3
By Race/Ethnicity						
White	1041	88.1+/-2.3	120	9.2+/-2.0	28	2.7+/-1.0
African American	130	79.1+/-4.6	29	16.2+/-4.9	8	4.7+/-2.7
Hispanic	56	69.6+/-9.7	15	20.7+/-9.7	7	9.7+/-6.5
Native American	37	81.6+/-14.5	*	*	*	*
Asian American	22	74.0+/-12.6	8	22.3+/-11.3	*	*
By Dental Insurance						
Private	783	91.7+/-2.3	59	6.9+/-2.0	9	1.4+/-0.9
Public	324	80.0+/-4.6	71	17.9+/-4.6	9	2.1+/-1.4
No Insurance	147	66.6+/-6.7	46	21.8+/-6.3	20	11.6+/-4.6
By Free/Reduced Lunch						
Enrolled	441	77.3+/-4.1	104	18.1+/-4.2	20	4.6+/-1.9
Not Enrolled	780	89.6+/-2.5	67	7.9+/-2.2	19	2.5+/-1.2
Language Spoken at Home						
English	1143	85.3+/-2.2	153	11.2+/-2.1	39	3.5+/-1.1
Other	124	80.3+/-7.2	25	17.9+/-6.2	*	*
All proportion estimates include 95% confidence intervals, N = number of positive respondents						
*Fewer than five events, information suppressed						

Table A6:

Proportion of Michigan third grade children who experienced difficulty obtaining dental care in the past year, 2005-06—*Count Your Smiles*

	Proportion who experienced difficulty obtaining dental care	
	N	%
Michigan (All children)	145	10.9+/-2.1
Upper Peninsula	11	5.6+/-4.2
Northern Lower Peninsula	29	13.6+/-5.7
City of Detroit	6	10.1+/-7.7
Suburban Detroit	40	10.1+/-3.4
Southern Lower Peninsula	59	11.5+/-3.3
By Age		
<9 years	107	10.9+/-2.6
9 years or older	38	11.3+/-4.1
By Gender		
Male	62	10.0+/-2.6
Female	83	12.0+/-3.0
By Race/Ethnicity		
White	110	9.8+/-2.1
African American	24	15.7+/-6.4
Hispanic	13	21.7+/-9.1
Native American	*	*
Asian American	5	14.4+/-11.8
By Dental Insurance		
Private	44	5.6+/-2.0
Public	43	13.2+/-3.5
No Insurance	51	25.9+/-5.6
By Free/Reduced Lunch		
Enrolled	77	15.7+/-3.8
Not Enrolled	56	6.7+/-1.9
Language Spoken at Home		
English	129	10.6+/-2.2
Other	15	13.4+/-5.5
All proportion estimates include 95% confidence intervals, N = number of positive respondents		
*Fewer than five events, information suppressed		

Table A7:

Proportion of Michigan third grade children with sealants present on permanent first molars, 2005-06—*Count Your Smiles*

	Proportion with sealants present on first molars	
	N	%
Michigan (All children)	388	23.3+/-3.6
Upper Peninsula	58	26.3+/-12.6
Northern Lower Peninsula	68	29.1+/-9.2
City of Detroit	14	22.5+/-21.1
Suburban Detroit	126	28.4+/-6.7
Southern Lower Peninsula	122	19.2+/-4.5
By Age		
<9 years	300	23.7+/-3.5
9 years or older	85	21.6+/-6.4
By Gender		
Male	173	22.1+/-4.8
Female	213	24.6+/-3.9
By Race/Ethnicity		
White	305	24.5+/-4.2
African American	41	24.3+/-10.3
Hispanic	16	14.6+/-7.9
Native American	13	28.7+/-14.5
Asian American	8	27.2+/-13.4
By Dental Insurance		
Private	221	24.3+/-4.5
Public	111	26.7+/-6.1
No Insurance	38	16.8+/-5.5
By Free/Reduced Lunch		
Enrolled	126	20.6+/-4.8
Not Enrolled	227	25.2+/-4.8
Language Spoken at Home		
English	345	25.0+/-4.1
Other	28	14.1+/-5.2
All proportion estimates include 95% confidence intervals, N = number of positive respondents		
*Fewer than five events, information suppressed		



Michigan Department of Community Health

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