

SMILE SURVEY 2010

THE ORAL HEALTH OF CHILDREN IN CLARK COUNTY, WASHINGTON



JULY 2011



Smile Survey 2010 Report

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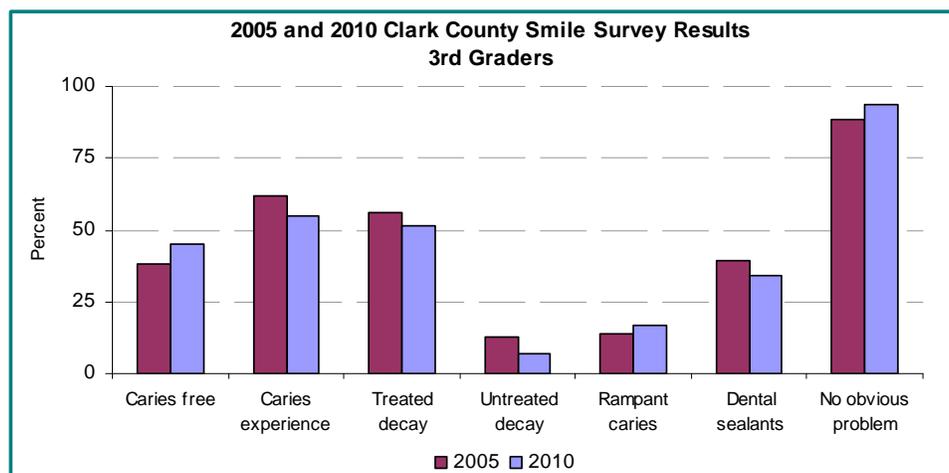
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Summary

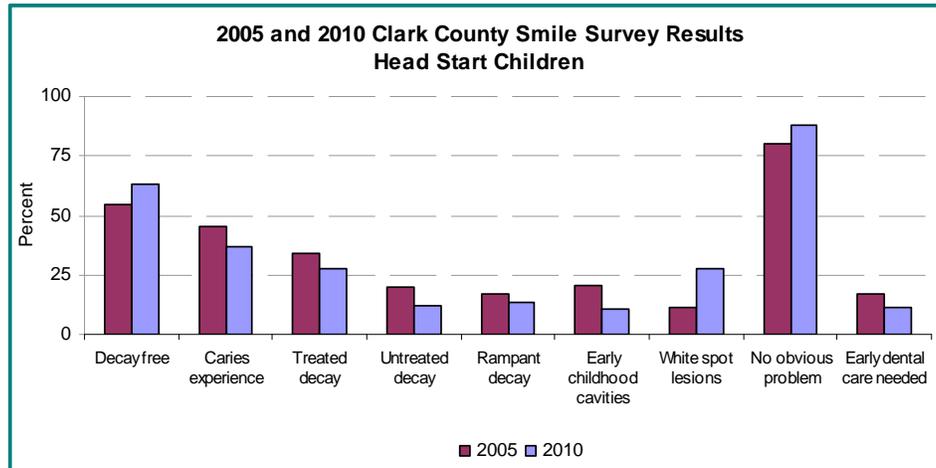
During the 2009-2010 school year, the Clark County Public Health Department conducted an oral health screening survey of (1) low-income preschoolers enrolled in Head Start/ECEAP, (2) public school kindergarteners, and (3) public school third graders. For the preschool survey, Head Start and ECEAP programs were randomly selected and all children were invited to participate. For the elementary school survey, public elementary schools were randomly selected and all children in kindergarten and 3rd grade were invited to participate. Dental hygienists, who attended a one day training session, screened the children using gloves, a disposable dental mirror and penlight. A total of 453 Head Start/ECEAP children and 2,068 elementary school students were screened.

Key Findings

- ⇒ Tooth decay is a health disparity issue in Clark County.
 - 39 percent of 3-5 year old Head Start/ECEAP low-income children screened already had cavities and/or fillings (decay experience)
 - 60 percent of children eligible for the Free and Reduced Lunch (FRL) Program – a national program to assist low-income students in need – had decay experience, compared to 42 percent of children not eligible for the program.
 - Twice as many children eligible for FRL had untreated decay (14%) compared to their counterparts (7%).
 - White, non-Hispanic 3rd grade students are twice as likely to have dental sealants (36%) than non-white students (17%). Dental sealants are an evidence-based method to prevent tooth decay.
- ⇒ More children are avoiding tooth decay/cavities (Note: data from kindergarteners is not available for 2005).
 - 55 percent of Head Start children screened in 2005 had no decay experience. In 2010 that percent increased to 63 percent.
 - 38 percent of 3rd graders screened in 2005 had no decay experience. In 2010 that percent increased to 45%.



- ⇒ Head Start/ECEAP children are experiencing less decay.
 - 20 percent of Head Start/ECEAP children screened had untreated decay in 2005. That percent decreased by 8 percent in 2010 (12%).
 - 34 percent of Head Start/ECEAP children screened had treated decay in 2005. That percent decreased by 7 percent in 2010 (27%).



Methods – Elementary School Survey

Sampling

An electronic data file of all elementary schools in Clark County was obtained from the Washington Office of Superintendent of Public Instruction. The data file, which was for the 2008-2009 school year, contained the following information for each school – district, county, total enrollment, Kindergarten and 3rd grade enrollment, and percent of children participating in the free or reduced price lunch program. All schools with at least 15 children each in both kindergarten and third grade were included in the sampling frame (57 schools and 9,864 students). Implicit stratification by percent of children eligible for the free or reduced price lunch (FRL) program was used to select a probability sample of 14 schools. Selecting a sample using implicit stratification assures that the sample is representative of the county's schools in terms of free/reduced price lunch participation.

Data Management and Analysis

Data entry was completed using Epi Info Version 3.5.1. Epi Info is a public access software program developed and supported by the Centers for Disease Control and Prevention. Data presented in this report were analyzed using SPSS version 19. Comparisons between the 2005 Smile Survey and the 2010 Smile Survey were limited to preschool and third grade respondents. Kindergarten age children were only surveyed in 2010.

Screening Protocols

Schools had the option of using either passive or positive consent. If passive consent was used, all children in first and third grade were screened; unless they returned a consent form specifically requesting that they not take part in the survey. If positive consent was used, only those children that returned a positive consent form were screened. Of the 14 schools taking part in the survey, 2 used positive and 9 used passive consent. Dental hygienists completed the screenings using gloves, penlights, and disposable mouth mirrors. The diagnostic criteria outlined in the Association of State and Territorial Dental Directors publication *Basic Screening Surveys: An Approach to Monitoring Community Oral Health* were used. The screeners attended a full-day training session which included a didactic review of the diagnostic criteria along with a hands-on calibration session. Information on age and language spoken at home was obtained from the child while gender and race were determined by the screener. Attempts were made to obtain information on a child's eligibility for the FRL program from each school; only about 10% of schools were unwilling or unable to provide this information.

Results – Elementary School Survey

Overall Results

Of the original 14 selected schools in the sample, five declined and were replaced with other schools that agreed to participate in the oral health survey. There were 2,593 children enrolled in the participating schools with 2,068 children screened; an 80 percent response rate. In terms of eligibility for the free and/or reduced price meal program, the participating schools did not differ from the 57 schools in the sampling frame. Refer to Table 1.2.

The children screened ranged in age from 5-10 years. Half of the children (50%) were male, 93 percent spoke English at home and 80 percent were white non-Hispanic. Refer to Table 1.3.

Forty-eight percent of the children screened had decay experience (untreated decay or fillings) in their primary and/or permanent teeth while 10 percent had untreated decay at the time of the screening.¹ About 9 percent of the children needed dental treatment with less than 1 percent in need of urgent dental care because of pain or infection. Children with a history of decay on seven or more teeth are considered to have rampant decay. About 15 percent of the kindergarten and 3rd grade children in Clark County had rampant decay. Refer to Table 1.4.

Only 34 percent of the 3rd grade children had a dental sealant on at least one permanent molar. Dental sealants provide an effective way to prevent decay on the chewing surfaces of molars (back teeth), which are most vulnerable to caries. A clear resin is used to cover the “pits and fissures” on the top of the teeth so that cavity-causing bacteria cannot reach areas that are difficult to clean and for fluoride to penetrate. Refer to Table 1.5.

In Clark County’s kindergarten and 3rd grade children, decay is largely limited to the primary teeth. Fifty-two percent of the children screened had no decay history, 42 percent had decay in their primary teeth only, while 6 percent had decay in their permanent teeth. Refer to Table 1.6.

Impact of Race and Ethnicity

Table 1.8 compares the oral health of white non-Hispanic children with minority children. White non-Hispanic children were significantly less likely to have caries experience and untreated decay. They were also significantly more likely to have dental sealants.

Impact of Language Spoken at Home

Language spoken at home is often used as a surrogate measure for immigration status or time since immigration to the United States. Table 1.9 compares the oral health of children whose parents speak English at home to children of non-English speaking parents. Children of non-English speaking parents had a significantly higher prevalence of caries experience, untreated decay, and dental treatment needs. There was no difference between the two groups in terms of rampant decay and dental sealant prevalence.

¹ The percent of children with untreated decay is assumed to be an under estimation because radiographs (x-rays) were not taken.

Impact of Socioeconomic Status

Eligibility for the free and/or reduced price lunch (FRL) program is often used as an indicator of overall socioeconomic status. Children from families with incomes at or below 130 percent of the poverty level (\$28,665 for a family of 4) are eligible for free meals. Those with incomes between 130 percent and 185 percent of the poverty level (\$40,793 for a family of 4) are eligible for reduced price meals.²

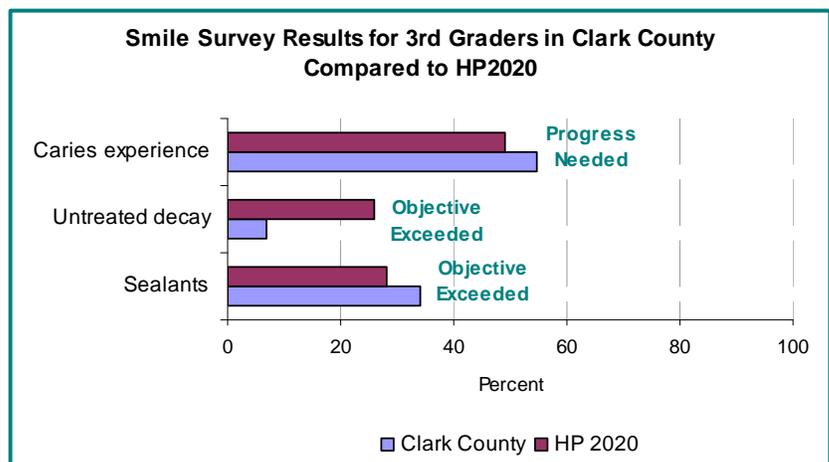
As presented in Table 1.10, income is significantly associated with a child's oral health. Children who are eligible for the FRL program, compared to those not eligible, had significantly higher levels of caries experience, untreated decay, rampant decay and dental treatment needs. There was no significant difference in the prevalence of dental sealants.

Comparison to Healthy People 2020 Oral Health Objectives

The National Oral Health Objectives for the Year 2020 (Healthy People 2020) outline several oral health status objectives for young children. For six- to nine-year-old children there are three primary oral health status objectives:

- Reduce the proportion of children who have experienced dental caries in permanent or primary teeth to 49 percent.
- Reduce the proportion of children with untreated dental caries in permanent or primary teeth to 26 percent.
- Increase the proportion of children receiving protective dental sealants on one or more permanent molar teeth to 28 percent.³

The Clark County Smile Survey was not designed to be representative of 6-9 year-old children, which is outlined in the Healthy People 2020 Objectives. The results for the 3rd graders screened are most similar in age range with 8-9 year-olds. Fifty-five percent of the 3rd grade children screened in Clark County had experienced dental caries, exceeding the HP2020 objective of 49 percent. Only 7 percent of the children screened had untreated caries – well below the HP2020 objective of 26 percent. Thirty-four percent of the 3rd graders screened had dental sealants compared to the HP2020 objective of 28 percent.

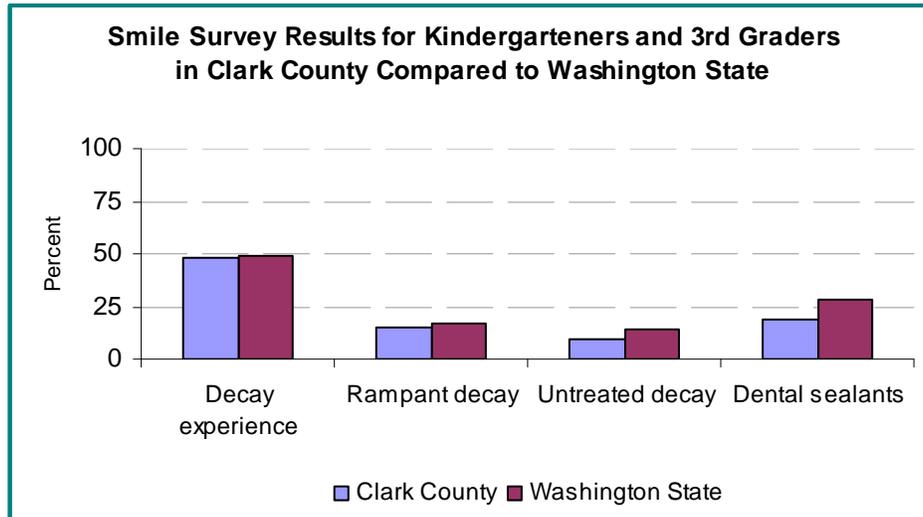


² U.S. Department of Agriculture, Child Nutrition Programs, School Lunch Program, Income Eligibility Guidelines SY 2010-2011, <http://www.fns.usda.gov/cnd/lunch/>.

³ U.S. Department of Health and Human Services, Healthy People 2020, Oral Health Objectives, <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=32>.

Comparison to Washington

The following figure compares the oral health of Clark County's elementary school children with the oral health of elementary children throughout Washington State. Kindergarten and third grade children in Clark County have a significantly lower prevalence of both rampant decay and untreated decay. Unfortunately, the prevalence of dental sealants in Clark County is significantly lower than the rest of the state. There is no significant difference between Clark County and Washington in decay experience.



Methods – Head Start / ECEAP Survey

Sampling

An electronic data file of all Head Start and ECEAP programs in Clark County was developed by the Washington State Department of Health. The data file, which was for the 2008-2009 school year, contained the following information for each program – site name, program type (ECEAP, Head Start, and Early Head Start), and contact information. A random sample of 15 Head Start/ECEAP sites was selected from the 62 sites in Clark County and all 15 sites agreed to participate.

Data Management and Analysis

Data entry and analysis was completed using Epi Info Version 3.5.1. Epi Info is a public access software program developed and supported by the Centers for Disease Control and Prevention. Data presented in this report were analyzed using SPSS version 19.

Screening Protocols

All children at the Head Start/ECEAP site were screened; unless they returned a consent form specifically requesting that they not take part in the survey. Dental hygienists completed the screenings using gloves, penlights, and disposable mouth mirrors. The diagnostic criteria outlined in the Association of State and Territorial Dental Directors publication *Basic Screening Surveys: An Approach to Monitoring Community Oral Health* were used. The screeners attended a full-day training session which included a didactic review of the diagnostic criteria along with a hands-on calibration session. Information on age and language spoken at home was obtained from the child and/or teacher while gender and race were determined by the screener.

Results – Head Start / ECEAP Survey

Overall Results

Of the 15 selected sites, all agreed to participate in the oral health survey. There were 631 children enrolled in the participating sites with 453 children screened; a 72 percent response rate. Refer to Table 2.1.

The children screened ranged in age from 1-6 years with the majority being 3-5 years of age. About half of the children (48%) were male, 75 percent spoke English at home, and 22 percent spoke Spanish at home. Fifty-one percent were white non-Hispanic while 34% were Hispanic. Refer to Table 2.2.

The following results are restricted to the 414 children between 3-5 years of age. Thirty-nine percent of the children screened had decay experience (untreated decay or fillings) and 13 percent had untreated decay at the time of the screening.⁴ About 12 percent of the children needed dental treatment with less than 1 percent in need of urgent dental care because of pain or infection. Children with a history of decay on seven or more teeth are considered to have rampant decay. About 15 percent of the Head Start/ECEAP children in Clark County had rampant decay, 11 percent had early childhood caries and 30 percent had incipient dental decay (white spot lesions). Refer to Table 2.3.

⁴ The percent of children with untreated decay is assumed to be an under estimation because radiographs (x-rays) were not taken.

Impact of Race and Ethnicity

Table 2.6 compares the oral health of white non-Hispanic children with minority children. While minority children were more likely to have white spot lesions and less likely to have caries experience and untreated decay, the differences are not significant.

Impact of Language Spoken at Home

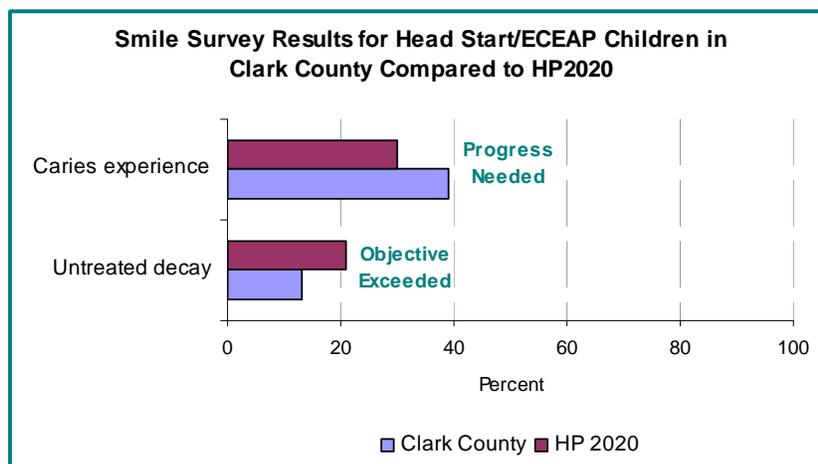
Language spoken at home is often used as a surrogate measure for immigration status or time since immigration to the United States. Table 2.7 compares the oral health of preschool children whose parents speak English at home to children of non-English speaking parents. Children of non-English speaking parents had a significantly higher prevalence of white spot lesions. There was no significant difference between the two groups in terms of caries experience, untreated decay, rampant caries, early childhood caries, or treatment need.

Comparison to Healthy People 2010 Objectives

The National Oral Health Objectives for Healthy People 2020 outline several oral health status objectives for preschool children. For three- to five-year-old children there are two primary oral health status objectives:

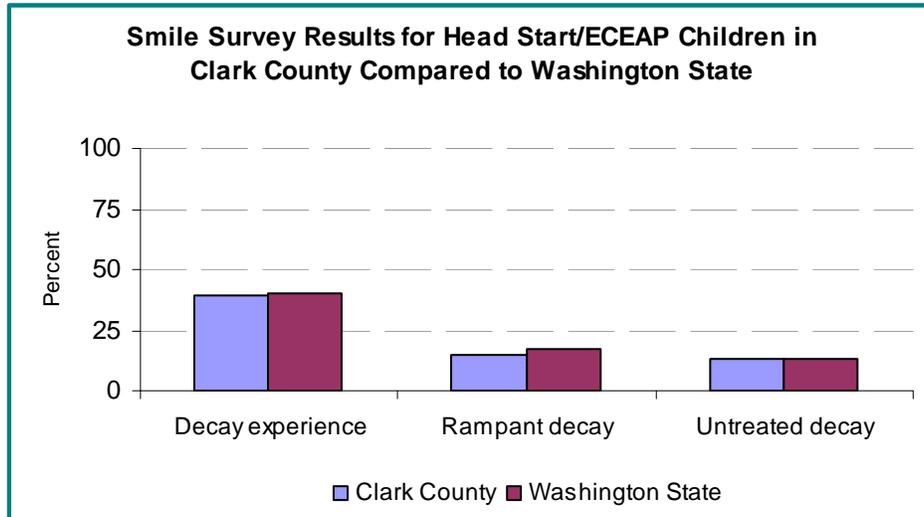
- Reduce the proportion of young children with dental caries experience in their primary in teeth to 30 percent.
- Reduce the proportion of young children with untreated dental caries in their primary teeth to 21 percent.

Thirty-nine percent of Clark County's Head Start/ECEAP children experienced dental caries – this is somewhat higher than the HP2020 objective of 30 percent. Thirteen percent of Clark County's low-income preschool children had untreated caries which is lower than the HP2020 objective of 21 percent.



Comparison to Washington

The following figure compares the oral health of Clark County's Head Start/ECEAP children with the oral health of low-income preschool children throughout Washington State. There were no significant differences.



Appendix A – Data Tables

Table 1.1
Elementary School Participation in Smile Survey 2010

	Number of Schools	Number Enrolled	Number Screened	Response Rate
Participating Schools	14	2,593	2,068	80.0

Table 1.2
Enrollment and Free/Reduced Price Lunch Program Participation in all Elementary Schools in Sampling Frame, Sample Schools and Participating Schools

	K & 3 rd Grade Enrollment	Percent on FRL	Percent White	Percent Hispanic	Percent African-American	Percent Other Race
Schools in Sampling Frame (n=57)	9,864	42.7	73.0			
Participating Schools (n= 14)	2,593	42.3	79.8	9.4	3.0	7.4
Children Screened (n= 2,068)						

Table 1.3
Age, Grade, Gender, Eligibility for the Free or Reduced Price Meal Program, Language Spoken at Home, and Race/Ethnicity of Children Screened

Variable	Kindergarten (n=980)		3 rd Grade (n=1,088)		All Grades (n=2,068)	
	Number	Percent	Number	Percent	Number	Percent
Age						
5 years	339	34.7	2	.2	341	16.5
6 years	624	63.9	0	0.0	624	30.2
7 years	13	1.3	1	.1	14	.7
8 years	0	0.0	324	29.8	324	15.7
9 years	1	.1	747	68.8	748	36.3
10 years	0	0.0	12	1.1	12	.6
Gender						
Male	479	48.9	562	51.7	1,041	50.3
Female	501	51.1	526	48.3	1,027	49.7
Free/Reduced Lunch Eligibility						
Not eligible	479	48.9	500	46.0	979	47.3
Eligible	407	41.5	468	43.0	875	42.3
Missing/Unknown	94	9.6	120	11.0	214	10.3
Language Spoken at Home						
English	884	90.2	1,042	95.8	1,926	93.1
Spanish	51	5.2	25	2.3	76	3.7
Other	42	4.3	18	1.7	60	2.9
Missing/Unknown	3	.3	3	.3	6	.3
Race/Ethnicity						
White	784	80.0	867	79.7	1,651	79.8
African American	28	2.9	35	3.2	63	3.0
Hispanic	97	9.9	97	8.9	194	9.4
Asian	50	5.1	69	6.3	119	5.8
American Indian/Alaska Native	0	0.0	0	0.0	0	0.0
Other	17	1.7	16	1.5	33	1.6
Missing/Unknown	4	.4	4	.4	8	.4

Table 1.4
Oral Health Status of Kindergarten and 3rd Grade Children Screened

	Number Screened	Percent
Caries free	2,068	52.4
Caries experience		
– primary and/or permanent teeth		47.7
Caries experience		
– permanent teeth		1.1
Treated decay		41.8
Untreated decay		9.6
Rampant caries		14.8
Dental sealants		19.5
Treatment Need		
No obvious problem		91.1
Early dental care needed		8.5
Urgent dental care needed		.5

Table 1.5
Oral Health Status of Kindergarten and 3rd Grade Children Screened Stratified by Grade

	Kindergarten		3 rd Grade	
	Number Screened	Percent	Number Screened	Percent
Caries free	980	60.3	1,088	45.2
Caries experience				
– primary and/or permanent teeth		39.7		54.8
Caries experience				
– permanent teeth		0.0		1.0
Treated decay		30.9		51.7
Untreated decay		12.8		6.8
Rampant caries		12.4		16.9
Dental sealants		3.4		34.1
Treatment Need				
No obvious problem		88.5		93.4
Early dental care needed		10.9		6.3
Urgent dental care needed		.6		.4

Table 1.6
Distribution of Treated Decay, Untreated Decay and Caries Experience
Among the Primary & Permanent Dentitions of Children Screened

	Kindergarten (n=980)	3 rd Grade (n=1,088)	Both Grades (n=2,068)
	Percent of Children	Percent of Children	Percent of Children
Treated Decay			
No treated decay	69.1	48.3	58.2
Primary teeth only	30.0	41.9	36.3
Primary and permanent teeth	.9	9.1	5.2
Permanent teeth only	0.0	.6	.3
Untreated Decay			
No untreated decay	87.2	93.2	90.4
Primary teeth only	12.4	5.9	9.0
Primary and permanent teeth	.2	.5	.3
Permanent teeth only	.1	.5	.3
Caries Experience			
No caries experience (caries free)	60.3	45.2	52.4
Primary teeth only	38.6	44.3	41.6
Primary and permanent teeth	.9	9.2	5.3
Permanent teeth only	0.0	.7	.4

Table 1.7
Oral Health of Kindergarten and 3rd Grade Children Screened Stratified by Race/Ethnicity
Percent of Children

Variable	White (n=1,651)	African American (n=63)	Hispanic (n=194)	Asian (n= 119)
Caries experience – primary and/or perm	46.3	46.0	58.2	51.3
Caries experience – permanent teeth	.4	0.0	0.0	0.0
Untreated decay	8.9	11.1	14.4	10.9
Rampant caries	14.7	9.5	16.5	17.6
Need early or urgent treatment	8.4	6.3	13.4	10.1
Need urgent treatment	.4	1.6	0.0	1.7
<i>Third Grade Children Only</i>				
Dental sealants	35.5	28.6	29.9	27.5

Table 1.8
Oral Health of Kindergarten and 3rd Grade Children Screened
Stratified by Race/Ethnicity

Variable	White Non-Hispanic (n=1,651)	Minority (n=417)
Caries experience – primary and/or perm	46.3	53
Caries experience – permanent teeth	.4	.2
Untreated decay	8.9	12.5
Rampant caries	14.7	15.1
Need early or urgent treatment	8.4	11.3
Need urgent treatment	.4	1.0
<i>Third Grade Children Only</i>		
Dental Sealants	35.5	16.8

Table 1.9
Oral Health of Kindergarten and 3rd Grade Children Screened
Stratified by Language Spoken at Home

Variable	English (n=1,9.26)	Other Language (n=136)
Caries experience – primary and/or perm	46.6	62.5
Caries experience – permanent teeth	.6	.7
Untreated decay	9.0	19.1
Rampant caries	14.4	19.9
Need early or urgent treatment	8.3	18.4
Need urgent treatment	.5	.7
<i>Third Grade Children Only</i>		
Dental Sealants	20.2	22.9

Table 1.10
Oral Health of Kindergarten and 3rd Grade Children Screened
Stratified by Eligibility for the FRL Program

Variable	Not Eligible (n=979)	Eligible (n=875)
Caries experience – primary and/or perm	41.4	58.5
Caries experience – permanent teeth	.4	.3
Untreated decay	7.3	13.5
Rampant caries	13.2	18.9
Need early or urgent treatment	6.3	12.9
Need urgent treatment	.3	.7
<i>Third Grade Children Only</i>		
Dental Sealants	20.7	17.6

Table 2.1
Head Start and ECEAP Participation in Smile Survey 2010

	Number of Sites	Enrollment	Number Screened	Response Rate
All Head Start & ECEAP Sites in County	62	1,996	NA	NA
Participating Sites	15	631	453	71.8

Table 2.2
Age, Gender, Language Spoken at Home, and Race of Head Start/ECEAP Children Screened

Variable	All Children Screened		3-5 Year Olds Only	
	Number	Percent	Number	Percent
Age				
1 year	18	4.0		
2 years	18	4.0		
3 years	57	12.9	57	13.8
4 years	220	48.6	220	53.1
5 years	137	30.2	137	33.1
6 years	2	.4		
Missing/Unknown	1	.2		
Gender				
Male	219	48.3	198	47.8
Female	233	51.4	215	51.9
Missing/Unknown	1	.2	1	.2
Language Spoken at Home				
English	341	75.3	309	74.6
Spanish	100	22.1	93	22.5
Other	11	2.4	11	2.7
Missing/Unknown	1	.2	1	.2
Race/Ethnicity				
White	233	51.4	210	50.7
African American	46	10.2	40	9.7
Hispanic	154	34.0	146	35.3
Asian	12	2.6	11	2.7
American Indian/Alaska Native	1	.2	1	.2
Other	5	1.1	5	1.2
Missing/Unknown	2	.4	1	.2

Table 2.3
Oral Health Status of Head Start and ECEAP Children Screened

	All Children (n=453)	3-5 Year Olds Only (n=414)
	Percent of Children	Percent of Children
Caries free	63.4	60.9
Caries experience	36.6	39.1
Treated decay	27.4	29.5
Untreated decay	12.4	13.0
Rampant decay (or a history of)	13.5	14.5
Early childhood cavities	10.4	11.1
White spot lesions	27.8	29.5
Treatment Need		
No obvious problem	88.1	87.7
Early dental care needed	11.3	11.6
Urgent dental care needed	.7	.7

Table 2.4
Distribution of Treated and Untreated Decay among Head Start/ECEAP Children Screened
Number of Children (Percent of Total)

Treated Decay	Untreated Decay	
	No Untreated Decay	Untreated Decay
No Treated Decay	287 (63.4%)	42 (9.3%)
Treated Decay	110 (24.3%)	14 (3.1%)

Table 2.5
Oral Health Status of Head Start and ECEAP Children Screened Stratified by Race/Ethnicity
3 to 5 Year Olds Only

Variable	White (n=210)	African American (n=40)	Hispanic (n=146)	Asian (n=11)
Caries experience	41.0	30.0	40.4	36.4
Untreated decay	14.8	7.5	13.0	9.1
Rampant caries	14.3	12.5	15.8	9.1
Early childhood caries	11.4	10.0	11.0	9.1
White spots	26.2	30.0	34.9	18.2
Need early or urgent treatment	13.6	10.0	12.6	9.1
Need urgent treatment	.5	2.5	.7	0.0

Table 2.6
Oral Health Status of Head Start and ECEAP Children Screened Stratified by Race
3 to 5 Year Olds Only

Variable	White Non-Hispanic (n=210)	Minority (n=204)
	Percent of Children	Percent of Children
Caries experience	41.0	37.3
Untreated decay	14.8	11.3
Rampant caries	14.3	14.7
Early childhood caries	11.4	10.8
White spots	26.2	32.8
Need early or urgent treatment	13.6	11.3
Need urgent treatment	.5	1.0

Table 2.7
Oral Health Status of Head Start and ECEAP Children Screened Stratified by Language
3 to 5 Year Olds Only

Variable	English (n=341)	Other Language (n=111)
	Percent of Children	Percent of Children
Caries experience	37.2	45.2
Untreated decay	12.6	14.4
Rampant caries	13.9	16.3
Early childhood caries	11.7	9.6
White spots	25.6	41.3
Need early or urgent treatment	11.7	14.4
Need urgent treatment	.6	.9

Appendix B – Participating Schools

Schools Participating in the 2010 Smile Survey

- ❖ Battle Ground School District
 - Captain Strong Primary
 - Maple Grove Primary
 - Tukes Valley Primary
- ❖ Evergreen School District
 - Crestline Elementary
 - Ellsworth Elementary
 - Fishers Landing Elementary
 - Illahee Elementary
 - Orchards Elementary
 - Riverview Elementary
 - Sifton Elementary
 - Silver Star Elementary
 - York Elementary
- ❖ Ridgefield School District
 - Union Ridge Elementary
- ❖ Washougal School District
 - Hathaway Elementary

Head Start/ECEAPs Participating in the 2010 Smile Survey

- ❖ Battle Ground Head Start
- ❖ Burton ECEAP
- ❖ Sandra Odren Family Center Head Start
- ❖ Ellsworth Head Start
- ❖ Evergreen Head Start
- ❖ Fruit Valley Head Start
- ❖ Learning Avenues Head Start/ECEAP
- ❖ Learning Avenues-McCoy Head Start/ ECEAP
- ❖ Manor Head Start
- ❖ Minnehaha ECEAP
- ❖ Sara J. Anderson Head Start
- ❖ St. John's ECEAP
- ❖ St. John's Head Start
- ❖ Vancouver Early Childhood Center Head Start
- ❖ Yacolt Head Start