Oklahoma Oral Health Needs Assessment 2016

Third Grade Children

Oklahoma State Department of Health

Dental Health Service

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Background and Purpose

The University of Oklahoma College of Public Health, in collaboration with the Oklahoma State Department of Health, conducted an oral health needs assessment among third grade children in the state of Oklahoma. A similar needs assessment has been conducted for eight of the last thirteen years. The purpose of this needs assessment was to produce statewide estimates of dental health status indicators. The oral screening included an assessment of the prevalence of protective sealants, untreated cavities, other caries experience, missing teeth, and need for dental treatment.

A number of major surveys have been performed to determine the prevalence of oral disease in the United States. However, prior to 2003, data specific to Oklahoma third grade children had not been previously available. Data on the percentage of Oklahoma children with sealants and caries are needed to make decisions guiding dental public health policy in this state. Data are reported to the National Oral Health Surveillance System (NOHSS), a collaborative effort between the Centers for Disease Control and Prevention's (CDC) Division of Oral Health and the Association of State and Territorial Dental Directors (ASTDD). In addition, these data are needed for reporting purposes to federal agencies, specifically the Title V Maternal and Child Health Block Grant.

One of the national performance measures required for federal reporting is the percentage of third grade children who have received protective sealants on at least one permanent molar tooth. Tooth decay affects nearly two-thirds of children by the time they are 15 years old. Dental sealants protect vulnerable sites on the tooth. Targeting dental sealants to those children at greatest risk for decay has been shown to be cost-effective. Although dental sealants in conjunction with water fluoridation have the potential to significantly prevent decay among children, sealants have been shown to be underutilized.

Research Design

This cross-sectional design included a random sample of third grade students in Oklahoma and direct observation of dental caries and sealants by Oklahoma licensed and registered dental hygienists. The protocol for data collection and calibration training was guided by recommendations of the ASTDD in their publication "Basic Screening Surveys: An Approach to Monitoring Community Oral Health." The oral health needs assessment was conducted during the 2015-2016 school year.

This study was submitted to and approved by the Oklahoma State Department of Health Institutional Review Board (IRB) (#02-15).

Sample

A large spreadsheet of both accredited and non-accredited Oklahoma public and private schools was acquired from the Oklahoma State Department of Education (OSDE) in April of 2015. All schools in the spreadsheet with one or more third grade classrooms and at least five third grade students were retained for this study. Approximately 900 public and private schools with at least one third-grade classroom were included in the sampling frame.

In order to derive statewide and regional estimates, Oklahoma was divided into six regions: Northeast (NE), Northwest (NW), Southeast (SE), Southwest (SW), Oklahoma County, and Tulsa County. The numerical breakdown for each region consisted of 21 counties in the NE region, 18 counties in the NW region, 23 counties in the SE region, 13 counties in the SW region, and one county each for both Oklahoma and Tulsa counties, representing the two metropolitan areas.

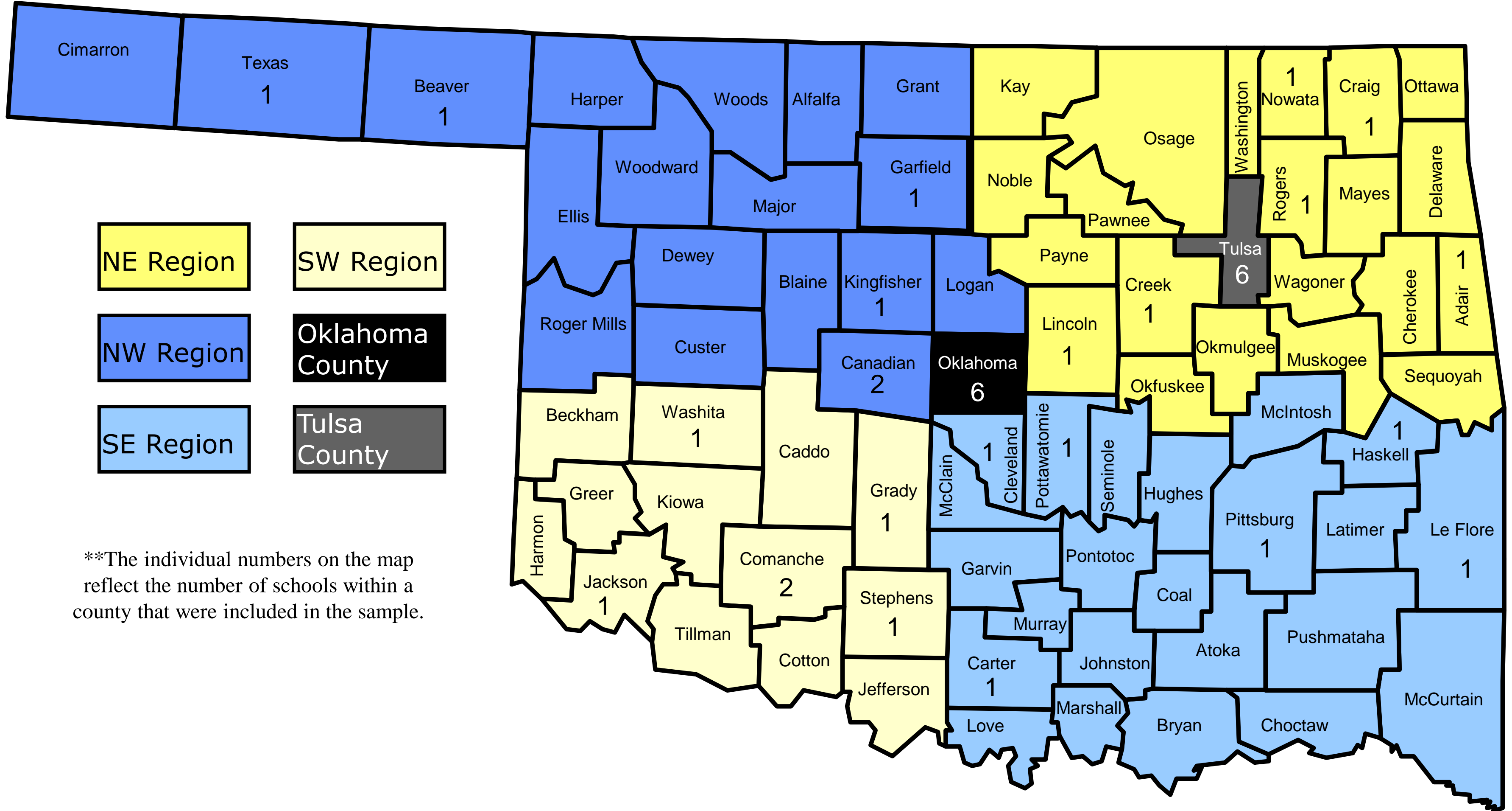
Based on power analyses, approximately 600 students were needed statewide, 100 in each region, to produce estimates with reasonable precision. To accommodate this sample size, six schools from each region were selected to participate, for a total of 36 schools statewide. The

sampling frame of all schools was stratified by region, and a 6-school-per-region random sample was selected using SAS SurveySelect. Each school had an equal probability of being included in the sample.

The six schools sampled from each region were asked to participate in the study. A descriptive letter about the study was mailed to the school, along with a return postcard signifying agreement to participate (Appendix A). If a school did not respond to this initial request, multiple other attempts were made to obtain school consent. These included, but were not limited to, at least three follow-up calls, another letter, and e-mails. If a school refused to participate or did not respond within a reasonable time period, a replacement school was selected that matched the original school by region, county, class size, and/or percent of students eligible for free and reduced priced meals. By using the sample replacement strategy described, a final sample of 36 participating schools was obtained.

After a school consented to the screenings, a list of all third grade teachers was made for each school. Screenings were done for all third grade classrooms at participating schools.

The following map describes the regions sampled, and the county location of each school included in the needs assessment.


NE Region
SW Region
NW Region
Oklahoma County
SE Region
Tulsa County
**The individual numbers on the map reflect the number of schools within a county that were included in the sample.
Cimarron
Texas
1
Beaver
1
Harper
Woods
Alfalfa
Grant
Kay
Osage
Washington
1
Nowata
Craig
1
Ottawa
Woodward
Major
Garfield
1
Noble
Pawnee
Rogers
1
Mayes
Delaware
Ellis
Dewey
Blaine
Kingfisher
1
Logan
Payne
Tulsa
6
Creek
1
Wagoner
Cherokee
1
Adair
Roger Mills
Custer
Canadian
2
Oklahoma
6
Lincoln
1
Okmulgee
Muskogee
Sequoyah
Beckham
Washita
1
Caddo
Okfuskee
McIntosh
1
Haskell
McClain
1
Cleveland
Pottawatomie
1
Seminole
Greer
Kiowa
Grady
1
Hughes
Pittsburg
1
Latimer
Le Flore
1
Harmon
Jackson
1
Comanche
2
Garvin
Pontotoc
Coal
Stephens
1
Murray
Tillman
Cotton
Carter
1
Johnston
Atoka
Pushmataha
Jefferson
McCurtain
Marshall
Love
Bryan
Choctaw

Consent

Active or passive parental consent and student assent were obtained for this needs assessment (Appendix B). IRB-approved parental consent forms were sent to the schools at least a week before the arrival of the dental hygienists, in order for parents and students alike to have access to the information needed to make an informed decision about the screenings. These parental consent forms included why the study was being done; how many students were taking part in the study; a description of the study; how long the child would be in the study; the risks, benefits, and options of the study; confidentiality of the study; the child's rights as a participant of the study; and pertinent contact information. Voluntary student participation was also emphasized on this form.

Data Collection

An oral health screening form was created to record all data (Appendix C). Teachers were asked to complete the information regarding school and student demographics, including each child's age, gender, race, and ethnicity. Gender was coded as M or F, according to either male or female, respectively. Race was coded as W for whites, B for blacks or African-Americans, NA for Native Americans, A for Asians, and O for any other race. Ethnicity was coded as H for Hispanic origin, N for not Hispanic origin and U for unknown ethnic origin. Although name was collected to facilitate the screening process, names were separated from the data immediately following the screening so that all results would remain confidential.

Seven dental hygienists (AC, CB, JH, VC, JC, TL, and LC) performed the screenings. The dental screenings usually took place within the classroom setting, with the dental hygienists checking one child at a time. The screenings were conducted with non-latex dental exam gloves, artificial light, and disposable dental mirrors.

Additionally, the dental hygienists were responsible for filling in all the oral health results for each participating student, according to preset and calibrated criteria established by the ASTDD and the Oklahoma State Department of Health. For decayed teeth, these criteria consisted of all cavitations, occlusal discolorations, and interproximal shadows. For missing teeth, these criteria weighed the following variables simultaneously: age of the child, normal exfoliation ages for primary teeth, and normal eruption ages for permanent teeth. For filled teeth, all amalgams, composites, and stainless steel crowns were classified as "filled." For sealants, any clear or tooth-colored resin on occlusal surfaces of permanent teeth was counted, resulting in a range of 0 to 4 sealants. Additionally, primary teeth were distinguished from permanent teeth by distinct anatomical differences, and were noted accordingly. For each student, the total number of decayed, missing, or filled teeth, or teeth with sealants was recorded.

Results for each child were sent home on a form filled in by the dental hygienist who visited the school (Appendix D). Results consisted of a checked box for the appropriate outcome, indicating whether the child had no dental problems observed, had some dental problems that needed attention soon, or the child had problems that needed attention immediately. All participating and non-participating children in the classroom received a toothbrush. An oral health educational program about the importance of oral hygiene, healthy diets, and regular dental visits was delivered to each classroom.

Data Entry and Analysis

All data were entered in Microsoft Access. After validation of data entry for accuracy, data were summarized and analyzed, and reports were prepared using SAS version 9.3. The reports included total number of sampled students per region; total estimated third graders in the state and per region (based on the data obtained from the OSDE); total schools in the

state and per region; total students with at least one tooth with caries per region; total number of teeth with caries per region; caries percentages per region; sealant percentages for the state and per region; percentage of each region that was sampled; and the percentage of the total state population that was sampled. Frequency and means procedures were used to generate statewide and regional estimates.

Weighted Analyses Methods

The results were weighted to account for the variation in the number of schools per region. These weights were the inverse of the probability of a school selection within region such that each school represented a specific number of schools in their region. Estimation of the weighted state population values was performed using the SAS survey analysis method PROC SurveyMeans. Weighted proportions and means plus 95% confidence intervals were produced.

Confidentiality

All data were stored in a password protected computer file. Signed parental consent forms, assent forms, and de-identified data entry forms were stored in locking file cabinets, accessible only to project staff. Only group data were analyzed, and no names will be used in any publication resulting from this needs assessment.

Results

A total of 1,285 third-grade students participated in the oral needs assessment from across Oklahoma. The overall participation rate was 66.8%. The incorporation of passive parental consent increased the participation rate by about 60% from the 42% participation in the 2013 screening. Both the number of students screened and participation rates varied by region (Table 1). Schools in the NW region of the state had the

highest participation rates (85.9%) followed closely by the NE region (84.5%). Tulsa County had the lowest rate of participation (31.8%). The SE region, with 120 students from six schools, had the fewest number of students screened. Oklahoma County, with 406 students from six schools, had the most students screened.

Table 1. Participating schools, by region

Region	School	County	# Parental Consents	# Screened	Participation Rate
NE	**A (N=19)**	**Adair**	**18**	**18**	**94.7%**
	B (N=21)	**Craig**	**18**	**18**	**85.7%**
	C (N=33)	**Creek**	**28**	**25**	**84.8%**
	D (N=28)	**Lincoln**	**8**	**8**	**28.6%**
	E (N=67)	**Nowata**	**57**	**54**	**85.1%**
	F (N=84)	**Rogers**	**84**	**73**	**100.0%**
	Total (N=252)		*213*	*196*	*84.5%*
NW	**A (N=9)**	**Beaver**	**8**	**7**	**88.9%**
	B (N=100)	**Canadian**	**91**	**87**	**91.0%**
	C (N=12)	**Canadian**	**4**	**4**	**33.3%**
	D (N=50)	**Garfield**	**41**	**40**	**82.0%**
	E (N=26)	**Kingfisher**	**24**	**23**	**92.3%**
	F (N=8)	**Texas**	**8**	**7**	**100.0%**
	Total (N=205)		*176*	*168*	*85.9%*
SE	**A (N=21)**	**Carter**	**20**	**20**	**95.2%**
	B (N=56)	**Cleveland**	**17**	**17**	**30.4%**
	C (N=7)	**Haskell**	**7**	**7**	**100.0%**
	D (N=32)	**Leflore**	**12**	**12**	**37.5%**
	E (N=14)	**Pittsburg**	**5**	**5**	**35.7%**
	F (N=69)	**Pottawatomie**	**65**	**59**	**94.2%**
	Total (N=199)		*126*	*120*	*63.3%*
SW	**A (N=73)**	**Comanche**	**17**	**17**	**23.3%**
	B (N=89)	**Comanche**	**80**	**73**	**89.9%**
	C (N=38)	**Grady**	**31**	**30**	**81.6%**
	D (N=50)	**Jackson**	**38**	**36**	**76.0%**
	E (N=65)	**Stephens**	**55**	**54**	**84.6%**
	F (N=51)	**Washita**	**42**	**41**	**82.4%**
	Total (N=366)		*263*	*251*	*71.9%*
OK County	**A (N=65)**	**Oklahoma**	**65**	**65**	**100.0%**
	B (N=179)	**Oklahoma**	**143**	**135**	**79.9%**
	C (N=103)	**Oklahoma**	**92**	**84**	**89.3%**
	D (N=78)	**Oklahoma**	**67**	**64**	**85.9%**
	E (N=64)	**Oklahoma**	**52**	**49**	**81.3%**
	F (N=44)	**Oklahoma**	**10**	**9**	**22.7%**
	Total (N=533)		*429*	*406*	*80.5%*
Tulsa County	**A (N=54)**	**Tulsa**	**28**	**28**	**51.9%**
	B (N=34)	**Tulsa**	**17**	**15**	**50.0%**
	C (N=90)	**Tulsa**	**9**	**9**	**10.0%**
	D (N=122)	**Tulsa**	**44**	**41**	**36.1%**
	E (N=79)	**Tulsa**	**23**	**22**	**29.1%**
	F (N=102)	**Tulsa**	**32**	**30**	**31.4%**
	Total (N=481)		*153*	*145*	*31.8%*

◊Participation rate is based on the number of parental consents returned divided by the total number of third grade students in the school.

Overall, the mean age for the population screened was 8.6 years, with a minimum age of 7 years and a maximum age of 11 years. The standard deviation for the group age was 0.6 years. When stratified by region, all showed a relatively similar mean age and standard deviation for the students participating in the screenings. The minimum age of students for five of the six regions was 8 years of age. The maximum age of students in five of the six regions was 10 years of age. Table 2 describes the demographic characteristics of participating students. A table of overall participant characteristics including the percentage with missing information is in Appendix F.

Of the non-missing demographic data, the study sample suggests an approximately equal proportion of males and females represented in the study (Males=53% and Females=47%). Racial make-up for the sample seemed to follow Oklahoma population trends, but with slightly lower percentage of Whites and slightly higher percentage of Blacks. The percentage of Whites in the sample was 63.9% (vs. 75.1% in Oklahoma population), Blacks equaling 12.1% (vs. 7.7% in Oklahoma population), Others (including Hispanics) equaling 12.5%, Native Americans equaling 9.6%, and Asian Americans equaling 1.8% of the sample population (U.S. Census Bureau, Oklahoma QuickFacts, 2014).

There were some regional differences in the race/ethnicity of participants. Approximately 23% of participants in the NE region were Native American, 43% of participants in Oklahoma County and 32% in Tulsa County were Hispanic, and 17% of participants in the SW region were Black. Tulsa County had the lowest percentage of White participants, with only 25% of students. In the NW region, over 80% of participants were White.

Table 2. Overall participant characteristics, among non-missing data

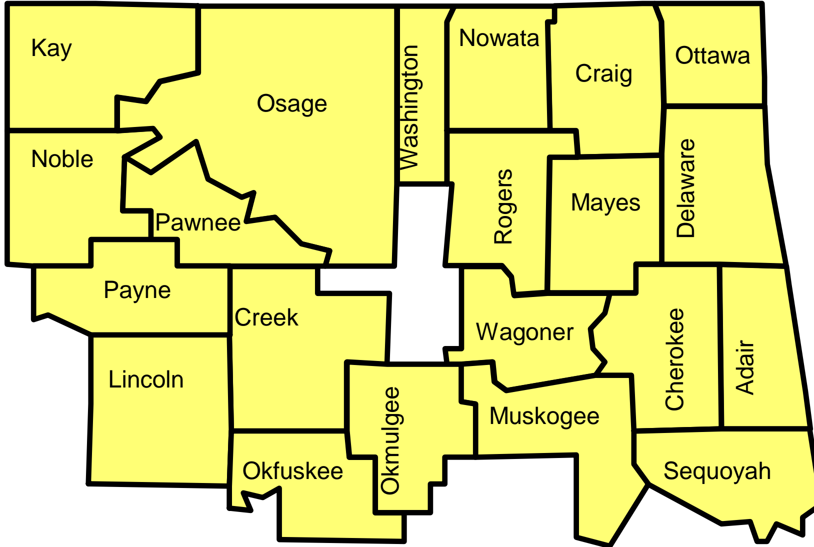
		No.	*Percent*			*No.*	*Percent*
Age	**7**	**3**	**0.2%**	**Gender**	**Female**	**588**	**47.0%**
	8	**586**	**47.5%**		**Male**	**664**	**53.0%**
	9	**583**	**47.3%**	**Race**	**Asian**	**20**	**1.8%**
	10	**60**	**4.9%**		**Black**	**132**	**12.1%**
	11	**1**	**0.1%**		**Native American**	**105**	**9.6%**
Ethnicity	**Hispanic**	**312**	**31.5%**		**Other**	**136**	**12.5%**
	Non-Hispanic	**659**	**66.4%**		**White**	**697**	**63.9%**
	Unknown	**21**	**2.1%**				

*All percentages are rounded to one decimal place; therefore, total may not add to 100%

Participant characteristics, by region

*All percentages are rounded to one decimal place; therefore, total may not add to 100%

Northeast Region



Participant Characteristics (n=195)

Age (years)

	Number	Percent
8	84	43.1%
9	94	48.2%
10	11	5.6%
11	1	0.5%
Missing	5	2.6%

Ethnicity

	Number	Percent
Hispanic	19	9.7%
Non-Hispanic	148	75.9%
Unknown	N/A	N/A
Missing	28	14.4%

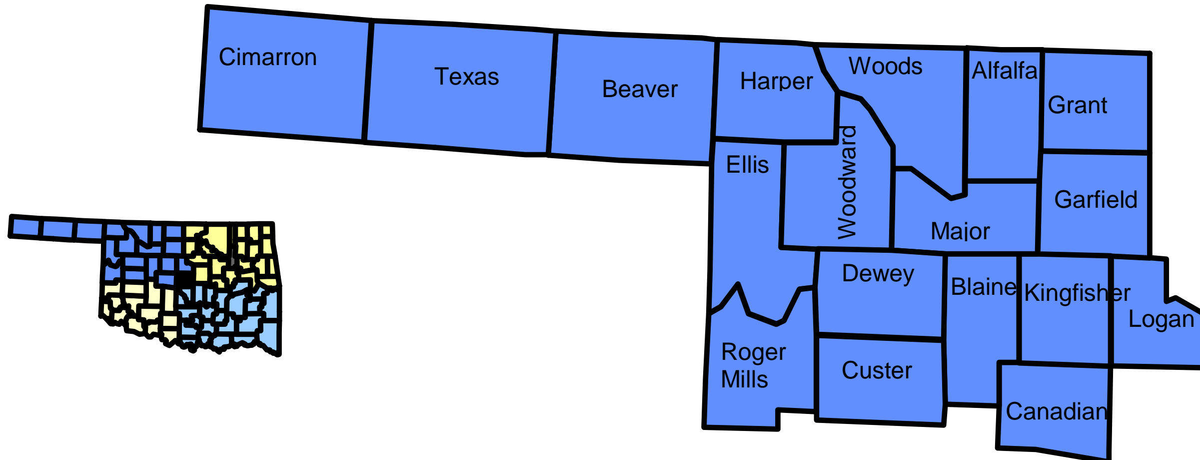
Gender

	Number	Percent
Female	91	46.7%
Male	104	53.3%
Missing	N/A	N/A

Race

	Number	Percent
Asian	1	0.5%
Black	11	5.6%
Native American	44	22.6%
White	130	66.7%
Other	5	2.6%
Missing	4	2.1%

Northwest Region



Participant Characteristics (n=168)

Age (years)

	Number	Percentage
8	93	55.4%
9	65	38.7%
10	3	1.8%
Missing	7	4.2%

Gender

	Number	Percentage
Female	76	45.2%
Male	92	54.8%
Missing	N/A	N/A

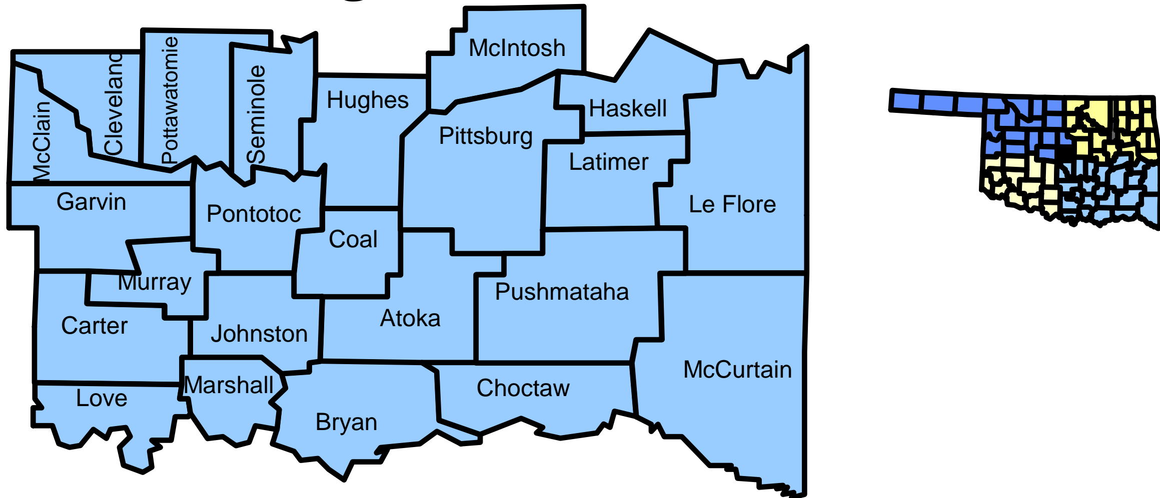
Race

	Number	Percentage
Asian	4	2.4%
Black	10	6.0%
Native American	3	1.8%
White	136	81.0%
Other	15	8.9%
Missing	N/A	N/A

Ethnicity

	Number	Percentage
Hispanic	24	14.3%
Non-Hispanic	103	61.3%
Unknown	N/A	N/A
Missing	41	24.4%

Southeast Region



Participant Characteristics (n=120)

Age (years)

	Number	Percent
8	65	54.2%
9	51	42.5%
10	4	3.3%
Missing	N/A	N/A

Ethnicity

	Number	Percent
Hispanic	7	5.8%
Non-Hispanic	33	27.5%
Unknown	10	8.3%
Missing	70	58.3%

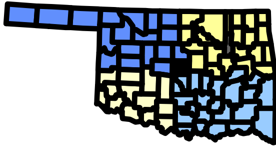
Gender

	Number	Percent
Female	53	44.2%
Male	67	55.8%
Missing	N/A	N/A

Race

	Number	Percent
Asian	2	1.7%
Black	2	1.7%
Native American	17	14.2%
White	76	63.3%
Other	2	1.7%
Missing	21	17.5%

Southwest Region



Participant Characteristics (n=251)

Age (years)

	Number	Percent
7	3	1.2%
8	120	47.8%
9	114	45.4%
10	14	5.6%
Missing	N/A	N/A

Gender

	Number	Percent
Female	116	46.2%
Male	135	53.8%
Missing	N/A	N/A

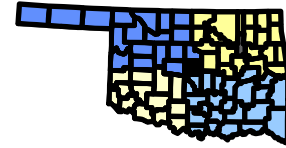
Race

	Number	Percent
Asian	4	1.6%
Black	43	17.1%
Native American	20	8.0%
White	154	61.4%
Other	21	8.4%
Missing	9	3.6%

Ethnicity

	Number	Percent
Hispanic	41	16.3%
Non-Hispanic	185	73.7%
Unknown	8	3.2%
Missing	17	6.8%

Oklahoma County Region



Participant Characteristics (n=406)

Age (years)

	Number	Percent
8	174	42.9%
9	204	50.3%
10	24	5.9%
Missing	4	1.0%

Gender

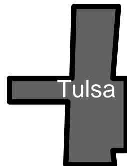
	Number	Percent
Female	202	49.8%
Male	202	49.8%
Missing	2	0.5%

Ethnicity

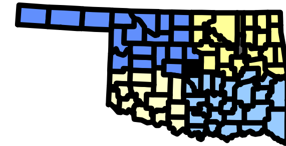
	Number	Percent
Hispanic	174	42.9%
Non-Hispanic	179	44.1%
Unknown	3	0.7%
Missing	50	12.3%

Race

	Number	Percent
Asian	7	1.7%
Black	45	11.1%
Native American	18	4.4%
White	165	40.6%
Other	91	22.4%
Missing	80	19.7%



Tulsa County Region



Participant Characteristics (n=145)

Age (years)

	Number	Percent
8	50	34.5%
9	55	37.9%
10	4	2.8%
Missing	36	24.8%

Gender

	Number	Percent
Female	50	34.5%
Male	64	44.1%
Missing	31	21.4%

Ethnicity

	Number	Percent
Hispanic	47	32.4%
Non-Hispanic	11	7.6%
Unknown	N/A	N/A
Missing	87	60.0%

Race

	Number	Percent
Asian	2	1.4%
Black	21	14.5%
Native American	3	2.1%
White	36	24.8%
Other	2	1.4%
Missing	81	55.9%

The distribution of the sample by region is shown in Table 3. These numbers are the denominators for the various percentages presented. Oklahoma County had the largest sample size, followed by the SW and NE regions. The SE and Tulsa County regions contributed the fewest children.

Table 3. Summary of Regional and Overall Sample Size

Region	*Sample Size (n)*	*Percent*
NE	195	15.2%
NW	168	13.1%
SE	120	9.3%
SW	251	19.5%
OK County	406	31.6%
Tulsa County	145	11.3%
Total	*1285*	*100%*

Overall Results

The dental health status of third grade students in Oklahoma is described in Table 4, using weighted estimates. Less than one-third of third grade students have one or more permanent molar teeth with dental sealants (25.2%). The percentage of dental caries (cavities) experience is high, 66.0%. Furthermore, 21.7% of children have untreated active caries in at least one permanent or primary tooth. Active caries are observed more frequently in primary teeth (18.4%) as compared to permanent teeth (8.8%). Likewise, primary teeth are more likely to have fillings/restorations (49.7%), when compared to permanent teeth (19.3%). The prevalence of missing permanent teeth is very low (1.3%); however, 8.2% of children have one or more missing primary teeth due to decay.

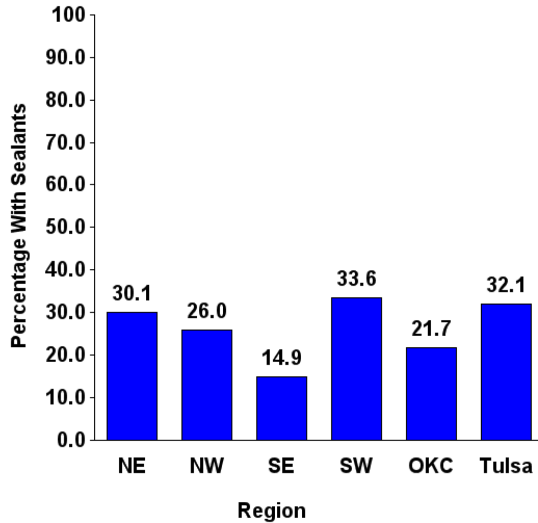
Table 4. Summary of dental health status of Oklahoma third grade students, weighted estimates and 95% confidence intervals

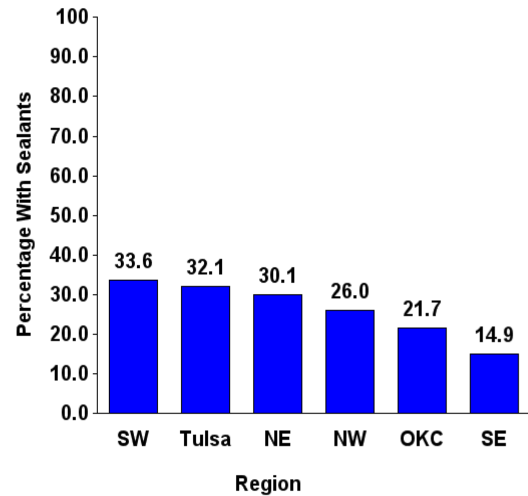
Dental Health Status Indicator	*Weighted Estimate*	*95% CI*
Percentage of third graders in Oklahoma with sealants on at least one permanent molar tooth	25.2%	19.1% - 31.2%
Percentage of third graders in Oklahoma with dental caries experience	66.0%	61.4% - 70.6%
Percentage of third graders in Oklahoma with untreated decay (active caries) in at least one permanent or primary tooth	21.7%	17.3% - 26.1%
Percentage of third graders in Oklahoma with untreated decay in at least one permanent tooth (active caries)	8.8%	4.6% - 12.9%
Percentage of third graders in Oklahoma with untreated decay in at least one primary tooth (active caries)	18.4%	14.2% - 22.5%
Percentage of third graders in Oklahoma with at least one missing permanent tooth	1.3%	0.4% - 2.1%
Percentage of third graders in Oklahoma with at least one missing primary tooth	8.2%	5.7% - 10.7%
Percentage of third graders in Oklahoma with at least one filled (treated/restored) permanent tooth	19.3%	14.8% - 23.9%
Percentage of third graders in Oklahoma with at least one filled (treated/restored) primary tooth	49.7%	45.3% - 54.1%

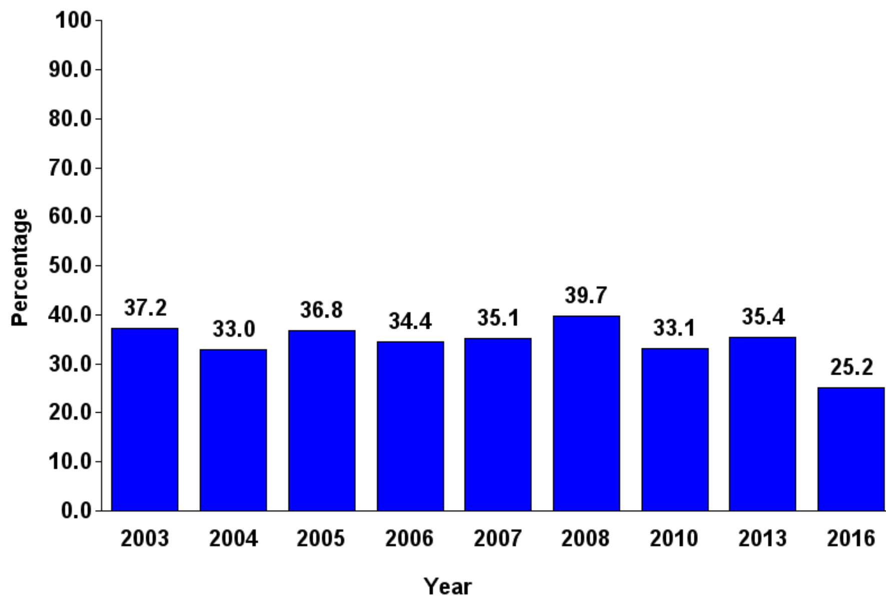
Sealants on Permanent Molar Teeth

Sealants consist of a protective coating used to protect teeth from decay. In this study, the number of sealants can range from 0 to 4 because only sealants on permanent molar teeth were assessed. Although approximately 25% of third graders in Oklahoma have sealants on one or more permanent molars, results by region are highly variable (Figure 1 and 2). Only three of the six regions have a prevalence of sealants greater than 30% while two regions have a prevalence of sealants less than 20%. Approximately 34% of children in the SW region are observed to have sealants. Of all students sampled, 17.2% have four molars with protective sealants. The mean number of sealants on permanent molar teeth for the students assessed equals 0.9 with a standard deviation of 1.6. In the nine years this needs assessment has been conducted, the percentage of children

with protective sealants remains around 35%, although it did decrease this year (Figure 3).







Caries Experience and DMFT/dmft Score (total caries)

Total caries, defined as any caries experience, is calculated based on a child having at least one permanent or primary tooth decayed (untreated), missing (prematurely lost to decay), or filled (treated/restored). DMFT is an indicator that is composed of the combined measurement of decayed, missing, or filled *permanent* teeth; while the dmft indicator is composed of the combined measurement of decayed, missing, or filled *primary* teeth. These indicators are used to assess overall dental health.

Of the 1,285 third grade children examined, 796 children, or 3,521 teeth, have been affected by decay. This results in a mean DMFT/dmft score of 2.7 teeth per child. In other words, on average, each third grade child has approximately 2.7 teeth that are decayed or were decayed and treated. Additionally, survey estimates show that 66.0% of third graders in the state have caries experience, which is higher than the percentages seen in 2010 and 2013 (Figure 6). The region with the lowest prevalence of caries experience is Oklahoma County with 52.6%, while the NE region has the highest with 78.4% (Figures 4 and 5).

Figure 4. Percentage of third graders with dental caries experience
Oklahoma 2015-2016

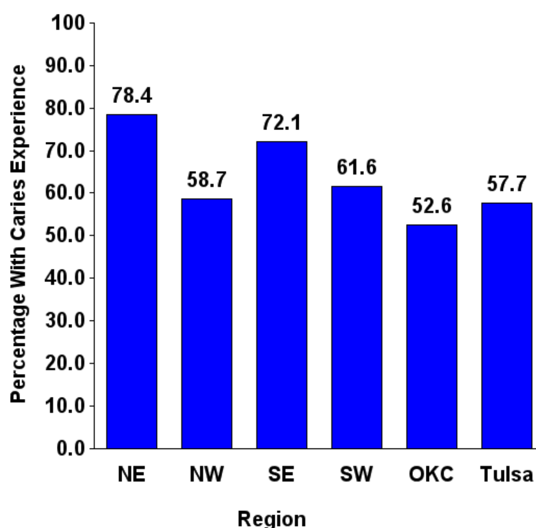
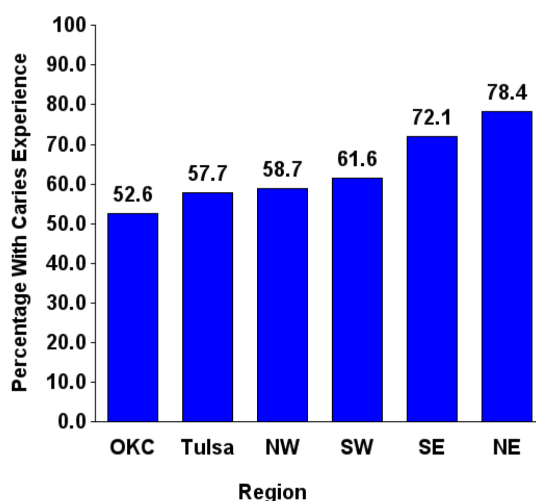


Figure 5. Percentage of third graders with dental caries experience In order from best to worst
Oklahoma 2015-2016



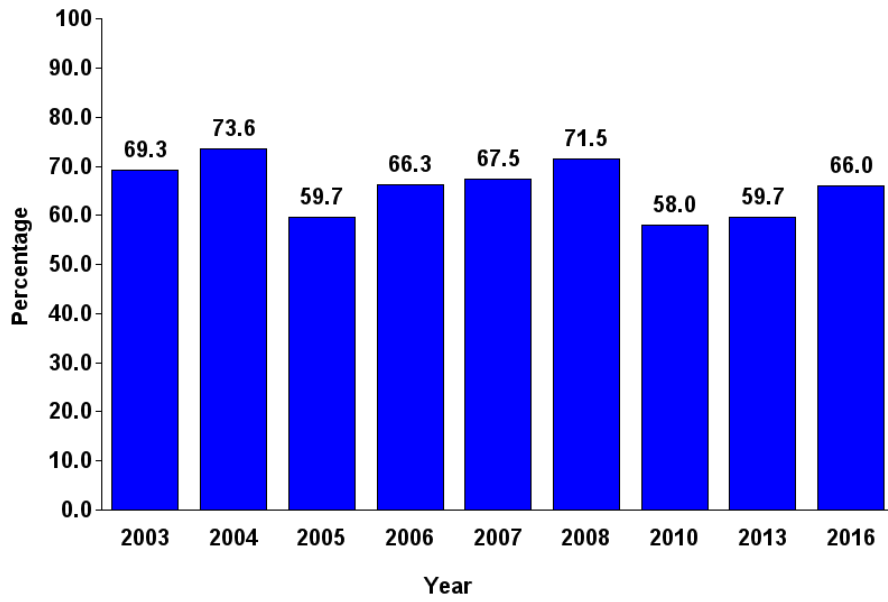


Figure 6. Weighted estimates of percentage of third graders
with dental caries experience
100
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Percentage
69.3
73.6
59.7
66.3
67.5
71.5
58.0
59.7
66.0
2003
2004
2005
2006
2007
2008
2010
2013
2016
Year

Untreated Decay in Permanent or Primary Teeth (active decay)

Another important dental health status indicator is active decay, defined as any untreated caries in at least one permanent or primary tooth. Over one-fifth (21.7%) of third grade children in Oklahoma are estimated to have untreated caries, a slight increase from 2013 (Figure 9). The prevalence of untreated caries is lower in Tulsa County (10.4%) compared with any other region (Figures 7 and 8). The highest prevalence of untreated caries is in the NE region 31.7%) and the SE region (26.8%).

Figure 7. Percentage of third graders with untreated decay in permanent or primary teeth (active caries)
Oklahoma 2015-2016

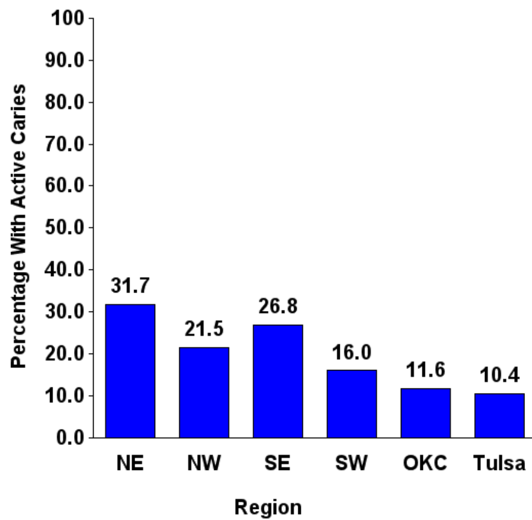
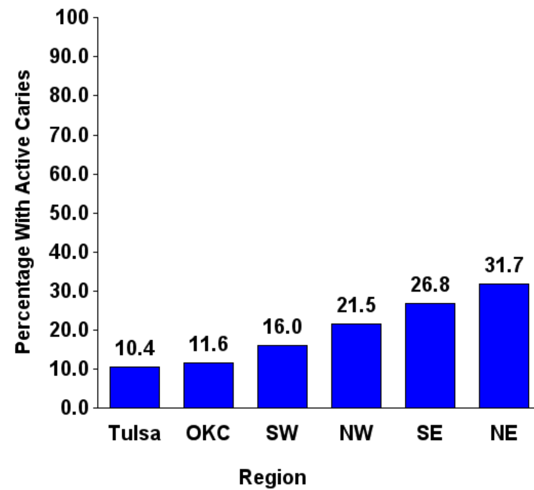


Figure 8. Percentage of third graders with untreated decay in permanent or primary teeth (active caries) In order from best to worst
Oklahoma 2015-2016



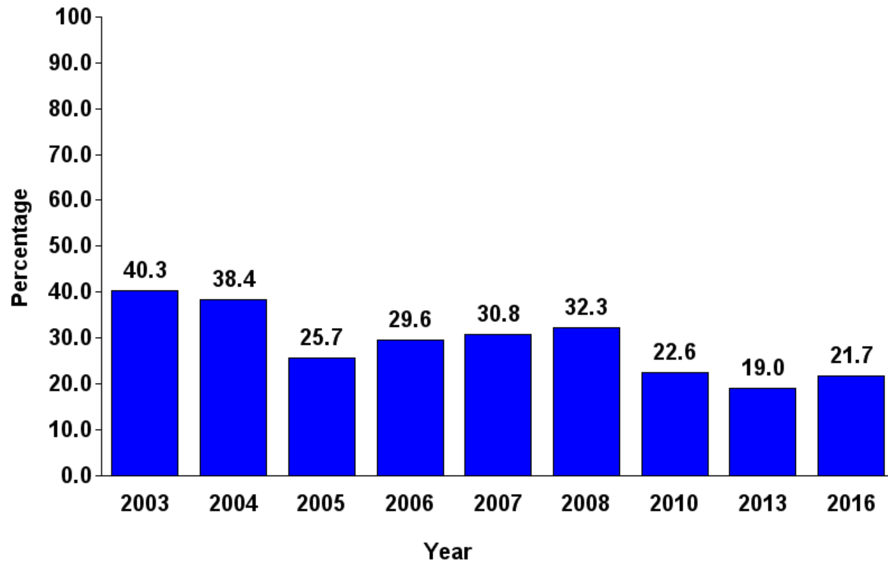


Figure 9. Weighted estimates of percentage of third graders
with untreated decay (active caries)
in at least one permanent or primary tooth
Percentage
100
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
40.3
38.4
25.7
29.6
30.8
32.3
22.6
19.0
21.7
2003
2004
2005
2006
2007
2008
2010
2013
2016
Year

Untreated Decay in Permanent Teeth (active decay)

Statewide, 8.8% of third graders have decayed permanent teeth (untreated active caries). Oklahoma County has the lowest prevalence of actively decayed permanent teeth (1.8%) while the NE region has the highest prevalence of decay (15.4%; Figure 10). The mean number of decayed permanent teeth for the 1,285 students is 0.1 teeth with a relatively moderate standard deviation of 0.5 and a range of 0 to 4 teeth. The majority of active decay is limited to one or two permanent teeth, but five students (0.4%) observed to have active decay in three teeth and nine students (0.7%) observed to have active decay in four teeth. The estimated percentage of third grade children in Oklahoma with decayed permanent teeth decreased from 2003-2010, but has increased in 2013 and 2016 (Figure 11).

Figure 10. Percentage of third graders with at least one decayed permanent tooth (active caries)
Oklahoma 2015-2016

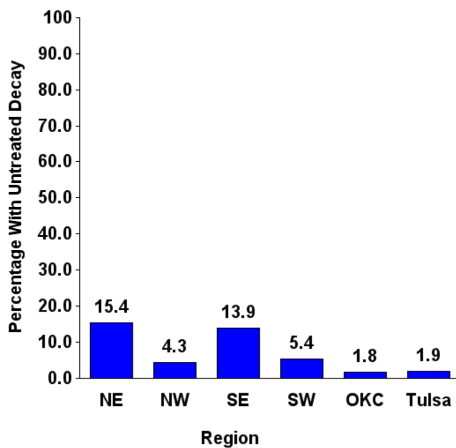
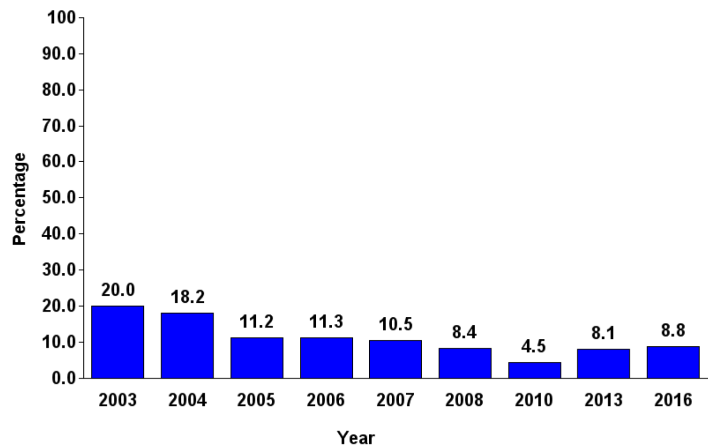


Figure 11. Weighted estimates of percentage of third graders with untreated decay (active caries) in at least one permanent tooth



Untreated Decay in Primary Teeth (active decay)

For children of this age group, the frequency of active decay in primary teeth is typically much higher than it is in permanent teeth. Almost one-fifth (18.4%) of third graders have active decay in one or more primary teeth (Figure 13). Children in Tulsa County have the lowest prevalence (10.0%), while the NE region has the highest prevalence of untreated decay in primary teeth (24.0%; Figure 12). In this statewide sample, the mean number of decayed primary teeth is 0.3 with a standard deviation of 0.8 and a range of 0 to 7 primary teeth with active decay. Approximately three percent of children have active, untreated decay in three or more primary teeth.

Figure 12. Percentage of third graders with at least one decayed primary tooth (active caries)
Oklahoma 2015-2016

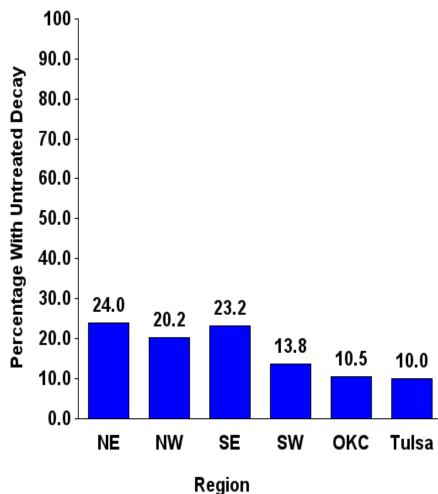
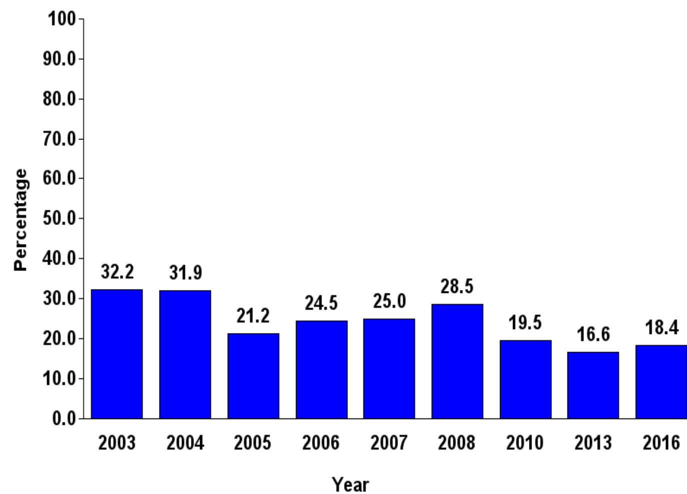


Figure 13. Weighted estimates of percentage of third graders with untreated decay (active caries) in at least one primary tooth



Missing Permanent Teeth

Only 11 third grade students screened (1.3%) are missing permanent teeth due to decay with a range of 1 to 2 missing permanent teeth. Six children from the NE region and two children from Oklahoma County are missing one permanent tooth. One child from each the NE region, the SW region, and Tulsa County are missing two permanent teeth.

Missing Primary Teeth

As expected, significantly more children are missing primary teeth due to decay as compared to permanent teeth. For the entire state, 8.2% of third grade students are missing one or more primary teeth, showing a 63% decrease from the 2013 survey data (Figure 15). Regional percentages vary from 2.9% in the SE region to 13.2% in the SW region (Figure 14). For the 1,285 students surveyed, the mean number of missing primary teeth for the sample equals 0.1 with a standard deviation of 0.6 and a range of 0 to 7 missing primary teeth. Most students with missing primary teeth are missing one or two teeth. Nineteen students, or 1.5%, are missing three or more primary teeth.

Figure 14. Percentage of third graders with at least one missing primary tooth
Oklahoma 2015-2016

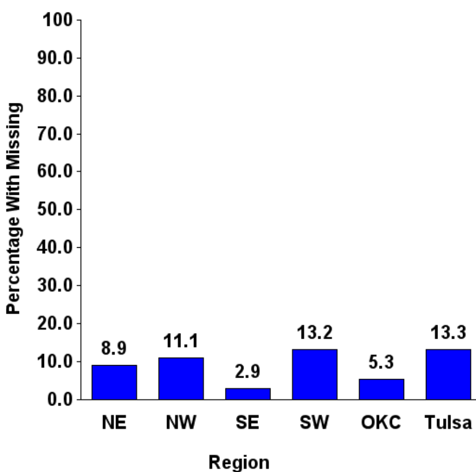
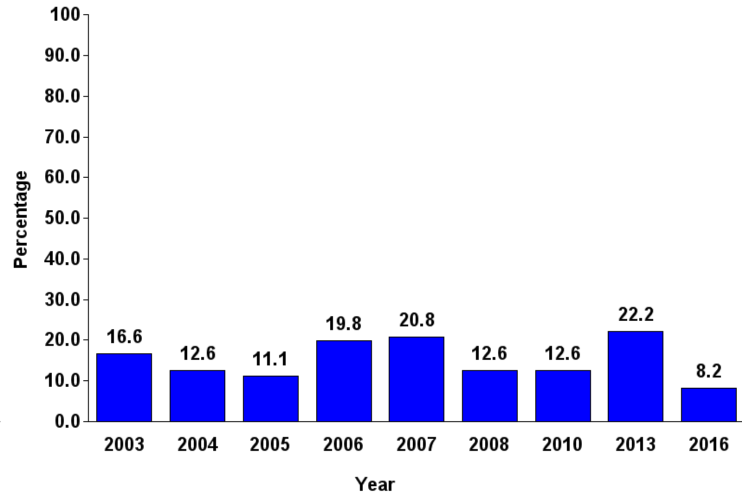


Figure 15. Weighted estimates of percentage of third graders with at least one missing primary tooth



Filled (Treated/Restored) Permanent Teeth

Approximately 19.3% of third graders in Oklahoma have filled (treated/restored) cavities in one or more permanent teeth. Differences by region are observed (Figure 16). Children in NW region have the lowest percentage of filled teeth with 9.7%. The highest percentage of filled/treated permanent teeth is observed in the SE region (27.2%), and there is almost a three-fold increase in the percentage of filled permanent teeth when the NW region is compared to the SE region (9.7% versus 27.2%, respectively). Among surveyed children, the mean number of filled permanent teeth for the sample is 0.4 with a standard deviation of 1.0 and a range of 0 to 4 permanent teeth filled (treated/restored). Prior to 2016, the estimated percentage of children in Oklahoma with filled permanent teeth has remained approximately 15% or less (Figure 17).

Figure 16. Percentage of third graders with at least one filled (treated/restored) permanent tooth
Oklahoma 2015-2016

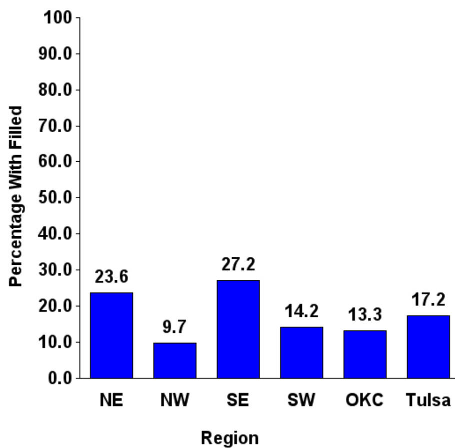
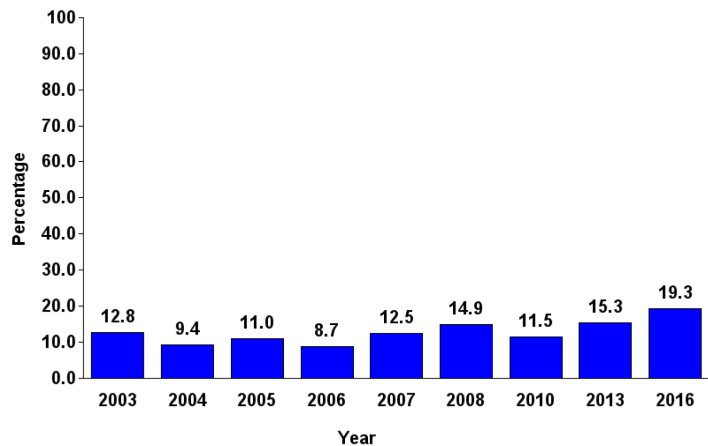
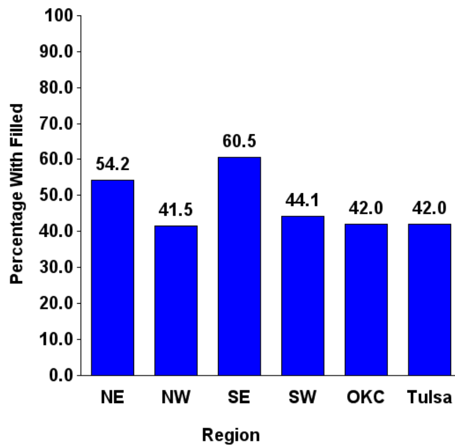


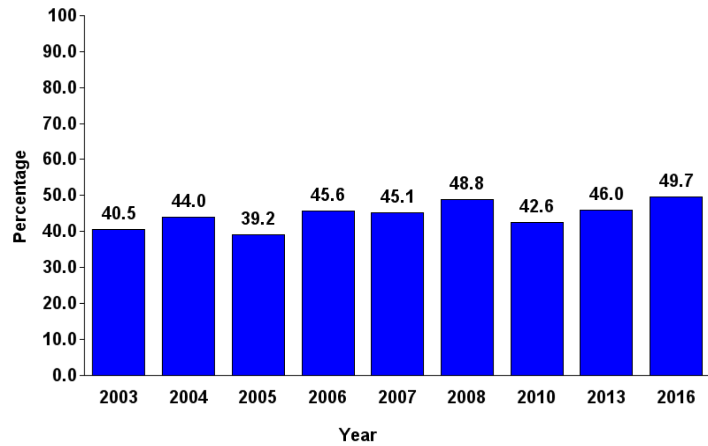
Figure 17. Weighted estimates of percentage of third graders with at least one filled (treated/restored) permanent tooth



Filled (Treated/Restored) Primary Teeth

Significantly more children are observed to have filled (treated/restored) primary teeth compared to permanent teeth. Overall, 49.7% of third graders have one or more filled primary teeth. Regional proportions vary from 41.5% in NW region to 60.5% in the SE region (Figure 18). The mean number of filled primary teeth for the sample is 1.8 with a standard deviation of 2.5 teeth and a range of 0 to 12 filled primary teeth. Less than one-fifth (22.6%) of participants have four or more filled (treated/restored) primary teeth. The estimated percentage of children in Oklahoma with filled primary teeth has remained relatively constant during the nine years of this needs assessment (Figure 19).





Results of Screening as Determined by Dental Hygienist

The visiting dental hygienists gave each child that participated in the dental screening a form to take home indicating whether or not the child had dental problems that needed attention. The dental hygienists' outcomes indicated that most of the participating children (83.5%) had no dental problems, and only 2.8% of the children had dental problems that needed immediate attention (Table 5).

Table 5. Summary of dental hygienists' screening outcomes among participating Oklahoma third grade students

Screening Results	*N*	*%*
Missing	3	0.2
Observed no dental problems	1073	83.5
Observed dental problems that need attention soon	173	13.5
Observed dental problems that need attention immediately	36	2.8

Most of the regions have similar results (Table 6). The NE region has the smallest percentage of children with no dental problems (72.8%) and the largest percentage of children with dental problems that need immediate attention (11.3%). Tulsa County has the highest percentage (94.5%) of children with no dental problems and the NW region has lowest percentage of children with dental problems that need immediate attention, at 0%.

Table 6. Percentage of participating Oklahoma third grade students by screening result and Region

	Region											
	NE		*NW*		*SE*		*SW*		*OK Co*		*Tulsa*	
Screening Results	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*
Observed no dental problems	142	72.8	142	84.5	89	74.8	210	83.7	353	87.4	137	94.5
Observed dental problems that need attention soon	31	15.9	26	15.5	26	21.8	39	15.5	46	11.4	5	3.4
Observed dental problems that need attention immediately	22	11.3	0	0.0	4	3.4	2	0.8	5	1.2	3	2.1

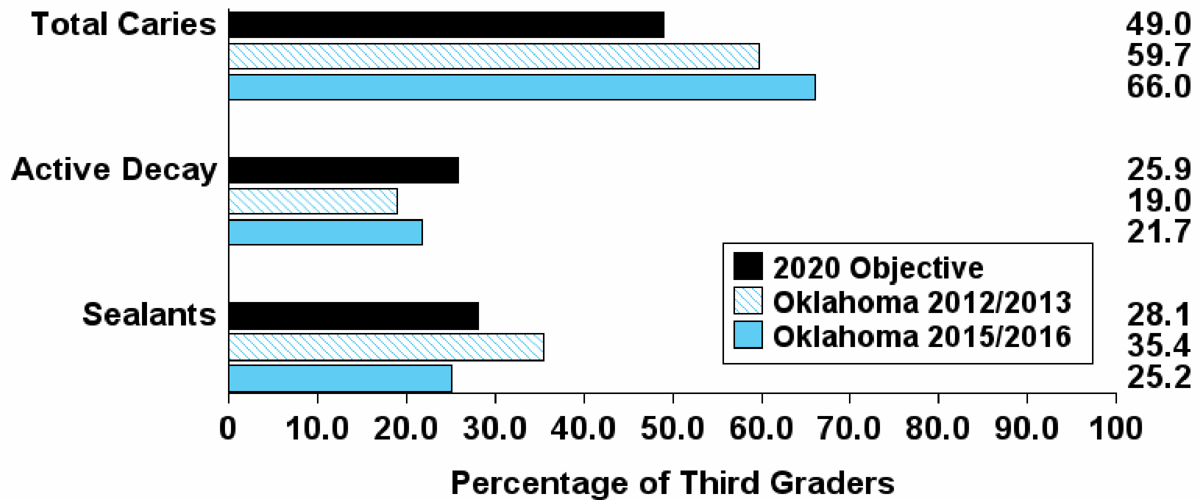
Discussion

Dental caries is one of the most common chronic childhood diseases. To establish a baseline for dental health indicators in third grade children in Oklahoma, this ninth needs assessment was conducted by the University of Oklahoma College of Public Health with funding from the Oklahoma State Department of Health, Dental Health Service and from the Title V Maternal and Child Health Block Grant. In addition, this needs assessment provides valuable information on the status of Oklahoma children's dental health and the progress made to reach the goals set by Healthy People 2020. See Appendix H for a comparison of the 2003-2010 needs assessments to Healthy People 2010 objectives.

Led by the U.S. Department of Health and Human Services, Healthy People 2020 is a ten-year health promotion program designed to target public health priorities to improve the health of all Americans. The Healthy People 2020 objectives include several measures related to oral health in children ages six to nine. The Healthy People 2020 objectives seek a 10% improvement of the 1999-2004 baseline measures from the National Health and Nutrition Examination Survey (NHANES). Progress towards the Healthy People 2020 objectives is monitored using specific, measurable objectives. These include:

- Reduce the proportion of children with dental caries experience (total caries) in their primary and permanent teeth to 49%.
- Reduce the proportion of children with untreated, active dental decay in primary and permanent teeth to 25.9%.
- Increase the proportion of children receiving dental sealants on their molar teeth to 28.1%.

Consistent with data from the previous dental assessments, data from the 2015-2016 study of Oklahoma children indicate areas where improvements are needed to meet the objectives (Figure 20).



The statewide prevalence for total dental caries experience in Oklahoma third graders is 66.0%, which is higher than the Healthy People 2020 objective (49%). The total dental caries measure from the 2016 survey has worsened from the previous 2013 assessment. The prevalence of active decay in Oklahoma (22%), defined as untreated caries in at least one permanent or primary tooth, reached the goals set by Healthy People 2020 (25.9%). The proportion of children with protective sealants in Oklahoma (25%) failed to reach the goal set by Healthy People 2020 (28.1%); however, Oklahoma met the goal in the 2013 survey.

Large regional differences are observed in the results of the oral health needs assessment. The NE and SE regions have the highest prevalence of active decay (31.7% and 26.8%). Tulsa County has the lowest proportion (10.4%) of children with active (untreated) decay. None of the regions meet the Health People 2020 objectives for prevalence of total caries (49%). The SW region, the NE region, and Tulsa County are the only regions to

meet the Healthy People 2020 goal for dental sealants on children's molar teeth.

Although the sample in Oklahoma was selected to ensure representation from all six regions, participation rates varied, and sample sizes were affected. These findings might be affected by selection bias, as not all schools first contacted agreed to participate and the schools selected did not necessarily provide coverage of the region. Additionally, 67% of selected students received parental consent to participate. In many schools, participation rates may be affected due to visits to these schools by dental professionals from other organizations.

The results of this study are hindered by the fact that seven dental hygienists were involved in the examinations. Each dental hygienist primarily screened schools within her region independently. Regional differences in results could then potentially reflect variations in the dental hygienists' classifications and not true differences. However, the dental hygienists were all concurrently trained and calibrated, reducing potential misclassification bias between regions.

Appendices

A. Letter to schools and return postcard p34

B. Parental consent forms p36

C. Data collection form p44

D. Result form p45

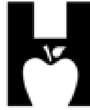
E. Un-weighted prevalence rates p46

F. Overall participant characteristics including percent missing p47

G. Participant characteristics by region p48

H. Health People 2010 objectives and 2003-2010 assessments...... p49

Appendix A



Oklahoma State Department of Health
Creating a State of Health

Date

Mr. Elementary Principal
1234 Primary Street
Your Town, OK Zip

Dear Mr. Principal:

The Oklahoma State Department of Health, in conjunction with the University Of Oklahoma College Of Public Health, has conducted a 3rd grade dental health screening for over 10 years. Each time, 36 schools are randomly selected to participate in the program,

Benefits of participating in the process include the following:

1) Children learn about oral health as we utilize presentations and interactive learning. Learning materials can be provided in advance of the oral health presentation to allow children to develop inquisitive minds.

2) Children with parental permission are screened for dental problems and a letter is sent home with each child screened informing the parent/s of the child's current dental condition.

3) All children are given toothbrushes, even if they do not participate in the screening process.

4) Arrangements can be made through the Oklahoma Dental Foundation to schedule the ODF mobile unit to provide care for children needing treatment.

5) Information obtained through the screening process allows the state to meet national oral health benchmarks and guides programming and workforce efforts.

This year, your school has been selected for this unique opportunity. If you would be willing to have your third grade students participate in this screening, please complete the enclosed, self-addressed stamped postcard and include contact information for your lead third grade teacher or school nurse so we can follow up with details including parental permission slips and information to ensure maximum participation. If you would like to talk with me personally about the dental screening program, I can be reached at (405) 271-5502.

Sincerely,

Jana S. Winfree, DDS
Director, Dental Health Service

Terry L Cline, PhD
Commissioner of Health
Secretary of Health and Human Services

Board of Health

Ronald Woodson, MD, *President*
Jenny Alexopulos, DO
Terry R Gerard, DO
Martha A Burger, MBA, *Vice President*
Charles W Grim, DDS, MHSA
R Murali Krishna, MD
Cris Hart-Wolfe, MBA, *Secretary-Treasurer*
Timothy E Starkey, MBA
Robert S Stewart, MD

1000 NE 10TH Street
Oklahoma City, OK 73117-1299
www.health.ok.gov
An Equal Opportunity Employer

Return Postcard

School Name: ____

Thank you for responding. Please indicate your preference below:

❑ Yes, I'd like for our school to participate. The person to contact

is____ who can best

be reached at ____.

❑ No, thank you. I do not wish for our school to participate.

❑ I would like more information. Please contact me at

____.

Appendix B

Active Consent Form- English

Dental Health Needs Assessment
PARENTAL/GUARDIAN CONSENT FORM
Lindsay Boeckman, MS, Principal Investigator

This is a dental needs assessment at your child's school. This survey involves only individuals who choose to take part in them. Please take your time to make your decision about your child's participation.

Your child is being asked to take part in this assessment because his/her school, _________________, was selected to participate in a dental health needs assessment sponsored by the Oklahoma State Department of Health and directed by Lindsay Boeckman.

Why is this assessment being done?
The purpose of this assessment is to determine the level of dental health in our state. We are interested in finding out how many children have dental sealants or cavities. This information will be used to plan dental health programs throughout the state.

How many people will take part in the assessment?
About 1300 third grade students will take part in this assessment at 36 elementary schools.

What is involved in the assessment?
This assessment will be carried out at your child's school. A dentist or dental hygienist will look at your child's teeth and count the number of teeth that have cavities or fillings and see if your child has any dental sealants. If dental problems needing further attention are identified during the screening, you will be notified on a form called 'Results of Dental Health Screening', that will be sent home with your child. This screening does not take the place of regular dental check-ups with your dentist who is able to examine your child more thoroughly. It is also important to include your child even if he or she has had a recent dental check-up. Your child will participate in an educational activity promoting proper care of teeth. Your child will also be asked to give permission to participate at the time of the screening.

How long will my child be in the assessment?
The educational activities will be less than 30 minutes, and individual student screenings will take an additional 2 minutes each.

What are the risks, benefits and options of the assessment?
The risks from your child participating are no greater than what they would encounter in their regular day. Disposable mirrors and non-latex gloves will be used on each child. The results of the screening will be kept confidential, as allowed by law. You will receive the results of the dental health screening, and all students in the class will receive a toothbrush. You and your child may choose not to participate at any time.

What about confidentiality?
Efforts will be made to keep your child's information confidential. The results of your child's screening will not be linked to his/her name. Your child will not be identified by name or description in any reports or publications about this assessment.

There are organizations that may inspect and/or copy the screening records for quality assurance and data analysis. The main organization for this will be the Oklahoma State Department of Health.
What are my child's rights as a participant?

Taking part in this assessment is voluntary. Your child may choose not to take part or may leave the survey at any time

Whom do I call if I have questions or problems?
If you have any questions regarding your child's participation in this needs assessment, you may contact Lindsay Boeckman by calling 405-271-2229. For more information on your child's rights, please contact Malinda Douglas, DrPH, CPH, OSDH IRB Coordinator at 405-271-7637.

Signature

Please complete this form to allow your child to participate in the dental health needs assessment.

____
Please print child's name

____
Signature of Parent/Guardian   (Date)

Active Consent Form- Spanish

Evaluación de Necesidades de Salud Dental
FORMULARIO DE CONSENTIMIENTO PATERNAL/TUTORES
Lindsay Boeckman, MS, Investigador Principal

Esta es una evaluación de necesidades dentales en la escuela de su hijo(a). Este estudio implica sólo a las personas que deciden participar en ellos. Por favor tómese el tiempo para tomar una decisión sobre la participación de su hijo(a).

Se le solicita a su hijo(a) tomar parte en esta evaluación porque su escuela, _________________, ha sido seleccionada para participar en una evaluación de necesidades de salud dental patrocinado por el Departamento de Salud del Estado de Oklahoma y dirigida por Lindsay Boeckman.

¿Por qué se hace esta evaluación?
El propósito de esta evaluación es determinar el nivel de salud dental en nuestro estado. Estamos interesados en averiguar cuantos niños tienen selladores dentales o caries. Esta información será utilizada para planificar programas de salud dental en todo el estado.

¿Cuántas personas participarán en la evaluación?
Cerca de 1300 estudiantes de tercer grado participaran en 36 escuelas primarias.

¿Qué está implicado en la evaluación?
Esta evaluación será llevada a cabo en la escuela de su hijo(a). Un dentista o higienista dental mirara los dientes de su hijo(a) y contara el número de dientes que tienen caries o rellenos y ver si su niño tiene algún sellador dental. Si problemas dentales que requieren mayor atención son identificados durante la evaluación, usted será notificado en un formulario denominado "Resultados de Evaluación de Salud Dental", que será enviada a casa con su hijo(a). Esta proyección no toma el lugar de chequeos dentales regulares con su dentista que es capaz de examinar a su hijo(a) más a fondo. También es importante incluir a su hijo(a) incluso si él o ella ha tenido un chequeo dental reciente. Su hijo participara en una actividad educacional que promueve el cuidado apropiado de dientes. A su hijo(a) también se le pedirá dar permiso de participar en el momento de la proyección.

¿Cuánto tiempo estará mi hijo(a) en la evaluación?
Las actividades educativas serán de menos de 30 minutos, y proyecciones estudiantiles individuales tomaran 2 minutos adicionales cada uno.

¿Cuáles son los riesgos, beneficios y opciones de la evaluación?
Los riesgos de su hijo(a) participando en la evaluación no son mayores que lo que encontrarían en su día regular. Espejos desechables y guantes que no sean de látex serán utilizados en cada niño. Los resultados de la proyección serán confidenciales, según lo permitido por la ley. Usted recibirá los resultados de la evaluación de salud dental y todos los estudiantes en la clase recibirán un cepillo de dientes. Usted y su niño pueden elegir no participar en cualquier momento.

¿Qué sobre la confidencial?
Se realizaran esfuerzos para mantener confidencial la información de su hijo(a). Los resultados de la evaluación de su hijo(a) no estarán ligados a su nombre. Su hijo(a) no será identificado por nombre o descripción en cualquier reporte o publicación sobre esta evaluación.

Hay organizaciones que pueden inspeccionar y/o copiar los resultados de proyección para garantía de calidad y análisis de datos. La organización principal para esto será el Departamento de Salud del Estado de Oklahoma.

¿Cuáles son los derechos de mi hijo(a) como participante?
Tomar parte en esta evaluación es voluntario. Su hijo puede optar no participar o dejar la encuesta en cualquier momento.

¿A quién puedo llamar si tengo preguntas o problemas?
Si tiene alguna pregunta con respecto a la participación de su hijo(a) en esta evaluación de necesidades, usted puede ponerse en contacto con Lindsay Boeckman llamando al 405-271-2229. Para más información sobre los derechos de s hijo(a), por favor póngase en contacto con Malinda Douglas, DrPH, CPH, OSDH IRB Coordinador al 405-271-7637.

Firma

Por favor complete este formulario para permitir que su hijo(a) participe en la evaluación de necesidades de salud dental.

____
Por favor imprimir nombre de niño

____
Firma de Padres/Tutor (Fecha)

Passive Consent Form- English

Dental Health Needs Assessment
PARENTAL/GUARDIAN CONSENT FORM
Lindsay Boeckman, MS, Principal Investigator

This is a dental needs assessment at your child's school. This survey involves only individuals who choose to take part in them. Please take your time to make your decision about your child's participation.

Your child is being asked to take part in this assessment because his/her school, _________________, was selected to participate in a dental health needs assessment sponsored by the Oklahoma State Department of Health and directed by Lindsay Boeckman.

Why is this assessment being done?
The purpose of this assessment is to determine the level of dental health in our state. We are interested in finding out how many children have dental sealants or cavities. This information will be used to plan dental health programs throughout the state.

How many people will take part in the assessment?
About 1300 third grade students will take part at 36 elementary schools

What is involved in the assessment?
This assessment will be carried out at your child's school. A dentist or dental hygienist will look at your child's teeth and count the number of teeth that have cavities or fillings and see if your child has any dental sealants. If dental problems needing further attention are identified during the screening, you will be, notified on a form called 'Results of Dental Health Screening', that will be sent home with your child. This screening does not take the place of regular dental check-ups with your dentist who is able to examine your child more thoroughly. It is also important to include your child even if he or she has had a recent dental check-up. Your child will participate in an educational activity promoting proper care of teeth. Your child will also be asked to give permission to participate at the time of the screening.

How long will my child be in the assessment?
The educational activities will be less than 30 minutes, and individual student screenings will take an additional 2 minutes each.

What are the risks, benefits and options of the assessment?
The risks from your child participating are no greater than what they would encounter in their regular day. Disposable mirrors and non-latex gloves will be used on each child. The results of the screening will be kept confidential, as allowed by law. You will receive the results of the dental health screening, and all students in the class will receive a toothbrush. You and your child may choose not to participate in this assessment at any time.

What about confidentiality?
Efforts will be made to keep your child's information confidential. The results of your child's screening will not be linked to his/her name. Your child will not be identified by name or description in any reports or publications about this assessment.

There are organizations that may inspect and/or copy the screening records for quality assurance and data analysis. The main organization for this will be the Oklahoma State Department of Health.

What are my child's rights as a participant?
Taking part in this assessment is voluntary. Your child may choose not to take part or may leave the survey at any time

Whom do I call if I have questions or problems?
If you have any questions regarding your child's participation in this needs assessment, you may contact Lindsay Boeckman by calling 405-271-2229. For more information on your child's rights, please contact Malinda Douglas, DrPH, CPH, OSDH IRB Coordinator at 405-271-7637.

Signature

If you **do not want** your child to participate, please complete this form and return it to your child's teacher.

Your child will be automatically enrolled in this assessment, unless this form is returned denying his or her participation.

____
Please print child's name

____
Signature of Parent/Guardian (Date)

Passive Consent Form- Spanish

Evaluación de Necesidades de Salud Dental
FORMULARIO DE CONSENTIMIENTO PATERNAL/TUTORES
Lindsay Boeckman, MS, Investigador Principal

Esta es una evaluación de necesidades dentales en la escuela de su hijo(a). Este estudio implica sólo a las personas que deciden participar en ellos. Por favor tómese el tiempo para tomar una decisión sobre la participación de su hijo(a).

Se le solicita a su hijo(a) tomar parte en esta evaluación porque su escuela, _________________, ha sido seleccionada para participar en una evaluación de necesidades de salud dental patrocinado por el Departamento de Salud del Estado de Oklahoma y dirigida por Lindsay Boeckman.

¿Por qué se hace esta evaluación?
El propósito de esta evaluación es determinar el nivel de salud dental en nuestro estado. Estamos interesados en averiguar cuantos niños tienen selladores dentales o caries. Esta información será utilizada para planificar programas de salud dental en todo el estado.

¿Cuántas personas participarán en la evaluación?
Cerca de 1300 estudiantes de tercer grado participaran en 36 escuelas primarias.

¿Qué está implicado en la evaluación?
Esta evaluación será llevada a cabo en la escuela de su hijo(a). Un dentista o higienista dental mirara los dientes de su hijo(a) y contara el número de dientes que tienen caries o rellenos y ver si su niño tiene algún sellador dental. Si problemas dentales que requieren mayor atención son identificados durante la evaluación, usted será notificado en un formulario denominado "Resultados de Evaluación de Salud Dental", que será enviada a casa con su hijo(a). Esta proyección no toma el lugar de chequeos dentales regulares con su dentista que es capaz de examinar a su hijo(a) más a fondo. También es importante incluir a su hijo(a) incluso si él o ella ha tenido un chequeo dental reciente. Su hijo participara en una actividad educacional que promueve el cuidado apropiado de dientes. A su hijo(a) también se le pedirá dar permiso de participar en el momento de la proyección.

¿Cuánto tiempo estará mi hijo(a) en la evaluación?
Las actividades educativas serán de menos de 30 minutos, y proyecciones estudiantiles individuales tomaran 2 minutos adicionales cada uno.

¿Cuáles son los riesgos, beneficios y opciones de la evaluación?
Los riesgos de su hijo(a) participando en la evaluación no son mayores que lo que encontrarían en su día regular. Espejos desechables y guantes que no sean de látex serán utilizados en cada niño. Los resultados de la proyección serán confidenciales, según lo permitido por la ley. Usted recibirá los resultados de la evaluación de salud dental y todos los estudiantes en la clase recibirán un cepillo de dientes. Usted y su niño pueden elegir no participar en cualquier momento.

¿Qué sobre la confidencial?
Se realizaran esfuerzos para mantener confidencial la información de su hijo(a). Los resultados de la evaluación de su hijo(a) no estarán ligados a su nombre. Su hijo(a) no será identificado por nombre o descripción en cualquier reporte o publicación sobre esta evaluación.

Hay organizaciones que pueden inspeccionar y/o copiar los resultados de proyección para garantía de calidad y análisis de datos. La organización principal para esto será el Departamento de Salud del Estado de Oklahoma.

¿Cuáles son los derechos de mi hijo(a) como participante?
Tomar parte en esta evaluación es voluntario. Su hijo puede optar no participar o dejar la encuesta en cualquier momento.

¿A quién puedo llamar si tengo preguntas o problemas?
Si tiene alguna pregunta con respecto a la participación de su hijo(a) en esta evaluación de necesidades, usted puede ponerse en contacto con Lindsay Boeckman llamando al 405-271-2229. Para más información sobre los derechos de s hijo(a), por favor póngase en contacto con Malinda Douglas, DrPH, CPH, OSDH IRB Coordinador al 405-271-7637.

Firma

Si usted **no** quiere que su hijo(a) participe, por favor complete este formulario devuélvalo al profesor de su hijo(a).

Su hijo(a) será automáticamente inscrito en esta evaluación, a menos que este formulario sea devuelto negando su participación.

____
Por favor imprimir nombre de niño

____
Firma de Padres/Tutor (Fecha)

Appendix C

2015-2016 Dental Health Screening Form

Dental Professional: Cut off names and shred before mailing

County ____________________________

*W=White, B=Black/African American, NA=Native American, A=Asian, O=Other

**H=Hispanic Origin, N=Not Hispanic Origin, U=Unknown

To be completed by Teacher																
	Student Demographics (for students who give Assent)					D	M	F	d	m	f		Outcome ✓		
List Each Student's Name Below	Child Assent Mark "X" for yes	Age	Gender M or F	Race *(W, B, NA, A, Other)	Ethnicity **(H, N, U)	Number Permanent Teeth Decayed	Number Permanent Teeth Missing	Number Permanent Teeth Filled	Number Primary Teeth Decayed	Number Primary Teeth Missing	Number Primary Teeth Filled	Number Sealants on Permanent Molars	No Problems	Problems/ Need Attn	Problems/ Need Immediate Attn
1															
2															
3															
4															
5															
6															
7															
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24															
25															

To be completed by hygienist/dentist   School ID: __________   Total # students in classroom: _________   Total # parental consents: _________

Appendix D

Results of Dental Health Screening

With your permission, __________________________ received a dental screening at school today. The purpose of the screening was to determine the number of children with dental sealants and to assess the oral health status of your community. The dentist or dental hygienist determined that the following conditions exist:

□ No dental problems were observed. See your dentist as he/she recommends

□ Dental problems were observed that appear to need attention. Please contact your dentist at your earliest convenience.

□ Dental problems were observed that appear to need immediate attention. Contact your dentist immediately!

Please note: This dental screening was not a complete dental examination (check-up). In many cases, cavities or other dental problems may not be detected by visual screening alone. For this reason, children should receive a thorough dental examination every six months, or as recommended by your dentist.

If you have questions or would like additional information about dental care for your child, please contact your local dentist. For information about Medicaid dental benefits, call the Oklahoma Health Care Authority at (405) 522-7300 or (800) 987-7767.

Appendix E

Summary of dental health status of Oklahoma third grade students, un-weighted prevalence rates

Dental Health Status Indicator	*Prevalence*	*95% Confidence Interval*
Percentage of third graders in Oklahoma with sealants on at least one permanent molar tooth	26.7%	24.2% - 29.1%
Percentage of third graders in Oklahoma with dental caries experience	61.9%	59.3% - 64.6%
Percentage of third graders in Oklahoma with untreated decay (active caries) in at least one permanent or primary tooth	16.7%	14.7% - 18.8%
Percentage of third graders in Oklahoma with untreated decay in at least one permanent tooth (active caries)	5.4%	4.1% - 6.6%
Percentage of third graders in Oklahoma with untreated decay in at least one primary tooth (active caries)	14.3%	12.3% - 16.2%
Percentage of third graders in Oklahoma with at least one missing permanent tooth	0.9%	0.4% - 1.5%
Percentage of third graders in Oklahoma with at least one missing primary tooth	8.3%	6.8% - 9.8%
Percentage of third graders in Oklahoma with at least one filled (treated/restored) permanent tooth	17.3%	15.2% - 19.4%
Percentage of third graders in Oklahoma with at least one filled (treated/restored) primary tooth	48.0%	45.2% - 50.7%

Appendix F

Overall Participant Characteristics, Including Percent Missing

		No.	*Percent*			*No.*	*Percent*
Age	7	3	0.2%	**Gender**	Female	588	45.8%
	8	586	45.6%		Male	664	51.7%
	9	583	45.4%		Missing	33	2.6%
	10	60	4.7%	**Race**	Asian	20	1.6%
	11	1	0.1%		Black	132	10.3%
	Missing	52	4.0%		Native American	105	8.2%
Ethnicity	Hispanic	312	24.3%		Other	136	10.6%
	Non-Hispanic	659	51.3%		White	697	54.2%
	Unknown	21	1.6%		Missing	195	15.2%
	Missing	293	22.8%				

*All percentages are rounded to one decimal place; therefore, total may not add to 100%

Appendix G

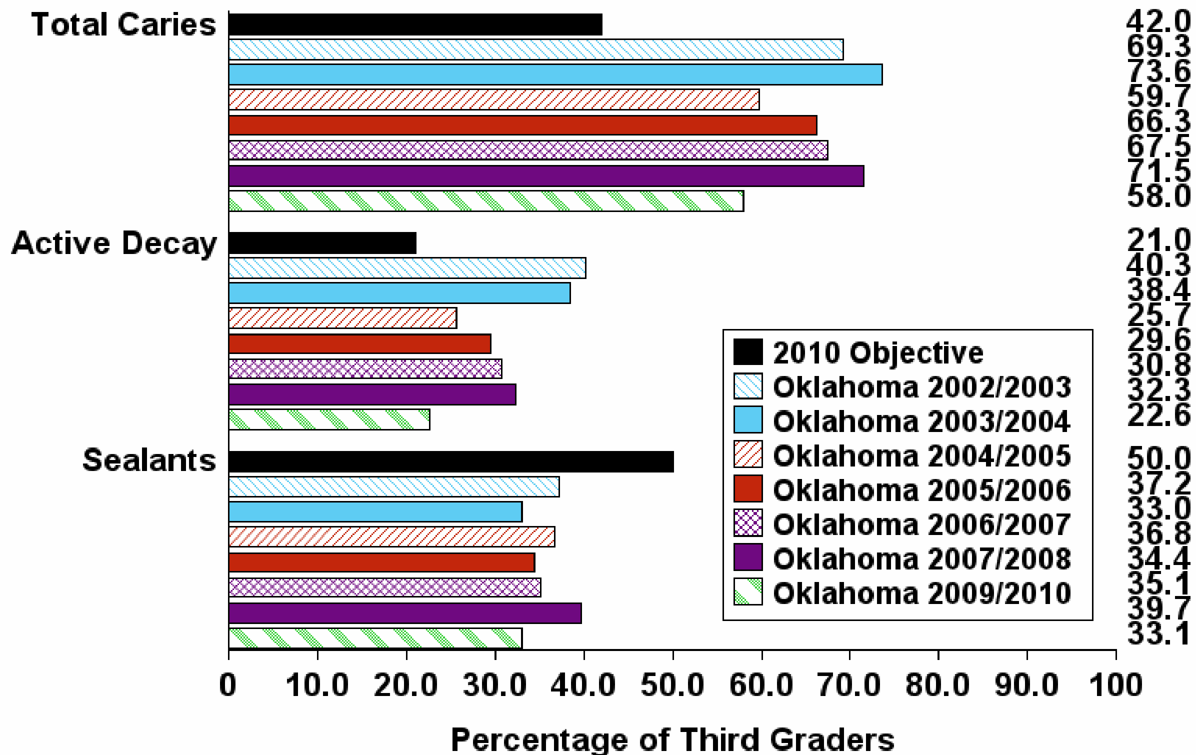
Participant Characteristics by Region

		NE		NW		SE		SW		OKC		Tulsa	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Age	7	N/A	N/A	N/A	N/A	N/A	N/A	3	1.2	N/A	N/A	N/A	N/A
	8	84	43.1	93	55.4	65	54.2	120	47.8	174	42.9	50	34.5
	9	94	48.2	65	38.7	51	42.5	114	45.4	204	50.2	55	37.9
	10	11	5.6	3	1.8	4	3.3	14	5.6	24	5.9	4	2.8
	11	1	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Missing	5	2.6	7	4.2	N/A	N/A	N/A	N/A	4	1.0	36	24.8
Gender	Female	91	46.7	76	45.2	53	44.2	116	46.2	202	49.8	50	34.5
	Male	104	53.3	92	54.8	67	55.8	135	53.8	202	49.8	64	44.1
	Missing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	0.5	31	21.4
Race	Asian	1	0.5	4	2.4	2	1.7	4	1.6	7	1.7	2	1.4
	Black	11	5.6	10	6.0	2	1.7	43	17.1	45	11.1	21	14.5
	Native American	44	22.6	3	1.8	17	14.2	20	8.0	18	4.4	3	2.1
	Other	5	2.6	15	8.9	2	1.7	21	8.4	91	22.4	2	1.4
	White	130	66.7	136	81.0	76	63.3	154	61.4	165	40.6	36	24.8
	Missing	4	2.1	N/A	N/A	21	17.5	9	3.6	80	19.7	81	55.9
Ethnicity	Hispanic	19	9.7	24	14.3	7	5.8	41	16.3	174	42.9	47	32.4
	Non-Hispanic	148	75.9	103	61.3	33	27.5	185	73.7	179	44.1	11	7.6
	Unknown	N/A	N/A	N/A	N/A	10	8.3	8	3.2	3	0.7	N/A	N/A
	Missing	28	14.4	41	24.4	70	58.3	17	6.8	50	12.3	87	60.0

*All percentages are rounded to one decimal place; therefore, total may not add to 100%

Appendix H

Summary of Oklahoma dental assessment results for 2003-2010, compared to Healthy People 2010 objectives



Led by the U.S. Department of Health and Human Services, Healthy People 2010 was a ten-year health promotion program designed to target public health priorities to improve the health of all Americans. The Healthy People 2010 objectives included several measures related to oral health in children ages six to eight. The Healthy People 2010 objectives sought goals that were better than the best racial/ethnic subgroup from the 1988-1994 baseline measures of the National Health and Nutrition Examination Survey (NHANES). Progress towards the Healthy People 2010 objectives was monitored using specific, measurable objectives. These included:

- Reduce the proportion of children with dental caries experience in their primary and permanent teeth to 42%.
- Reduce the proportion of children with untreated dental decay in primary and permanent teeth to 21%.
- Increase the proportion of children receiving dental sealants on their molar teeth to 50%.

In all dental assessments conducted between 2003 and 2010, Oklahoma failed to meet the Healthy People 2010 targets. The statewide prevalence for total dental caries experience was approximately 60% or greater in all years, which was higher than the 2010 objective of 42%. The prevalence of active decay in Oklahoma came closest to meeting the 2010 objective in 2010 (23%), but was still slightly higher than the goal of 21%. Additionally, the proportion of children with protective sealants was lower in Oklahoma (33-40%) than the Healthy People 2010 objective of 50%.

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