# 2008-2009
# THIRD-GRADE ORAL HEALTH SURVEY
## Nevada



**Department of Health and Human Services**
**Nevada State Health Division**
**Oral Health Program**

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## INTRODUCTION

During the 2008-2009 academic year, the Oral Health Program conducted a survey of third-grade students in Nevada, the third of its kind. The primary purpose of the survey was to obtain population parameter estimates for three oral health indicators: caries experience, untreated decay, and dental sealants. As a secondary benefit, the screenings directly impacted the students by educating them about healthy oral hygiene habits and informing their parents or guardians of the need for dental care.

The statewide measures generated from the survey were then used to determine Nevada's status relative to the national targets specified in Healthy People 2010. In addition to the estimates, 95% confidence intervals are given, which illustrate the range of values that surveys conducted during the same time period and using the same methodology would have likely produced.

The results, as presented on the following pages, demonstrate that Nevada needs to make considerable progress before meeting any of the three oral health targets. Only through a combination of public health policy, improvements in access to dental services, and concerted oral health interventions can Nevada make strides toward achieving these important aims.

The first section of this report provides an overview of the key findings of the survey, the overall oral health outcome estimates for the state. The subsequent section examines these estimates more closely by breaking them down by various demographic characteristics and according to the affordability and accessibility of dental care. Finally, the last two sections detail the surveying and sampling methods used to conduct the screenings.

## KEY FINDINGS

### #1
### CARIES EXPERIENCE

64.9% of third-grade students in Nevada have experienced dental decay in their primary or permanent teeth. The confidence interval of this measure spans from 60.8% to 69.1%.

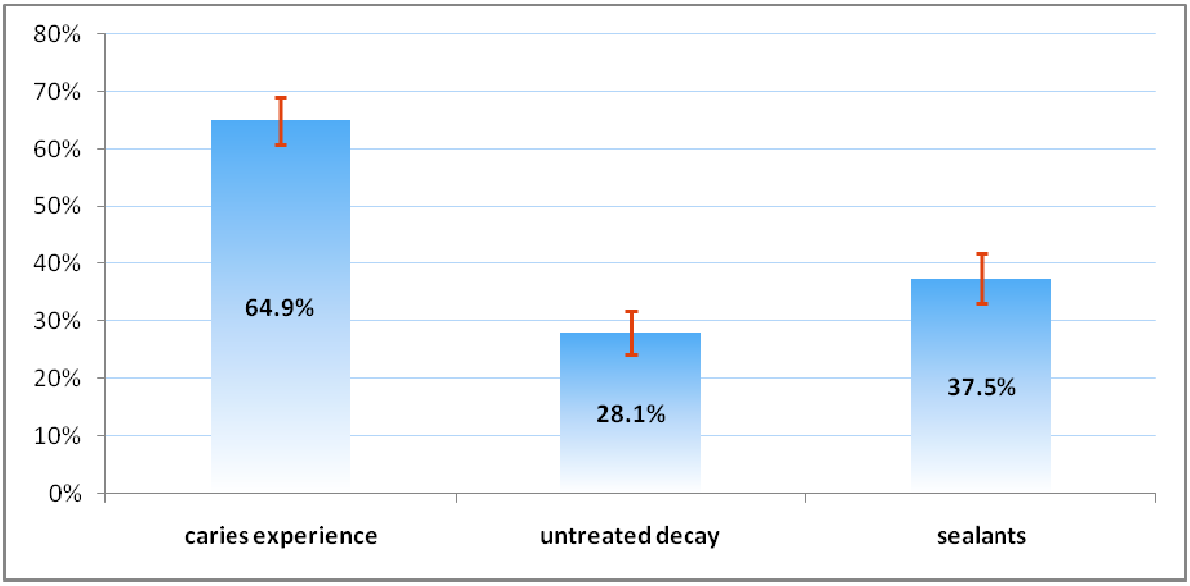
### #2
### UNTREATED DECAY

28.1% of third-grade students in Nevada have untreated dental decay. The confidence interval of this measure spans from 24.3% to 31.8%.

### #3
### DENTAL SEALANTS

37.5% of third-grade students in Nevada have dental sealants on at least one permanent molar. The confidence interval of this measure spans from 33.1% to 41.8%.

**Figure 1 – STATEWIDE ORAL HEALTH OUTCOMES**

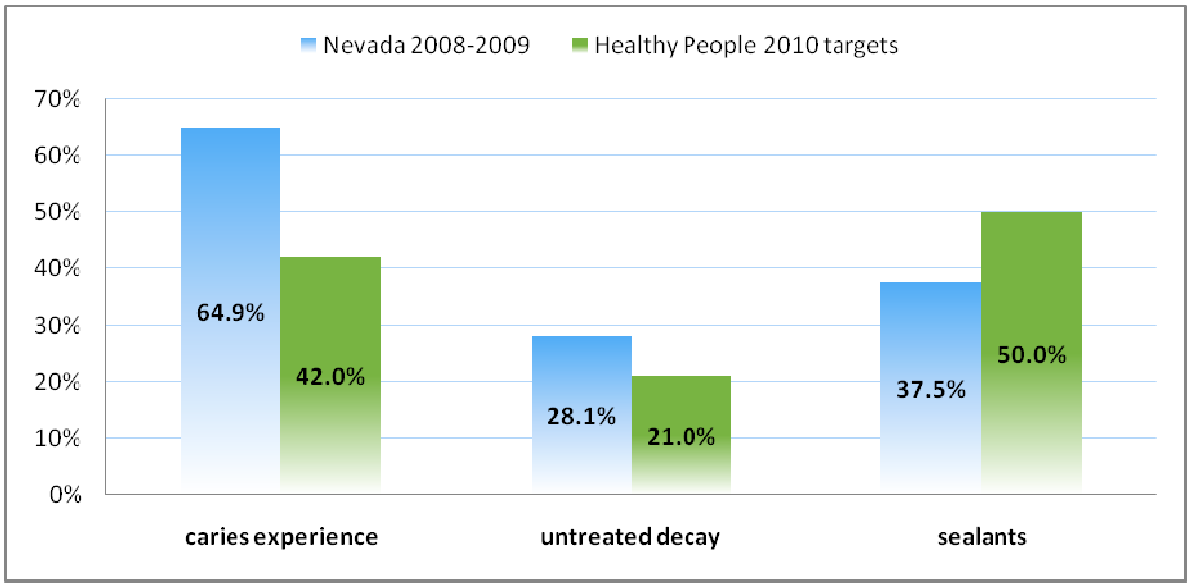


## #4
## HEALTHY PEOPLE 2010

Now in the second decade of Healthy People, the 2010 objectives from the oral health module for which this survey generated comparative measures are as follows:

- **21-1b:** "Reduce the proportion of children with dental caries experience in their primary and permanent teeth." Children were defined as those 6-8 years old. The target was set at 42%.
- **21-2b:** "Reduce the proportion of children with untreated dental decay in primary and permanent teeth." Again, children were defined as in 21-1b. The target was set at 21%.
- **21-8a:** "Increase the proportion of children who have received dental sealants on their molar teeth." Here, children were defined as those 8 years old. The target was set at 50%.

### Figure 2 – ORAL HEALTH OUTCOMES VERSUS HEALTH PEOPLE 2010 TARGETS



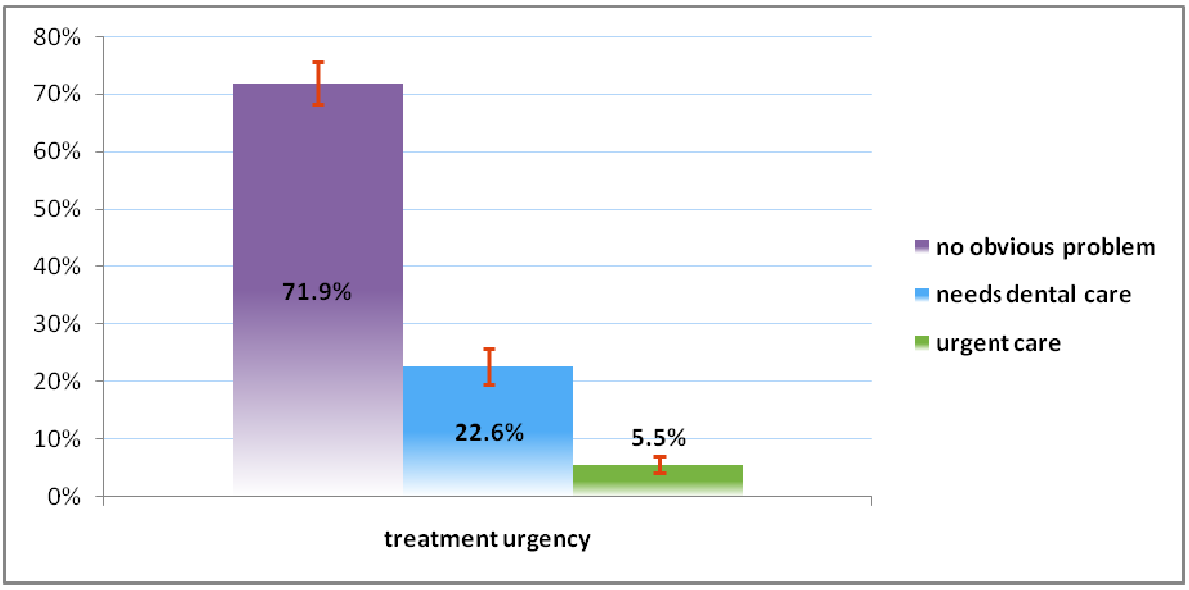

The results, as presented graphically and here below, demonstrate that Nevada needs to make considerable progress before meeting any of the three targets.

- At 64.9%, Nevada will have to reduce the prevalence of caries experience by 23 points.
- At 28.1%, Nevada will have to reduce the rate of untreated decay by 8 points.
- At 37.5%, Nevada will have to increase the proportion having dental sealants by 13 points.

## #5
## TREATMENT URGENCY

Depending on the combination of oral health outcomes observed at the time of screening, the need for dental care was also evaluated for each third-grade student. The survey indicates that while 71.9% of third-grade students in Nevada exhibited no obvious dental problem, 22.6% needed dental care, and 5.5% were in need of urgent dental care due to pain or infection. The confidences intervals of these measures span from 68.2% to 75.5%, 19.4% to 25.8%, and 4.0% to 6.9%, respectively.

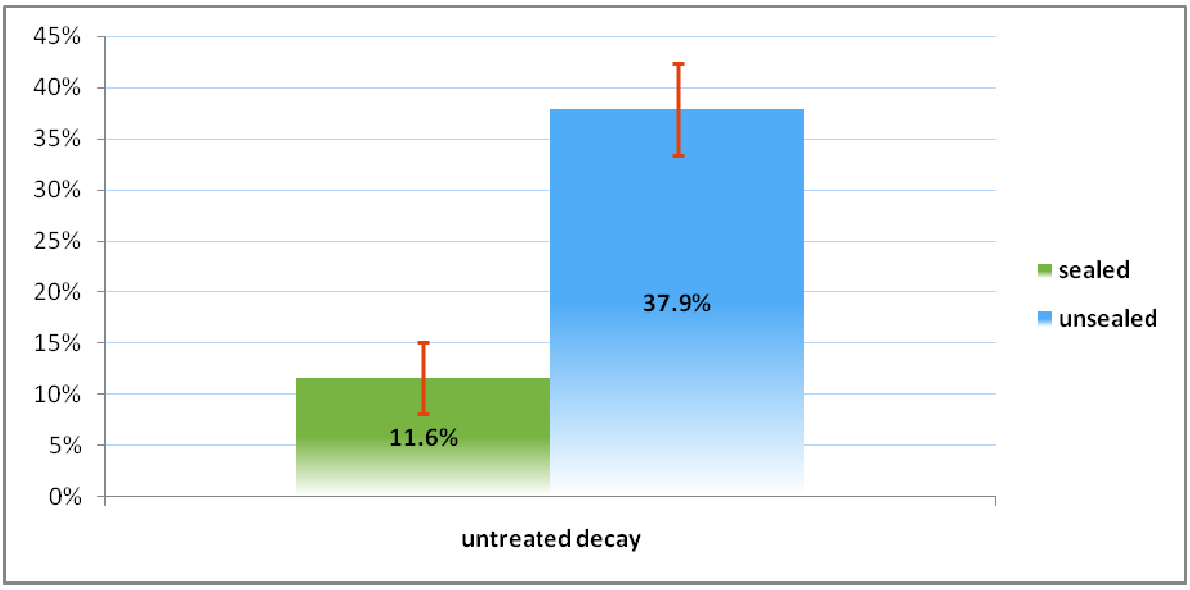
**Figure 3 – TREATMENT URGENCY**



## #6
## UNTREATED DECAY BY SEALANT STATUS

Dental sealants are a proven means of preventing cavities in the pits and fissures of teeth. To demonstrate the impact that sealants are having on cavity frequency among third-grade students in Nevada, untreated decay was cross-tabulated by sealant status. 11.6% of those with sealants had untreated decay versus 37.9% without, an increase in the frequency of dental decay of over three times. The confidence intervals of these measures span from 8.1% to 15.1% and 33.4% to 42.4%, respectively.

**Figure 4 – UNTREATED DECAY BY SEALANT STATUS**

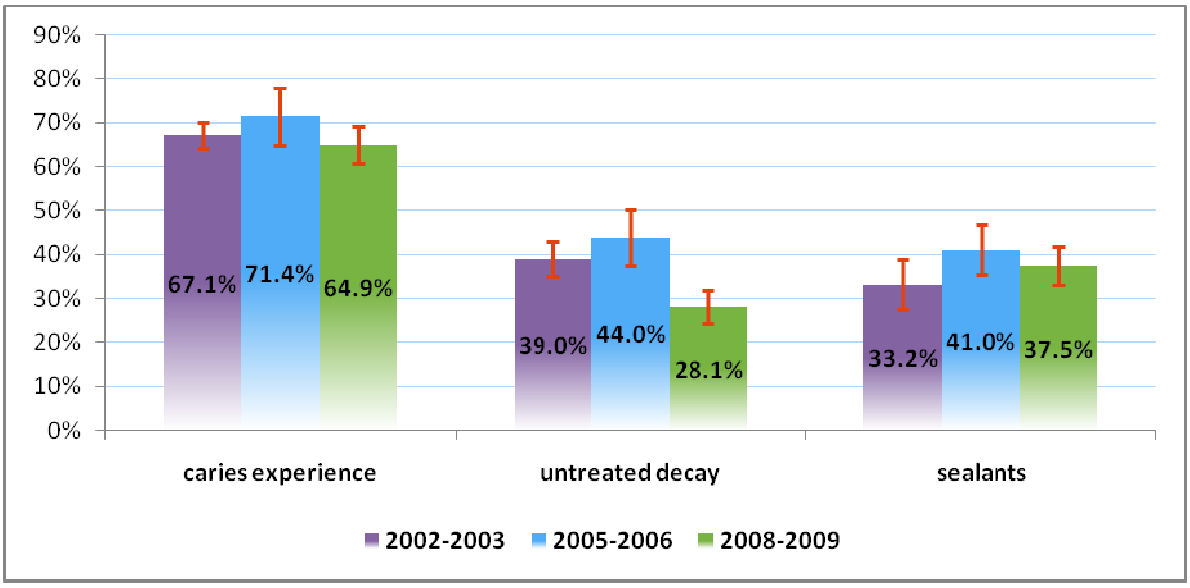


## TOPICS

### TOPIC:
### ACADEMIC YEAR

The 2008-2009 academic year marks the third time the Oral Health Program has conducted a survey of third-grade students in Nevada. A statistically significant difference can be seen between the current measure for untreated decay and those taken during previous academic years.

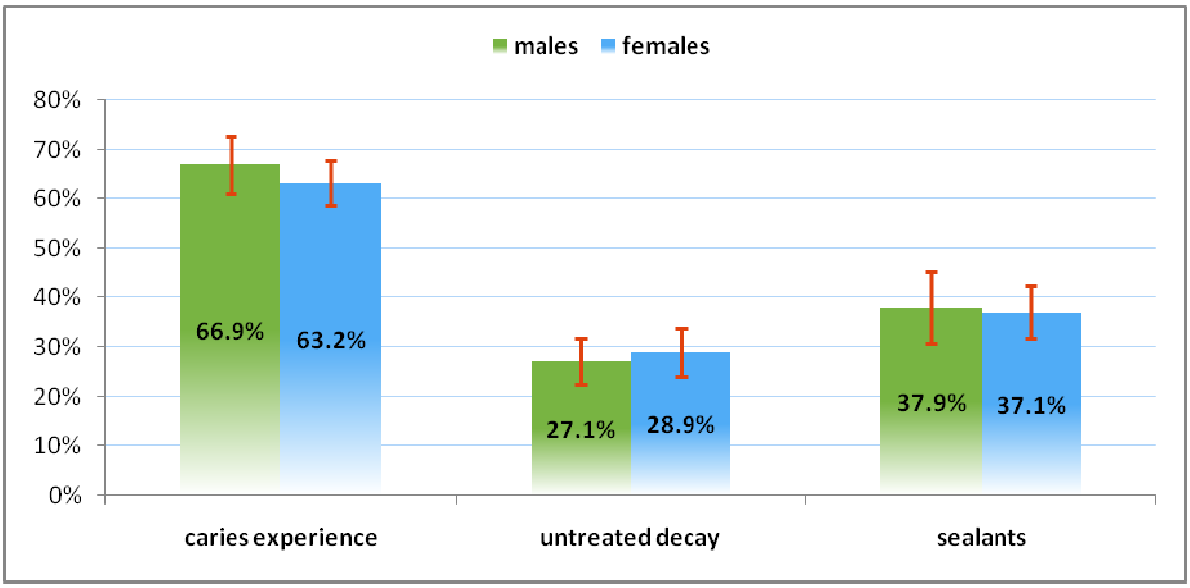
**Figure 5 – STATEWIDE ORAL HEALTH OUTCOMES BY SCHOOL YEAR**



## TOPIC:
## SEX

Looking at the oral health outcomes by sex revealed that while slight differences were observed, the figures and confidence intervals suggest that sex does not appear to have a major impact. 66.9% of males versus 63.2% of females have experienced dental decay in their primary or permanent teeth, 27.1% of males versus 28.9% of females have untreated dental decay, and 37.9% of males versus 37.1% of females have dental sealant on at least one permanent molar.

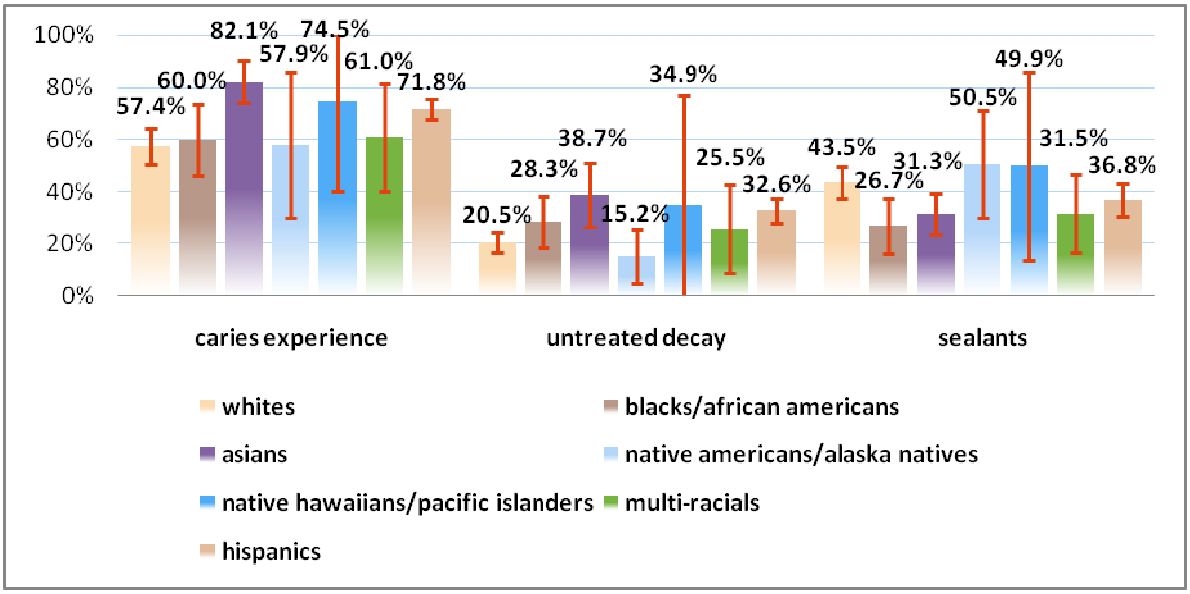
**Figure 6 – ORAL HEALTH OUTCOMES BY SEX**



## TOPIC:
## RACE

Analyzing the oral health outcomes according to race and ethnicity showed much variability, though due to the size of the samples for some of the racial categories[1], many of the confidence intervals were very wide, meaning that their measures are likely to be unreliable. The racial and ethnic categories exhibiting the narrowest confidence intervals were Whites and Hispanics, which one might expect given their corresponding proportions in the Nevada population and, consequently, the survey sample.

### Figure 7 – ORAL HEALTH OUTCOMES BY RACE/ETHNICITY




At 82.1%, the highest rate of caries experience was observed among Asians followed by Native Hawaiians/Pacific Islanders, 74.5%, and Hispanics, 71.8%. The rates among Whites, Black/African Americans, Native Americans/Alaska Natives, and Multi-racials were nearly the same. Of all possible comparative combinations, a statistically significant difference was observed between Whites and both Asians and Hispanics.

Similarly, Asians had the highest rate of untreated decay at 38.7% followed by Native Hawaiians/Pacific Islanders, 34.9%, and Hispanics, 32.6%. The lowest rate was observed among Native Americans/Alaska Natives, 15.2%. Again, a statistically significantly difference was detected between Whites and both Asians and Hispanics.

The highest rates of dental sealants were observed among Native Americans/Alaska natives, 50.5%, and Native Hawaiians/Pacific Islanders, 49.9%. At 43.5%, Whites had the next highest rate. The lowest rate was observed among Blacks/African Americans, 26.7%. A statistically significant difference was observed between Whites and Blacks/African Americans.

[1] All racial categories exclude those of Hispanic heritage. The ethnic category of Hispanics includes them instead.

## TOPIC:
## REGION

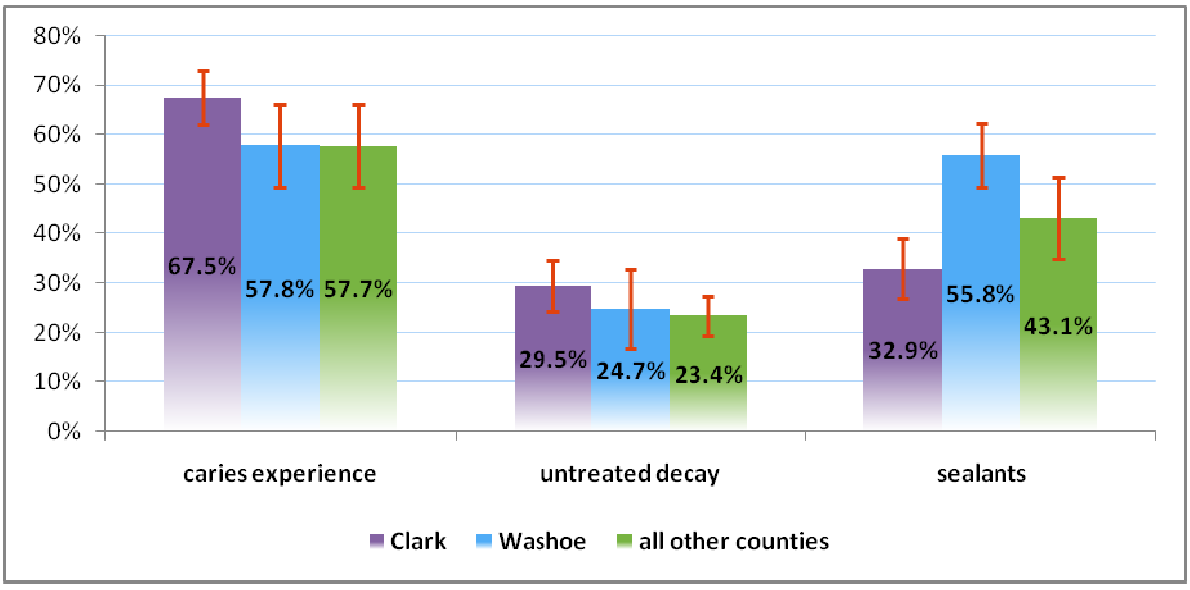
The sampling method of the survey was designed such that parameter estimates could also be generated for the three regions that are commonly used in Nevada to look at different parts of the state: Clark County, Washoe County, and all other counties.

The prevalence of caries experience was highest in Clark County, 67.5%, versus 57.8% and 57.7% for Washoe County and all other counties, respectively.

The prevalence of untreated decay was also somewhat higher in Clark County, 29.5%, versus 24.7% and 23.4% for Washoe County and all other counties.

The proportion of third-grade students having dental sealants was 32.9% in Clark County in contrast to 55.8% in Washoe County and 43.1% in all other counties. A statistically significant difference was observed between Clark County and Washoe County.

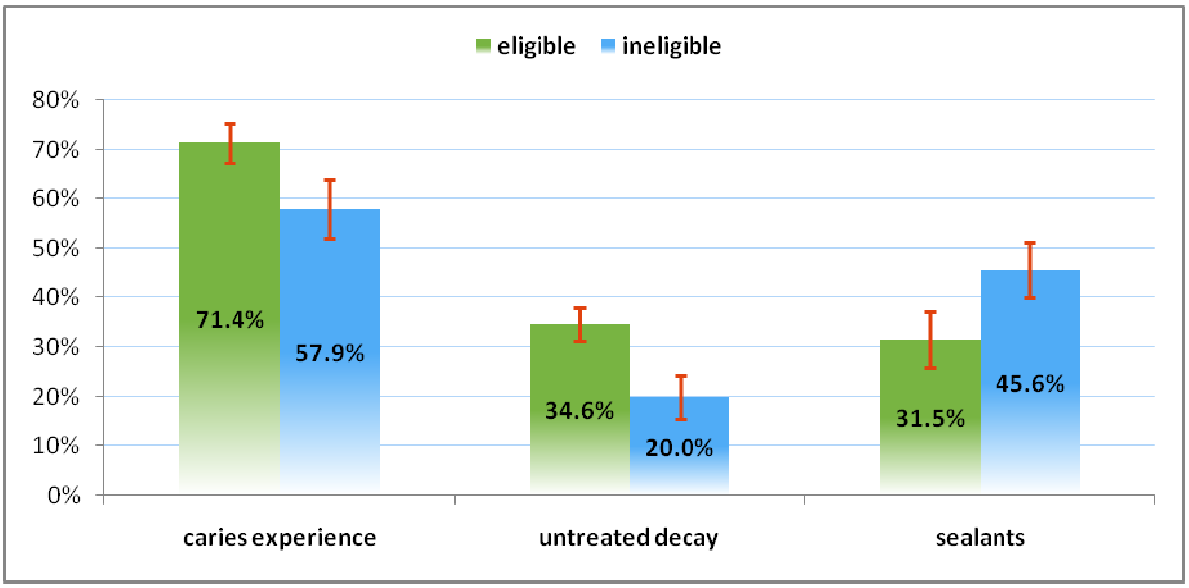
**Figure 8 – ORAL HEALTH OUTCOMES BY REGION**



## TOPIC:
## NATIONAL SCHOOL LUNCH PROGRAM

Eligibility for the National School Lunch Program is often used as an indicator of overall socio-economic status. For the 2008-2009 survey, statistically significant differences were observed across all three oral health outcome measures. A higher proportion of third-grade students eligible for free or reduced lunches exhibited a history of caries, 71.4%, compared to those not eligible, 57.9%. Furthermore, those eligible were more likely to have untreated decay, 34.6% versus 20.0%. Dental sealant rates were also lower among those eligible for the program, 31.5%, in comparison to those ineligible, 45.6%. Overall, socio-economic status, as approximated by eligibility for free or reduced lunches, appears to be a major predictor of oral health.

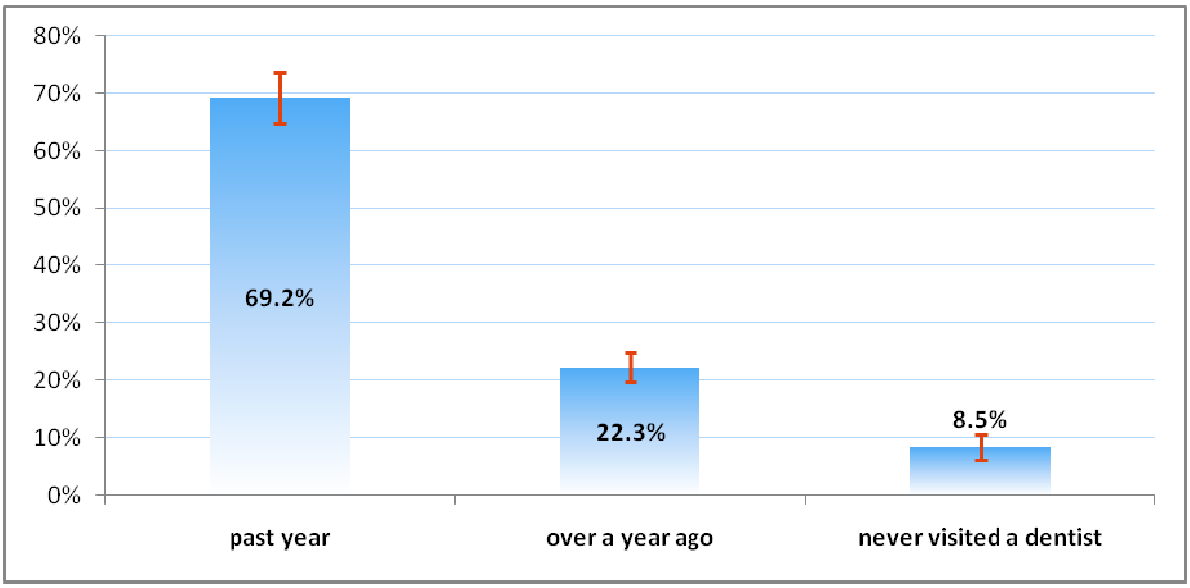
### Figure 9 – ORAL HEALTH OUTCOMES BY ELIGIBILITY FOR FREE OR REDUCED LUNCHES



## TOPIC:
## DENTAL VISIT

Regular dental examinations hold the potential to detect oral health problems early on and have them treated. While 69.2% of parents reported that their child had visited a dentist in the past year, 22.3% noted that it had been over a year since their child's last visit, and 8.5% indicated that their child had never visited a dentist.

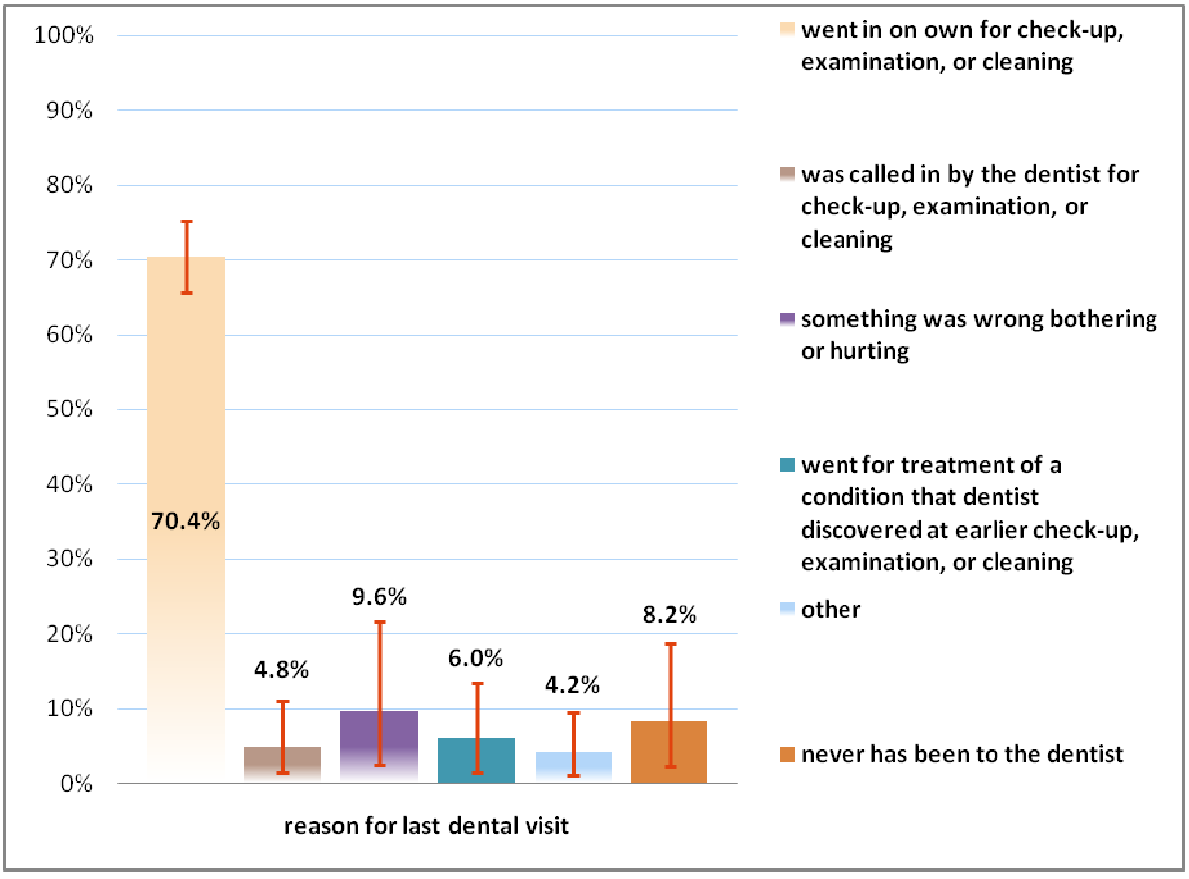
**Figure 10 – TIME SINCE LAST DENTAL VISIT**



Furthermore, the reason for each student's last dental visit was examined. The vast majority of parents, 70.4%, took their child in on their own; whereas, 4.8% indicated that their child was called in by the dentist; 9.6% that something was wrong, bothering, or hurting; 6.0% that they took their child in for treatment of a condition that the dentist had discovered at an earlier appointment; 4.2% some other reason, and 8.2% that their child had never visited a dentist. A statistically significant difference was observed between those who took their child in on their own and all other groups.

It should be noted that the values do not sum to 100% due to some respondents indicating more than one reason. There is also a minute difference between the proportions of students having never visited a dentist presented here and previously because this was gathered in two separate places on the consent form and responses were not always consistent.

**Figure 11 – REASON FOR LAST DENTAL VISIT**



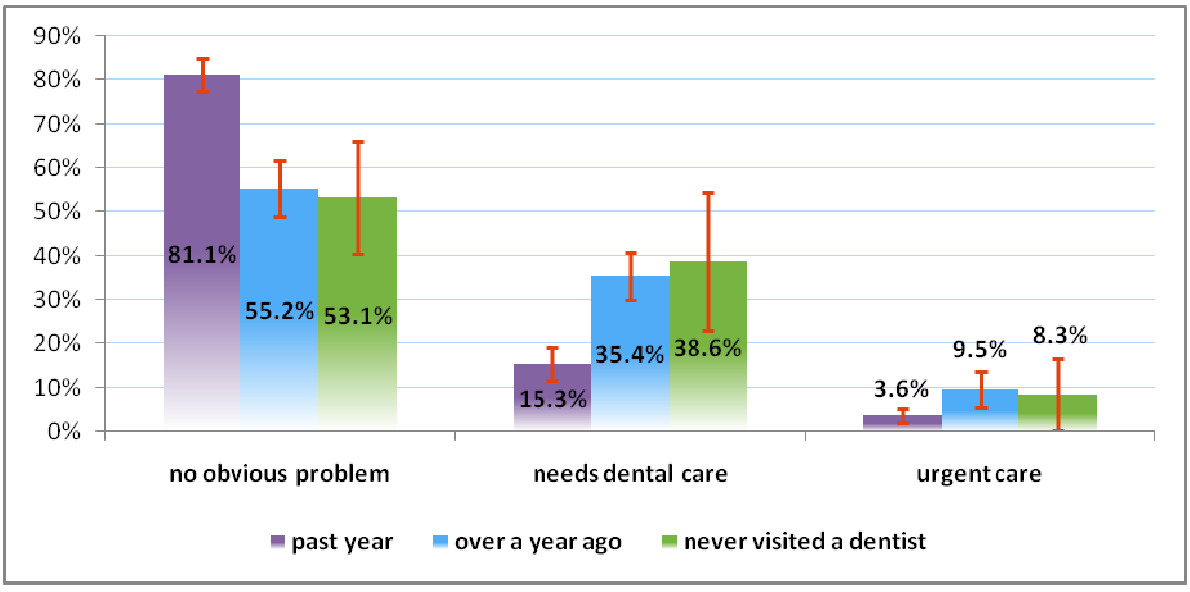
The survey also allowed the three oral health outcomes to be analyzed by time since last dental visit, as represented by three different groups. Time since last dental visit appears to be a significant predictor of the oral health outcomes.

At 71.7%, the prevalence of caries experience was highest among those having visited a dentist over a year ago. Among those having visited a dentist in the past year, it was 66.0% and among those having never visited a dentist 43.8%. The last figure seems counterintuitive, yet a potential explanation may lay, one, in the wide confidence interval of the measure for this group and, two, in a possible selection bias among those parents having never taken their child to a dental visit not consenting to having their child screened.

The prevalence of untreated decay was highest among those having never visited a dentist, 45.8%, versus 19.1% and 44.4% among those having visited a dentist in the past year and those having visited a dentist over a year ago, respectively.

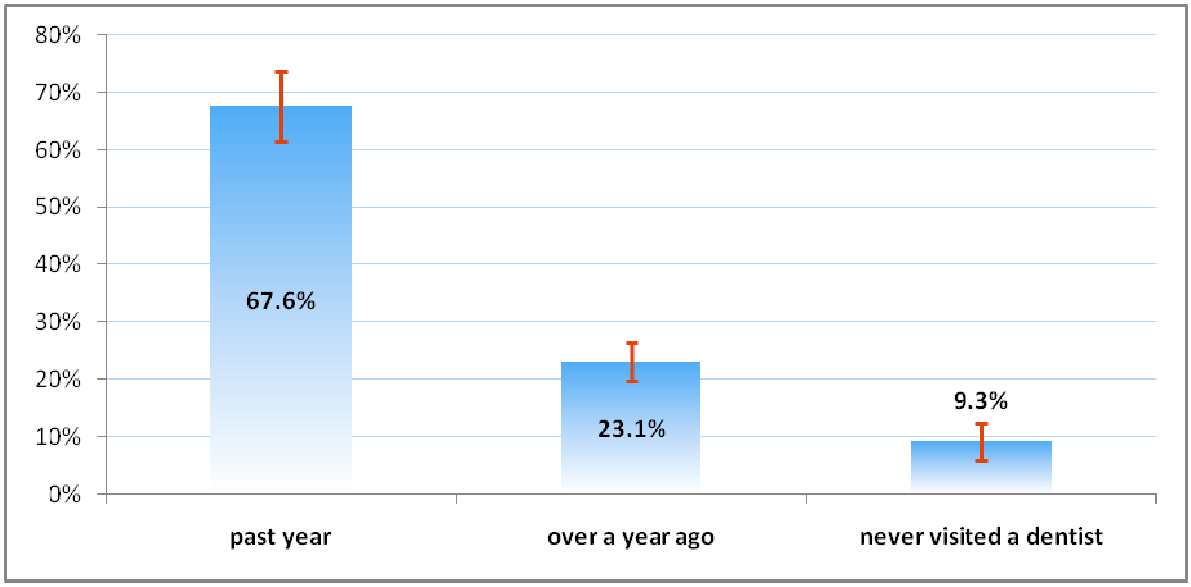
The proportion of third-grade students having dental sealants was 49.7% among those having visited a dentist in the past year in contrast to 19.0% among those having visited a dentist over a year ago and 4.1% among those having never visited a dentist. A statistically significant difference was observed between all three groups.

**Figure 12 – ORAL HEALTH OUTCOMES BY TIME SINCE LAST DENTAL VISIT**



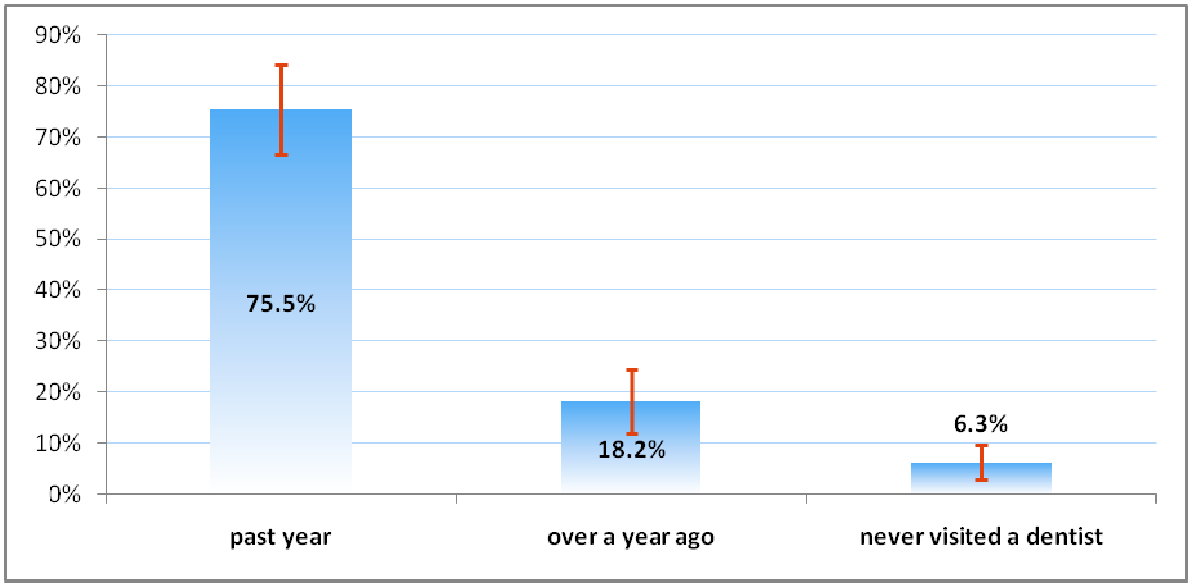
While 67.6% of parents in Clark County reported that their child had visited a dentist in the past year, 23.1% noted that it had been over a year since their child's last visit, and 9.3% indicated that their child had never visited a dentist.

**Figure 13 – TIME SINCE LAST DENTAL VISIT IN CLARK COUNTY**



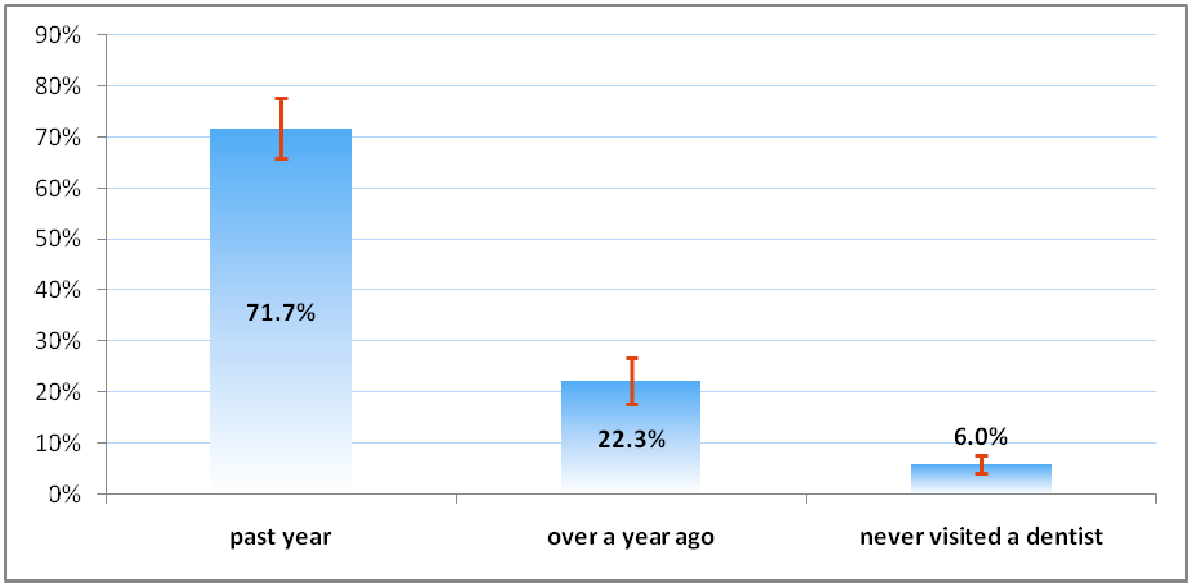
While 75.5% of parents in Washoe County reported that their child had visited a dentist in the past year, 18.2% noted that it had been over a year since their child's last visit, and 6.3% indicated that their child had never visited a dentist.

**Figure 14 – TIME SINCE LAST DENTAL VISIT IN WASHOE COUNTY**



While 71.7% of parents in all other counties reported that their child had visited a dentist in the past year, 22.3% noted that it had been over a year since their child's last visit, and 6.0% indicated that their child had never visited a dentist.

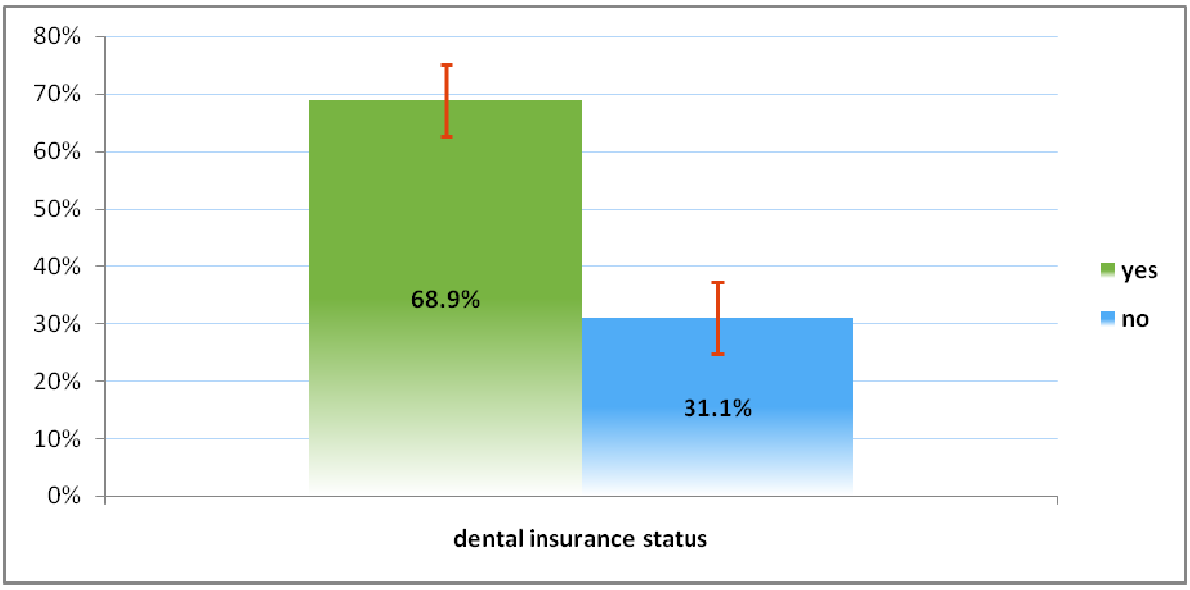
**Figure 15 – TIME SINCE LAST DENTAL VISIT IN ALL OTHER COUNTIES**



## TOPIC:
## DENTAL INSURANCE

Insurance coverage is a crucial determinant of access to and affordability of medical and dental services. While 68.9% of students were covered by dental insurance, 31.1% were not.

**Figure 16 – DENTAL INSURANCE STATUS**



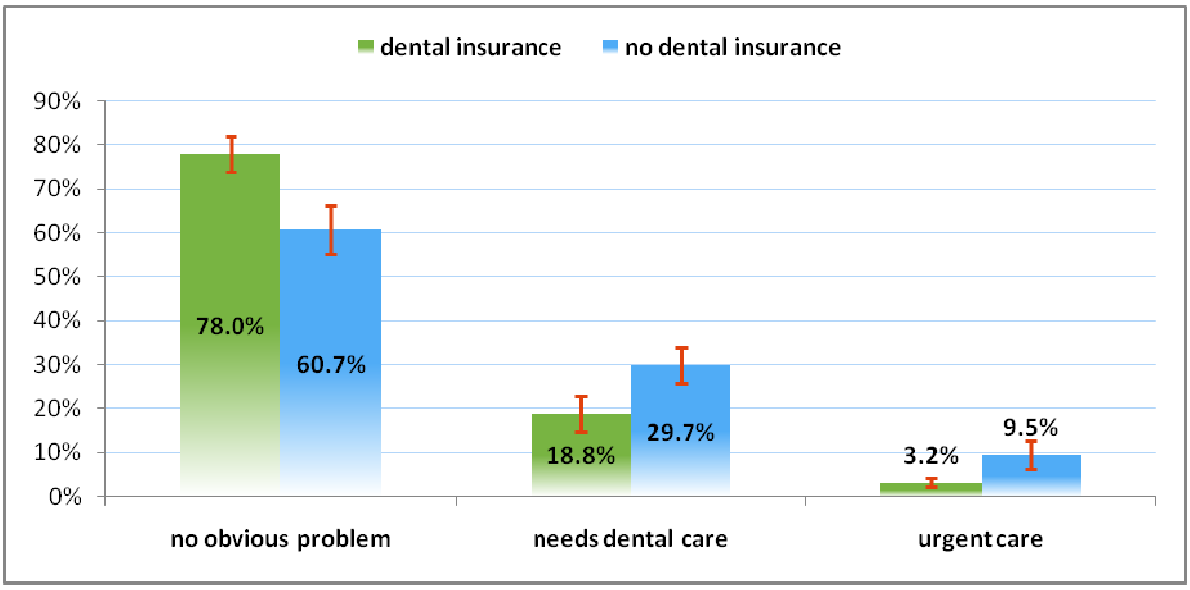
Looking at the oral health outcomes by dental insurance status revealed differences across all three and statistically significant differences for two of the three. Dental insurance status appears to be a significant predictor of the oral health outcomes—like time since last visit—and is likely to be correlated with the latter.

The prevalence of caries experience was slightly higher among those with dental insurance, 66.4%, compared to those without, 62.1%.

The prevalence of untreated decay was higher among those without dental insurance, 39.0%, versus those with, 22.1%. A statistically significant difference was observed between the two.

The proportion of third-grade students having dental sealants was 45.9% among those with dental insurance versus 22.0% among those without. A statistically significant difference was observed between the two.

**Figure 17 – ORAL HEALTH OUTCOMES BY DENTAL INSURANCE STATUS**



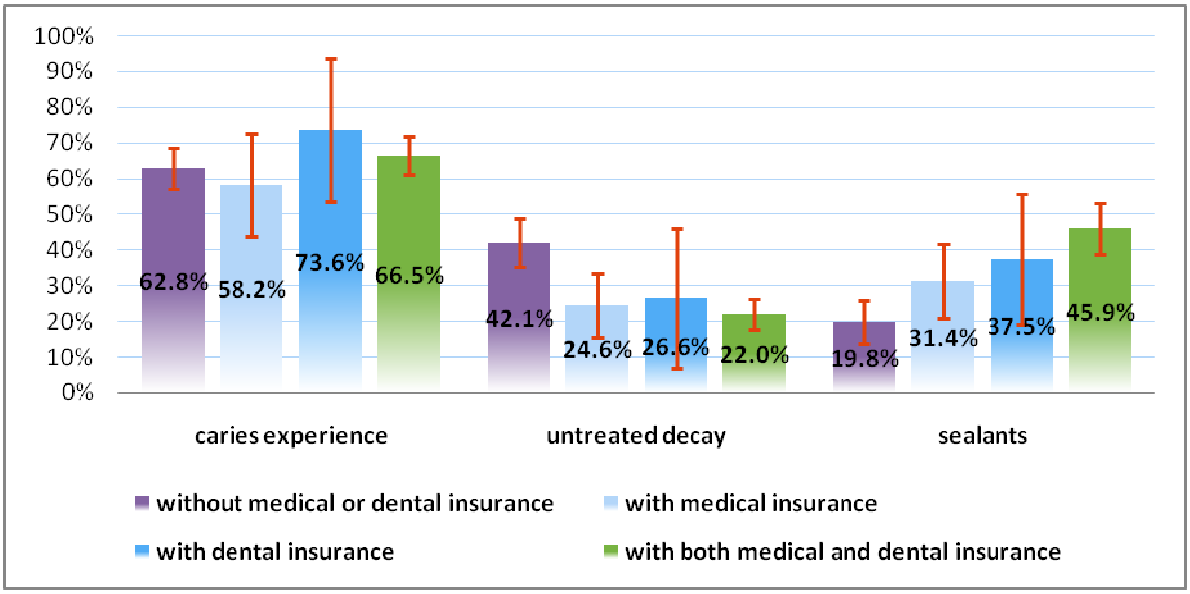
In addition, the oral health outcomes were further analyzed by the possible combinations of medical and dental insurance coverage. Independently, having either dental or medical coverage resulted in improvements to two of the three outcomes. A synergistic effect was observed among those who had both dental and medical coverage.

The prevalence of caries experience was highest among those with only dental insurance, 73.6%, and lowest among those with only medical insurance, 58.2. As was the case with time since last dental visit, this result seems again odd. There may be a number of explanations—including those noted for the previous anomaly—but in this case, additional explanations may lay, one, in the theoretical possibility, given the wide confidence interval, that those with only dental insurance actually have the lowest rate of caries experience, and, two, in a definitional issue around what constitutes caries experience that is contributing to such counterintuitive results.

At 42.1%, the prevalence of untreated decay was highest among those with no insurance and lowest among those with both medical and dental insurance, 22.0%. A statistically significant difference was observed between those with no insurance and both those with only medical insurance and those with both medical and dental insurance.

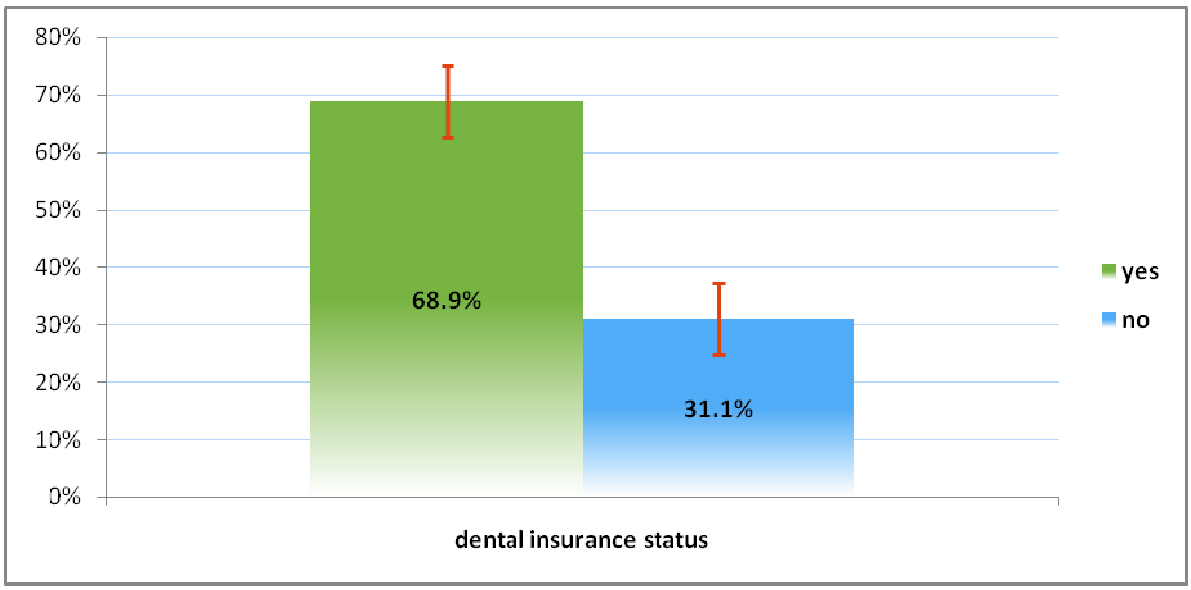
Likewise, those with no insurance had the lowest rate of dental sealants, 19.8%; whereas, those with both medical and dental insurance had the highest rate, 45.9%. A statistically significant difference was observed between those with no insurance and those with both medical and dental insurance.

**Figure 18 – ORAL HEALTH OUTCOMES BY MEDICAL AND DENTAL INSURANCE STATUS**



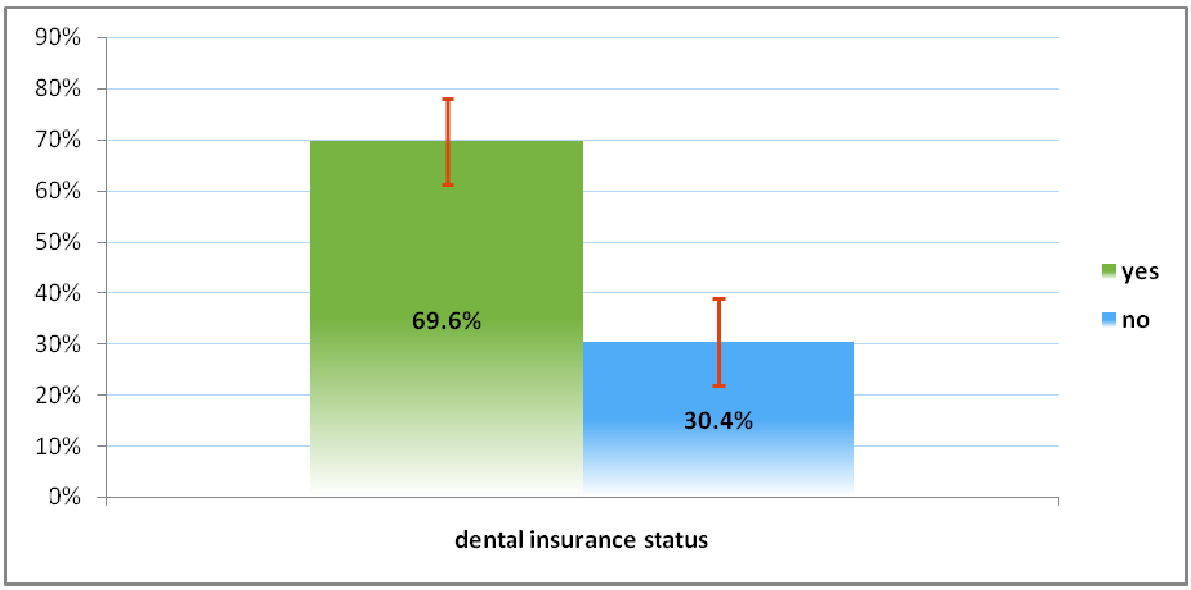
While 68.9% of students were covered by dental insurance in Clark County, 31.1% were not.

**Figure 19 – DENTAL INSURANCE STATUS IN CLARK COUNTY**



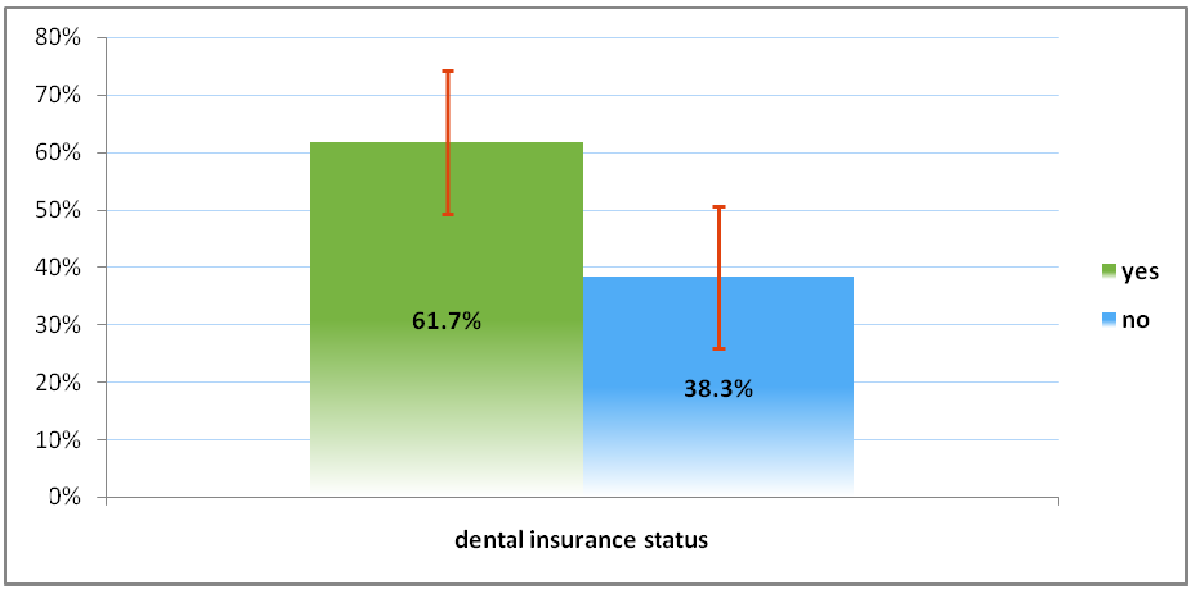
While 69.6% of students were covered by dental insurance in Washoe County, 30.4% were not.

**Figure 20 – DENTAL INSURANCE STATUS IN WASHOE COUNTY**



While 61.7% of students were covered by dental insurance in all other counties, 38.3% were not.

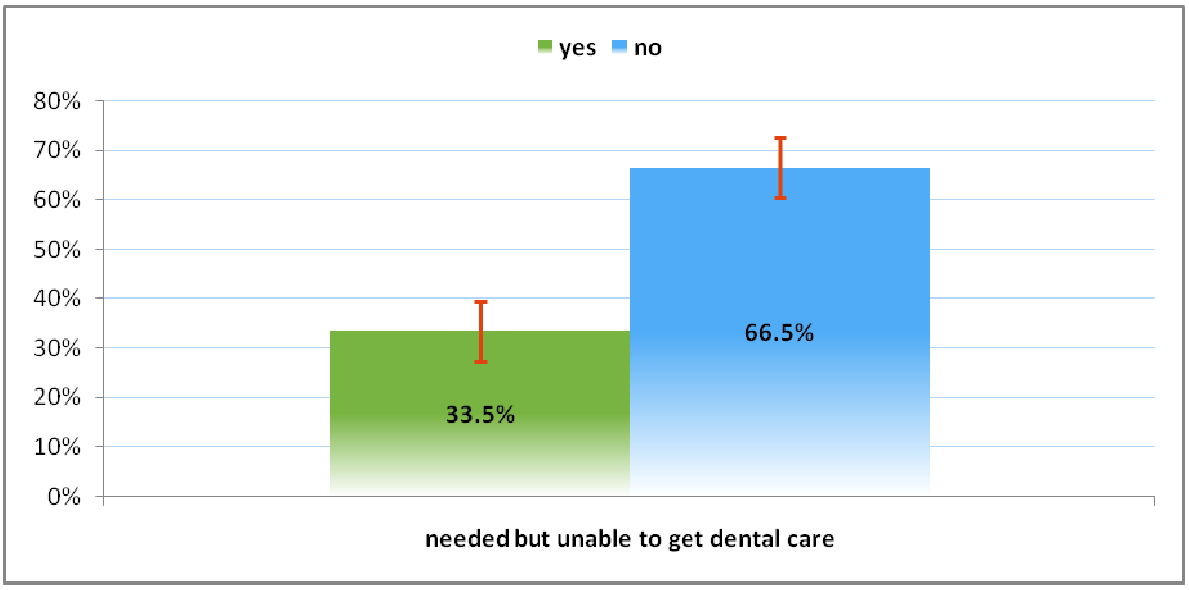
**Figure 21 – DENTAL INSURANCE STATUS IN ALL OTHER COUNTIES**



## TOPIC:
## ACCESS TO DENTAL CARE

Due to issues of accessibility, availability, and affordability, dental care is not necessarily available when it is needed. For the 2008-2009 survey, 33.5% of parents indicated that they were unable to seek dental care when their child needed it during the past 12 months. 66.5% of parents indicated that did not have this issue over the time period.

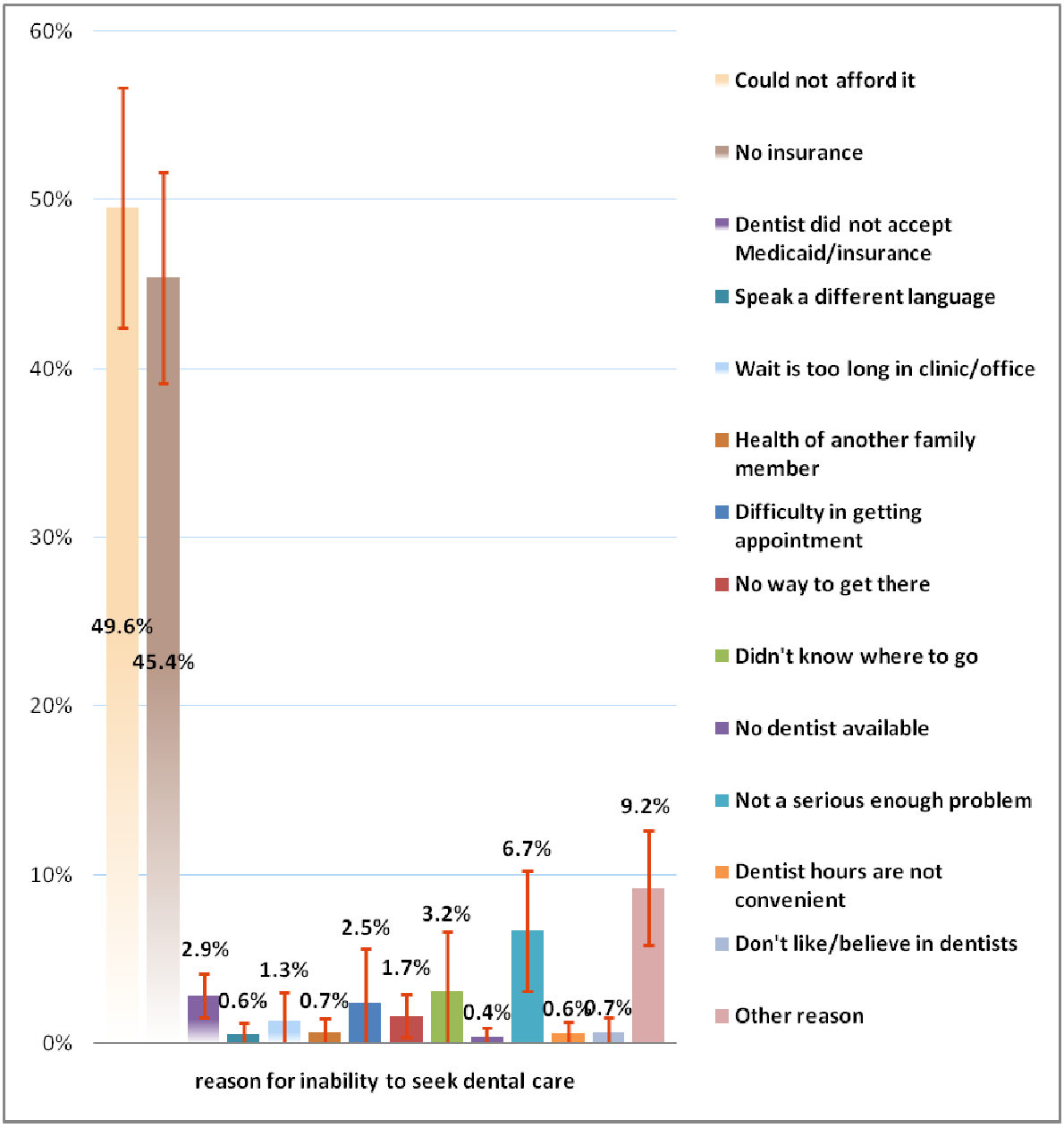
### Figure 22 – INABILITY TO SEEK DENTAL CARE WHEN NEEDED



Furthermore, the reason for the inability to seek dental care when needed was examined. Overall, affordability was most often the issue, with 'could not afford it' and 'no insurance' cited 49.6% and 45.4% of the time, respectively. An 'other' reason was indicated, without further explanation, 9.2% of the time, followed by 'not a serious enough problem' 6.7% of the time.

Due to multiple responses, the values do not sum to 100%.

**Figure 23 – REASON FOR THE INABILITY TO SEEK DENTAL CARE WHEN NEEDED**



## SURVEY METHOD

As with previous surveys, active consent was required of a student's parent or guardian before he or she could be screened. The consent form was combined with a questionnaire that gathered basic demographic information and asked questions concerning socio-economic status and the accessibility, availability, and affordability of dental services. Only children of consenting parents or guardians were screened.

Individual surveys were conducted by visual oral health screening in accordance with the diagnostic criteria outlined in the Association of State and Territorial Dental Directors': *Basic Screening Surveys: An Approach to Monitoring Community Oral Health*. For each survey, the screener wore a fresh pair of gloves and used a disposable mouth mirror and a flashlight. Cotton swabs were also used as needed.

The screeners for the survey were either members of the Oral Health Program team or dental hygiene students from the Dental Hygiene Program at Truckee Meadows Community College. Team staff provided additional training to the students regarding the survey and calibrated them to the evaluation criteria to ensure consistent returns. Overall, 4 of the 42 schools were screened by the hygiene students.

At each school, a list of students identified as in need of dental treatment was submitted to the school nurse for follow-up with the child's parent or guardian, and all students were educated about the importance of dental hygiene and taught healthy oral hygiene habits.

## SAMPLING

Third-grade students were the focus demographic of the 2008-2009 oral health survey, and schools were the primary sampling unit.

During the 2007-2008 school year, there were 363 schools with third-grade students in Nevada for a total of 34,234 third-grade students. Of these schools, 45 had less than 20 students enrolled in third-grade, so they were excluded from the sampling frame. As a result, there were no qualifying schools left in either Esmeralda or Eureka counties, thus neither had the possibility of being represented. The remaining 318 schools—for a total of 33,947 third-grade students—were then stratified by the three regions frequently used in Nevada: Clark County, Washoe County, and all other counties.

Stratum-specific sample sizes were calculated for each oral health measure using the third-grade student population of each region, parameter estimates for each of the three oral health indicators from the previous 2005-2006 third-grade oral health survey, and an error of 7%. The largest of the three was then chosen. These sample sizes were then adjusted according to the fraction of the region's third-grade student population to be sampled and to account for a survey design effect. As a final adjustment, the sample sizes were increased in anticipation of a response rate of 46%.

Next, to determine the number of schools to survey in each region, it was assumed that 60 students would be available for screening at each school, which meant that 42 schools were needed: 15 in Clark County, 13 in Washoe County, and 14 in all other counties. To determine which schools would be selected, they were ordered by the percentage of students eligible for the National School Lunch Program, and a school was randomly chosen as the starting point. Schools were then successively selected on an interval basis as determined by the number of schools to be surveyed in each region. Due to the refusal of two principals to participate in the survey, two substitute schools had to be chosen for Washoe County.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