

2008 South Carolina Oral Health Needs Assessment

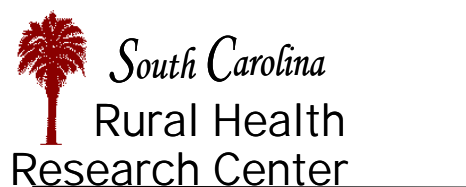
The 2008 OHNA was funded by through the Chronic Disease Prevention and Health Promotion Component 4-
State-Based Oral Health Disease Program
Cooperative Agreement U58/CCU422829-05



Needs assessment administered by
The South Carolina Department of Health and Environmental Control
Division of Oral Health



Results prepared by the South Carolina Rural Health Research Center
Amy Brock Martin, Dr.P.H., Deputy Director
Bankole Olatosi, Ph.D., Post Doctoral Fellow



Contents

Background

Executive Summary

2008 OHNA Results

Chapter 1: Description of Children Screened

Chapter 2: Assessment of Sealants

Chapter 3: Assessment of Caries Experience

Chapter 4: Assessment of Untreated Caries

Chapter 5: Assessment of Treatment Urgency

Appendix A – Tabular Results

Background

The OHNA plan was USC Graduate Student Valeria Carlson's Masters Project. The success of the OHNA clearly was dependent upon a solid plan and also a strong Division of Oral Health staff to move the plan to action. Deborah Bode-Hinson and Dr. Rick McDaniel played key roles in gaining the permission of the schools (district and school level) to conduct the survey, in developing and implementing the screener training curriculum, and in performing a large number of the dental screenings themselves. The DHEC School Dental Programs conducted dental screenings in school they served. Mary Kenyon Jones prepared the Department of Education standards based Oral Health Curriculum CDs for distribution to all the school participating with the OHNA. Following Val's departure from DHEC, Melissa English assumed the responsibility for the development of the database and data input. The raw data was sent to ORS in order to be de-identified and then linked to the various data sources. Contracts and permission requests were in place. Once ORS completed their work, the data was delivered to Dr. Martin who then completed her analysis.

Executive Summary

Sealants

- **Race** – No disparities were detected among the third graders screened ($p=0.16$). White and Black children had comparable rates of sealant use.
- **Age** – No differences were detected among the age groups ($p=0.12$).
- **Gender** – No gender differences were detected among third graders ($p=.57$).
- **Medicaid Enrollment** – Children enrolled in Medicaid were more likely to have sealants than children not enrolled ($p=<0.0001$).

Caries Experience

- **Race** – Black children were more likely to have caries than White children ($p<0.001$).
- **Age** – Children aged 9 to 10 years were more likely to have caries than children in other age groups ($p<0.0001$).
- **Grade** – Children in the third grade were more likely to have caries than children in Kindergarten ($p<0.0001$).
- **Gender** – No significant differences were detected between boys and girls for caries experience ($p=0.09$).
- **Medicaid Enrollment** – Children enrolled in Medicaid were more likely to have caries than children not enrolled ($p<0.0001$).
- **DHEC Region** – Region 7 had the lowest rate of caries (417.0 per 1,000)

Untreated Caries

- **Race** – Black children were more likely to have untreated caries than White children ($p<0.0001$).
- **Age** – Children aged 9 to 10 years were more likely to have untreated caries than children in other age groups ($p<0.003$).
- **Grade** – Children in the third grade were more likely to have untreated caries than children in Kindergarten ($p<0.0001$).
- **Gender** – No significant differences were detected between boys and girls for untreated caries ($p=0.09$).
- **Medicaid Enrollment** – No disparities were detected ($p=0.61$). Children enrolled in Medicaid were no more likely to have untreated caries than children not enrolled.
- **Free and Reduced Lunch Participation** – Children participating in Free and Reduced Lunch programs were more likely to have untreated caries than children not participating in the programs ($p<0.0001$).
- **Rural-Urban Status** – Children living in rural South Carolina were more likely to have untreated caries than children living in urban areas ($p<0.0001$).
- **Dental HPSA Status** – Children living in counties designated as Whole County Low Income Dental Health Professional Shortage Areas (HPSA) were most likely to have untreated caries, as compared to those living in counties with Whole County Geographic, Parital or counties with no Dental HPSA designation ($p<0.0001$).
- **DHEC Region** – Region 2 had the lowest rate of untreated caries (166.9 per 1,000)

Treatment Urgency (TxUrg)

- **Race** – Black children were more likely to have TxUrg 1 and 2 than White children ($p < 0.001$).
- **Age** – Children aged 9 to 10 years were more likely to have TxUrg 1 and 2 than children in other age groups ($p = 0.002$).
- **Grade** – Children in the third grade were more likely to TxUrg 1 while Kindergarten children were more likely to have TxUrg 2 ($p = 0.009$).
- **Gender** – No significant differences were detected between boys and girls for either types of TxUrg ($p = 0.24$).
- **DHEC Region** – Region 3 had the lowest rate of TxUrg 1 (113.3 per 1,000) while Region 7 had the lowest rate of TxUrg 2 (46.2 per 1,000).

Chapter 1: Description of Children Screened

A total of 5,734 children were screened in 73 schools in 39 school districts during the fall and spring semesters of the 2007-2008 school year.

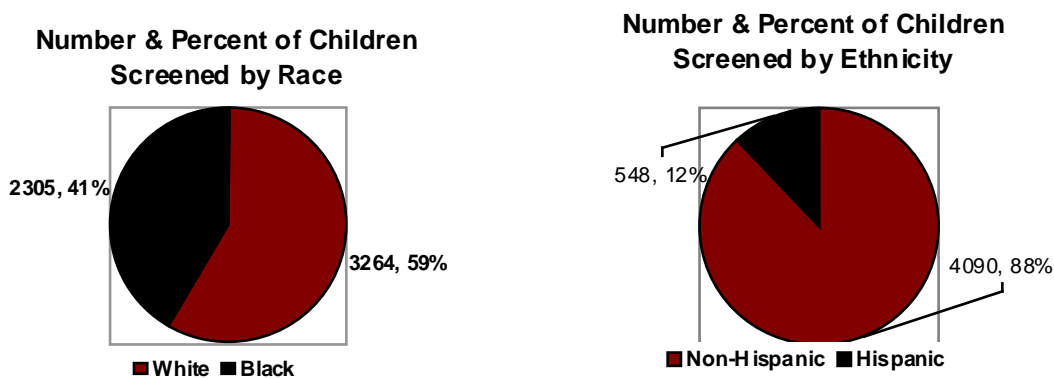
Screening Protocol

In 2005-2006 there were 630 public schools in South Carolina with at least one student enrolled in either kindergarten or third grade¹. These schools had a total kindergarten and third grade enrollment of 102,708 students. Schools with fewer than 20 students enrolled in K-5 and/or third grade were removed from the sampling frame. The final sampling frame included 618 schools with 102,628 K-5 and third grade children, which was developed by Kathy Phipps, SC-DHEC sampling consultant.

The sampling frame was stratified by region (Kathy Phipps, SC-DHEC sampling consultant, personal communication). Within each region a probability sample of schools was selected with implicit stratification by rural/urban status and percent of children eligible for the free/reduced lunch program (Kathy Phipps, SC-DHEC sampling consultant, personal communication). If a region had 60 or more schools, 10% of the schools were selected. If a region had fewer than 60 schools, six schools were selected (Kathy Phipps, SC-DHEC sampling consultant, personal communication).

The resulting sample is described by each category of analysis in each of the following sections.

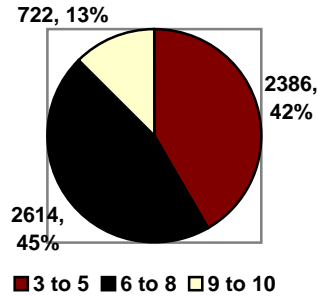
Race & Ethnicity - Race choices were White or Black. Of the 5,734 children screened, race was missing for 165. Ethnicity was collected separately from race and measured as either Hispanic or Non-Hispanic. For nearly 20% (1,096) of the children screened, ethnicity was missing making it unreliable for analytical purposes. It is presented descriptively in the needs assessment report, but no significance testing was conducted that used it in any models.



¹ South Carolina State Department of Education (2005). Pupil Count in South Carolina Schools, 2004-2005 school year. Accessed 4/4/07 from <http://ed.sc.gov/agency/offices/research/PupilCountReport.html>

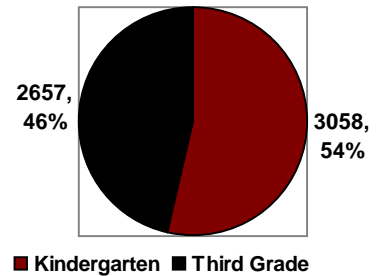
Age – Age was collected in whole year intervals and included ages 3 through 10 years. For purposes of presentation, age groups were created based on program needs and normal distribution of the data. The age groups were 3 to 5 years; 6 to 8 years; and 9 to 10 years. Only 12 cases are missing age.

Number & Percent of Children Screened by Age Group

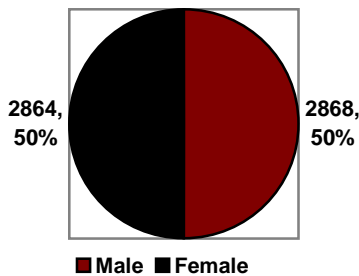


Grade – Children enrolled in Kindergarten and third grade were included in the screening. Nineteen of the 5,734 children screened either had missing or unknown for grade.

Number & Percent of Children Screened by Grade



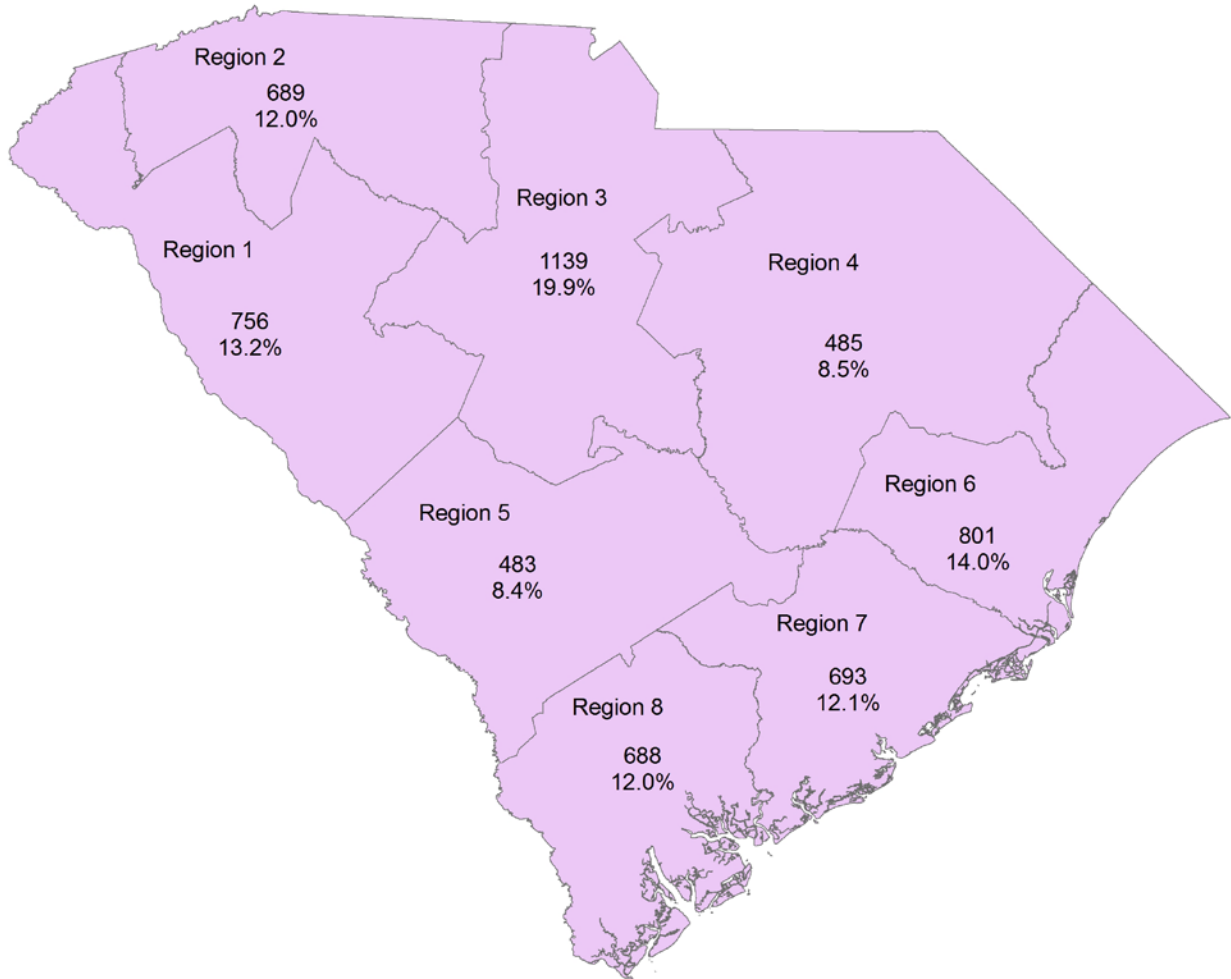
Number & Percent of Children Screened by Gender



Gender – Children were categorized as male or female for the screening. Only 2 children are missing gender assignments.

DHEC Region – All eight DHEC regions were included in the sample used for the SCOHNA. A map delineating the proportion of the sample originating in each region is presented below:

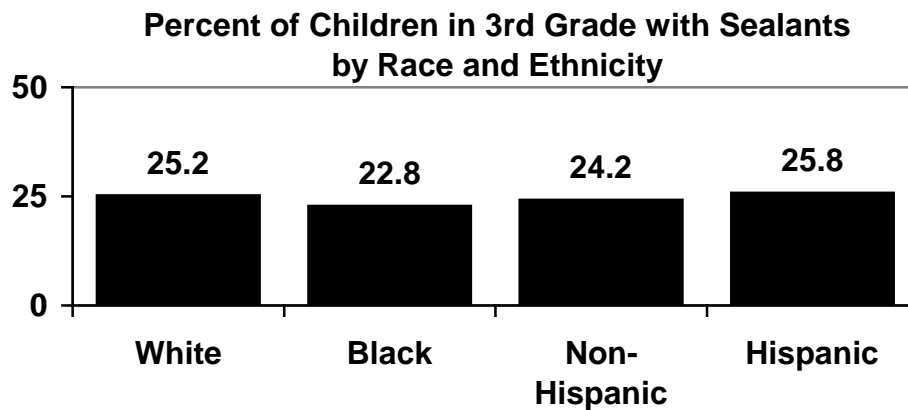
Total Number of Children Screened and Percentage of Sample by DHEC Region



Chapter 2: Assessment of Sealants

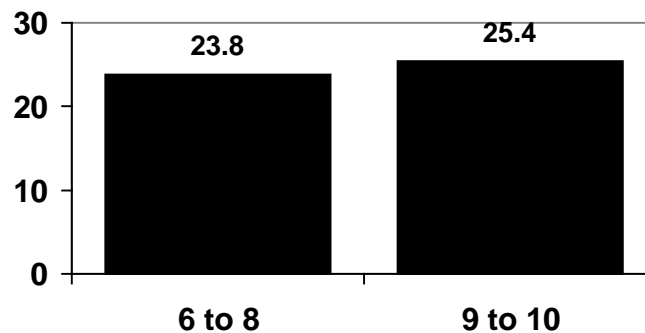
Data was examined along person-level and ecological-level characteristics. Race, ethnicity, age, grade, gender, Medicaid status, and enrollment in free and reduced lunch programs were among the person-level characteristics analyzed. Data was also analyzed by DHEC region, dental HPSA status, rural status, county, and school district. Because sealant applications tend to be age-dependent, data is analyzed for children in the third grade only. This special analysis is not repeated for the remaining indicators of interest. Of the 2,657 third grade children screened, 24.2% (613) had sealants.

Race & Ethnicity – No disparity for sealant use existed for White and Black children, as statistical differences were not observed. ($p=0.16$). More Non-Hispanic than Hispanic children had sealants with a margin of nearly 9 to 1. Unfortunately, nearly 20% of the children had an unreported ethnicity making the findings difficult to interpret therefore no significance testing was conducted.

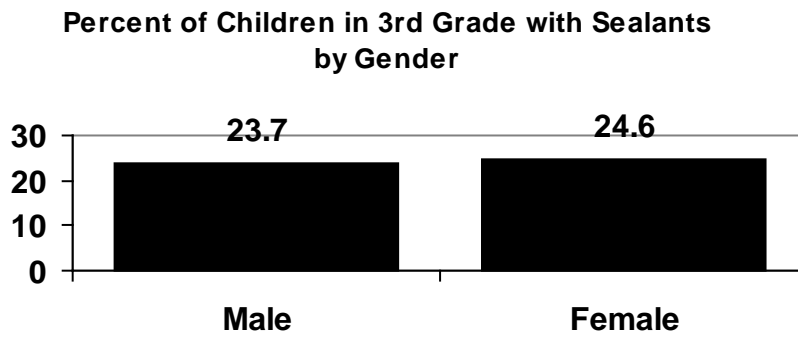


Age – Age was not significant when examined for children enrolled in the third grade ($p=0.12$), which was not expected given the children are in the same phase of academic development.

**Percent of Children in 3rd Grade with Sealants by Age
Group**

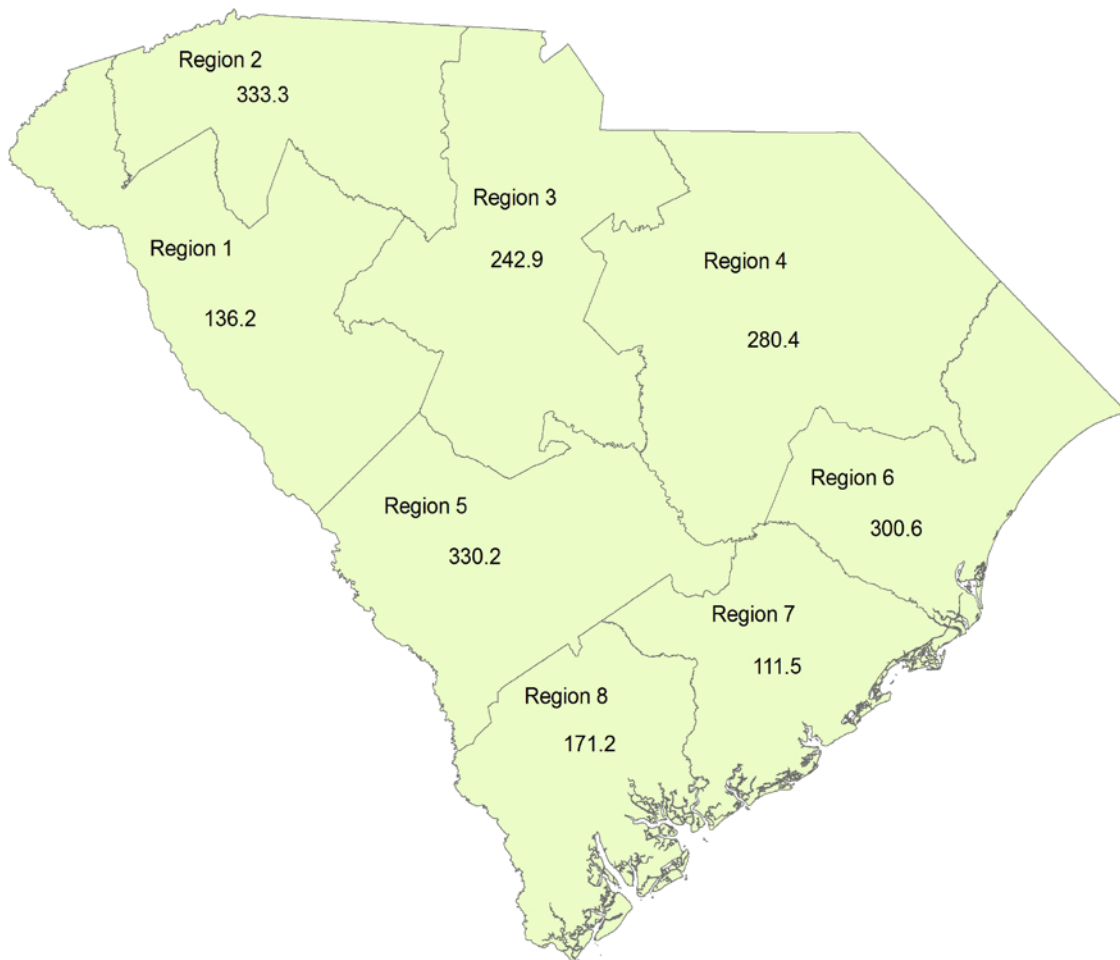


Gender – No significant gender differences were observed for third grade students only (p=0.57).



DHEC Region – Maps delineating sealant prevalence among children enrolled in the third grade are presented below by region:

Third Grade Sealant Rate per Total Number of 3rd Graders Screened by DHEC Region per 1000 Children

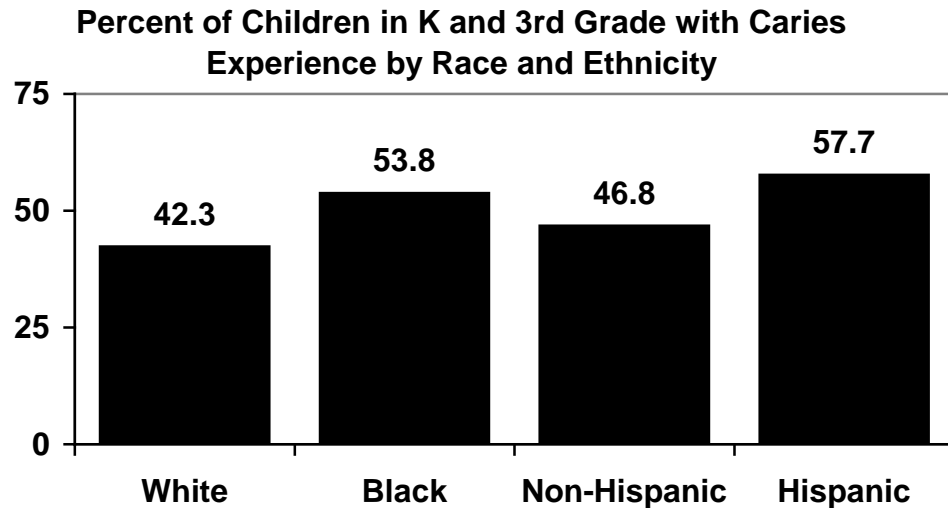


Region 2 had the highest rate of sealant use with 333.3 children out of every 1,000 children screened having sealants. This rate is followed closely by Region 5 (330.2) and Region 6 (300.6).

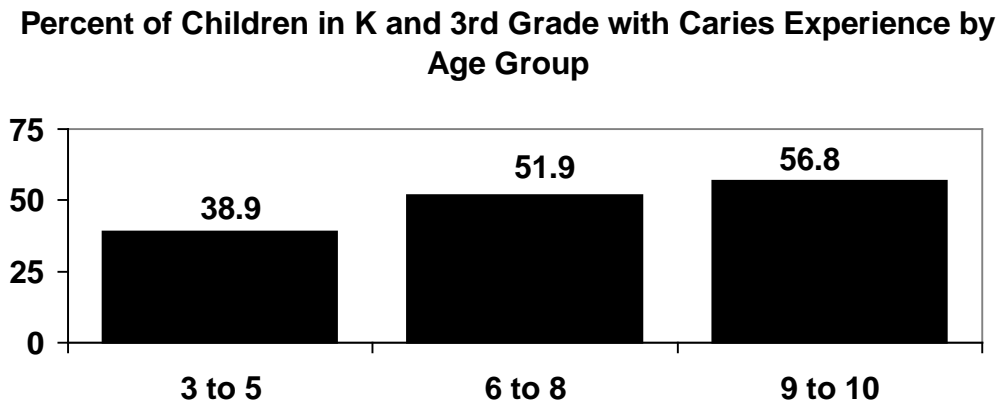
Chapter 3: Assessment of Caries Experience

Of the 5,734 children screened, 47.1% (2,700) had caries experience. Data was examined using the same indicators as sealants.

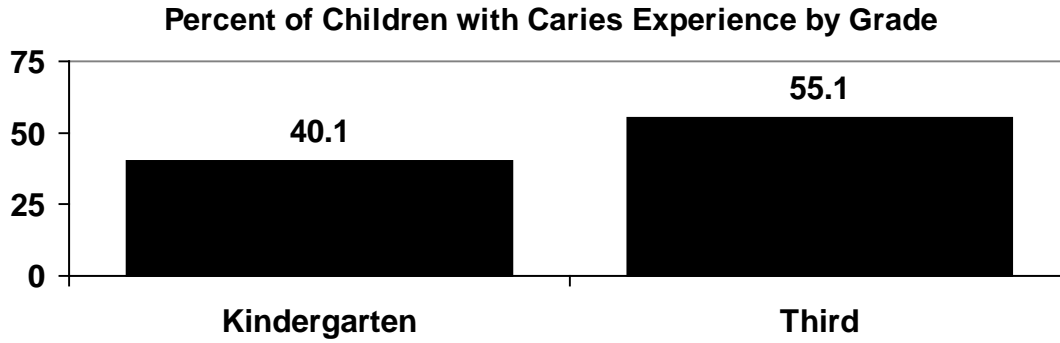
Race & Ethnicity – Black children are significantly more likely than White children to have caries experience ($p < 0.0001$). Data suggest that Hispanic children were more likely to experience caries than Non-Hispanic children, but no significance testing was conducted due to the large volume of missing data for ethnicity.



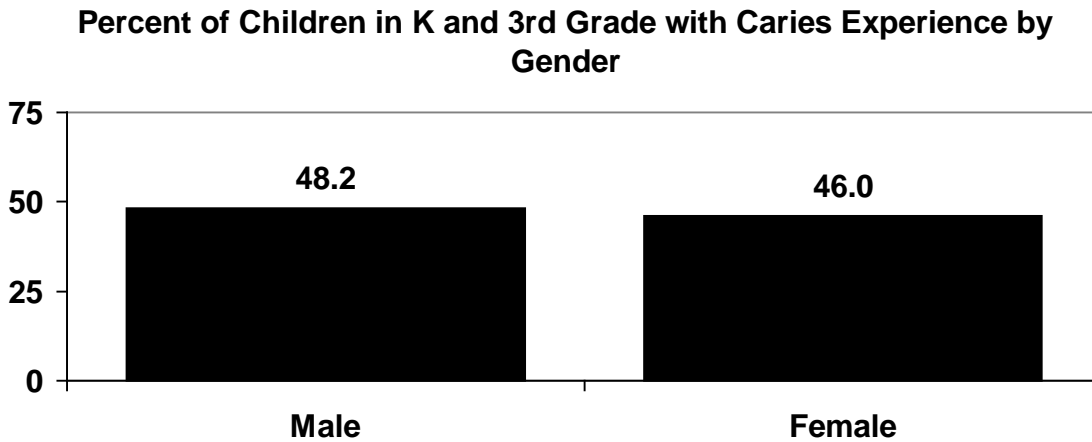
Age – Age group and likelihood of having caries experience were related. As age increased, so did the likelihood of experiencing caries ($p > 0.0001$). Children aged 9 to 10 years were most likely to experience caries, followed by children aged 6 to 8 years and 3 to 5 years.



Grade – Significant differences were detected for caries experience with more children in the third grade than kindergarten who experienced caries ($p < 0.0001$). These findings corroborate the age group analysis.

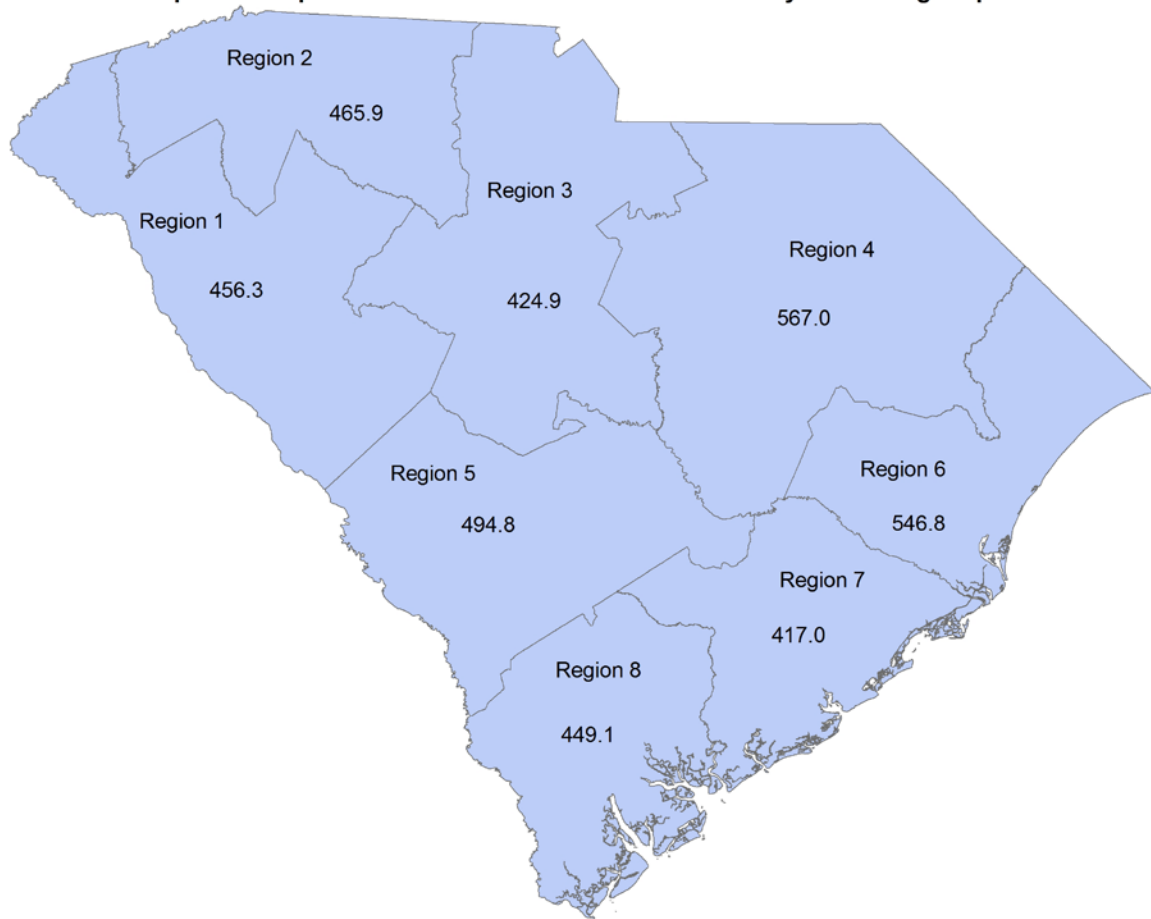


Gender – No differences for caries experiences were observed between boys and girls ($p = 0.09$).



DHEC Region –A map delineating prevalence of caries among the regions is presented below:

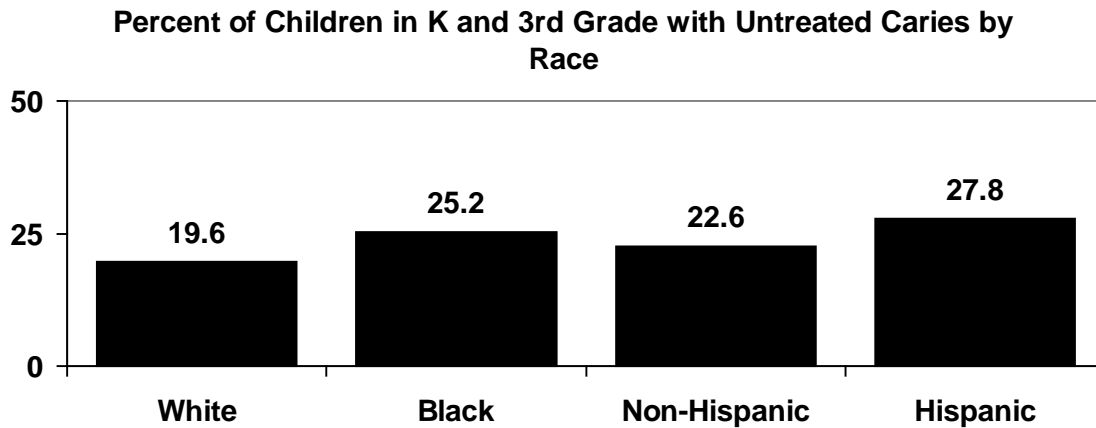
Rate of Caries Experiences per Total Number of Children Screened by DHEC Region per 1000 Children



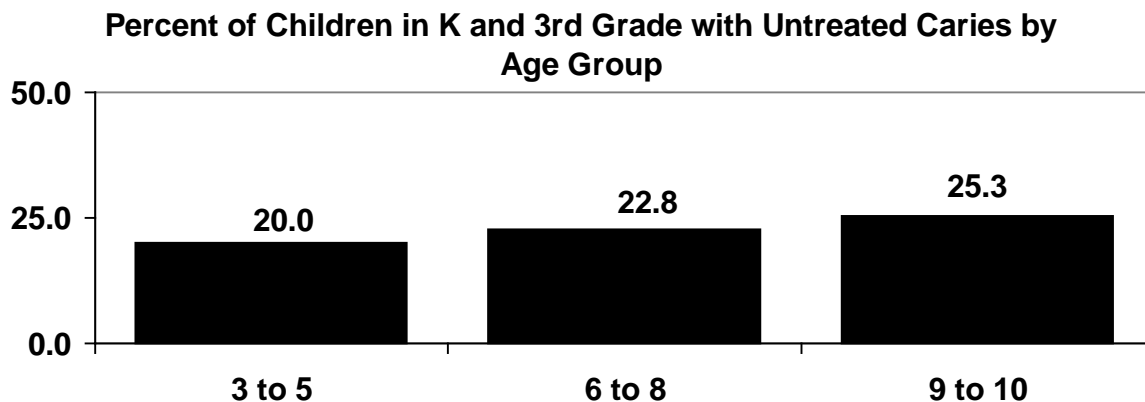
Chapter 4: Assessment of Untreated Caries

Of the 5,734 children screened, 22.0% (1,261) had untreated caries. Data was examined using the same indicators as sealants and caries experience.

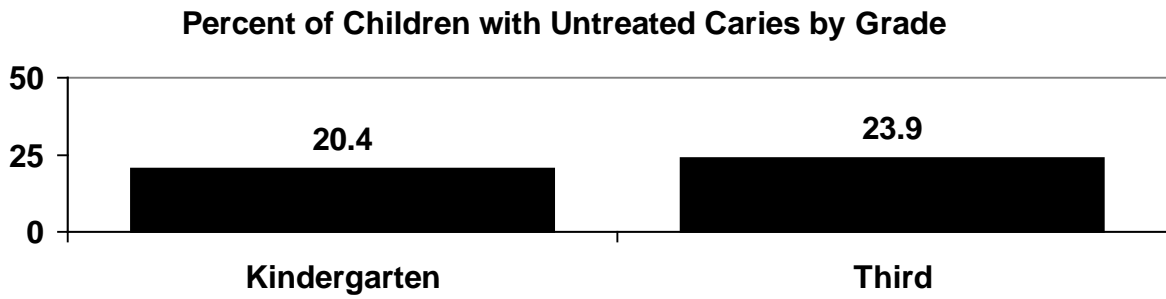
Race & Ethnicity – Black children were more likely to have untreated caries than White children ($p < 0.0001$). Data suggest that, descriptively, more Hispanic children have untreated caries than Non-Hispanic children. Unfortunately, 1 in 5 children had missing ethnicity so the findings cannot be interpreted accurately. No significance testing was conducted.



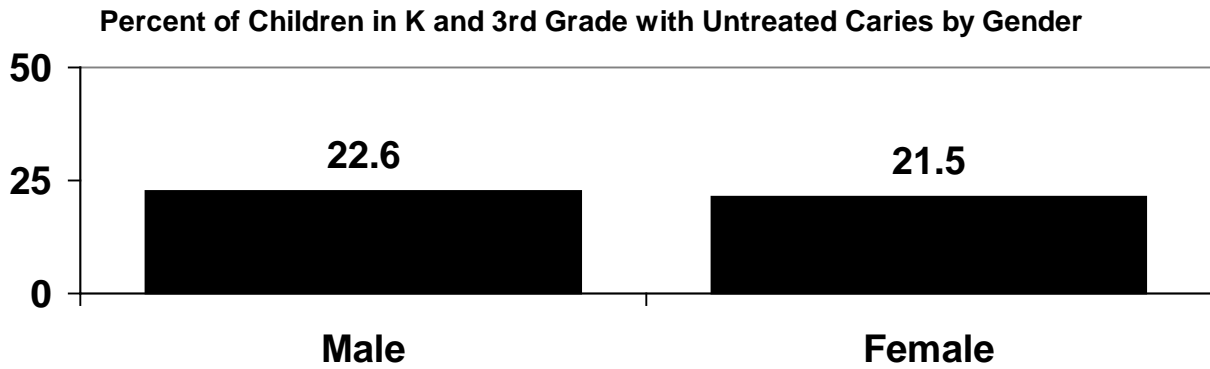
Age – Children aged 9 to 10 years were significantly more likely to have untreated caries than children in the other age groups ($p = 0.003$).



Grade – Third graders were significantly more likely to have untreated caries than children in Kindergarten, corroborating the significance detected among age groups ($p=0.0001$).

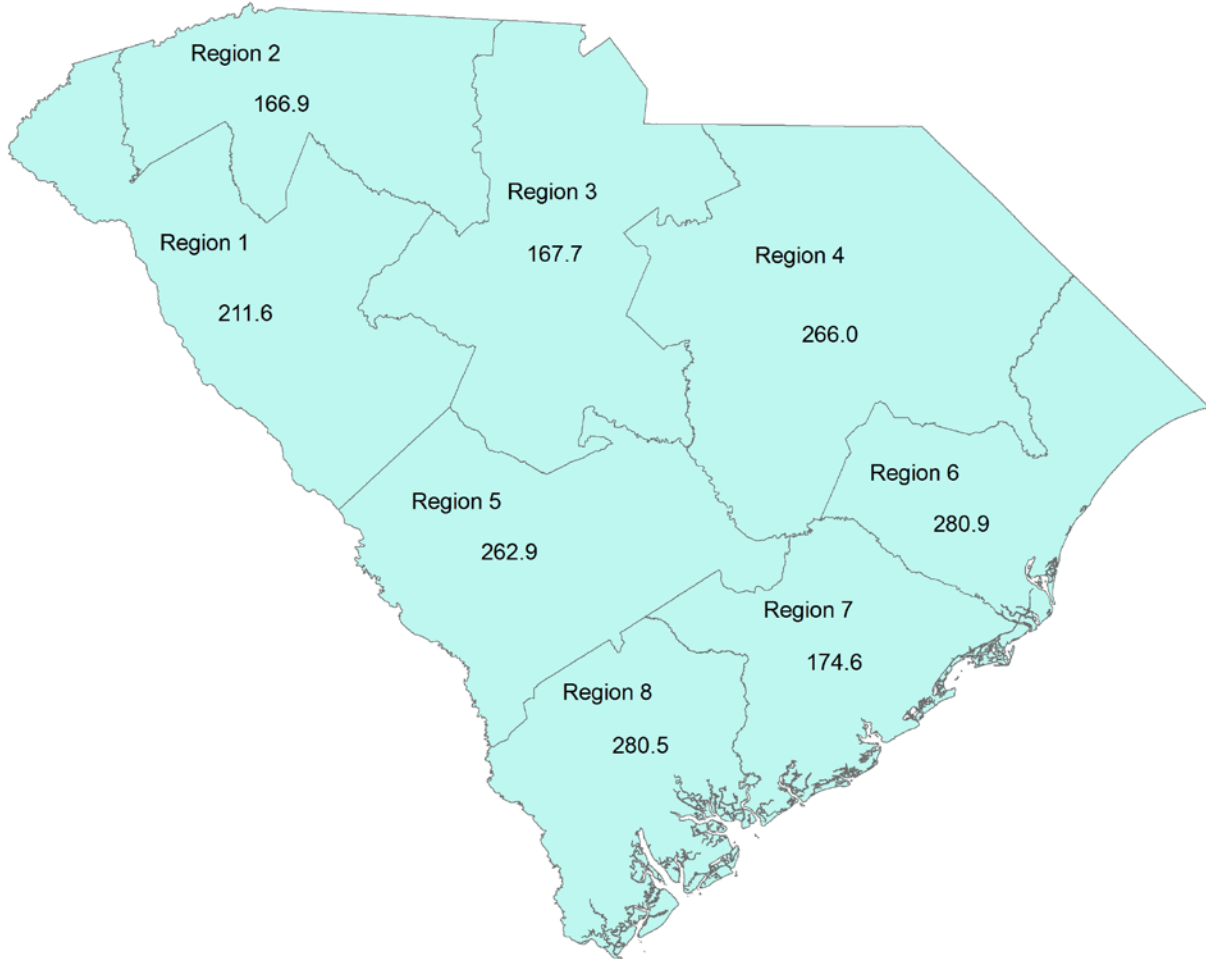


Gender – There were no real differences between boys and girls for untreated caries ($p=0.30$).



DHEC Region – All eight DHEC regions were included in the sample used for the SCOHNA. A map delineating sealant prevalence among the regions is presented below:

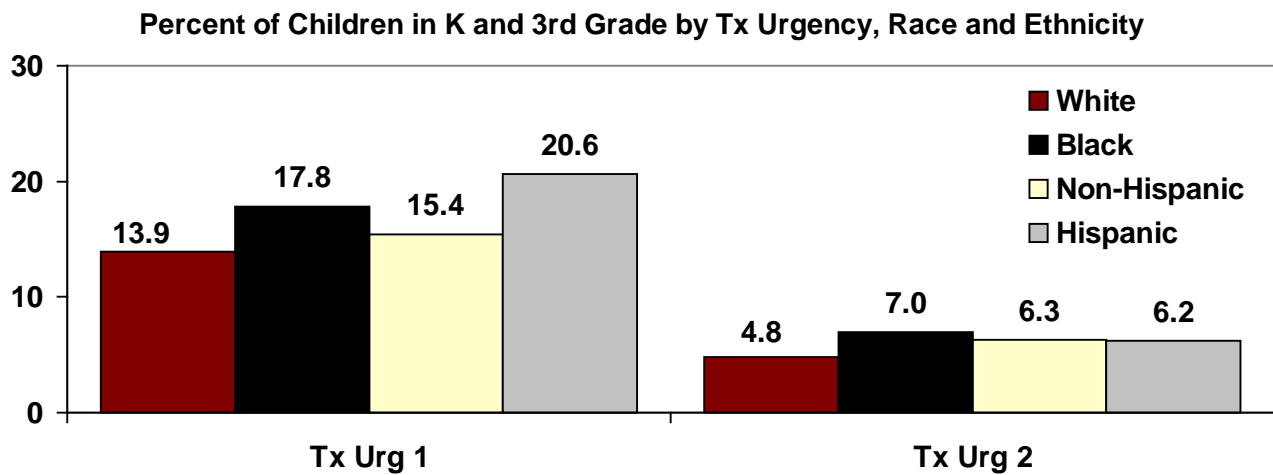
Rate of Untreated Caries per Total Children Screened by DHEC Region per 1000 Children



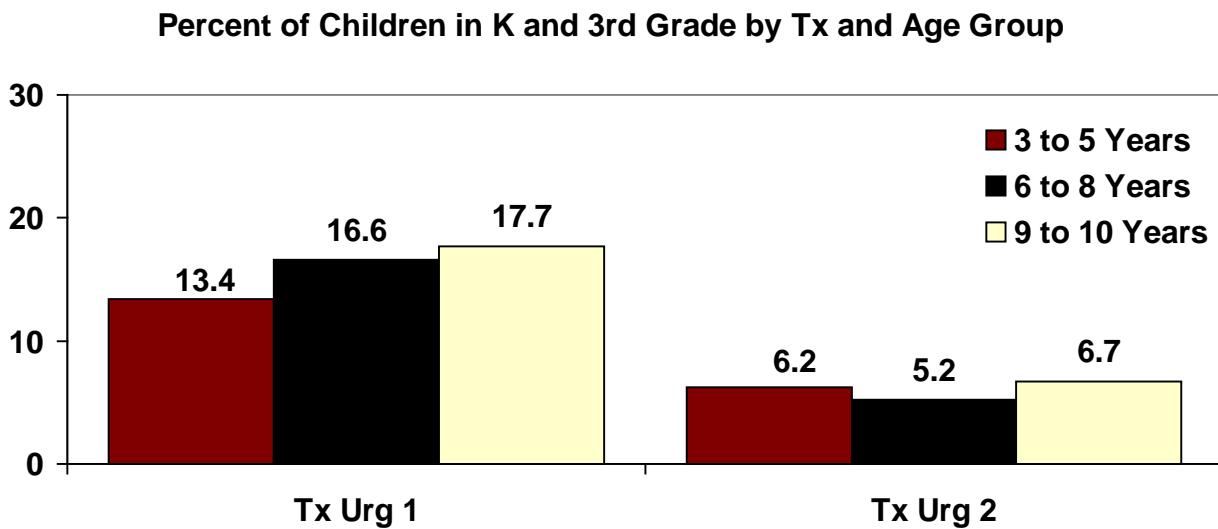
Chapter 5: Assessment of Treatment Urgency

Of the 5,734 children screened, 21.3% (1,223) had some level of treatment urgency. Broken out by urgency type, 15.5% of all children screened had treatment urgency 1 and 5.9% had treatment urgency 2. Data was examined using the same indicators as for previous outcomes of interest.

Race & Ethnicity – Black children were significantly more likely to have treatment urgencies 1 and 2 than White Children ($p < 0.0001$). Descriptive data demonstrate more Hispanic children had treatment urgency 1 than Non-Hispanic, but less likely for treatment urgency 2. As in previous analyses, no statistical significance testing was conducted due to the large number of missing data for ethnicity.

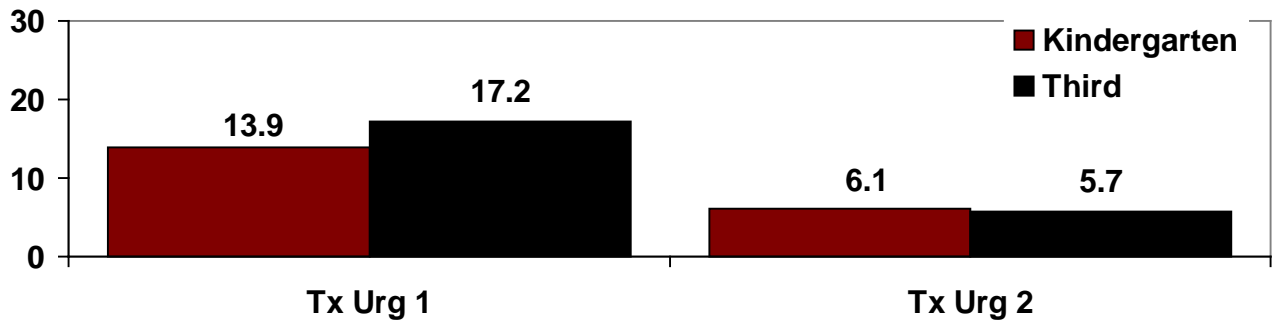


Age – Children aged 9 to 10 years were most likely to have treatment urgencies 1 and 2 than those in other age groups ($p = 0.002$). Likelihood of treatment urgency 1 increases with age. The trend is not similar for treatment urgency 2 for which children aged 6 to 8 years were least likely to experience, as compared to younger and older children.



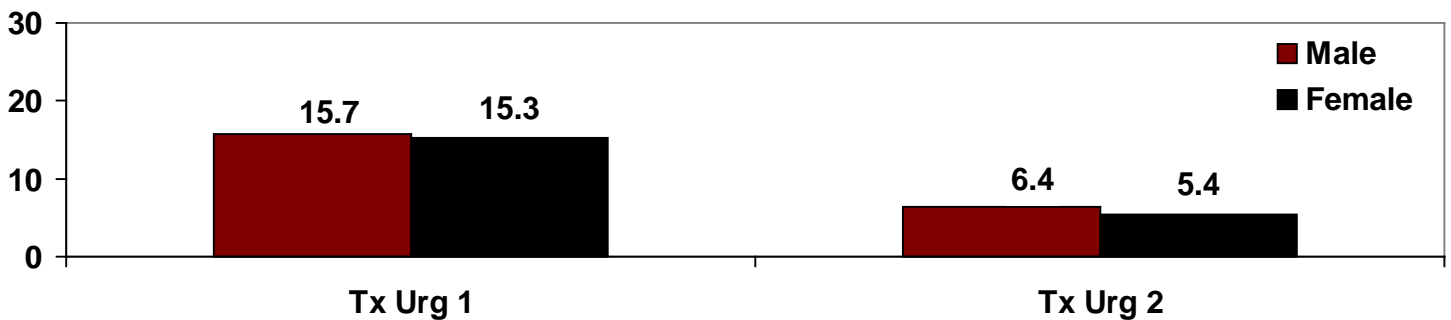
Grade – Children in Kindergarten were less likely to have treatment urgency 1 but more likely to have treatment urgency 2 than third graders (p=009).

Number & Percent of Children by Tx Urgency & Grade



Gender – The distribution of treatment urgencies were equitable among boys and girls for both levels 1 and 2 with nearly half represented in each urgency type. No significant differences were detected (p=0.24)

Percent of Children in K and 3rd Grade by Tx Urgency & Gender

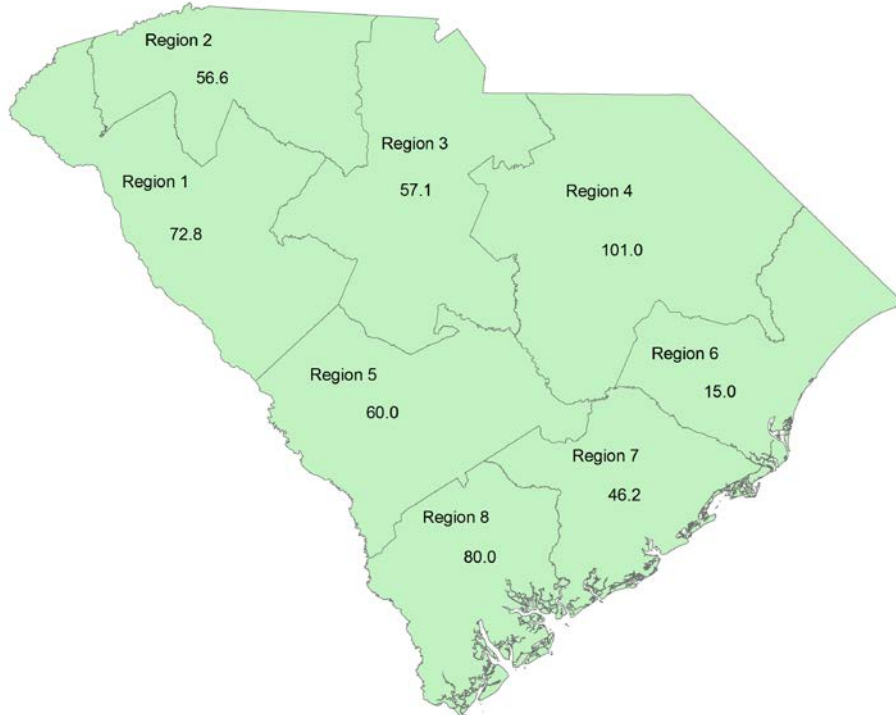


DHEC Region – Rates for each DHEC Region are presented in the two following maps, one for each treatment urgency type.

Rate of Treatment Urgency 1 per Total Children Screened by DHEC Region per 1000 Children



Rate of Treatment Urgency 2 per Total Children Screened by DHEC Region per 1000 Children



APPENDIX A

Tabular Results from 2008 Oral Health Needs Assessment – All Sampled Children

Category	Total Screened	Caries Experience	Untreated Caries	Treatment Urgency (1)	Treatment Urgency (2)
	Number (Column Percent)	Number (Row Percent)	Number (Row Percent)	Number (Row Percent)	Number (Row Percent)
Total	5,734 (100%)	2,700 (47.1%)	1,261 (22.0%)	887 (15.5%)	336 (5.9%)
Person-level characteristics					
Race					
White	3,264 58.6%	1,382 42.4%	639 19.6%	454 13.9%	157 4.8%
Black	2,305 41.4%	1,239 53.8%	580 25.2%	410 17.8%	162 7.0%
Unknown/Missing	165	166	171	165	
Ethnicity					
Hispanic	548 11.8%	316 57.7%	152 27.8%	113 20.6%	34 6.2%
Non-Hispanic	4,090 88.2%	1,914 46.8%	921 22.6%	631 15.4%	258 6.3%
Unknown/Missing	1,096	1,097	1,073	1,096	
Age					
3 to 5 Years	2,386 41.7%	928 38.9%	477 20.0%	320 13.4%	149 6.2%
6 to 8 Years	2,614 45.7%	1,355 51.9%	596 22.8%	435 16.6%	137 5.2%
9 to 10 Years	722 12.6%	410 56.8%	182 25.3%	128 17.7%	48 6.7%
Unknown	12	13	18	12	
Grade					
Kindergarten	3,058 53.3%	1,225 40.1%	624 20.4%	425 13.9%	186 6.1%
Third	2,657 46.4%	1,463 55.1%	633 23.9%	458 17.2%	150 5.7%
Unknown	18 0.3%	11 61.1%	3 16.7%	3 16.7%	0 0%
Missing	1	2	7	1	
Gender					
Male	2,868 50.0%	1,383 48.2%	647 22.6%	450 15.7%	182 6.4%
Female	2,864 50.0%	1,316 46.0%	614 21.5%	437 15.3%	154 5.4%
Missing	2	3	8	2	

Category	Total Screened	Caries Experience	Untreated Caries	Treatment Urgency 1	Treatment Urgency 2
	Number (Column Percent)	Number (Row Percent)	Number (Row Percent)	Number (Row Percent)	Number (Row Percent)
DHEC Region					
1	756 13.2%	345 45.7%	160 21.3%	102 13.5%	55 7.3%
2	689 12.0%	321 46.6%	115 16.7%	80 11.6%	39 5.7%
3	1139 19.9%	484 42.5%	191 16.8%	129 11.3%	65 5.7%
4	485 8.5%	275 56.7%	129 26.7%	78 16.1%	49 10.1%
5	483 8.4%	239 49.5%	127 26.3%	97 20.1%	29 6.0%
6	801 14.0%	438 54.7%	225 28.1%	172 21.5%	12 1.5%
7	693 12.1%	289 41.7%	121 17.5%	86 12.4%	32 4.6%
8	688 12.0%	309 44.9%	193 28.1%	143 20.8%	55 8.0%