The Oral Health of Arizona's Children

Current Status, Trends and Disparities

November 2005

Arizona Department of Health Services

Division of Public Health Services
Public Health Prevention Services
Office of Oral Health

Leadership for a Healthy Arizona

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State of Arizona

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EXECUTIVE SUMMARY

The Problem

Tooth decay is an infectious disease process affecting both children and adults. Even though the prevalence of tooth decay in the United States has declined over the last 30 years, it remains one of the most prevalent diseases known to man.[1] Low-income and minority children have more untreated decay and visit the dentist less frequently.

Oral disease is progressive and cumulative and becomes more complex over time. If left untreated, tooth decay can lead to needless pain and suffering; difficulty in speaking, chewing, and swallowing; missed school days; increased cost of care; the risk of other systemic health problems due to poor nutrition; and loss of self-esteem. Additionally, connections are emerging between the condition of the mouth and diabetes, heart disease, and adverse pregnancy outcomes.[2]

From 1999-2003, The Arizona Department of Health Services (ADHS), Office of Oral Health (OOH) conducted a statewide dental survey (the Arizona School Dental Survey) to determine the oral health status of Arizona's children and develop policy recommendations to improve oral health. More than 13,000 children were screened in kindergarten, first, second and third grade. Results were compared to a similar dental survey conducted in 1987-1990; overall, it was found that, in 2003, tooth decay continues to be a major problem for Arizona's children. Seven key findings were identified.

Key Findings

1. Almost 39% of Arizona's third grade children have untreated tooth decay.
2. Almost 9% of Arizona's children in kindergarten to third grade have urgent dental care needs.
3. While 31% of Arizona's eight year-old children have at least one sealant, 81% need initial or additional sealants.
4. Only 57% of Arizona's children in kindergarten through third grade visited the dentist in the last year.
5. Oral health status varies among children with different types of dental insurance, and among children with and without dental insurance.
6. Arizona has substantial disparities in oral health. Low-income children, Hispanic children, and children of racial minority have more dental treatment needs.
7. Arizona falls far short of Healthy Arizona 2010 and Healthy People 2010 oral health objectives.

[1] Burt BA, Eklund SA. Dentistry, Dental Practice, and the Community. Saunders, Philadelphia, 1999.

[2] Oral Health in America: A Report of the Surgeon General. Department of Health and Human Services, Washington, DC, 2000.

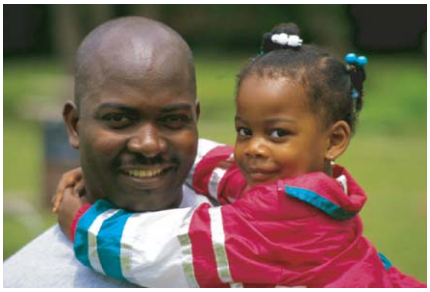
Response/Recommendations

The 1987-1990 survey results started an expansion of efforts to provide more preventive oral health services to children in Arizona. While large strides have been made, Arizona has not been completely successful in assuring statewide comprehensive interventions to prevent oral disease. This is true for school age children, preschool children, toddlers and their caregivers, and other adult populations including older adults and people with special health care needs.

Several strategies could be implemented to improve oral health in Arizona including:

- Expand access to community water fluoridation.
- Increase availability of dental insurance to all high-risk children and adults.
- Increase the number of people with dental insurance who use their annual dental benefits for themselves and their children.
- Promote annual dental visits as a minimum standard of dental care, particularly for high-risk children by one year of age.
- Expand comprehensive evidence-based dental disease prevention strategies to include all pregnant women, infants and toddlers.
- Expand the school-based dental sealant program to reach all eligible schools in all counties, and stress the importance of sealants and preventive care for all children.
- Increase the number of dentists participating in the Arizona Cost Containment System (AHCCCS).
- Increase the number of dental providers practicing in underserved areas.
- Educate medical care providers about the relationship of oral health and general health.
- Expand the State's dental public health infrastructure.

Private and public sectors must be encouraged and supported to collaboratively participate in mobilizing resources and developing policy to pursue and sustain these strategies.



THE IMPORTANCE OF ORAL HEALTH

"The mouth reflects general health and well-being."

Former Surgeon General David Satcher, 2000

Tooth decay is an infectious disease process affecting both children and adults. It is probably the most widespread disease known to man. Tooth decay is the single most common chronic disease of childhood, five times more common than asthma.[1] About 22% of two year-olds in Arizona have decay experience.[2] Tooth decay has affected 60% of third grade children; by the time children start high school in Arizona, 75% have decay.[3] In 1996, children between 5 to 17 years of age missed 1,611,000 school days due to acute dental problems - an average of 3.1 days per 100 students.[4] For too long, the perception that oral health is in some way less important than and separate from general health has been ingrained in the American consciousness, yet if left untreated, tooth decay can lead to difficulty in speaking, chewing, and swallowing, increased cost of care, loss of self-esteem, needless pain, and lost work and school days.

Oral health is more than healthy teeth; oral diseases and disorders also affect health and well being throughout life. Recent studies point to associations between oral infections and diabetes, heart disease, and preterm, low-weight births.[5]

While the prevalence and severity of tooth decay has declined among U.S. school-aged children, it remains a significant problem - particularly for certain racial and ethnic groups and low-income children.[6]

By recognizing and understanding the oral health needs of Arizonans, policies can be initiated and advanced to ensure that all Arizonans receive the oral health care they need. Some of the approaches to promote oral health, outlined in Oral Health in America: A Report of the Surgeon General[5] and A National Call to Action to Promote Oral Health[7] include:

- Changing the publics', health providers', and policy makers' perceptions of oral health so that oral health becomes an accepted component of overall health.
- Building an effective health infrastructure that meets the oral health needs of all and integrates oral health into overall health.
- Engaging in public-private partnerships to improve the oral health of those who suffer disproportionately from oral disease.
- Including oral health services in health promotion and disease prevention programs, care delivery systems, and reimbursement schedules.
- Replicating effective programs and proven efforts in improving oral health care access and reducing disease.
- Remove known barriers between people and oral health services.

[1] Edelstein B, Douglass C. Dispelling the cavity free myth. Public Health Reports 1995, 110:522-30.

[2] Arizona Dental Survey of Preschool Children, 1994-1995. Arizona Department of Health Services, Office of Oral Health.

[3] Oral Health of Arizona Children. Arizona Department of Health Services, Office of Oral Health 2000.

[4] National Center for Health Statistics. Current estimates from the National Health Interview Survey, 1996 (Vital and Health Statistics; Series 10, Data from the National Health Survey; no. 200). Hyattsville, MD, 1996.

[5] Oral Health in America: A Report of the Surgeon General. Department of Health and Human Services, Washington, DC, 2000.

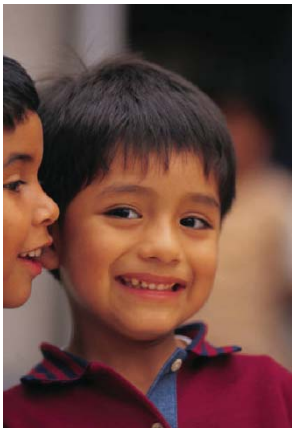
[6] Vargas CM, Crall JJ, Schneider DA. Sociodemographic distribution of pediatric dental caries, NHANES III, 1988-1994. J Am Dent Assoc 1998,129:1229-38.

[7] A National Call to Action to Promote Oral Health. Rockville, MD: US Dept of Health and Human Services. HIH Publication #03-5303, May 2003.

THE ARIZONA SCHOOL DENTAL SURVEY

Introduction

From 1987-1990, the Arizona Department of Health Services, Office of Oral Health conducted the Arizona Dental Survey of School Age Children. The results of the survey reported that Arizona's elementary school children had more tooth decay experience than the national average along with high levels of untreated decay. Few children had dental sealants.[1]



Based on the results of this survey, the Office of Oral Health defined program goals and targeted dental activities designed to prevent tooth decay in Arizona's children. Some of the activities implemented since 1990 include expansion of community water fluoridation, school-based dental sealant programs, continuation of the fluoride mouth rinse program, and continuation of the dental trailer loan program, which assists communities in establishing permanent dental clinics.

The Office of Oral Health completed a second dental survey from 1999-2003 (Arizona School Dental Survey). Oral health Information was collected on children in kindergarten, first, second and third grades. Dental screenings were conducted in public elementary schools in Arizona communities with a population of 1,000 or more.

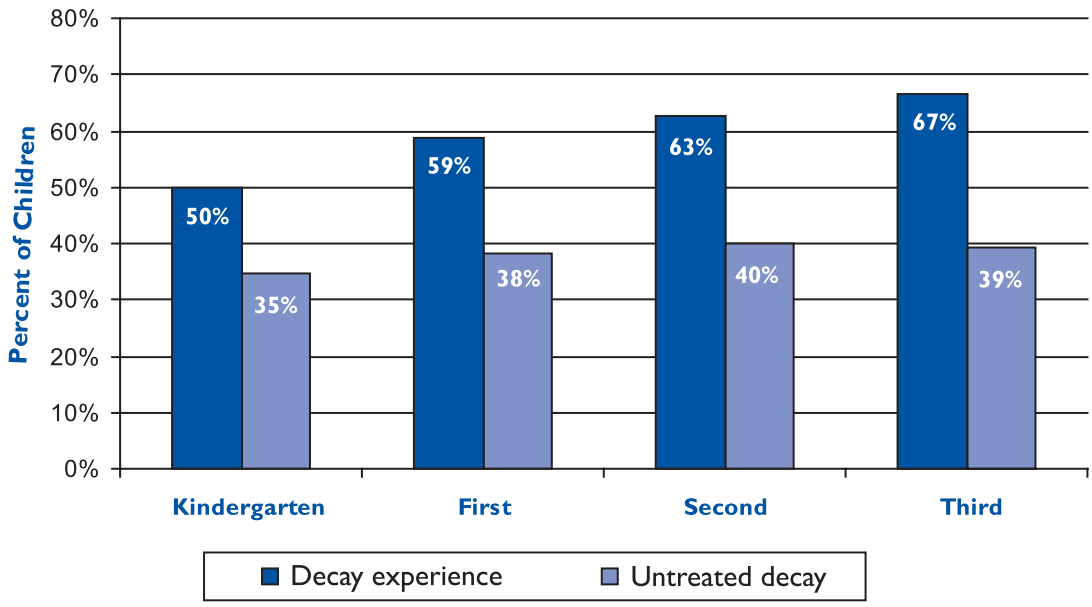
More than 13,000 children received dental screenings (approximately 4% of all children enrolled in kindergarten through third grade). Detailed information on the design of the 1999-2003 dental survey can be found in the Survey Methods section of this report.

Results from the 1999-2003 Arizona School dental survey have been organized into seven key findings. These findings highlight the current oral health status of Arizona's children, comparison of oral health status in 1987-1990 to 1999-2003, and oral health disparities in Arizona. Findings are also compared to objectives from Healthy People 2010 and Healthy Arizona 2010.

[1] Office of Oral Health. About Arizona: Oral Health of Arizona Children. Arizona Department of Health Services, Phoenix, Arizona, 2000.

KEY FINDING #1: ALMOST 39% OF ARIZONA'S THIRD GRADERS HAVE UNTREATED TOOTH DECAY.

Percent of Arizona Children with Untreated Tooth Decay and Decay Experience by Grade, 1999-2003



The percent of children with untreated tooth decay is consistent across the grades, with almost 39% of all kindergarten through third grade children having untreated tooth decay.

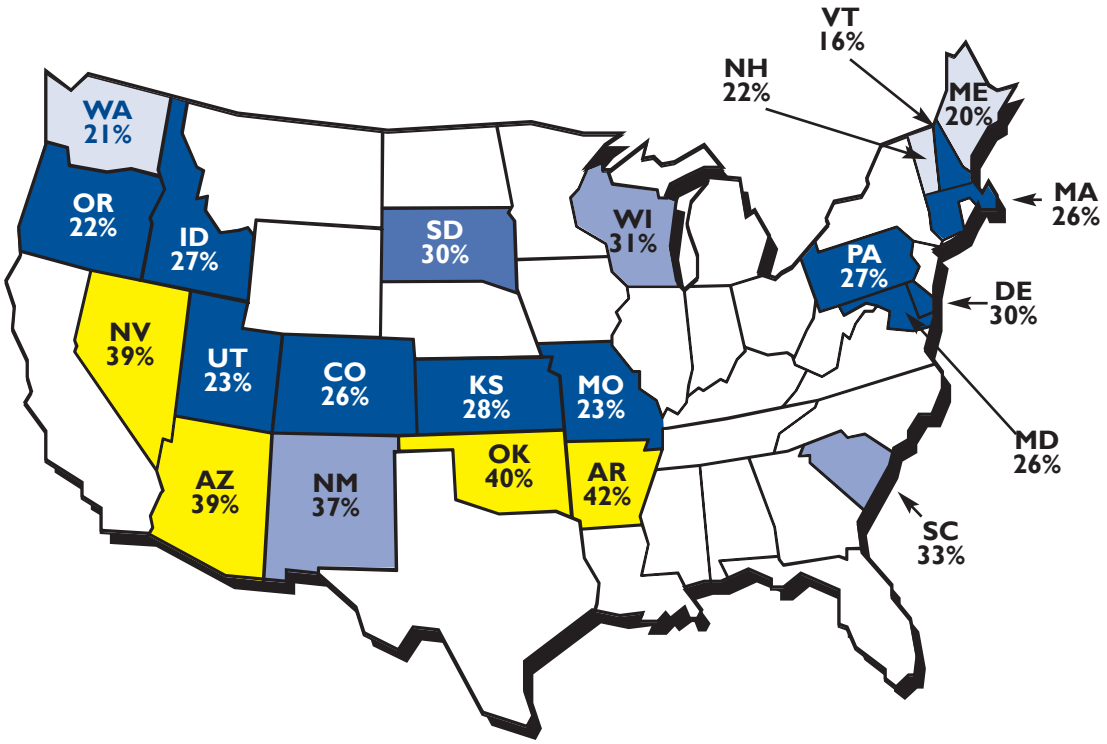
In this survey, decay experience means that a child has had tooth decay in the primary (baby) and/or permanent (adult) teeth in his or her lifetime. Decay experience can be past (fillings, crowns, or teeth that have been extracted because of decay) or present (untreated tooth decay or cavities). Decay experience increases with age (see graph). In Arizona, almost 50% of the children in kindergarten already have decay experience.

Comparison to 1987-1990 Survey of School Age Children

There has been little change in the prevalence of children in Arizona with decay experience in the ten years between the 1987-1990 (61%) and the 1999-2003 surveys (60%). There was, however, a decrease in the mean number of decayed, missing and filled permanent teeth from 0.8 among 8 year olds in 1987-1990 to 0.3 among 8 year olds in 1999-2003. In addition, fewer children had untreated decay in 1999-2003 than they did in 1987-1990[1] (42% of children screened had untreated decay compared to 38% in 1999-2003). Refer to Table 1.

[1] Arizona dental survey of school age children 1987-1990. Arizona Department of Health Services, OOH.

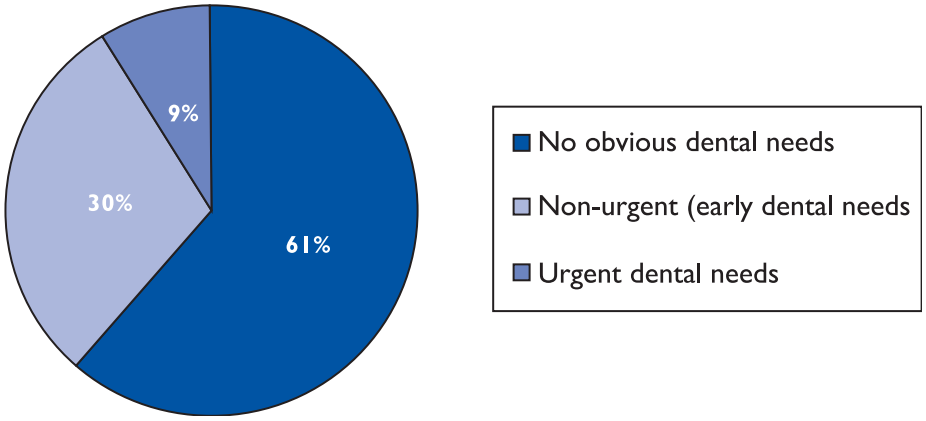
KEY FINDING #1 (CONT): ALMOST 39% OF ARIZONA'S THIRD GRADE CHILDREN HAVE UNTREATED TOOTH DECAY.



Of 22 states with oral health data, Arizona ranks third highest in the proportion of third grade children with untreated tooth decay. Arkansas has the highest prevalence of untreated decay (42%), followed by Oklahoma (40%), Arizona (39%) and Nevada (39%). Vermont has the lowest prevalence of untreated decay (16%). More Information is available through the National Oral Health Surveillance System (NOHSS), www.cdc.gov/nohss.

KEY FINDING #2: ALMOST 9% OF ARIZONA'S KINDERGARTEN-THIRD GRADE CHILDREN HAVE URGENT DENTAL CARE NEEDS.

Percent of Arizona's K-3rd Grade Children Needing Dental Care 1999-2003

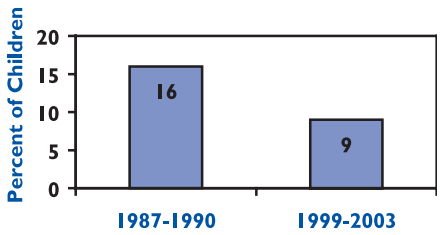


Almost 9% of Arizona's children have urgent treatment needs. In Arizona during the 2003-2004 school year, there were 305,770 children enrolled in kindergarten through third grade; this means that **almost 27,000 children were attending school with dental pain, dental infection, or severely decayed teeth in need of treatment.** It is well documented that children in pain are less likely to learn.[1] Since this survey was a screening and not a full dental examination that included radiographs (x-rays), **this number is likely to be underestimated.** An additional 30% of Arizona's children in kindergarten through third grade need non-urgent dental treatment.

Comparison to 1987-1990 Survey of School- Aged Children

Substantially fewer children need urgent care compared to a decade ago. In 1987-1990, 16% of the 6-8 year old children needed urgent care[2], compared to 9% of the 6-8 year old children screened in 1999-2003. Refer to Table 1.

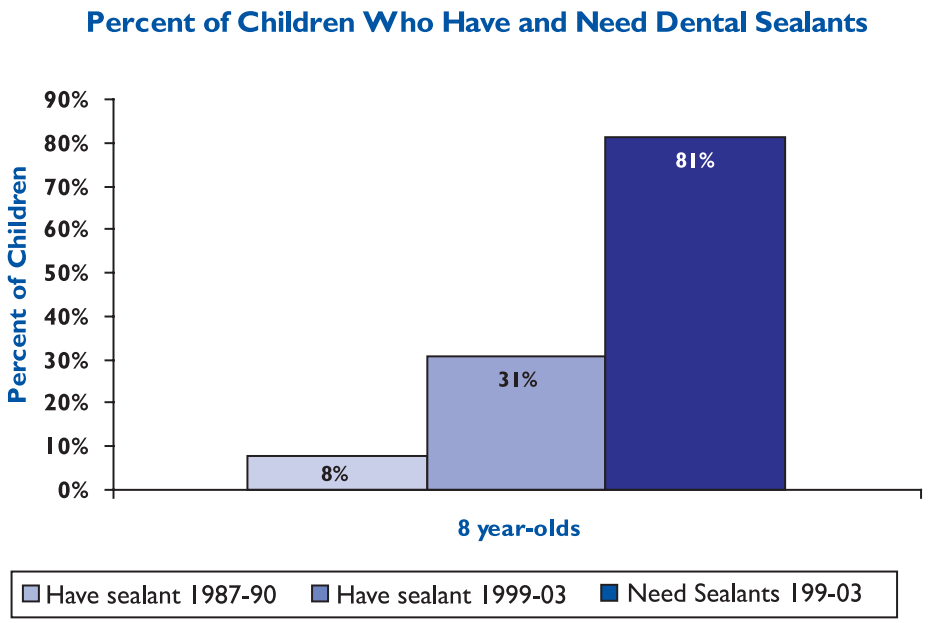
Percent Needing Urgent Care



[1] Oral Health and Learning. National Center for Education in Maternal and Child Health, Arlington, VA, 2001. (Available at www.mchoralhealth.org/PDFs/Learningfactsheet.pdf.)

[2] Arizona dental survey of school age children 1987-1990. Arizona Department of Health Services, Office of Oral Health.

KEY FINDING #3: WHILE 31% OF ARIZONA'S EIGHT YEAR-OLD CHILDREN HAVE AT LEAST ONE SEALANT, 81% NEED INITIAL OR ADDITIONAL SEALANTS.



Dental sealants are a plastic coating applied to the chewing surfaces of the back teeth. They are a safe, effective way to prevent tooth decay among schoolchildren. Sealants have been shown to significantly reduce a child's risk for having untreated decay. In some cases, sealants can even stop tooth decay that has already started.[1] In Arizona, only 31% of the eight-year-old children screened had dental sealants, while 81% needed initial or additional sealants.

Percent of 8-Year-Olds that Have or Need Sealants, 1999-2003

Need Sealants	Have Sealants		
	Yes	No	Total
Yes	14%	67%	81%
No	17%	2%	19%
Total	31%	69%	100%

Comparison to 1987-1990 Survey of School Age Children

We are making progress. Only 8% of children screened in 1987-1990 had sealants.[2] Although most children in Arizona still need them, there has been a 400% increase in the prevalence of dental sealants in the last decade. The increase in sealant prevalence can be at least partially explained by the funding and consequent expansion of school-based sealant programs in Arizona. Refer to Table 1.

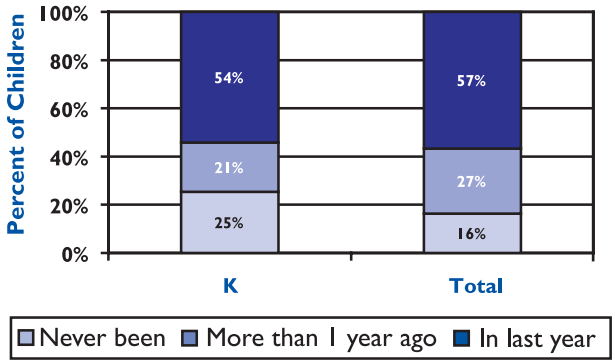
[1] Heller KE, Reed SG, Bruner FW, Eklund SA, Burt BA. Longitudinal evaluation of sealing molars with and without incipient dental caries in a public health program. J Public Health Dent. 1995;55:148-53.

[2] Arizona dental survey of school age children 1987-1990. Arizona Department of Health Services, Office of Oral Health.

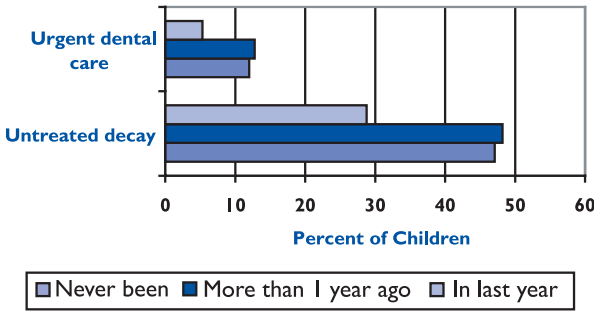
KEY FINDING #4: ONLY 57% OF THE CHILDREN IN KINDERGARTEN THROUGH THIRD GRADE VISITED THE DENTIST IN THE LAST YEAR.

Parents completed a short questionnaire on dental history. According to their responses, 57% of Arizona's children in kindergarten through third grade had a dental visit in the last year, 27% had been to the dentist more than a year ago, and 16% had never been to the dentist. While the American Academy of Pediatric Dentistry recommends that all children have a dental visit by one year of age, **more than 25% of children old enough to attend kindergarten in Arizona have never seen a dentist.**

Time Since Last Dental Visit, 1999-2003



Oral Health of Arizona's K-3rd Graders by Time Since Last Dental Visit, 1999-2003



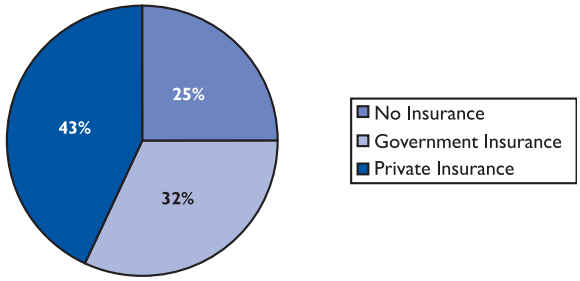
Of those children with private insurance, 70% had visited the dentist in the last year, compared to 56% of those with government insurance (Medicaid, Indian Health Service, KidsCare) and 36% of those without dental insurance. As would be expected, kindergarten through third grade children who have been to the dentist in the last year are less likely to have untreated decay and/or urgent treatment needs. Children who have been to the dentist are more likely to be non-Hispanic white, have a higher income, and have private dental insurance.

Strategies for increasing the number of people who make annual dental visits may include promoting availability of dental insurance benefits for all, promoting use of annual dental benefits by insurance plan enrollees, educating parents and health care professionals about the importance of dental visits for children by one year of age, and maximizing use of the application process for Dental Health Professional Shortage Areas. Refer to Tables 2-4.

KEY FINDING #5: ORAL HEALTH STATUS VARIES AMONG CHILDREN WITH DIFFERENT TYPES OF DENTAL INSURANCE, AND AMONG CHILDREN WITH AND WITHOUT DENTAL INSURANCE.

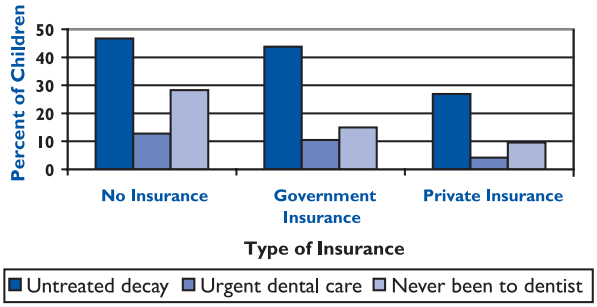
Parents completed a short questionnaire on dental history. According to their responses, approximately 75% of kindergarten through third grade children had dental insurance. Government funded dental insurance programs (Medicaid, Indian Health Service, KidsCare) cover 32%, and private dental insurance covers 43%. **Over 25% of children in kindergarten through third grade have no dental insurance.**

Percent of Arizona's K-3rd Grade Children with Dental Insurance, 1999-2003



Children with no dental insurance or different types of insurance have different oral health status. Of those children without dental insurance, 47% have untreated decay compared to 44% of those with government insurance and 27% of those with private insurance. Children without insurance or with government insurance are more likely to need urgent dental care (13% and 10% respectively) than do children with private insurance (4%).

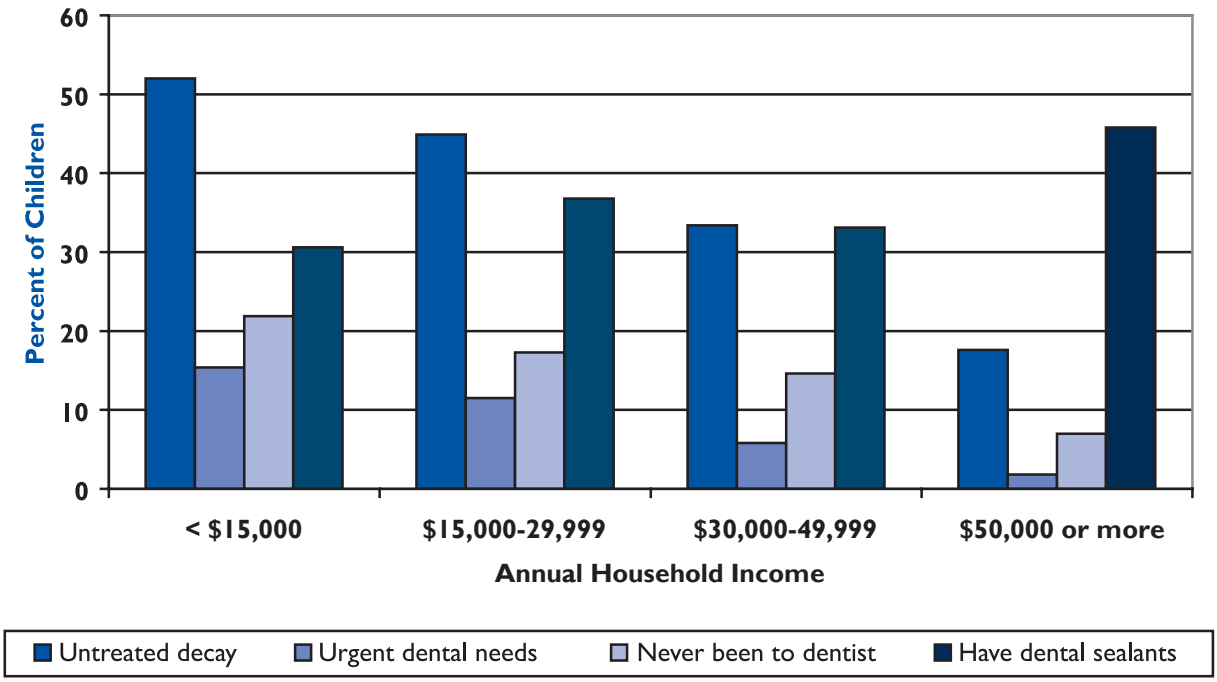
Oral Health of Arizona's K-3rd Grade Children by Dental Insurance, 1999-2003



Third grade children with government or private insurance are equally likely to have dental sealants (40%), while children without any dental insurance are much less likely to have dental sealants (24%). Refer to Tables 2 and 3.

KEY FINDING #6: ARIZONA HAS SUBSTANTIAL DISPARITIES IN ORAL HEALTH. LOW-INCOME CHILDREN, HISPANIC CHILDREN, AND CHILDREN OF RACIAL MINORITY HAVE MORE DENTAL TREATMENT NEEDS.

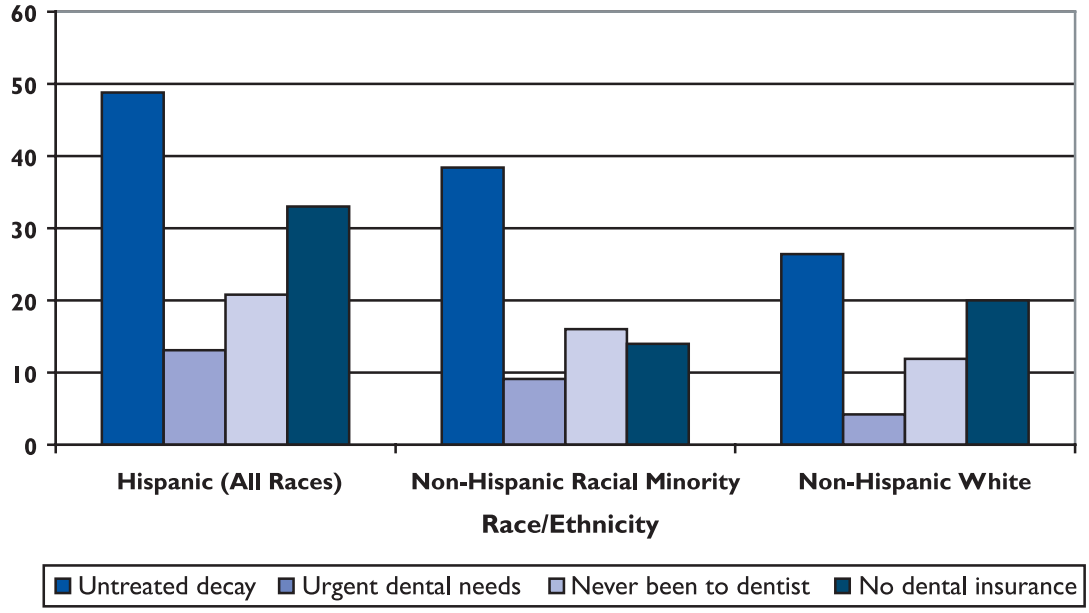
Oral Health of Arizona's K-3rd Grade Children by Income, 1999-2003



As the graph shows, there is an inverse relationship between income and untreated tooth decay (in other words, as income increases, tooth decay decreases). Over 50% of children from low-income households have untreated decay and 15% have urgent dental needs. More low-income children have never been to a dentist and fewer have dental sealants. Low-income children are also less likely to have dental insurance; 33% of the lowest income children have no dental insurance compared to 13% of the highest income children. Refer to Table 5.

KEY FINDING #6 (CONT.): ARIZONA HAS SUBSTANTIAL DISPARITIES IN ORAL HEALTH. LOW-INCOME CHILDREN, HISPANIC CHILDREN, AND CHILDREN OF RACIAL MINORITY HAVE MORE DENTAL TREATMENT NEEDS.

Oral Health of Arizona Children by Race, 1999-2003



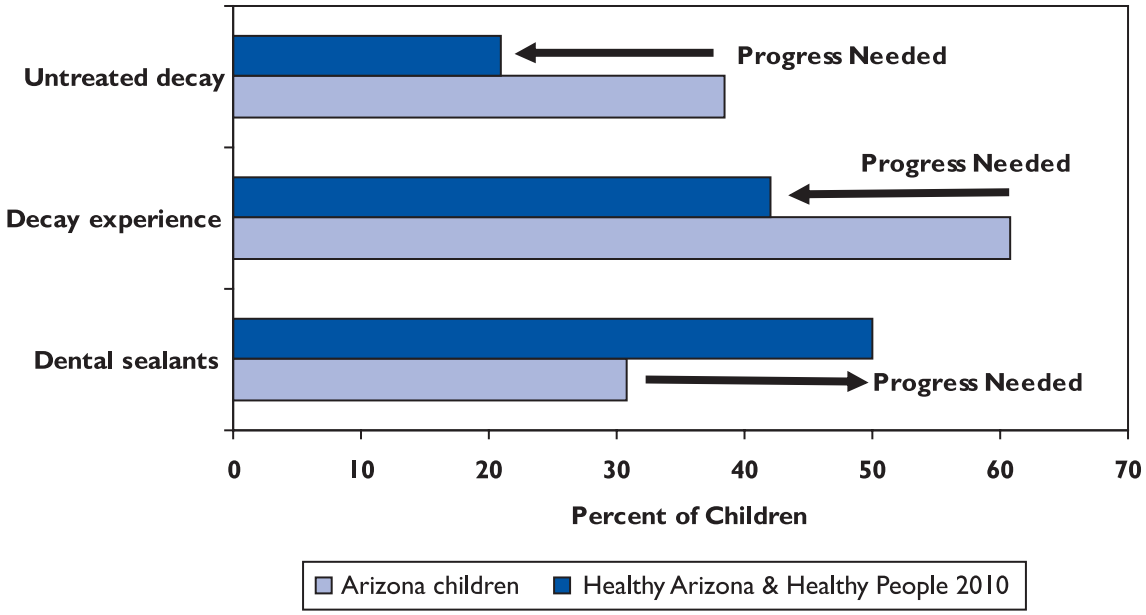
In Arizona, Hispanic children and children of other non-Hispanic racial minorities have more untreated tooth decay (49% and 38%, respectively) than non-Hispanic white children (26%). The need for urgent dental care is highest among Hispanic children (13%) compared to other non-Hispanic races (9%) and white children (4%). More Hispanic children have never been to a dentist.

In addition to having more tooth decay, Hispanic children are less likely to have dental insurance. Thirty-three percent of the Hispanic children have no dental insurance compared to 14% of non-Hispanic races and 20% of white children.

Oral health disparities between racial/ethnic groups in Arizona are further affected by household income. Thirty-eight percent of the Hispanic children are from households with an annual income less than $15,000 compared to 22% of non-Hispanic races and 11% of non-Hispanic white children. Without controlling for income, Hispanic children are 224% more likely to have decay, but they are only 37% more likely to have decay after controlling for income. Refer to Tables 6, 7, and 8.

KEY FINDING #7: ARIZONA FALLS FAR SHORT OF HEALTHY ARIZONA 2010 AND HEALTHY PEOPLE 2010 ORAL HEALTH OBJECTIVES.

Oral Health of Arizona Children Compared to Healthy Arizona and Healthy People 2010 Objectives



Healthy Arizona 2010 and Healthy People 2010 outline several oral health objectives for elementary school children:

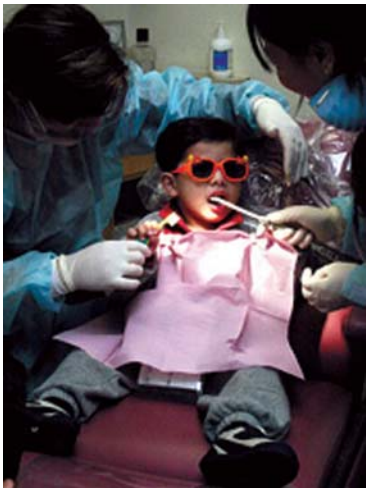
- Decrease the proportion of 6-8 year old children with untreated tooth decay to 21% (Healthy People 2010 and Healthy Arizona 2010).
- Decrease the proportion of 6-8 year old children with decay experience to 42% (Healthy People 2010 and Healthy Arizona 2010).
- Increase the proportion of 8-year-old children with dental sealants to 50% (Healthy People 2010).

Thirty-eight percent of Arizona's 6-8 year-old children have untreated caries compared to the *Healthy Arizona and Healthy People 2010* objective of 21%. Almost 61% of the 6-8 year-old children in Arizona have decay experience - substantially higher than the *Healthy Arizona and Healthy People 2010* objective of 42%. Only 31% of Arizona's 8-year-olds have dental sealants while the 2010 objective is 50%.

ORAL HEALTH RESOURCES IN ARIZONA

In order to improve the oral health of Arizona's residents, resources are necessary for both the prevention and treatment of tooth decay.

The Arizona Department of Health Services (ADHS), Office of Oral Health (OOH) directs several oral disease prevention activities. The State's school-based dental sealant program targets high-risk schools where at least 65% of the children participate in the free or reduced price meal program (FRL). In 2003, 140 schools participated in five counties and 7,677 children in second and sixth grade received sealants. The need exceeds the funding and resources available, with over 500 schools/facilities in Arizona meeting high-risk criteria.



The State's school based fluoride mouth rinse program targets schools in non-fluoridated communities with at least 50% of their student population on FRL. In FY 2003, the program served 26,500 children in 67 schools throughout Arizona.[1]

The Office of Oral Health has a mobile dental trailer program. Three trailers, each with two fully equipped dental units, are on loan, by application, for a five-year period. Applicants must staff the trailers to provide treatment and demonstrate sustainability of the treatment services after the five-year loan period. The trailer program has been in operation for 30 years.

In 2003, ADHS Office of Oral Health was awarded a grant from the Robert Wood Johnson Foundation for the Arizona State Action for Oral Health Access. This project funds eight initiatives to test comprehensive new ways to improve oral health access for low-income, minority, and disabled people. The goals are to expand the number of providers and those who will see low-income, minority and disabled people, and to increase consumer and provider education.

In 2004, the Office of Oral Health was awarded a grant from the Association of State and Territorial Chronic Disease Program Directors to learn more about senior oral health status and preventive approaches to dental disease in the four Arizona counties bordering Mexico.

Other Resources

Community water fluoridation, named one of the top 10 accomplishments in public health in the last century, is an effective method for preventing tooth decay in both children and adults.[2] In 2003, about 55% of Arizonans served by public water systems had access to optimally fluoridated drinking water (see below).[3]

Water Fluoridation in Arizona

The following communities adjust water fluoridation to optimal levels:

Bisbee	Glendale	Phoenix
Chandler	Mesa	Tempe
Gilbert	Peoria	Yuma

Additionally, many communities in Arizona have naturally occurring, optimal levels of fluoride. For more information on water fluoridation and water systems in your county, please go to:

http://apps.nccd.cdc.gov/MWF/CountyDataV.asp?State=AZ

[1] Program data, Arizona Department of Health Services, Office of Oral Health.

[2] Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries. MMWR 1999; 48:933-40.

[3] Centers for Disease Control and Prevention, Water Fluoridation Reporting System, 2000.

There are a variety of venues that provide dental treatment services in Arizona, including dentists in private practice, community-based clinics, community health centers, and Indian Health Service and tribal clinics. In 2003, 67 clinics provided care at free or reduced fees to their eligible populations (see map).[1]

In 2003, the Arizona School of Dentistry and Oral Health accepted its first class of 54 students to be trained as dentists. There are also five dental hygiene programs in the state (Bullhead City, Flagstaff, the Phoenix Metro area [3], and Tucson). All of these educational programs train future dental health care providers and provide care for the population.

Most individuals in Arizona receive their dental care from private practice dentists. In June of 2003, 2,635 dentists were licensed and practicing in Arizona.[2] Using the population estimate of 5,579,222 for 2003,[3] Arizona averages one dentist to every 2,117 people.

The U.S. average is one dentist to every 1,810 people,[4] a difference of 307 more people per dentist in Arizona. In addition to having a higher dentist-to-population ratio than the U.S. average, Arizona suffers from an uneven distribution of dentists and dental hygienists, with more practicing in or near major communities. This uneven distribution contributes to underserved areas and underserved populations.

Arizona Community Based Dental Clinics 2003

[1] Survey of Clinics in Arizona, 2003. ADHS, OOH.

[2] Annual Report, Arizona State Board of Dental Examiners, 2002-03.

[3] Estimates of the population for Counties of Arizona, Population Division, U.S. Census Bureau, 2005.

[4] Zillen PA, Mindak M. World dental demographics. Int Dent J2000;50:194-7.

The U.S. Census Bureau estimates that there were approximately 1.7 million children 0-20 years of age in Arizona in 2003. About 579,600 (34%) were enrolled in the Arizona Health Care Cost Containment System (AHCCCS/ Medicaid) during fiscal year 2003. Of those, only about 160,000 (28%) used AHCCCS dental services[1] compared to Healthy People 2010 baseline data (73% of 2-17 year-olds had visited a dentist within the previous year).[2]

In 2003, 1068 dentists were registered with AHCCCS;[3] this is an average of one dentist for every 150 AHCCCS-enrolled children using dental services.

The 1999-2003 Arizona School Dental Survey reported that 57% of Arizona children in kindergarten through third grade had visited a dentist in the past year. If 57% (330,372) of the children enrolled in AHCCCS in 2003 had visited a dentist that year, each AHCCCS-registered dentist would have needed to see more than twice as many AHCCCS-enrolled children (309) as they saw in 2003. As the Arizona population grows, as the number of children enrolled in AHCCCS grows, and as the number of children utilizing AHCCCS dental services grows, the number of dentists accepting AHCCCS will also need, not only to continue to grow, but to do so at a pace that will meet the dental needs of Arizona's population.

The contribution to oral health by many public and private entities, partnerships, oral health coalitions, and individuals in Arizona cannot be overemphasized. Participation, support, and expansion of these partnerships and coalitions are very important in order to improve oral health for all Arizonans.

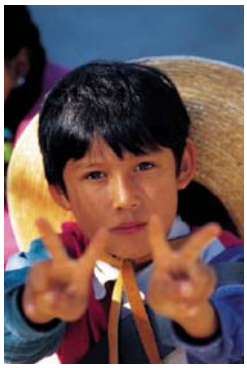
[1] HCFA-416 EPSDT Participation Report, 2003.

[2] U.S. Department of Health and Human Services. Healthy People 2010. 2nd ed. Understanding and Improving Health and Objectives for Improving Health. 2 vols. Wash D.C.: U.S. Gov. Printing Office, November 2000.

[3] Arizona Health Care Cost Containment System, personal communication, 2005.

RESPONSE / NEXT STEPS

Arizona has fewer children with untreated decay and fewer children with urgent dental treatment needs in 2003 as compared to 1990, and yet Arizona ranks third highest in the proportion of third grade children with untreated tooth decay among states with oral health data. These results suggest that tooth decay is still a significant health problem in Arizona, with low-income and minority children at highest risk. There has been an increase in the number of children with sealants; the 1990 survey results helped demonstrate a need for expansion of efforts to provide more preventive oral health services to children in Arizona. While strides have been made, Arizona has not been completely successful in assuring statewide preventive interventions against oral disease. For example, the school-based dental sealant program expanded to provide sealants to 7,677 second and sixth grade children in 140 schools by 2003, but over 500 schools/facilities met the high-risk criteria. While 67 non-fluoridated schools participated in the fluoride mouth rinse program in 2003, lack of funding contributed to a decline in school participation over the last decade. Only 55% of Arizonans live in areas with access to optimally fluoridated drinking water. Twenty-five percent of kindergarten through third graders do not have dental insurance, and of the 75% who do, only 57% visited a dentist in the last year. Finally, more work must be done in Arizona earlier in a child's life to prevent decay in primary teeth, and it must be done well before the child reaches school age.



Several key strategies could be adapted to improve the oral health of children in Arizona. The private and public sector must collaboratively participate in mobilizing resources and developing policies to pursue and sustain these strategies:

- Expand access to community water fluoridation.
- Expand the school-based dental sealant program to reach all eligible schools in all counties, and stress the importance of sealants and preventive care for all children.
- Expand comprehensive evidence-based dental disease prevention strategies to include all pregnant women, infants and toddlers.
- Increase availability of dental insurance to all high-risk children and adults.
- Increase the number of people with dental insurance who use their annual dental benefits for themselves and their children.
- Promote annual dental visits as a minimum standard of dental care, particularly for high-risk children by one year of age.
- Encourage an increase in the number of dentists participating in the Arizona Health Care Cost Containment System (AHCCCS).
- Increase number of dental providers practicing in underserved areas.
- Educate medical care providers about the relationship of oral health and general health.
- Expand the State's dental public health infrastructure.

Together, we can improve oral health for all Arizonans from childhood throughout the lifespan.

SURVEY METHODS

In this report, data from the 1999-2003 survey are compared to data from Arizona's 1987-1990 dental health survey. Readers should be aware that the methods for the two surveys differed in terms of sample selection, case definition, and protocol. The 1987-1990 survey sampled school districts based on stratification by school fluoride mouth rinse participation, community water fluoridation levels and socioeconomic background. Letters were sent to 300 school districts; 146 schools consented, and from these, 74 schools were selected for the survey. The 1987-1990 sample included 6,469 children six to 15 years of age. Dental explorers were used in this survey.

The 1999-2003 Arizona School Dental Survey sampled children in public schools in kindergarten through third grades. Schools were selected from communities with a population of 1,000 or more (U.S. 1990 Census). Schools in communities on Indian Reservations were not included. The survey was conducted from 1999 to 2003. Communities were stratified as either rural or urban.

In rural communities, one school was randomly selected. Of the 73 rural communities in Arizona, 70 participated. The goal was to screen at least 30 students per grade, per community. Independent random samples of students were drawn from each grade.

Twelve communities in Arizona were designated as urban. Urban community schools were stratified into three categories (low, middle, high) based on percent of the student body on the free and/or reduced price meal program, and one school from each category was selected. In the State's two major metropolitan communities (Phoenix and Tucson), additional schools were selected based on the community's population. In urban communities, two classes per grade were randomly selected for a minimum of 60 students per grade.

Written parental consent was obtained. Each parent/guardian was asked to complete an eight-item questionnaire. The questionnaire collected information on dental insurance, race/ethnicity, medical and dental history, plus household income.

Teams consisting of one screener (a licensed dental hygienist) and one recorder were trained, standardized and calibrated to conduct screenings using a dental mirror and portable dental light. Consistent with recommendations developed by the National Institute of Dental and Craniofacial Research, each tooth surface was scored for decay, restorations, sealants, fluorosis, trauma, premature loss, and eruption status. Additional information was gathered to determine treatment urgency and referral needs.

More than 13,000 children received dental screenings; approximately 4% of all children enrolled in kindergarten through third grade. The data were weighted to account for the complex sampling scheme and non-response. Data analysis was completed using SAS® and Epi Info™ statistical software.

DATA TABLES

Table 1: Oral Health Status of Arizona's Kindergarten through Third Grade, 6 to 8 Year Old and 8 Year Old Children

	K (n=3,289)	1st (n=3,348)	2nd (n=3,312)	3rd (n=3,189)	All (K-3rd) (n=13,138)	6-8 Years (n=9,368)	8 Years (n=3,089)
% with decay experience	49.8	58.6	62.5	66.7	59.4	60.8	66.7
% with untreated decay	34.6	38.2	40.0	39.4	38.1	38.4	40.5
% needing treatment Non-urgent (early) Urgent	28.3 7.0	29.3 10.0	31.8 9.6	31.6 8.4	30.2 8.8	30.5 9.0	32.1 9.3
% with dental sealants	1.5	9.3	21.0	36.2	17.0	17.6	30.8
% needing dental sealants	28.3	69.8	84.5	76.5	64.9	74.1	81.1

Table 2: Demographics and Access to Dental Care for Arizona's Kindergarten through Third Grade Children

	Kindergarten	First	Second	Third	All (K-3rd)
Race					
% White	49.7	47.9	51.9	49.1	49.6
% Black	3.6	3.3	2.6	3.0	3.1
% Native American	3.2	3.3	3.1	4.7	3.6
% Asian/Pacific Islander	1.6	1.4	1.7	1.3	1.5
% Multi-Racial	9.3	10.1	8.4	9.6	9.4
% Other	11.9	11.3	11.6	11.9	11.7
% Unknown	20.6	22.7	20.6	20.4	21.1
Ethnicity					
% Hispanic	44.5	45.4	42.3	41.7	43.5
% Non-Hispanic	49.0	48.5	51.1	51.1	49.9
% Unknown	6.5	6.2	6.6	7.3	6.7
Race/Ethnicity					
% Hispanic (all races)	39.9	41.0	38.6	40.1	39.9
% non-Hispanic white	43.6	43.5	44.7	43.0	43.7
% non-Hispanic all other races	8.2	8.4	8.5	8.9	8.5
% Unknown	8.3	7.0	8.2	8.0	7.9
Annual household income					
% < $15,000	17.3	21.5	19.5	20.0	19.6
% $15,000-29,999	23.4	22.5	23.5	22.8	23.0
% $30,000-49,999	19.1	17.9	18.8	15.7	17.9
% > $50,000	19.1	18.5	19.8	18.5	19.0
% Unknown	21.1	19.7	18.4	23.0	20.5
Dental insurance (n=12,044)*					
% with no insurance	23.9	26.9	27.2	22.1	25.1
% with "government" insurance	33.9	32.7	29.3	31.0	31.8
% with private insurance	42.1	40.4	43.4	46.9	43.2
Time since last dental visit (n=12,377)*					
% in last year	54.2	54.4	58.0	60.4	56.7
% more than 1 year ago	20.5	27.0	29.8	30.7	27.0
% that have never been	25.3	18.5	12.2	9.0	16.3

* Not all parents provided information. Percentage is based on those that answered each question.

Table 3: Oral Health Status of Arizona's Kindergarten through Third Grade Children Stratified by Type of Dental Insurance*

	No Insurance (n=2,952)		"Government" Insurance (n=4,096)		Private Insurance (n=4,996)
% with decay experience	60.3		69.1		50.5
% with untreated decay	46.7		43.8		26.9
% needing treatment					
Non-urgent (early)	35.0		34.6		23.5
Urgent	12.8		10.5		4.2
Race/Ethnicity					
% Hispanic - all races	59.3		58.1		28.1
% non-Hispanic white	35.6		29.1		62.4
% non-Hispanic all other races	5.1		12.8		9.6
Annual household income					
% < $15,000	32.5		43.2		5.5
% $15,000-29,999	32.7		36.9		19.8
% $30,000-49,999	21.8		12.2		31.0
% > $50,000	13.0		7.7		43.7
Time since last dental visit					
% in last year	36.1		55.9		70.1
% more than 1 year ago	35.6		29.1		20.3
% that have never been	28.3		15.0		9.6
3rd Grade Students Only					
Number of Children Screened	694		950		1,243
% with dental sealants	24.3		40.5		40.0

* Some parents reported multiple types of insurance coverage. The following hierarchy was used if multiple insurance types were provided: private, government, and no insurance. For example, if a parent reported both government and private insurance, the child was included in the private insurance category.

NOTE: Not all parents provided information on the demographic and access to care variables. The information in this table reflects the percent of those that provided an answer - missing is not included in the denominator.

Table 4: Oral Health Status of Arizona's Kindergarten through Third Grade Children Stratified by Time Since Last Dental Visit

	Never Been to a Dentist (n=2,051)		No Dental Visit in Last Year (n=3,406)		Dental Visit in Last Year (n=6,920)
% with decay experience*	47.8		61.9		60.6
% with untreated decay	47.1		48.2		28.8
% needing treatment					
Non-urgent (early)	35.8		36.0		24.8
Urgent	12.0		12.8		5.3
Race/Ethnicity					
% Hispanic (all races)	59.2		52.0		39.5
% non-Hispanic white	32.4		37.4		51.9
% non-Hispanic all other races	8.4		10.6		8.6
Annual household income					
% < $15,000	34.6		28.9		19.1
% $15,000-29,999	32.6		35.6		24.3
% $30,000-49,999	21.7		21.2		23.7
% > $50,000	11.1		14.3		32.9
Dental insurance					
% with no insurance	44.0		32.8		15.6
% with "government" insurance	29.6		34.1		30.7
% with private insurance	26.4		33.1		53.7
3rd Grade Students Only					
Number of Children Screened	274		941		1,758
% With Dental Sealants	9.3		18.7		50.6

* Children who visit the dentist regularly have a higher prevalence of decay experience because x-rays identify small cavities that are not apparent during a dental screening.

Table 5: Oral Health Status of Arizona's Kindergarten through Third Grade Children Stratified by Annual Household Income

	< $15,000 (n=2,631)		$15,000 to $29,999 (n=3,057)		$30,000 to $49,999 (n=2,455)	> $50,000 (n=2,307)
% with decay experience	72.4		65.9		55.8	43.5
% with untreated decay	52.0		44.9		33.4	17.6
% needing treatment						
Non-urgent (early)	37.9		34.1		28.8	16.5
Urgent	15.4		11.5		5.8	1.8
Race/Ethnicity						
% Hispanic (all races)	71.1		57.3		33.2	20.3
% non-Hispanic white	20.3		31.2		55.4	72.8
% non-Hispanic all other races	8.6		11.5		11.4	6.9
Number of persons/household (mean)	4.7		4.6		4.6	4.6
Dental insurance						
% with no insurance	33.3		28.6		23.9	13.2
% with "government" insurance	56.8		41.4		17.1	10.0
% with private insurance	9.9		30.0		59.0	76.8
Time since last dental visit						
% in last year	44.7		47.9		59.2	76.6
% more than 1 year ago	33.4		34.8		26.2	16.4
% that have never been	21.9		17.3		14.6	7.0
3rd Grade Students Only						
Number of Children Screened	655		719		574	555
% With Dental Sealants	30.6		36.8		33.1	45.8

NOTE: Not all parents provided information on the demographic and access to care variables. The information in this table reflects the percent of those that provided an answer - missing is not included in the denominator.

Table 6: Oral Health Status of Arizona's Kindergarten through Third Grade Children Stratified by Race and Ethnicity*

	Hispanic All Races (n=5,241)		Non-Hispanic White (n=5,744)		Non-Hispanic All Other Races (n=1,116)
% with decay experience	69.3		48.0		60.1
% with untreated decay	48.8		25.8		38.0
% needing treatment					
Non-urgent (early)	37.0		22.4		30.0
Urgent	13.1		4.1		8.6
Annual household income					
% < $15,000	38.0		11.5		22.1
% $15,000-29,999	35.6		20.5		34.3
% $30,000-49,999	15.8		27.9		26.2
% > $50,000	10.6		40.1		17.4
Dental insurance					
% with no insurance	33.1		20.1		13.7
% with "government" insurance	40.3		20.3		42.7
% with private insurance	26.6		59.6		43.6
Time since last dental visit					
% in last year	48.9		66.0		53.7
% more than 1 year ago	30.3		22.4		31.3
% that have never been	20.8		11.7		15.0
3rd Grade Students Only					
Number of Children Screened	1,278		1,372		283
% With Dental Sealants	32.4		40.5		33.5

* If a parent reported that a child was Hispanic, that child is included only in the Hispanic category regardless of race. The non-Hispanic white category consists of those children whose parents reported that their race was white and they were not Hispanic. The non-Hispanic all other races category consists of children whose parents reported that the child was black or African American, American Indian or Alaska Native, Asian, Pacific Islander, or multiracial but not Hispanic.

NOTE: Not all parents provided information on the demographic and access to care variables. The information in this table reflects the percent of those that provided an answer - the number of missing is not included in the denominator.

Table 7: Risk Factors for Untreated Decay in Arizona's Kindergarten through Third Grade Children (Logistic Regression)

Risk Factor	Univariate Analysis		Multivariate Analysis	
	Odds Ratio	p-value	Odds Ratio	p-value
Annual Income				
> $50,000 (reference)	--	--	--	--
$30,000 - 49,999	2.74	<0.001	2.73	<0.001
$15,000 - 29,999	3.72	<0.001	3.22	<0.001
<$15,000	4.82	<0.001	4.08	<0.001
Race/Ethnicity				
Non-Hispanic white (reference)	--	--	--	--
Non-Hispanic all other races	1.53	<0.001	1.22	<0.001
Hispanic	2.24	<0.001	1.37	<0.001

Table 8: Oral Health Status of Arizona's Kindergarten through Third Grade Children Stratified by Percent of Students in School Participating in the Free and Reduced Price Meal Program (FRL)

	0-35% of Student Population on FRL (n=3,388)	36-64% of Student Population on FRL (n=5,692)	> 65% of Student Population on FRL (n=3,883)
% with decay experience	47.7	59.9	71.4
% with untreated decay	24.4	40.2	50.8
% needing treatment			
Non-urgent (early)	21.5	32.4	37.6
Urgent	3.4	9.1	14.3
Race/Ethnicity			
% Hispanic - all races	21.2	41.1	78.9
% non-Hispanic white	69.9	48.4	12.6
% non-Hispanic all other races	8.9	10.5	8.5
Dental insurance			
% with no insurance	19.6	25.5	30.9
% with "government" insurance	19.2	29.1	48.5
% with private insurance	61.2	45.4	20.6
Time since last dental visit			
% in last year	68.2	54.9	45.3
% more than 1 year ago	21.9	27.7	32.1
% that have never been	9.9	17.4	22.6
3rd Grade Students Only			
Number of Children Screened	810	1,385	955
% With Dental Sealants	43.8	32.2	31.5

NOTE: Not all parents provided information on the demographic and access to care variables. The information in this table reflects the percent of those that provided an answer - missing is not included in the denominator.