"Make Your Smile Count!"

Report of the Texas Dental Health Survey

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"Make Your Smile Count!"
Texas Dental Health Survey
Executive Summary

Survey Introduction

The aim of the survey was to assess the impact of enrollment in the Texas Health Steps (EPSDT, Medicaid) program on oral health of children in Texas. Sixteen middle schools and sixteen adjacent elementary schools with a high percentage of students enrolled in the free lunch program were selected randomly for the survey in all eight public health regions of the state. For the survey 1124 children in 2nd grade and 802 students in 8th grade were included by parental consent, a questionnaire, and a clinical oral examination made by one calibrated dentist according to written protocols.

Also, as specified in the study contract, 110 preschool children (2-3 years of age) enrolled in Texas Health Steps were selected on a random basis for the survey. A consent and questionnaire were completed by a parent or guardian and a dental inspection was conducted by the dental examiner in the home.

Social and clinical aspects of access to dental care were analyzed for the three age groups in the survey. Children in 2nd and 8th grades enrolled currently in Texas Health Steps were compared with their peers not enrolled to assess oral health status and access to oral health care.

Key Findings

Schoolchildren in 2nd and 8th Grade

Social Survey Findings

The findings for children in Grade 2 and 8 were generally similar. Ninety percent of the children in the survey were from families with an annual income of less than $30,000 per year. Nearly two-thirds (56-60%) of children surveyed were from families with an income less than $16,000 per year, with 43-50% of these children enrolled in Texas Health Steps. The Grade 8 enrollment rate for children in the lowest income group lagged Grade 2 somewhat. Overall, 35% of children in 2nd grade and 28% of students in 8th grade were enrolled currently in Texas Health Steps. The survey found that many children are eligible but are not enrolled in Texas Health Steps. These children are not gaining the benefits of coverage for health care and dental care.

Children from single adult households were more likely to be enrolled in Texas Health Steps. Enrollment status did not differ by race/ethnicity in Grade 8 but did so for Grade 2 with more Black and fewer Hispanic children enrolled in Medicaid.

Enrollment in Texas Health Steps was significantly associated ($p<0.05$) with a number of favorable indicators for the dental program:

(i) better parental perception of the child's general health,
(ii) better parental perception of the child's oral health,
(iii) greater likelihood of a dental visit in the past year,
(iv) higher likelihood of last dental attendance for a check up or follow up reason,
(v) lower likelihood of the last visit for pain or a problem,
(vi) lower likelihood of never having had a dental visit,
(vii) greater likelihood of having a usual place for dental care, and
(viii) greater likelihood of attending a community health center and private dental office if enrolled.

Parents of children not enrolled cited cost, no perceived reason to go and not having a dentist as their major reasons for their children not attending in the past year. Parents of children enrolled also cited these reasons plus an inability to get to the dental office or clinic because of distance, transportation, or available appointment.

Children enrolled in Texas Health Steps were less likely to have been in need but unable to obtain dental care, and also were less likely to have had difficulty with acceptance of their coverage or payment. However children not enrolled were less likely to have tried to access dental care.

That cost was a barrier for enrollees is surprising and should be studied further for both age groups to determine the perceived nature and amount of these costs. Only a quarter of the children that were not enrolled had private dental insurance, although over a third had private general health coverage.

Clinical Dental Findings

Children enrolled had more filled teeth whereas children not enrolled had more decayed teeth (untreated tooth decay). This was true for both primary and permanent teeth. Dental caries had been experienced by 53-66% of these children. The prevalence of dental caries (past or present tooth decay experience) in primary teeth did not differ with enrollment for second grade children. In permanent teeth the prevalence was higher in enrollees of both ages. Children not enrolled were of a slightly higher average socioeconomic status and thus may be expected to have lower dental caries rates.

Texas Health Steps enrollment was associated with an enhanced treatment rate and treatment completion rate. This completion rate was greater in Grade 8 than Grade 2. However, early professional guidance and periodicity of dental visits were not occurring to the extent needed to prevent and reduce the overall burden of dental caries. In addition, the rate of annual dental visits and the Medicaid enrollment rate were so low, that the proportion of financially qualified children who meet both criteria was only 34% of Grade 2 and 27% of Grade 8 students from families with an annual income of less than $16,000.

Children enrolled in Texas Health Steps more often had preventive dental sealants with 16-36% of enrollees having sealants on molars. The Healthy People 2000 national goal of 50% of children with dental sealants will not be met by this group of Texas children. There was a notable absence of preventive dental sealants on primary molars.

Preschool Children (2-3 Years of Age)

Social Survey Findings

Eighty-eight percent of the preschool children were enrolled in Texas Health Steps at the time of the survey.

More parents had a positive perception of their child's general health than of their child's oral health. Although two thirds had a dental visit in the past year, one third did not yet have one. Even at the young age of 2-3 years, seven percent of children attended in pain. Only a third of parents themselves had a dental visit, and thirteen percent of them had attended for relief of pain. Six percent of the children needed care but could not get it in the past year. Barriers related to lack of access included having no reason to go, not having a dentist or being unable to get to the office or clinic, fear, and cost. As expected these parents were very reliant on Medicaid for dental care coverage, and utilized public and private dental services.

Etiologic factors for early childhood caries were prominent. These included late weaning from a bedtime or naptime bottle, use of sweetened liquids in the bottle at bed time, and lack of parental tooth brushing with fluoride toothpaste beginning soon after teeth erupt in the first year. This points to a need for prevention, professional guidance, and appropriate periodicity of dental visits starting from twelve months of age.

Clinical Dental Findings

One fifth of the 2-3 year old children already had frank tooth decay. Thirteen percent were in need of treatment, one percent urgently. An additional fourteen percent had early enamel dental caries. This early sign of the disease is potentially arrestable and remineralizable by dietary change, dental sealants, parental and professional use of fluorides (e.g., toothpaste and fluoride varnish), and plaque control by tooth brushing. Only 1% had received preventive dental sealants.

Through a decision tree devised by a consensus panel of pediatric and public health dental professionals it was estimated that ninety percent of preschool children with dental caries, and 24% of preschool children overall, could be managed by application of prevention, remineralization, and minimal restoration. Success would not be universal, and depends on engagement of parents, caregivers, and dental professionals in focused prevention, guidance and periodic re-evaluation. Health behaviors of the parents, caregivers, and practice behaviors of many dentists would be changed to achieve this outcome. There is great potential however for overall reduction in the cost and risk of general anesthesia or sedation and possible hospitalization used to support the restorative treatment approach.

The remaining ten percent of preschool children with dental caries, and three percent of preschool children overall, had more advanced dental caries indicating need for general anesthesia or sedation and possible hospitalization. Long term success of any treatment schema is dependent on prevention and remineralization of tooth decay, and not merely on overcoming the backlog of restoration of existing frank cavities. It is the disease which must be treated, not just its consequences.

This decision tree provides a schema of alternatives which should be prospectively tested for process, outcome, and efficiency.

Selected Recommendations – Opportunities for Action

To improve the oral health of children in Texas several actions are recommended based on the findings of this statewide survey. Coordinated and collaborative efforts involving a variety of organizations and individuals across Texas will be necessary to attain major improvements in children's oral health. Along with parents and families, actions are needed by multiple groups such as government agencies, professional organizations, non-profit groups, and academic institutions. Organizations in the private, public, and non-profit sectors need to work in tandem at the state and local level with dental professionals, health and social service providers, child care, school personnel, public officials and others to assure improvements in the oral health of children in Texas.

Urge Promotion and Implementation of Community-Based Prevention

Support the initiation and maintenance of community-based prevention efforts like community water fluoridation.

Support local community water fluoridation efforts.

Develop community awareness campaigns for community water fluoridation in non-fluoridated areas.

Support Community-Based and Individual-Based Prevention Strategies to Prevent Tooth Decay in Children Especially Young Children

Integrate a prevention and early intervention orientation and focus into the Texas Health Steps (Medicaid, EPSDT) and Children's Health Insurance Program (CHIP) for all children.

Integrate for all children effective measures that are provided by professionals based on risk assessments into the Texas Health Steps (Medicaid, EPSDT) and Children's Health Insurance Program (CHIP). Demonstration programs are needed for the prevention of tooth decay in the primary teeth of children. These actions need to start with parents during the prenatal period, continue with infants and toddlers, and proceed throughout the preschool time and elementary school years. Innovative policies, programs, and professional practices need to be developed, implemented, and evaluated to provide early prevention and intervention services with sufficient intensity over time to be effective in preventing tooth decay during early childhood.

Community-Based Strategies

Support innovative campaigns through education, promotion, and community awareness to reach parents, caregivers, the media, and policymakers about practices that can be adopted to prevent early childhood caries.

Increase access to preventive services by maximizing state and local resources to support community-based dental programs. Model preventive dental programs, such as dental sealant programs that are based in or linked with child care centers and schools, should be replicated in areas across the state.

Increase fluoride mouthrinse programs in schools in non-fluoridated areas until water fluoridation can be achieved in the community.

Individual-Based Strategies

Promote widespread application of preventive measures such as dental preventive sealants and fluoride varnishes, particularly in children at risk for tooth decay, by reducing professional and personal barriers to their use.

Increase prescription of dietary fluoride supplements by medical and dental professionals in non-fluoridated areas until water fluoridation can be achieved in the community.

In programs supported by TDH such as Texas Health Steps (Medicaid, EPSDT) and Children's Health Insurance Program (CHIP) ensure coverage of all "medically necessary" evaluations, parental guidance and care to allow for the contemporary management of oral disease in children, e.g., dietary guidance, parent and child instructions in fluoride use and plaque control.

Support pilot projects and provide waivers at the local level to encourage investigations of innovative policies, programs, and practices for oral disease prevention and treatment for individuals and groups.

Improve Access to Dental Care

Maximize enrollment in public and private insurance programs that include dental coverage (e.g., Texas Health Steps (Medicaid, EPSDT), Children's Health Insurance Program (CHIP), and Texas Healthy Kids Corp. Increase awareness about the availability of no-cost and low-cost health insurance and dental coverage for children.

Increase access to dental care by ensuring that every child has an identified "dental home," a usual place to receive dental care.

Utilize multiple strategies to expand current enrollment and assure continuity and periodicity of dental care by streamlining or reforming policies (e.g., extend Medicaid coverage to one year, etc.) that produce barriers and prevent children from receiving needed regular dental care.

Eliminate barriers that families face in trying to access dental care for their children. Further study is needed to assess why some barriers described in this study contribute to the lack of regular dental visits and to determine effective ways to eliminate these identified barriers. For example, many parents seem unaware of the benefits of regular preventive dental attendance and said they had no reason to go, some enrolled parents said cost was a barrier and why this would be so is not apparent, and parents of preschoolers were fearful about dental care of their young children.

Decrease barriers to ensure that dental professionals are available and accessible in communities for children and their families (e.g., decrease distances to offices or clinics, increase available appointments, etc.).

Improve transportation assisting families to reach a dental office or dental clinic and to assure that children receive needed dental care.

Facilitate collaboration and referral between school-based dental programs (e.g., fluoride mouthrinse programs, dental sealant programs, and screenings) and dental offices and clinics to assure linkages with ongoing dental care.

Increase incentives and decrease disincentives to maximize participation of dentists in Texas Health Steps (Medicaid, EPSDT) and Children's Health Insurance Program (CHIP), and Texas Healthy Kids Corp. (e.g., reimbursement rates at reasonable level, streamlined administrative paperwork, etc.).

Increase capacity of traditional and safety-net providers to provide dental services to children and their families.

Utilize innovative strategies to promote access to dental care by ensuring that a sufficient number of dental providers are available in communities to meet the actual dental care needs of children.

Ensure access to primary dental care of parents so they can attain oral health themselves, be more fully informed oral health teachers of their own children, and have less reason to be fearful about more routine dental care sought early for their children.

Establish performance standards in publicly funded dental programs (e.g., Texas Health Steps (Medicaid, EPSDT), Children's Health Insurance Program (CHIP) to assure evaluation of outcome measures for the improvement of children's oral health.

Develop community awareness campaigns through education and promotion to increase the awareness of the importance of regular dental visits for children to prevent and detect dental problems early. Promote awareness among parents and caregivers about the need for early and periodic screening, diagnosis, prevention, and treatment for children, commencing by one year of age.

Increase the competence of dental and dental hygiene graduates and practicing professionals to manage early childhood caries for individuals and communities at both the preventive and interceptive levels. These actions are provided under the 1999-2004 Texas State Health Plan, Goal 4, namely, "to create a health care workforce trained and equipped to use education and prevention as the primary approach to helping Texas achieve optimal health."

Strengthen Capacity of the Public Sector

Support efforts of public health agencies at the state and local level to conduct periodic assessments of oral health needs of Texan children and their families (e.g., status of oral diseases, dental care needs, evaluation of existing resources, available capacity, gaps in services and resources, effectiveness of interventions, etc.).

Provide support, training, and technical assistance at the local and community levels for assessment of oral health needs, development and implementation of oral health policies, programs, and practices, and evaluation of outcomes to assure that identified oral health needs are addressed in local communities.

Assure that necessary oral health services are available and accessible in communities for children and their families that need them. Support the provision of needed private and public dental services in communities and as necessary provide direct dental services in communities where needed dental services are not available or accessible.

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Introduction

The Oral Health Assessments were a large undertaking that involved the cooperation of more than two thousand families across the state. The Department of Community Dentistry, Dental School, University of Texas Health Science Center at San Antonio led this effort with funding from the Texas Department of Health (TDH). The Acknowledgements and Appendix A provide a list of the numerous individuals, agencies, and schools involved in the survey.

In 1998, two oral health assessments were conducted in Texas. The first assessment was a survey of children in second and eighth grades enrolled in Texas public schools. The second assessment evaluated preschool children 2-3 years of age enrolled in Texas Health Steps (THSteps) known as the Medicaid Early Periodic Screening, Diagnosis, and Treatment Program (EPSDT) at the Federal level. Both surveys assessed the extent of dental disease and determined factors that influence access to dental care.

The assessments were designed to include all regions of the state and assess oral health status as well as evaluate access to dental care of Texas children. A goal of the surveys was to consider the oral health needs of low-income children by focusing on the "Texas Health Steps Population" and students enrolled in the free lunch program.

During the Planning Phase (October 1997 – August 1998) the co-investigators in conjunction with the Texas Department of Health (TDH) determined the scope of the assessments and developed a sampling plan that coincided with the work plan and budget. The Co-investigators communicated regularly with the TDH during the planning phase to establish the sampling plans and resolve questions about representativeness, efficiency, analysis, and interpretation. Meetings were held to determine the types of data to be collected and establish data collection criteria and methodologies. The consent forms and questionnaires were developed with TDH.

Applications for Institutional Review Boards were developed and approvals for conducting the Dental Health Assessments of Texas Children were received by the Institutional Review Boards of the Texas Department of Health and the University of Texas Health Science Center at San Antonio. School Districts also signified approval to conduct the survey and school principals also agreed to sponsor the survey in their school.

The co-investigators developed survey manuals that outlined and standardized survey protocols, forms, and tasks. The survey manuals formed the basis of training sessions for the school coordinators and survey team members. The manuals guided the activities of the survey and were referred to regularly throughout the survey.

Training sessions were held in August 1998 for the school coordinators and survey team members before the start of the data collection phase. All survey personnel (school coordinators, dentist, dental hygienist, secretary, and co-investigators) received training in survey techniques and methodologies according to the protocols established for the survey. Oral epidemiological methods were reviewed and examiner calibration sessions were conducted with preschool children in early childhood development centers and school children in an elementary and middle school. During the training sessions examiner calibrations for reliability were conducted versus the Principal Investigator, an experienced examiner.

Quality Control was maintained in several ways. The study coordinator was present at each school site to ensure that established procedures were followed, as prescribed during survey team training. The sampling processes and data management activities were supervised by the project statistician. Survey information systems were established to record information and track communications for both assessments.

During the data collection phase the data manager and/or principle investigator reviewed written and electronic data at least once a week and provided feedback to the examiner and recorder by telephone immediately when required, and in person on a weekly basis. During the data collection phase survey management and technical staff held meetings each week. Midway through the data collection phase a second training session was held to review survey protocols and maintain standardization of survey procedures.

The survey of schoolchildren was conducted in a clustered sample of 16 elementary schools and 16 middle schools from 11 school districts in 8 TDH Regions randomly selected to participate in the survey. In the elementary schools 1,302 second grade schoolchildren returned consent forms and questionnaires and 1,146 had dental inspections. In the middle schools 907 eighth grade students provided consent forms and questionnaires and 825 received dental inspections. The resulting linked data sets of social survey questionnaires and dental inspections included 1124 Grade 2 survey participants and 802 Grade 8 survey participants.

In 8 TDH Regions the survey team made scheduled visits at the homes of 92 preschool children in 8 communities and met with 18 preschool children and their parent or guardian at the local schools in three rural communities. When the quota for home visits in a region was not met by pre-scheduled appointments the survey team conducted "cold calls" by telephone or at the doorstep to recruit participants in the survey. Fifteen preschool children participated in the survey in response to a "cold call" by the survey team. A total of 110 preschool children had a dental inspection and questionnaire completed for the survey and a linked data set was developed for these 110 survey participants that were 2 – 3 years of age.

Following a data management plan data from the assessments was coded, entered, computerized, summarized, and linked for each individual survey participant. The linked data sets for each assessment were analyzed and the findings are outlined in this report.

Methods for Conducting the Oral Health Assessments (School-Age Children - 2nd and 8th Grade Schoolchildren)

Sampling Plan

The TDH provided a computerized list of public elementary schools with Grade 2 and middle schools with Grade 8 in school districts in Texas, based on the Texas Education Agency PEIMS data (TCE for 1996-1997). This listing was categorized by 8 TDH Health Regions / Combined Regions. Schools with 60% or more children eligible for the Free School Lunch Program (FLP), and with at least 100 students enrolled in Grade 2 and Grade 8, were included in the sampling frame. The cut off of 60% was chosen to ensure that sufficient number of children were at or below the Federal Poverty Level, and so would be financially qualified for Medicaid, whether enrolled or not enrolled in Medicaid. The 60% FLP cut off was also set at this level to ensure that two middle schools, each with one hundred or more grade 8 students, were available for sampling in each Region. The enrollment level of at least 100 students in each grade was utilized to enhance efficiency and assure that the survey team had one full day in each school.

In each TDH Health Region one middle/junior high school with Grade 8 classes meeting the survey criteria was randomly selected from the sampling list. In the same School District a second middle school was chosen at random from the list of those schools meeting the survey criteria. If there was not a second middle school to be selected in the school district, one was randomly selected in a second school district geographically closest to the already selected middle school. The two elementary schools that met the survey criteria, were geographically closest to the selected middle schools, and within the same school district(s) were then selected for the survey. The requirement of four available schools in each Region caused the minimum grade enrollment (100 in Grade 2 and 8) to be set slightly lower in two elementary schools in two Regions to assure all regions of the state were included in the assessments.

This sampling plan was compatible with a work plan and budget requiring the completion of two elementary schools and two middle schools in a single geographic area each week. This sampling plan had budget implications with allowances for travel times and a work week of over 40 hours occurring in the field.

Because the survey team scheduled only one day in each school random selection of students was necessary in schools with large student populations to meet the survey goals and timetable in an efficient manner. All students identified as a 2nd or 8th grade student in the school were considered eligible to participate in the selection process. In elementary schools classrooms of 2nd grade students were randomly selected from a list of classes identified by family name of teachers in order to select at least 74 students in each school. The mean number of schoolchildren selected in the elementary schools was 109 students.

Eighth grade students were randomly selected in middle schools based on the organization of the school. In each school at least 100 8th grade students were selected randomly either by a) individual 8th grade students (6 schools), b) "team" groupings (2 schools), or c) homeroom or core course classroom teachers ordered alphabetically by family name of teachers (8 schools) to participate in the survey. The mean number of schoolchildren selected in the middle schools was 133 students. This random selection process was coordinated with the school administration and developed according to each school's unique daily and weekly scheduling circumstances in order to randomly select students but also reach students for distribution and collection of consent and questionnaires as well as assure student participation in the dental inspection on the day of the survey team visit.

As the data collection phase progressed the investigators tracked the total number of schoolchildren available in schools compared to the number of children with positive consents and if the consent

rate fell appreciably below the predicted quota for a single school, additional, available classes and students in that school or in subsequent schools were included in the survey to make up the quota of participants. Also, this action eventuated due to changes in school enrollments and obtaining the most updated information from schools throughout the planning and data collections phases of the survey.

Data Collection

After the sample was drawn the State Dental Director and Principle Investigator initiated contact by mail and telephone with School District Superintendents and other appointed District Administrators and secured district letters of approval for participation in the survey. Between July 1998 and December 1998 school coordinators contacted 32 school principals, their delegated contacts, school nurses, and teachers to plan, organize, and prepare for conducting the surveys in each school according to an established 3 1/2 month schedule for data collection. School coordinators visited each school at least twice to distribute and pick up materials as well as make logistical arrangements for the survey team visit.

A school district tracking system and school campus database was established for the survey. Individual school district notebooks were developed to record information and track contacts at the school district, school, classroom, and student level. Roster forms listing selected students were prepared in each school to record and track student participation in the survey.

Self Administered Questionnaires for Parents or Guardians of Students

An envelope with the consent form and questionnaire was distributed to all selected 2nd and 8th grade students. At some schools additional distribution waves were necessary to increase response and participation in the survey.

Each survey participant returned the envelope with a signed consent form and most contained the questionnaire completed by a parent or guardian. In many schools students received a dental packet (e.g., toothbrush, toothpaste, and floss), and educational materials as an incentive for returning the envelope.

The paper-and-pencil questionnaire with 17 closed-end questions was self-administered and completed at home by the student's parent or guardian. Appendix B outlines the Introduction Letter, Envelope Cover Page, Consent Form, and Questionnaire. The parent or guardian completed the consent form and the attached questionnaire assembled in a booklet format. The questionnaire was based on proven questions used in other national, state, and local surveys where possible. It also assessed demographic and other identification information. It included whether the child had a usual source of dental care, ethnicity, parent's level of education and family income, whether the child was Medicaid-EPSDT enrolled, and how dental care was paid for currently.

All survey materials distributed to schoolchildren were in English and Spanish. In addition, survey materials for students were translated into Laotian and Vietnamese and distributed in specific schools upon recommendations of principals or school nurses. The consent form and questionnaire was pretested and discussed by comparable adults and amended for comprehension. A translation and interpretation checking process occurred during the development of the English and Spanish versions of the consent form and questionnaire. They were translated twice from English into colloquial Spanish, checked for consistency, amended, tested, and amended as needed.

Social Variable Measures

The social variables in the student survey were grouped in a number of categories. The first was a set of basic sociodemographic variables. The social variables for students included age, gender,

ethnicity, enrollment in free or reduced lunch program, past or current participation in Medicaid. The social variables associated with the student's family included education of parent or guardian, family income level, and family size.

The second group of variables included aspects of oral health behavior and focused on health service utilization. The variables covered the length of time since last dental visit, usual source of dental care, categorization of oral health services received during last dental visit, usual source of dental care, insurance status, and payment mechanisms for general health care and oral health care.

The next group of sociological variables included perceived general health and oral health status, perceived need for oral health care, and barriers to accessing dental services.

Clinical Data Collection Instrument for Student Dental Inspections

Clinical oral health data for students was collected at schools by a survey team including one single examiner (dentist) and a recorder (dental hygienist). The Clinical Data Collection Instrument is outlined in Appendix C. Oral examinations were conducted with portable dental equipment at the selected schools using standard clinical supplies, infection control, and survey procedures. All survey participants were provided dental inspections using a disposable plane (flat) mouth mirror and explorer (shepherd's hook). The dental inspections followed an established sequence and included use of artificial light from an examination light and a fiber optic transillumination light.

In conducting the survey standardized training and data collection procedures were followed throughout the data collection phase. Interexaminer calibrations for reliability were conducted in the initial training sessions versus the Principal Investigator, an experienced examiner. One examiner completed all dental inspections during the survey and for this reason interexaminer reliability is not an applicable consideration of this survey. The study coordinator selected at random 45 (2.3%) students for replicate dental inspections during the survey. Analysis for intraexaminer consistency showed a rate for decayed, extracted due to dental caries, and filled surfaces of 94.2% affected surfaces in permanent teeth, 92.7% of affected surfaces in primary teeth, and 93.4% overall.

Direct data entry to personal laptop computers was used for all clinical dental inspections. The direct data entry computer program for dental inspections was developed by the project statistician and programmed to avoid inconsistent-values, out-of-range values, and missing data.

Further, certain precautionary measures were taken to prevent the loss of data collected by direct entry. At the end of each dental inspection a hard copy was printed for back up purposes. In the event of failure of computer hardware or software printed copies of the data were still available. Another measure was to make back-up copies of the data periodically. Such duplication of data onto floppy diskettes was routinely done at the end of each morning and afternoon session.

Oral Health Variables for Student Dental Inspections

Standardized Clinical Measurements

The oral examination method and criteria were a modification of the basic methods developed for oral health surveys by the World Health Organization (WHO, Oral Health Surveys - Basic Methods, 4th Edition, 1997) and outlined in detail in a survey manual used for training and as a reference during the survey.

Dentition Status

The status of primary and permanent teeth was recorded during the dental inspection. The condition of the teeth and tooth surfaces was recorded as either:

- sound,
- decayed (dental caries),
- filled and decayed (recurrent),
- filled, no recurrent dental caries,
- extracted (missing) due to dental caries,
- extracted (missing) for any other reason
- dental sealant, otherwise sound
- bridge abutment, special crown or veneer,
- unerupted or congenitally missing tooth,
- excluded tooth – banded, severe hypoplasia, or
- trauma (fracture with loss of tissue and requiring treatment, permanent teeth only, otherwise sound).

The treatment needs of the dentition were recorded for each tooth. Tooth treatment needs were classified as either:

- no treatment required,
- preventive, caries arresting or sealant care,
- one surface restoration,
- two or more surface restorations,
- crown or bridge abutment,
- bridge element,
- endodontic treatment and restoration,
- extraction,
- other care, e.g., veneer, or
- endodontic treatment and crown, inlay, or onlay

An additional examination of proximal surfaces was recorded using a fiber optic transillumination light alone. The condition of the tooth surfaces was recorded as either:

- no additional information observed - no changes observed, restored, marginal ridge fracture, or unable to assess,
- enamel caries observed, or
- dentin caries observed.

Fluorosis

The presence of dental fluorosis was recorded by subject using Deans index criteria. The severity score was made on the basis of the two teeth most affected. The following categories were recorded

- normal,
- questionable,
- very mild,
- mild,
- moderate, or
- severe.

In addition, the number of fluorosed teeth at the maximum level of severity was recorded during the dental inspection.

Overall Treatment Needs and Urgency of Care (Referral for Care)

Notation was made during the dental inspection of overall treatment needs. The following categories were recorded:

- no need for treatment,
- preventive care,
- restorative treatment,
- extraction,
- endodontic treatment,
- prosthodontic treatment,
- orthodontic treatment,
- periodontal (advanced) treatment, or
- other specified treatment.

Urgency of care was recorded during the dental inspection. The following categories were recorded:

- no obvious problems seen, child should seek regular dental check-ups and prevention,
- non-urgent dental care needed, child should seek dental treatment soon, or
- urgent dental care needed, child should seek dental treatment for an urgent dental need as soon as possible.

All consenting parents or guardians and the school nurse were advised in writing of the results of the dental inspection or dental screenings. In addition, a listing of local dental resources was provided and sent home with each survey participant. Regional Dental Directors, Texas Department of Health were responsible for the referral and follow-up process for the survey participants and coordinated these arrangements with the school nurses and other school personnel. Regional Dental Directors developed and provided the school nurse with a local list of dental providers participating in Medicaid-EPSDT, and where needed made available the State Fee-for Service Contracted Dental Services.

Carrying Out the Survey

The sampling plan provided an efficiently clustered sample of 16 randomly selected middle schools and 16 adjacent elementary schools from 11 school districts in 8 TDH Regions. One of the eleven school districts chose not to participate in the survey. In this region a second round of random selections was conducted and another school district and two selected elementary schools and two middle schools agreed to participate and replaced the originally selected school district and its schools.

In the selected schools the expected percentage of children eligible for free lunch according to the Texas Education Agency for 1996-1997 ranged from 64% - 100% and 60% - 100% for the second grade schoolchildren in elementary and eighth grade students in middle schools, respectively. The number of students enrolled in each grade according to the Texas Education Agency for 1996-1997 ranged from 83 - 151 and 128 - 479 for the elementary and middle schools, respectively.

In fall of 1998 during the data collection phase the observed enrollment figures for second and eighth grade students ranged from 74 - 174 and 111 – 504 students for the selected elementary and middle schools, respectively. In the 16 elementary schools 92 classrooms were selected and 1,744 students were asked to participate in the survey. A total of 2,132 8th grade students were selected and asked to participate in the survey in 16 middle schools.

In the elementary schools 1,302 second grade schoolchildren returned consent forms and questionnaires and 1,146 had dental inspections. In the middle schools 907 eighth grade students provided consent forms and questionnaires and 825 received dental inspections. See Appendix D Table 1 and Table 2.

The target number of participants was 960 in Grade 2 and 960 in Grade 8. In terms of those who consented, returned a questionnaire, and received a dental inspection, the rate of attainment of participants was 119% in Grade 2, 86% in Grade 8, and 103% overall, of the target numbers.

The linked data sets used for analysis included the number of children with combined data from a questionnaire and a dental inspection. The number of children in the linked data sets was adjusted based on children absent from school the day of the survey team visit, children with incomplete questionnaires, and the maximum number of children that were seen for dental inspections according to the work plan of a one day survey team visit in each school. In schools where the situation arose and the maximum number of dental inspections were conducted, other children with consent received a dental screening. Children with a dental screening were not included in the dental inspection numbers and were not included in the combined data set for each grade level. There was no known systematic bias in the type of class or demographic characteristics of children receiving dental screening versus dental inspection

Preparing Data for Analysis

A data management plan was developed that outlined steps for coding, computerizing, data entry, summarizing, and linking of data from the self administered questionnaires and dental inspections for schoolchildren assessments. After the data was coded, computerized, edited, and cleaned the resulting data sets were linked for each individual student.

Computer assisted data collection and data entry procedures were maximized throughout the survey to integrate range and contingency checks into the process to limit and reduce errors. Supplementary data cleaning procedures were developed and utilized on data sets after data entry. A plan for data processing was developed to guide data editing and cleaning. Decision rules were established to resolve discrepancies found through range checking and contingency checking. A computerized consistency checking process was utilized to detect errors. A deductive approach of internal data checks was utilized to assure consistency throughout the data set and impute missing values. Responses to a few questions for each grade group were combined to increase a cell size or to form a superset of the original data. For example, this process was necessary to determine status of general health insurance and dental insurance.

Clinical data for 2nd and 8th grade schoolchildren was entered directly into a portable personal computer during the dental inspections. The string of clinical data was summarized into standard dental indices for each student and transferred into a spreadsheet program (Lotus 123). Completed self administered questionnaires were returned to the Survey Office and data was entered utilizing a computerized data entry program to standardize the entry process and avoid inconsistent values, out-of-range values, and missing data. The data from the questionnaires was then also transferred into a spreadsheet program (Lotus 123). Summarized data from individual dental inspections was linked to data from the self-administered questionnaires for each student to form a complete data set. The resulting linked data sets included 1124 Grade 2 survey participants and 802 Grade 8 survey participants.

Implementing Analysis of the Data

The analysis plan developed for the 2nd and 8th grade oral health assessments was implemented with input from the TDH Central Office. The two data sets used for analysis consisted of 1124 Grade 2 schoolchildren and 802 Grade 8 students who completed both the dental inspections and social survey questionnaires.

The sample size for the oral health variables from the dental inspections equals 1124 for Grade 2 and 802 for Grade 8. The sample sizes for the social variables vary depending on the number of responses for specific questions. The analysis of the social variables was based on the number of responses to individual survey questions and the frequencies for non-response to specific social survey questions are outlined in the data tables for 2nd and 8th grade oral health assessments in Appendix H. It should be noted that individual responses to a question are based only upon those schoolchildren with responses and the sum of the responses equals 100%. Incorrectly summing the percents of all responses plus the percent of non-responses will lead to a total greater than 100%.

Descriptive statistics including measures of central tendency (e.g., means and medians) and dispersion (e.g., maximum and minimum values) were calculated for social variables and oral health variables. Also, frequencies and percentages for social and oral health variables were computed for all school children in the survey providing a sample profile. The percentages for 2nd and 8th grade schoolchildren are outlined in the summary data tables in Appendix H and shown in the figures included in the Findings section of this report.

The sample for each grade level was divided into two subgroups based on Medicaid enrollment status. From responses to the social survey questionnaire, children were determined to be enrolled currently or not enrolled in the "Medicaid program (EPSDT), now called Texas Health Steps." Again percentages were generated for social variables and oral health variables for each subgroup. For each grade level the summary statistics were compared using a large sample z-test for the two Medicaid enrollment subgroups. The tests for difference between two means and difference between two proportions were used where appropriate. A small sample t-test was used for the average missing teeth per child for the 8th grade sample. The test for difference of proportions was not utilized when the count for a particular response was less than five. Statistical significance was based on hypothesis tests performed at the .05 level of significance. The summary analysis comparing Medicaid enrollment status for 2nd and 8th grade schoolchildren is outlined in the summary data tables in Appendix H and shown in the figures included in the Findings section of this report.

Methods for Conducting the Oral Health Assessment (Preschool Children - 2 - 3 Years of Age)

Sampling Plan

The Texas Department of Health (TDH) supplied the investigators with a computerized list of all children aged 2 years but not yet 3 (24-35 months), who were currently enrolled as of July 1998 in the Texas Health Steps (THSteps) program and resided in the zip codes of the selected elementary schools in each TDH Region. The Texas Health Steps (THSteps) program is known as the Medicaid Early Periodic Screening, Diagnosis, and Treatment Program (EPSDT) at the Federal level. The list included a child's full name, date of birth, gender, parents/legal guardians' full name, child's street address, apartment number, zip code+4, telephone number, social security number, last medical and dental screen date, and ethnicity.

To produce an efficiently clustered sample in each Region the listing was randomly ordered by a geographic breakdown of each zip code area (zip code + four digits). In each Region 13 children were randomly selected per zip code as the primary subjects to be included in the survey sample. An additional 37 children in each Region were randomly selected as the secondary subjects for the sample. The rest of the listing was considered the third section. This third section which was in random order was used for contacting potential participants when the first two sections were exhausted or for "cold calls" out in the field. If all names on the list for one zip code were exhausted without examining the quota of 13 preschool children, names were then selected using the same procedures from a similar list for the zip code of the second selected elementary school. Preschool children that participated in the survey resided in 12 zip codes and 106 different zip codes+4 configurations.

Systematic and energetic efforts were made to contact the selected children for the oral health assessment based on established protocols. A tracking system was developed and implemented and each contact with a preschool child's family was recorded systematically.

Data Collection

Between August 1998 and December 1998 a bilingual survey staff member systematically contacted by mail and telephone parents or guardians of selected preschool children. Information about the survey was conveyed and parents and guardians were recruited to participate in the survey. Appointments for home visits by the survey dentist and dental hygienist were scheduled with the families. This preparatory phase was the responsibility of one individual at Survey Office and was coordinated by her throughout the survey.

In the preparatory phase, all the selected preschool children's parents and guardians were contacted by mail and those with telephone numbers were contacted by telephone with the main purpose of introducing the survey, recruiting survey participants, and scheduling appointments for a home visit. Attempts were made to contact parents or guardians three times by telephone, including early evening hours. When three attempted telephone contacts and one mail contact was not successful, the survey team attempted contact in the field by cell telephone or directly at the home address in the late afternoon and early evening.

Lack of response to these initial contacts was dealt with during the field phase by selecting a child on the full list for a contact who resided closest to a child already scheduled for an appointment in the late afternoon and early evening, and proceeding down the list as necessary, until such a child was recruited as a participant for the survey. These "cold calls" occurred in the field phase of the survey.

In three communities home visits were scheduled in advance as described previously, but carried out at the local schools. In these communities parents or guardians were willing or preferred to bring their preschool children to the local school for the survey. The schools served as a common community gathering place in these more rural areas and meeting families at the schools increased efficiency of conducting the survey because of greater distances, poor road conditions and signage, and difficulties locating homes in rural areas in the dark during evening hours.

Self Administered Questionnaires for Parents or Guardians of Preschool Children

The paper-and-pencil questionnaire with 20 closed-end questions was self-administered and completed by the preschool child's parent or guardian. Appendix E outlines the Consent Form and Questionnaire. The parent or guardian completed the consent form and the attached questionnaire assembled in a booklet format. The questionnaire was based on proven questions used in other national, state, and local surveys where possible. It included demographic and other identification information. It assessed whether the child had a usual source of dental care, ethnicity, parent's / guardian's level of education, Medicaid-EPSDT enrollment status, and barriers to dental care.

All survey materials were in English and Spanish. The consent form and questionnaire were pretested and discussed by comparable adults and amended for comprehension. A translation and interpretation checking process operated during the development of the English and Spanish versions of the consent form and questionnaire. They were translated twice from English into colloquial Spanish, checked for consistency, amended, tested, and amended as needed.

The parent or guardian of preschool children were offered a $10.00 incentive to compensate for their time of participation. Also, the parent or guardian and preschool child received a dental packet (e.g., toothbrush and toothpaste) and educational materials as an incentive for participating in the survey

Social Variable Measures

The social variables in the preschool survey were grouped in a number of categories. The first was a set of basic sociodemographic variables. The social variables for preschool children included age, gender, ethnicity, and current participation in Medicaid-EPSDT. The social variables associated with the child's family included education of parent or guardian, family income level, and family size.

The second group of variables included aspects of oral health behavior and health service utilization. The health service utilization variables for the child covered the length of time since last dental visit, categorization of oral health services received during last dental visit, usual source of dental care, insurance status, and payment mechanisms for general health care and oral health care. Also, health service utilization variables that related to the parent or guardian included the length of time since last dental visit and categorization of oral health services received during last dental visit.

In addition, the oral health behavior variables included use of daily cleaning of teeth, daily use of toothbrush, daily use of fluoride toothpaste, age of beginning daily use of fluoride toothpaste, age of child when child started to eat table foods, use of baby bottle at nap or bedtime, usual contents of baby bottle at nap or bedtime, and age when child stopped using baby bottle at nap or bedtime.

The next group of sociological variables included perceived general health and oral health status. The items covered perceived need for oral health care and barriers to accessing dental services.

Clinical Data Collection Instrument for Preschool Children Dental Inspections

Clinical oral health data for preschool children was collected by a survey team including one single examiner (dentist) and a recorder (a bilingual dental hygienist). The Clinical Data Collection Instrument is outlined in Appendix F. Oral examinations were conducted using standard infection control supplies and dental screening procedures. All survey participants were provided dental inspections using a disposable plane (flat) mouth mirror. The dental inspections followed an established sequence and included use of artificial light from a flashlight and/or headlamp. Examiner calibration for reliability were conducted initially versus the Principal Investigator, an experienced examiner, during the initial training sessions. Organization of the field examinations in homes and time limitations in communities, did not allow for return to homes for replications of dental inspections for preschool children, as was planned and carried for schoolchildren in 2nd and 8th grades.

Data for the preschool survey was recorded manually in homes and later transferred into electronic format. The clinical data collection instruments and questionnaires were completed and returned to the survey office where staff entered into the computer the data for each preschool child participating in the survey.

Oral Health Variables for Student Dental Inspections

Standardized Clinical Measurements

The oral examination methods and criteria were a modification of the basic methods developed for oral health surveys by the World Health Organization (Organization (WHO, Oral Health Surveys - Basic Methods, 4th Edition, 1997) and outlined in detail in a survey manual used for training and as a reference during the survey.

In addition, TDH requested that oral examination methods and criteria be developed to assess "need for hospitalization" for dental care for preschool children. A consensus panel was assembled to establish criteria for need for hospitalization for dental care. (Panel members are listed in the Acknowledgement section). Two meetings of the consensus panel were held to review and discuss background papers as well as develop materials. The consensus panel report was submitted to TDH for review and approval. Appendix G provides excerpts from the consensus panel report that describes the methods and criteria used to assess "need for hospitalization" during the dental inspections of preschool children. Three recordings were made to determine the "need for hospitalization" for dental care.

Dentition Status

The status of primary teeth was recorded during the dental inspection. The condition of the teeth and tooth surfaces were recorded as either:

- sound,
- decayed (dental caries),
- filled and decayed (recurrent),
- filled, no recurrent dental caries,
- extracted (missing) due to dental caries,
- extracted (missing) for any other reason
- dental sealant, otherwise sound
- bridge abutment, special crown or veneer,
- unerupted or congenitally missing tooth,
- excluded tooth – banded, severe hypoplasia, or
- incipient (enamel) caries.

The treatment needs of the dentition were recorded for each tooth. Tooth treatment needs were classified as either:

- no treatment required,
- preventive, caries arresting or sealant care,
- one surface restoration,
- two or more surface restorations,
- crown or bridge abutment,
- bridge element,
- endodontic treatment and restoration,
- extraction,
- other care, e.g., veneer, or
- endodontic treatment and crown, inlay, or onlay.

Overall Treatment Needs and Urgency of Care (Referral for Care)

Notation was made during the dental inspection of overall treatment needs. The following categories were recorded:

- no need for treatment,
- preventive care,
- restorative treatment,
- extraction,
- prostodontic treatment,
- endodontic treatment,
- orthodontic treatment,
- periodontal (advanced) treatment, or
- other specified treatment.

Urgency of care was recorded during the dental inspection. The following categories were recorded:

- no obvious problems seen, child should seek regular dental check-ups and prevention,
- non-urgent dental care needed, child should seek dental treatment soon, or
- urgent dental care needed, child should seek dental treatment for an urgent dental need as soon as possible.

All consenting parents or guardians were advised in writing of the results of the dental inspection. In addition, a listing of local dental resources was provided to each parent or guardian. Regional Dental Directors, Texas Department of Health were responsible for the referral and follow-up process for the survey participants and coordinated these arrangements with the families. Regional Dental Directors developed and provided the local list of dental resources and where needed made available the State Fee-for Service Contracted Dental Services.

Opacities and Hypoplasia

The presence of opacities and hypoplasia was recorded. The following categories were recorded for opacities and hypoplasia:

- none,
- present, or
- unable to score.

In addition, the total number of teeth affected for each condition was recorded during the dental inspection.

Assessment of "Need for Hospitalization" for Dental Care

Children's ability to cooperate for dental care is limited by age and stage of development, determined by the extent of dental caries, and by the invasiveness of dental care needed including the prevention, restoration or extraction of teeth. Three recordings were made and will be summarized to determine the "need for hospitalization" for dental care. (This schema, its rationale, and its consensus by a special panel are the subject of a prior report to TDH. See Appendix G for excerpts).

1. *Early Childhood Caries (ECC)*

The Godoy classification was adapted to assess baby bottle tooth decay (BBTD) or nursing caries pattern.* This classification of early childhood dental caries by Godoy was utilized, as it was in the WIC study of Jones, Mobley and Godoy in San Antonio and Mission, Texas. It has the advantage of describing stages related to presumed methods of prevention and treatment, and allows the survey to be compared with this larger group study of over 3,000 preschool children of varying age, and of known dietary intake. The following Godoy categories were recorded:

- none,
- very mild,
- mild,
- moderate,
- severe, or
- very severe.

A seventh category was added to record past and treated experience with this pattern of early childhood caries (baby bottle tooth decay (BBTD) or nursing caries) by recording extracted anterior teeth or teeth restored with stainless steel crowns, with history elicited from the parent or guardian

2. *Total Number of Teeth with Frank Cavitation*

When the moderate Godoy classification was recorded the examiner categorized the total number of anterior and posterior teeth with frank cavitation. The following categories were recorded:

- 1 - 2 teeth, or
- 3 or more teeth.

3. *Tolerance for Dental Inspection*

The examiner assessed the ability of the preschool child to tolerate the complete dental inspection with parental and dentist's support, but without restraint. The following categories were recorded:

- child was able to tolerate the complete dental inspection, or
- child was not able to tolerate the complete dental inspection.

Attachment #8 in Appendix G indicates how these three categories will be used to assess "need for hospitalization" for dental care, which the expert panel interpreted to mean " the need for pain and patient behavior management (non-chemotherapeutic management, local anesthesia, sedation, general anesthesia, or hospitalization.

(*Garcia-Godoy F, Mobley CM, Jones DL, Mays MH. Caries and Feeding Patterns in South Texas Preschool Children Final Report. Minority Health Statistics Grants Program, National Center for Health Statistics, Centers for Disease Control and Prevention, January 1995).

Carrying Out the Survey

The survey team made scheduled visits at homes of 92 preschool children in 8 communities and met with 18 preschool children and their parent or guardian at the local schools in three rural communities. When the quota for home visits in a region was not met by pre-scheduled appointments the survey team conducted "cold calls" by telephone or at the doorstep to recruit participants in the survey. Fifteen preschool children participated in the survey in response to a "cold call" by the survey team. A total of 110 2-3 year old preschool children had a dental inspection and questionnaire completed for the survey. The target was 100 survey participants. See Table 3 in Appendix D.

Preparing Data for Analysis

A data management plan was developed that outlined steps for coding, computerizing, data entry, summarizing and linking data from the self administered questionnaires and dental inspections for the preschool assessment. After the data was coded, computerized, edited, and cleaned the resulting data sets were linked for each individual child.

Computer assisted data entry procedures were maximized throughout the preschool survey to integrate range and contingency checks into the process to limit and reduce errors. Supplementary data cleaning procedures were developed and utilized on data sets after data entry. A plan for data processing was developed to guide data editing and cleaning. Decision rules were established to resolve discrepancies found through range checking and contingency checking. A computerized checking process was utilized to detect errors. A deductive approach of internal data checks was utilized to assure consistency throughout the data set and impute missing values. Responses to a few questions for each grade group were combined to increase a cell size or to form a superset of the original data.

Completed Clinical Data Collection Instruments and self administered Questionnaires were returned to the Survey Office. Data was entered utilizing a computerized data entry program to standardize the entry process and avoid inconsistent values, out-of-range values, and missing data. The string of clinical data was summarized for each child. Data from the Clinical Dental Inspections and Questionnaires were transferred into a spreadsheet program (Lotus 123). Summarized data from individual dental inspections were linked to data from the self-administered questionnaires for each child to form a complete data set. The resulting linked data set included 110 preschool survey participants (2 – 3 years of age).

Implementing Analysis of the Data

The analysis plan for the oral health assessment of preschool children (2 – 3 years of age) was implemented with input from the TDH Central Office. The contract for the oral health assessment of preschool children called for a statewide convenience sample of 100 children that solely utilized descriptive analysis.

The data set used for analysis consisted of 110 preschool children (2 – 3years of age) who completed both the dental inspections and social survey questionnaires. The sample size for the oral health variables from the dental inspections equals 110. The sample sizes for the social survey variables vary depending on the number of responses for specific questions. The analysis of the social variables are based on the number of responses to individual survey questions and the frequencies for non-response to specific social survey questions are outlined in the Findings section of this report. It should be noted that individual responses to a question are based only upon those preschool children with responses and the sum of the responses equals 100%. Incorrectly summing the percents of all responses plus the percent of non-responses will lead to a total greater than 100%.

Descriptive statistics including measures of central tendency (e.g., means and medians) and dispersion (e.g., maximum and minimum values) were computed for the social variables and oral health variables. Also, frequencies and percentages for the social and oral health variables were calculated for all preschool children providing a sample profile. See the Findings section of this report for the summary data tables outlining the frequencies.

Findings from the Oral Health Assessments

The data tables for the oral health assessments in 2nd and 8th grade schoolchildren are outlined in Appendix H. The data tables of the findings are organized by variable type:

a. sociodemographics (from the social survey questionnaires)
b. perceptions of oral health and access to dental care (from the social survey questionnaires)
c. oral health variables (from the clinical dental inspections)

Appendix I provides a summary of the clinical findings based on the observations utilizing the Fiber Optic Transillumination (FOTI) light.

The sample size for the oral health variables from the dental inspections equals 1124 for Grade 2 and 802 for Grade 8. The sample sizes for the social variables vary depending on the number of responses for specific questions. The analysis of the social variables was based on the number of responses to individual survey questions and the frequencies for non-response to specific social survey questions are outlined in the data tables for 2nd and 8th grade oral health assessments in Appendix H. It should be noted that individual responses to a question are based only upon those schoolchildren with responses and the sum of the responses equals 100%. Incorrectly summing the percents of all responses plus the percent of non-responses will lead to a total greater than 100%.

Figures such as pie and bar charts depicting data from the data tables are shown on pages 22-53 for Grade 2 and pages 57-82 for Grade 8. In the figures the shading for the legends move from left to right on the bar charts and from top to bottom on the tables.

The key findings for the oral health assessments are summarized on pages 18-20 for 2nd grade schoolchildren and pages 54-55 for 8th grade schoolchildren.

Key Findings - 2nd Grade Schoolchildren

Sociodemographic Composition

The mean age of the 1124 second grade survey participants was 7.7 years, with 51% female and 49% male. Just under two-thirds (60.5%) of second grade students in the survey were from families with an income less than $16,000 per year. Almost all of these children can be presumed to be financially qualified for the Texas Health Steps (EPSDT, Medicaid) program. Half of these (30% overall) were enrolled in Texas Health Steps. One-third (30.0%) of children were from families with an income of $16-$30,000 annually. Only 14.4% of these children were enrolled (4.3% overall). Nearly ten percent (9.5%) were from families with an income greater than $30,000 per year, and only 5.1% (0.5% overall) of these were enrolled currently in the Texas Health Steps program.

In the survey of second graders, Hispanic children comprised 67% of the sample, Black children 19.6%, Anglo children 7.5%, Asian children 3.3% and children of other race/ethnicity or multiracial/multiethnic 2.6%. Hispanic children were the largest overall group in the survey and the largest enrolled racial/ethnic group at any level of family income. Higher proportions of Black and Asian children were enrolled than not enrolled at the lowest level of family income (<$16,000 p.a.). Only 34.5% of all children studied were enrolled Texas Health Steps (EPSDT, Medicaid) program at the time of the survey, with 63.5% overall having ever been enrolled in Medicaid.

Household size differed between enrolled and non-enrolled children – with more children from larger households being enrolled in Texas Health Steps (EPSDT, Medicaid) program. However children from single adult households were more likely to be enrolled than not enrolled (39.5% vs. 23.2%, $p<0.05$). Differences in this summary are reported at this level of probability.

Findings from Social Survey Questionnaires

Overall, parents and guardians perceived their child's general health to be better than their oral health. More parents reported their child's oral health as poor or fair (45.0%) compared to those considering their child's general health as poor or fair (15.0%). Those with children enrolled in the Texas Health Steps program, versus not enrolled, were more likely to perceive their child's general health (25.2% vs. 16.0%) and oral health (12.0% vs. 2.6%) as excellent. Those with non-enrolled children were more likely to perceive the oral health of their child as fair or poor (49.4% vs. 36.4%).

Children enrolled were almost twice as likely to have had a dental visit in the past year (68.8% vs. 36.2%). Also, they were more likely to have last attended for a check-up or follow-up reason (80.8% vs. 51.2%). Children not enrolled were more likely to have last attended for pain or a problem (17.1% vs. 10.2%), and never to have had a dental visit (28.0% vs. 6.9%).

Nearly forty percent (39.5%) of all second grade schoolchildren did not have a usual source of dental care. Children enrolled were more likely to have a usual place of dental care (79.4% vs. 50.8%), and this was twice as likely to have been in a public facility (30.0% vs. 15.3%). Almost half (48.0%) of those enrolled attended a private dentist, versus 34.0% of those children not enrolled in the Texas Health Steps program.

Children not enrolled cited cost (45.3%), no perceived reason to go (27.8%), and not having a dentist (11.3%) as major reasons for non attendance. Children enrolled cited no reason to go (23.4%), not having a dentist (17.0%), unable to get to the office or clinic (12.8%), other priorities (7.4%) and other reasons (13.8%) for non attendance. For seventeen percent of children enrolled cost was still considered a barrier to having a dental visit in the past year. Factors for not being able

to reach an office or clinic were identified in the questionnaire as, it was too far away, no transportation, and no appointment available.

Children enrolled were less likely during the past year to need dental care and be unable to get it (17.6% vs. 29.0%). For the children not enrolled in this situation, cost was again the major barrier (71.7%) plus not having a dentist (10.5%). For the enrolled children in need of dental care but unable to get it, all the previously cited barriers were considered barriers to attendance, including cost and inability to get to the dental provider.

Enrollees were more likely to have no difficulty with acceptance of coverage or payment for dental care over the past year (78.6% vs. 49.7%). However, many more of the children not enrolled had not tried to access dental care (37.5% vs. 8.6%).

Almost half (45%) of non-enrollees pay for dental care from the family budget, 29.2% did not know how they would pay for dental care, and 24.4% of them had private dental insurance. This is contrasted with 37.7% of these non-enrollees having private general health insurance coverage.

Findings from Clinical Dental Inspections

Children in Grade 2 typically have had a fully erupted primary dentition for about five years, and their first permanent molars, the most decay prone permanent tooth, has been present for about two years. Their dental caries status will be reported for primary, permanent and the combined mixed dentition.

There was no significant difference in the prevalence of dental caries (63% of Grade 2 children) in primary teeth by Medicaid enrollment status. For permanent teeth this prevalence was higher in children enrolled versus children not enrolled (22.3% vs. 12.3%). However this comparison suffers from the fact that those who are enrolled in the Texas Health Steps (EPSDT, Medicaid) program represent families of somewhat lower socioeconomic status (SES) than those not enrolled in the program. The latter group includes some families with relatively higher annual income who would not be economically qualified for Medicaid. Thus the group of children not enrolled overall is of a somewhat higher SES and can be expected to have lower dental caries scores, as was found in the survey.

Why this difference characterizes of dental caries of permanent and not primary teeth is unclear. It is consistent with the prevalence and tooth surface distribution of dental caries in primary teeth not having changed as dramatically as for permanent teeth, during the caries decline of the past 30 years.

Children enrolled were more likely to have filled primary teeth (48.4% vs. 34.7%) and children not enrolled had more decayed (untreated) primary teeth (30.4% vs. 45.2%). Also, enrollees were more likely to have tooth decay treated in permanent teeth (15.2% vs. 3.9% of children with restorations).

Only 16% of students in Grade 2 had at least one preventive dental sealant on an occlusal surface of a permanent molar (The Healthy People 2000 national goal is 50%). Enrollees were more likely to have preventive dental sealants; for permanent teeth 25.4% vs. 10.1%, for primary teeth 6.8% vs. 3.5%, and for both dentitions 28.0% vs. 12.3% of children.

As expected the distribution of dental caries in the population studied is very skewed, with one third of children having 80% of the total decay experience (in the mixed dentition). The same picture of treated and untreated dental caries is observed if caries indices are considered, rather than the percent of children affected in the survey. Enrolled children have on average more filled teeth, while those children not enrolled had more decayed teeth.

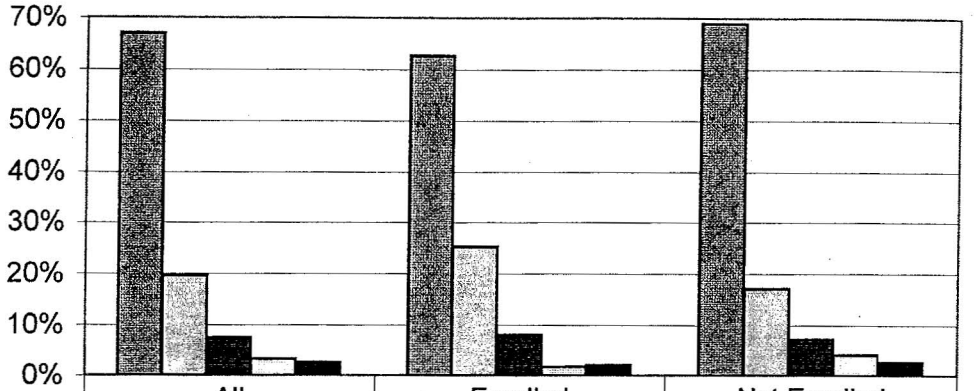
Dental caries has been experienced by two thirds (65.9%) of these 2nd grade children and largely in primary teeth Enrollment in Texas Health Steps is associated with an enhanced treatment rate. Nearly half (48.6%) of enrolled children showed complete treatment for dental caries of the mixed dentition (primary and permanent teeth) versus 25.8% of children not enrolled in the program.

Referral for non-urgent dental care was more often indicated for children not enrolled (42.5% vs. 30.6%). This differed by enrollment status was shown for restorative care (fillings), tooth extraction, and orthodontic needs as being higher in non-enrollees

Despite the significant difference Texas Health Steps enrollment makes to dental treatment, early professional intervention and periodicity of dental visits are not occurring to the extent necessary to decrease the burden of dental caries in second graders primary and permanent teeth through clinical preventive services and parental guidance.

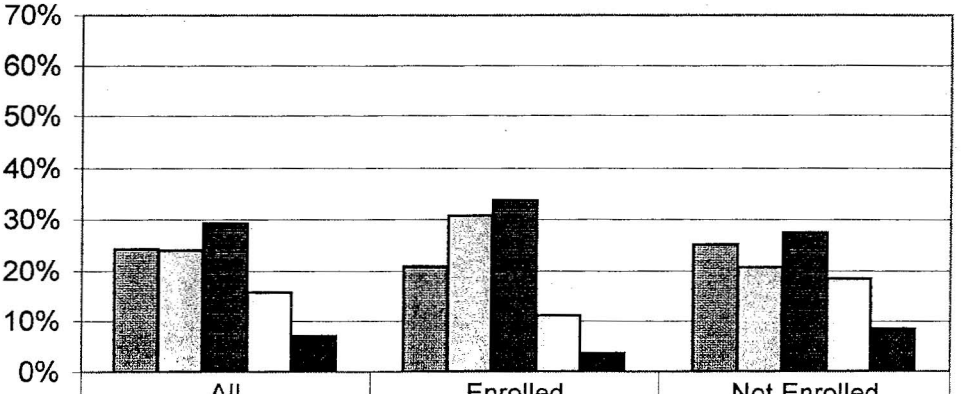
Only half of children from families with annual incomes less than $16,000 were enrolled in Texas Health Steps (EPSDT, Medicaid) program. Of all such enrollees, 68% had a dental visit in the past year, versus 30% of non enrollees. Thus the overall proportion of financially qualified children in Grade 2 who are both enrolled and receive annual Medicaid dental services is only a third (34%).

Figure 3.
Percentage of Children by
Race/Ethnicity and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Hispanic*	67.0%	62.6%	69.0%
Black*	19.6%	25.3%	17.1%
Anglo	7.5%	8.2%	7.3%
Asian	3.3%	1.8%	4.1%
Other or Multiracial	2.6%	2.1%	2.6%

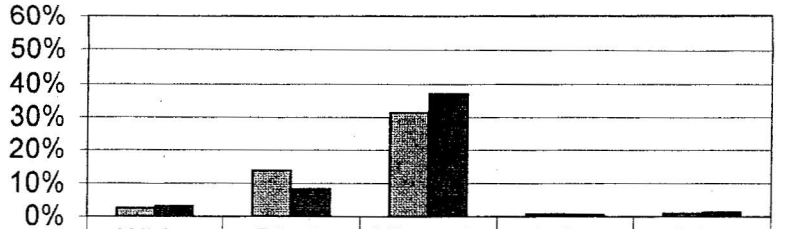
Figure 4.
Percentage of Children by Education Level of their
Parent/Guardian and Child's Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Elem. School	24.1%	20.8%	25.0%
Some High School*	23.9%	30.7%	20.7%
High School Grad.*	29.2%	33.7%	27.4%
Some College*	15.7%	11.2%	18.4%
College Grad.*	7.0%	3.6%	8.5%

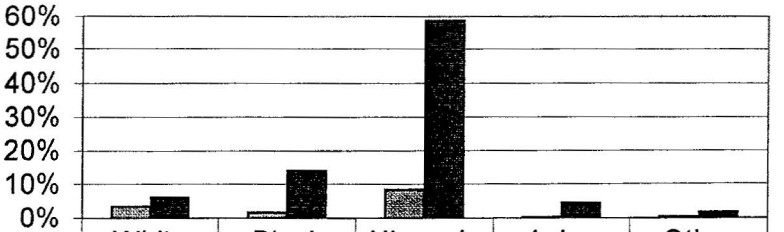
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 7.
Percentage of Children in Families with Income
< $16,000 by Race/Ethnicity and Medicaid Enrollment Status
(2nd Grade)



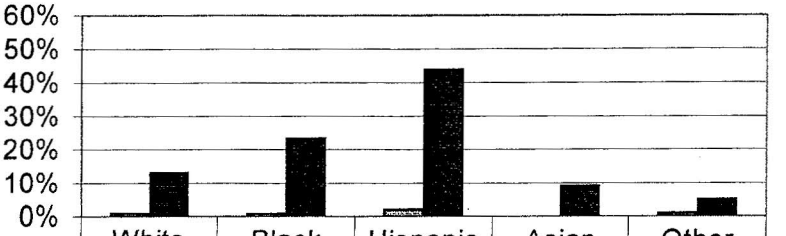
	White	Black	Hispanic	Asian	Other
Enrolled	2.4%	13.8%	31.5%	0.8%	1.0%
Not Enrolled	3.1%	8.5%	37.1%	0.5%	1.3%

Figure 8.
Percentage of Children in Families with Income $16,000 -
$30,000 by Race/Ethnicity and Medicaid Enrollment Status
(2nd Grade)



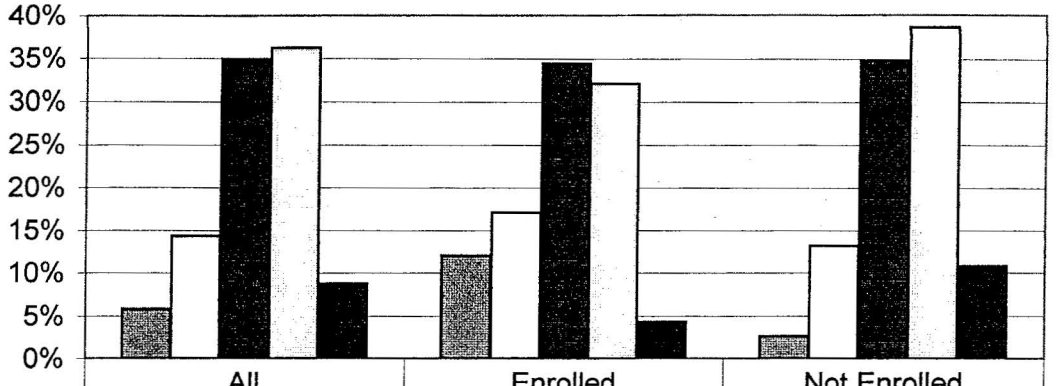
	White	Black	Hispanic	Asian	Other
Enrolled	3.6%	1.6%	8.5%	0.3%	0.3%
Not Enrolled	6.2%	14.1%	58.7%	4.6%	2.0%

Figure 9.
Percentage of Children in Families with Income
> $30,000 by Race/Ethnicity and Medicaid Enrollment Status
(2nd Grade)



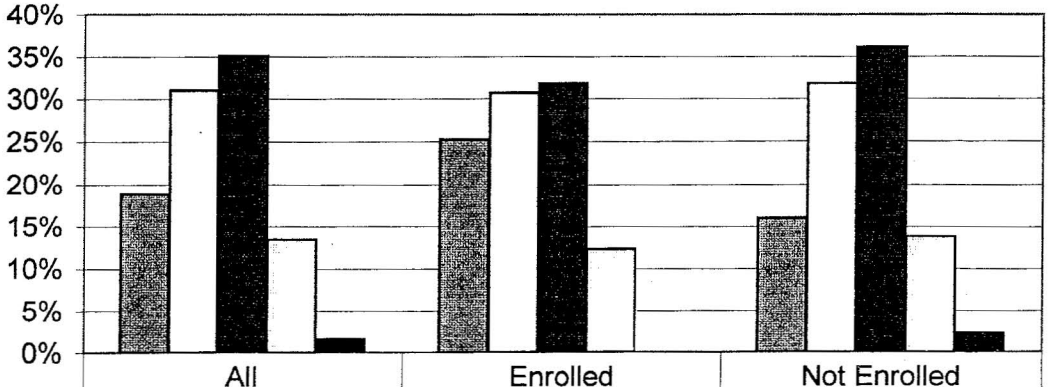
	White	Black	Hispanic	Asian	Other
Enrolled	1.0%	1.0%	2.0%	0.0%	1.0%
Not Enrolled	13.3%	23.5%	43.9%	9.2%	5.1%

Figure 14.
Percentage of Children by Perceived
Oral Health and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Excellent*	5.8%	12.0%	2.6%
Very Good	14.3%	17.1%	13.2%
Good	34.9%	34.5%	34.8%
Fair*	36.3%	32.1%	38.6%
Poor*	8.7%	4.3%	10.8%

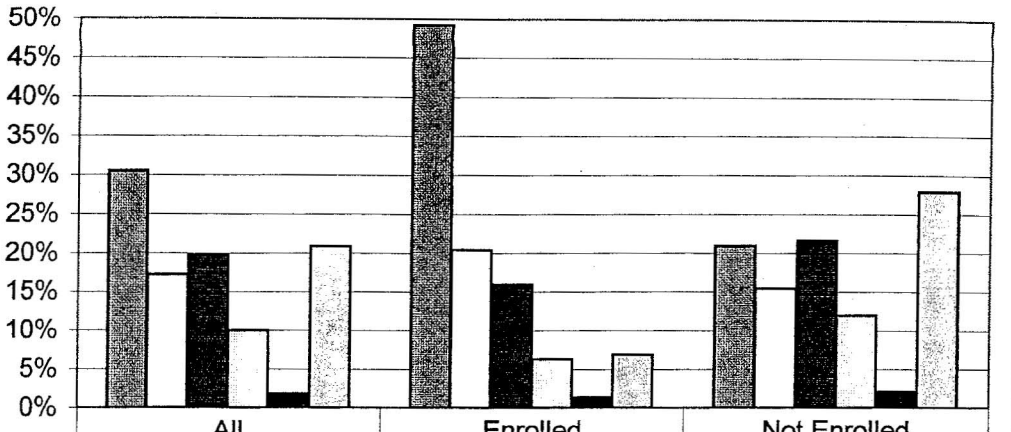
Figure 15.
Percentage of Children by Perceived
General Health and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Excellent*	18.9%	25.2%	16.0%
Very Good	31.0%	30.7%	31.8%
Good	35.1%	31.8%	36.1%
Fair	13.4%	12.3%	13.8%
Poor	1.6%	0.0%	2.3%

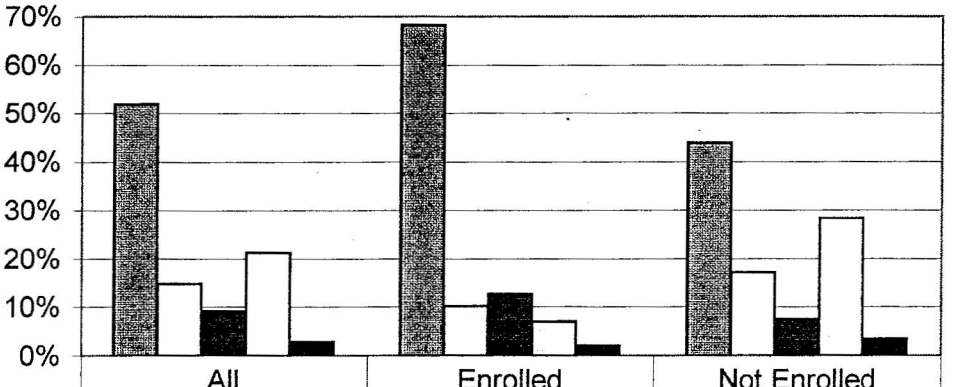
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 16. Percentage of Children by Last Dental Visit and Medicaid Enrollment Status (2nd Grade)



	All	Enrolled	Not Enrolled
Past 6 months*	30.5%	49.2%	21.0%
6-12 months*	17.2%	20.4%	15.4%
1-2 years*	19.7%	15.9%	21.6%
2-5 years*	10.0%	6.3%	12.0%
5 or more years	1.8%	1.3%	2.1%
Never*	20.9%	6.9%	28.0%

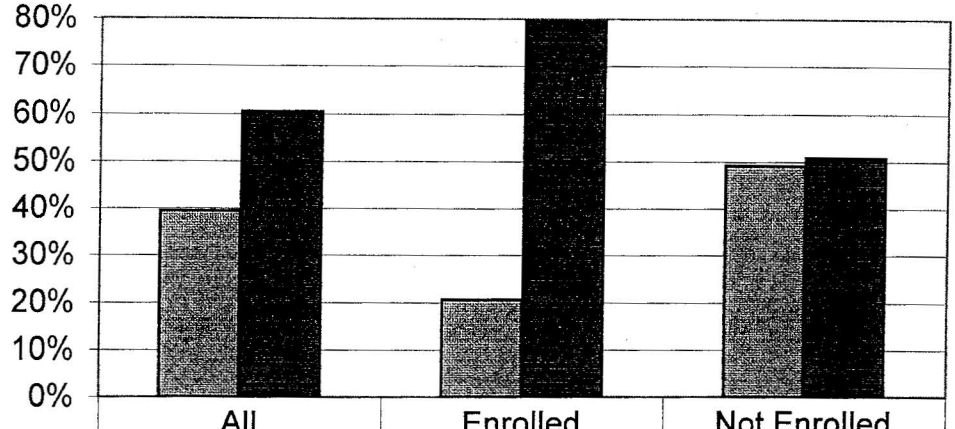
Figure 17.
Percentage of Children by Reason for Last Dental Visit and Medicaid Enrollment Status (2nd Grade)



	All	Enrolled	Not Enrolled
Check-up*	51.9%	68.2%	43.7%
Pain*	14.7%	10.2%	17.1%
Follow-up*	9.2%	12.6%	7.5%
No Visit*	21.3%	7.0%	28.3%
Inconsistent Resp.	2.9%	2.1%	3.4%

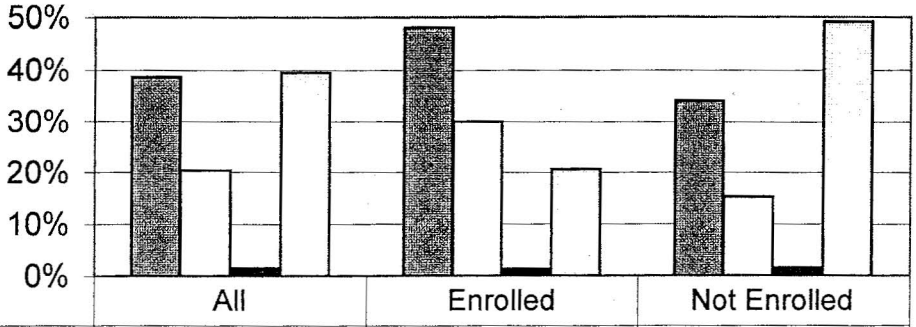
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 18.
Percentage of Children by Usual Place for
Dental Care and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
No Usual Place*	39.5%	20.6%	49.2%
Has Usual Place*	60.5%	79.4%	50.8%

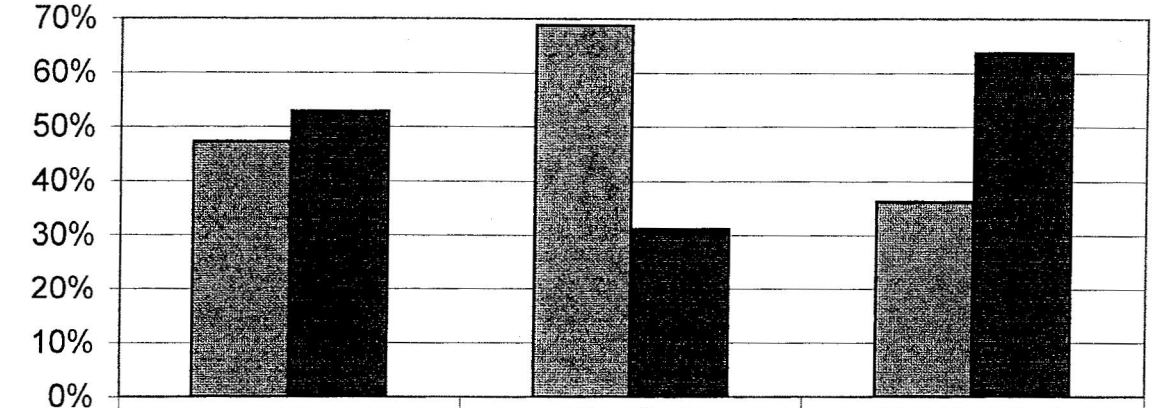
Figure 19.
Percentage of Children by Usual Site for
Dental Care and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Private Dental Office*	38.6%	48.0%	34.0%
Public Dental Clinic*	20.4%	30.0%	15.3%
Emergency Room or Other Site	1.5%	1.3%	1.6%
No Usual Place*	39.5%	20.6%	49.2%

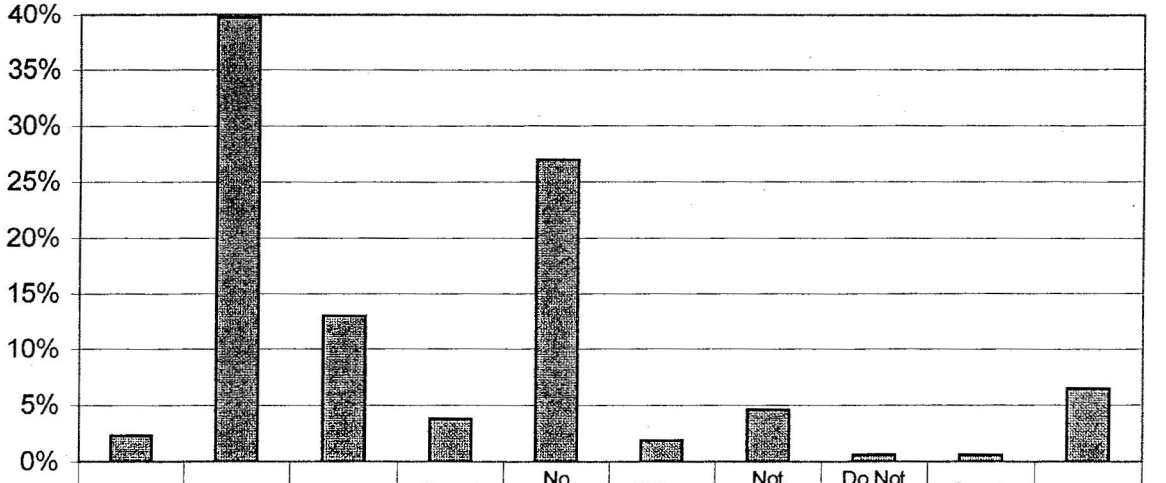
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 20.
Percentage of Children by Dental Visit
Past Year and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Yes*	47.2%	68.8%	36.2%
No*	52.8%	31.2%	63.8%

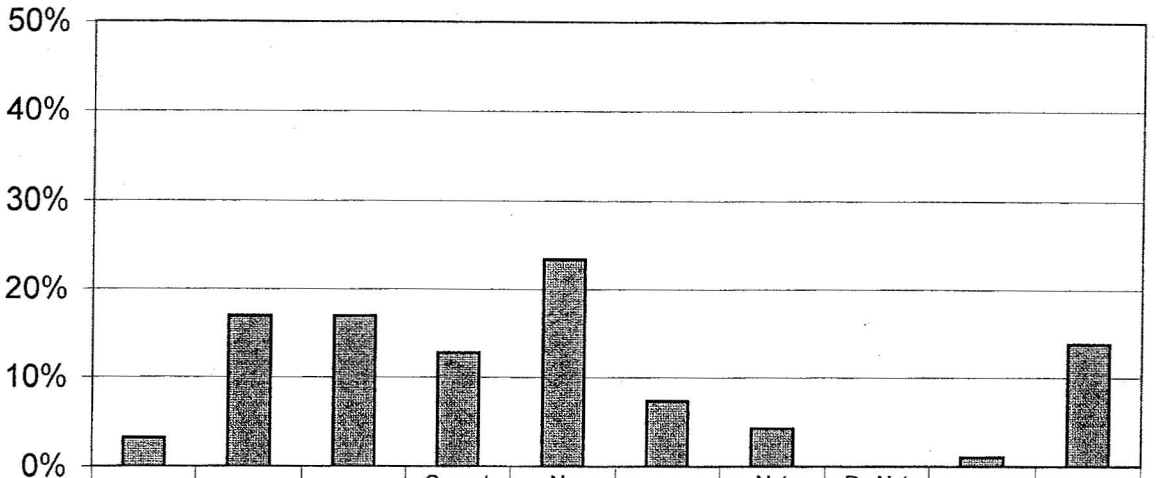
Figure 21.
Percentage of Children by Reason for No Dental Visit Last Year
(All Children--2nd Grade)



	Fear	Cost	No Dentist	Cannot Get There	No Reason To Go	Other Priorities	Not Thought of It	Do Not Trust Dent.	Speak Diff. Lang.	Other
All	2.3%	39.8%	13.0%	3.8%	27.0%	1.9%	4.6%	0.6%	0.6%	6.5%

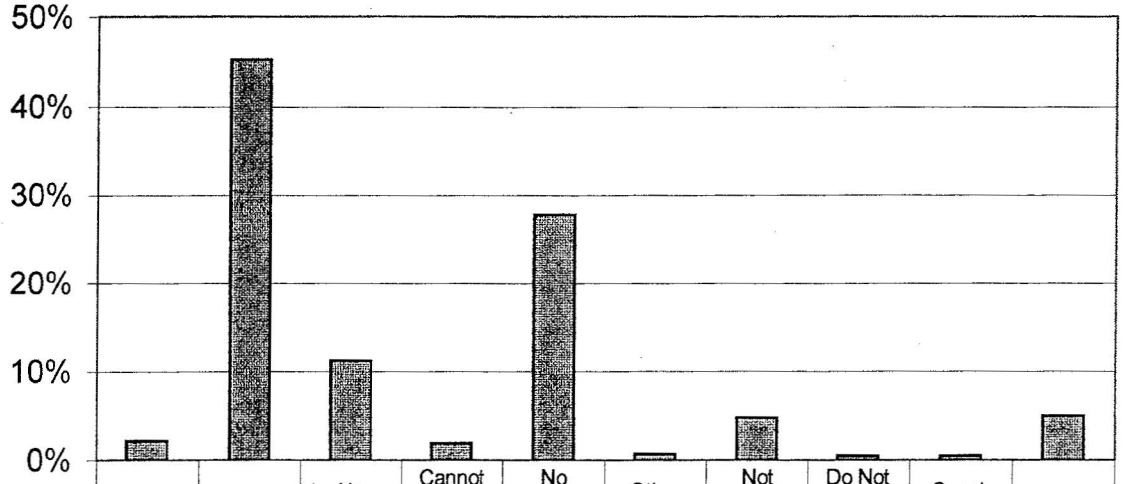
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 22.
Percentage of Children by Reason for No Dental Visit Last Year
(Children Enrolled in Medicaid--2nd Grade)



	Fear	Cost*	No Dentist	Cannot Get There*	No Reason To Go	Other Priorities	Not Thought of It	Do Not Trust Dent.	Speak Diff. Lang.	Other*
Enrolled	3.2%	17.0%	17.0%	12.8%	23.4%	7.4%	4.3%	0.0%	1.1%	13.8%

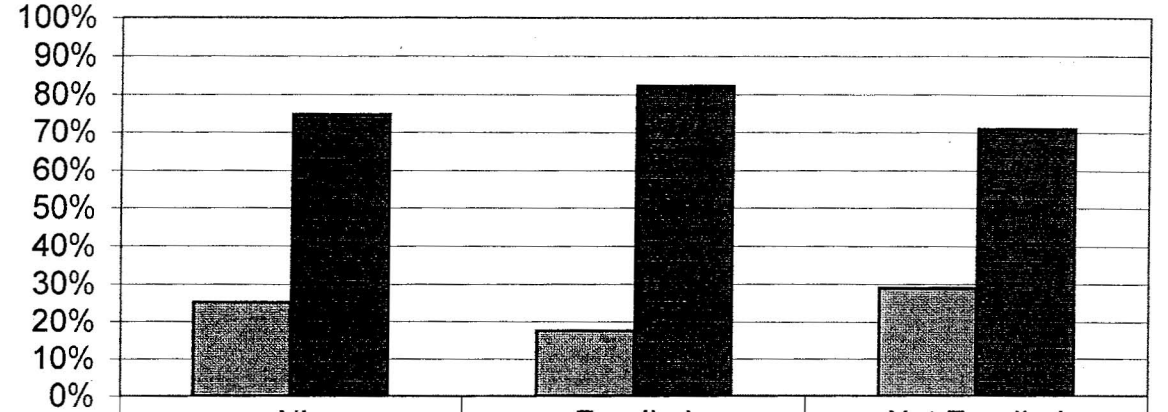
Figure 23.
Percentage of Children by Reason for No Dental Visit Last Year
(Children Not Enrolled in Medicaid--2nd Grade)



	Fear	Cost*	No Dentist	Cannot Get There*	No Reason To Go	Other Priorities	Not Thought of It	Do Not Trust Dent.	Speak Diff. Lang.	Other*
Not Enrolled	2.2%	45.3%	11.3%	1.9%	27.8%	0.7%	4.8%	0.5%	0.5%	5.0%

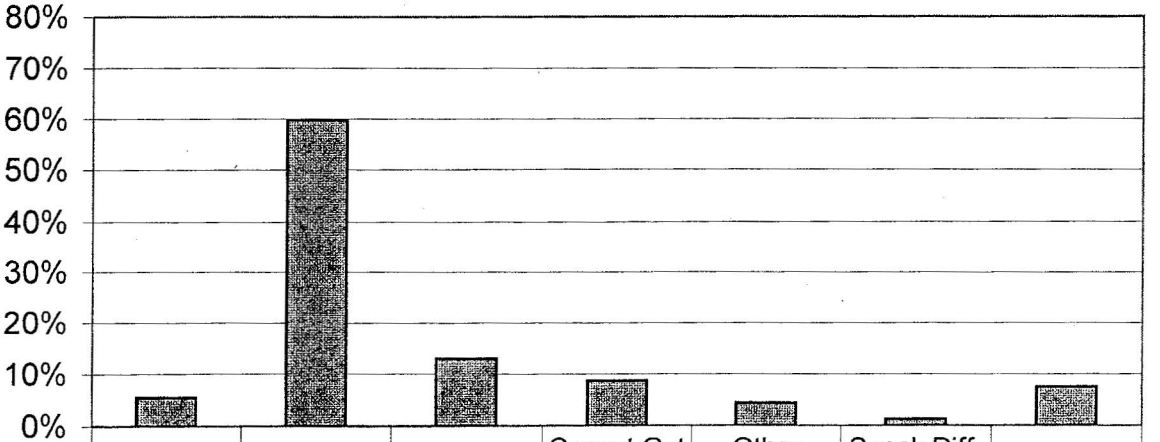
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 24.
Percentage of Children by Need for Dental Care But Could Not Get It in Past Year and Medicaid Enrollment Status (2nd Grade)



	All	Enrolled	Not Enrolled
Yes*	25.3%	17.6%	29.0%
No*	74.7%	82.4%	71.0%

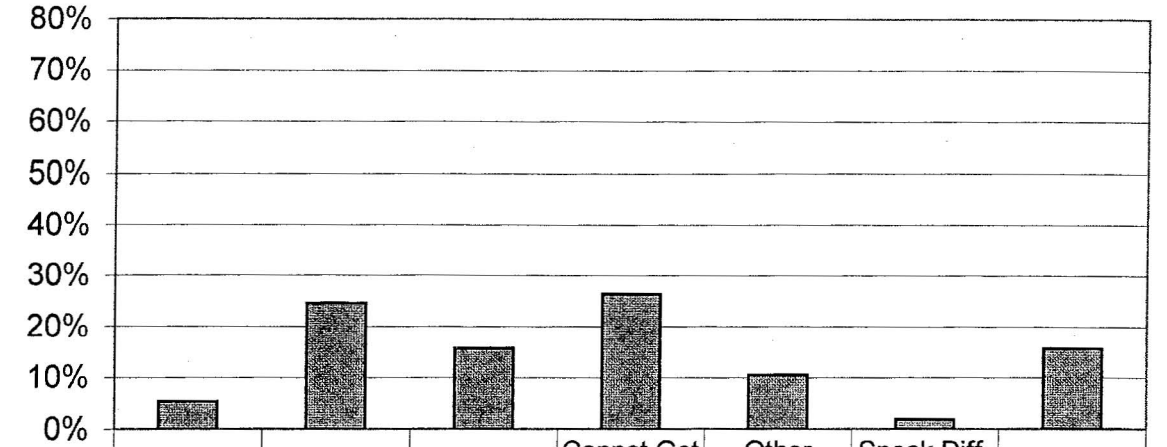
Figure 25.
Percentage of Children by Reason for Not Getting Needed Dental Care in Past Year (All Children--2nd Grade)



	Fear	Cost	No Dentist	Cannot Get There	Other Priorities	Speak Diff. Lang.	Other
All	5.5%	59.8%	13.0%	8.7%	4.3%	1.2%	7.5%

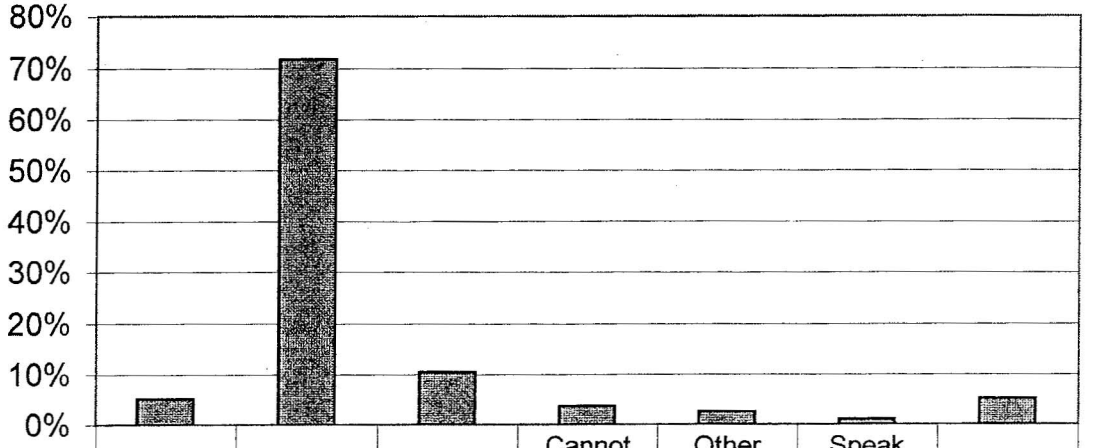
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 26.
Percentage of Children by Reason for
Not Getting Needed Dental Care in Past Year
(Children Enrolled in Medicaid--2nd Grade)



	Fear	Cost*	No Dentist	Cannot Get There*	Other Priorities*	Speak Diff. Lang.	Other*
Enrolled	5.3%	24.6%	15.8%	26.3%	10.5%	1.8%	15.8%

Figure 27.
Percentage of Children by Reason for
Not Getting Needed Dental Care in Past Year
(Children Not Enrolled in Medicaid--2nd Grade)



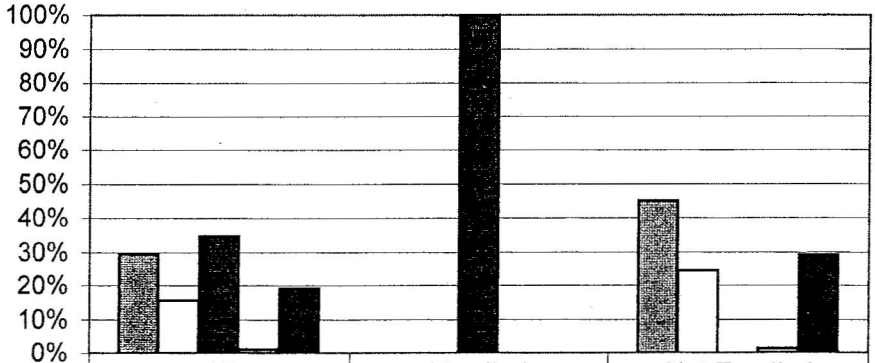
	Fear	Cost*	No Dentist	Cannot Get There*	Other Priorities*	Speak Diff. Lang.	Other*
Not Enrolled	5.2%	71.7%	10.5%	3.7%	2.6%	1.0%	5.2%

* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 28.
Percentage of Children by Difficulty with Acceptance of Coverage or Payment for Dental Care During Past Year and Medicaid Enrollment Status (2nd Grade)

	All	Enrolled	Not Enrolled
Yes	12.7%	12.8%	12.8%
No*	59.7%	78.6%	49.7%
Have Not Tried*	27.5%	8.6%	37.5%

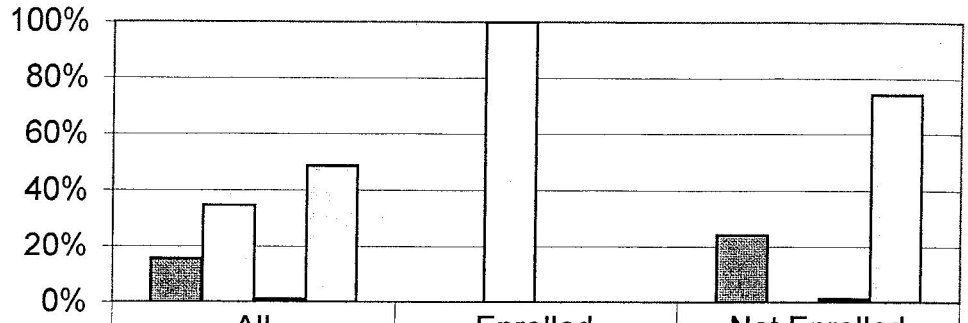
Figure 29.
Percentage of Children by How Dental Care is Paid Currently and Medicaid Enrollment Status (2nd Grade)



	All	Enrolled	Not Enrolled
Family Pays Costs	29.5%	0.0%	45.0%
Private Insurance	15.5%	0.0%	24.4%
Medicaid	34.8%	100.0%	0.0%
Other	1.1%	0.0%	1.4%
Do Not Know How It Would Be Paid	19.1%	0.0%	29.2%

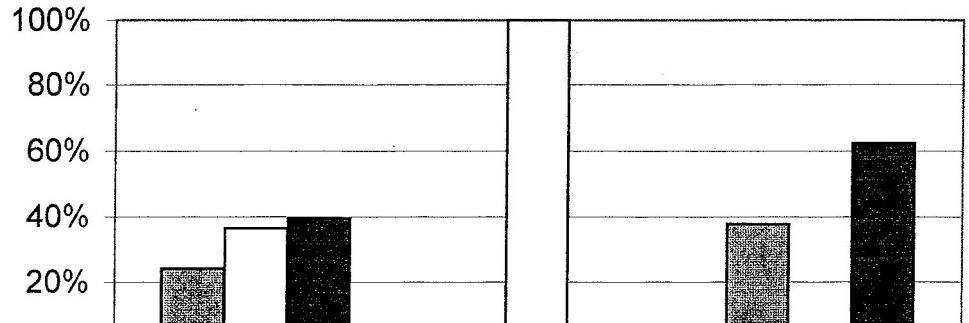
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 30.
Percentage of Children by Dental Insurance or
Dental Coverage and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Private Insurance	15.5%	0.0%	24.4%
Medicaid	34.8%	100.0%	0.0%
Other Coverage	1.1%	0.0%	1.4%
None	48.6%	0.0%	74.2%

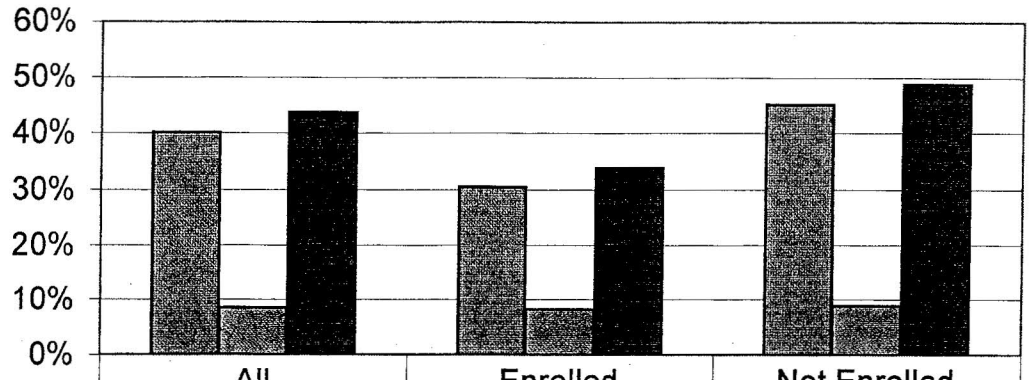
Figure 31.
Percentage of Children by Medical Insurance or
General Health Coverage and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Private Insurance	24.0%	0.0%	37.7%
Medicaid	36.4%	100.0%	0.0%
None	39.6%	0.0%	62.3%

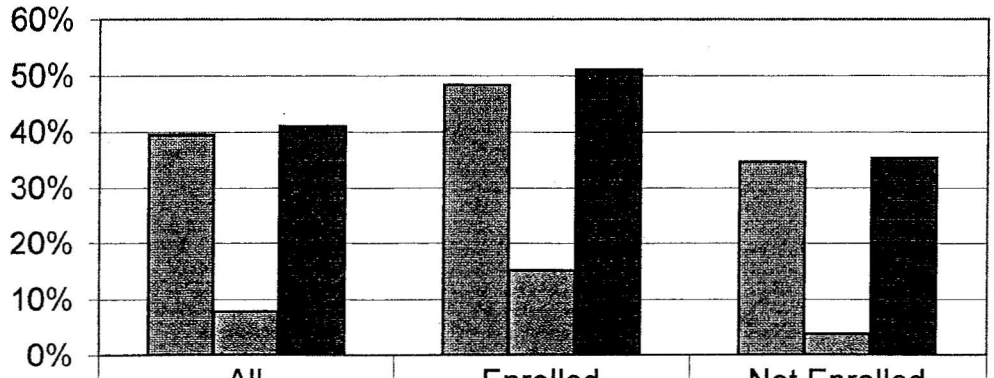
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 47.
Percentage of Children with Decayed Teeth
by Dentition and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Primary*	40.1%	30.4%	45.2%
Permanent	8.5%	8.1%	8.8%
Prim. or Perm.*	43.7%	33.8%	48.9%

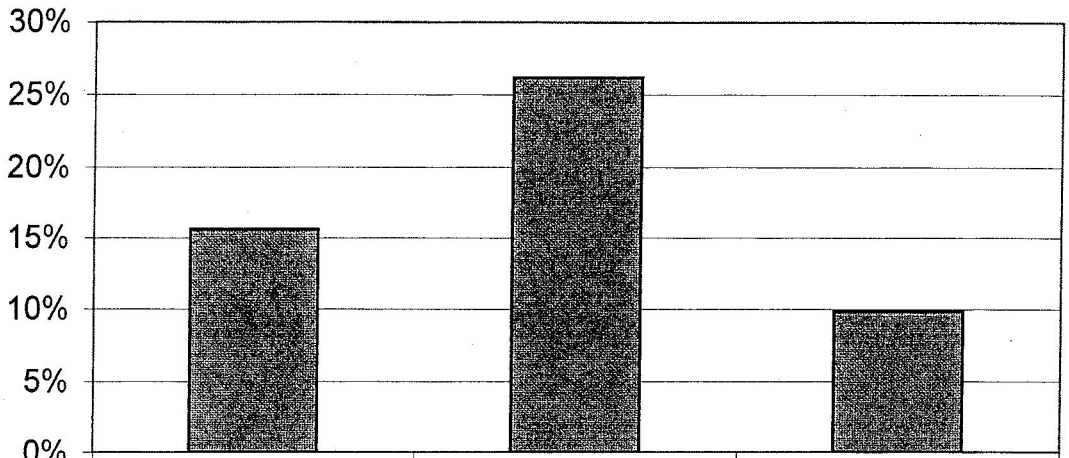
Figure 48.
Percentage of Children with Filled Teeth
by Dentition and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Primary*	39.6%	48.4%	34.7%
Permanent*	7.8%	15.2%	3.9%
Prim. or Perm.*	40.9%	51.0%	35.4%

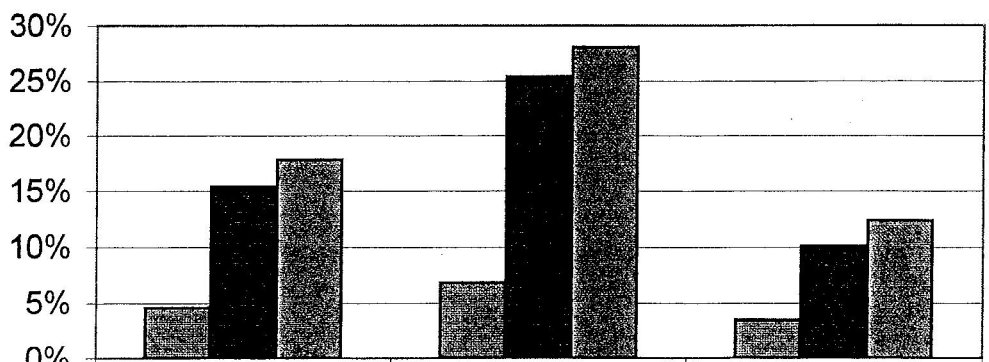
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 50. Percentage of Children who Received Protective Dental Sealant on the Occlusal (Chewing) Surfaces of Permanent Molar Teeth by Medicaid Enrollment Status (2nd Grade)



	All	Enrolled	Not Enrolled
Permanent*	15.6%	26.2%	9.9%

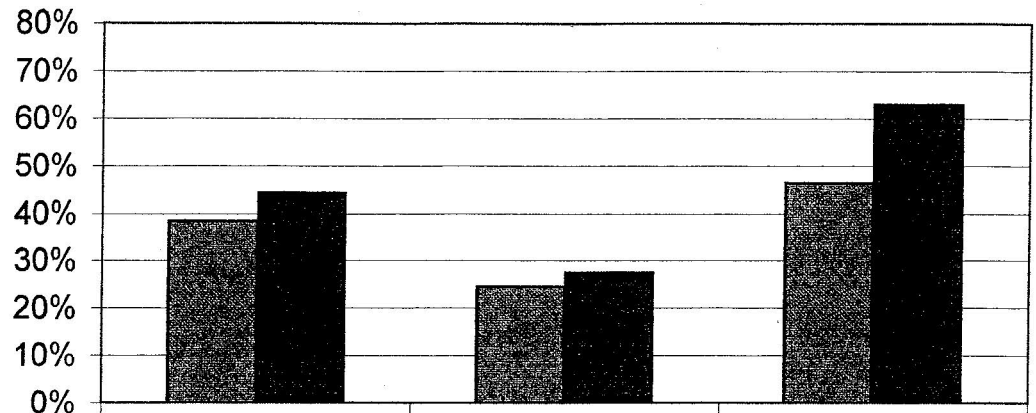
Figure 51. Percentage of Children who Received Protective Dental Sealant on Any Surface of Any Tooth by Dentition and Medicaid Enrollment Status (2nd Grade)



	All	Enrolled	Not Enrolled
Primary*	4.6%	6.8%	3.5%
Permanent*	15.4%	25.4%	10.1%
Prim. or Perm.*	17.8%	28.0%	12.3%

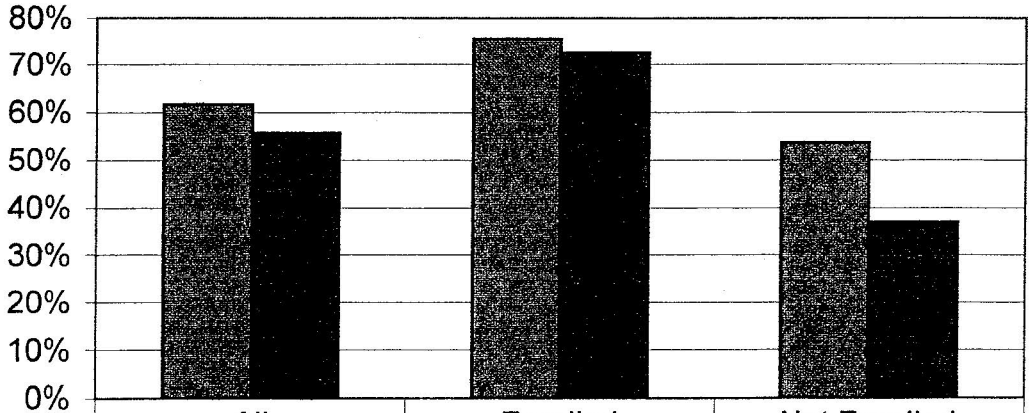
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 52.
Percent of Affected Teeth Which are Decayed
(d/dft, D/DMFT) by Dentition and Medicaid Enrollment Status
(2nd Grade)



	All	Enrolled	Not Enrolled
Primary*	38.4%	24.5%	46.4%
Permanent*	44.4%	27.5%	63.0%

Figure 53.
Percent of Affected Teeth Which are Filled
(f/dft, F/DMFT) by Dentition and Medicaid Enrollment Status
(2nd Grade)

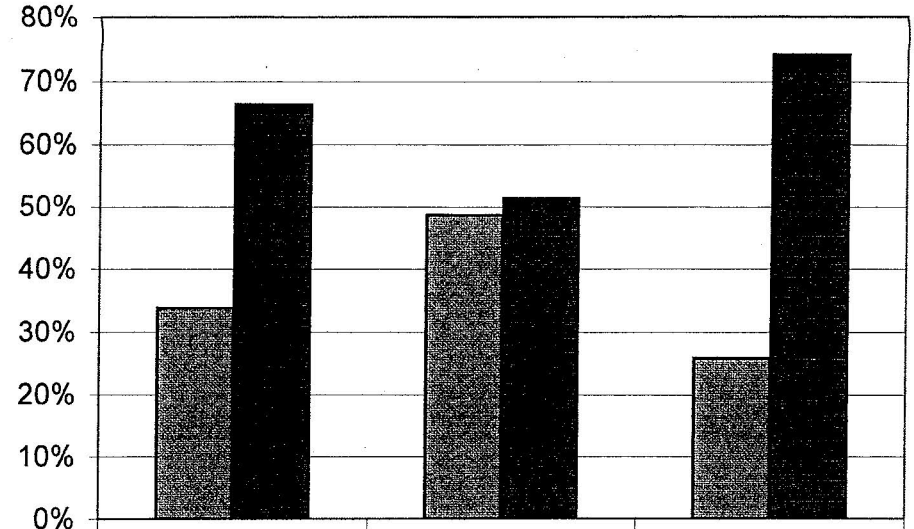


	All	Enrolled	Not Enrolled
Primary*	61.6%	75.5%	53.6%
Permanent*	55.6%	72.5%	37.0%

* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Children 2 Grade only.

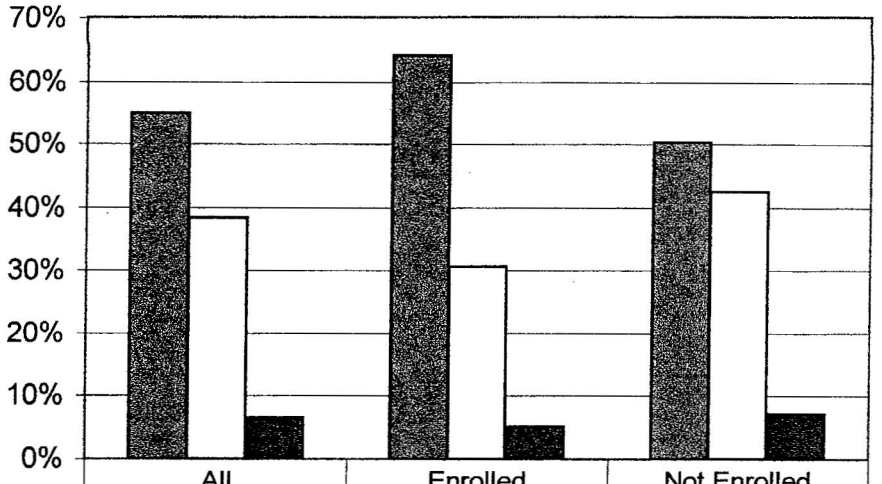
Figure 56. Percentage of Children with Completeness/Incompleteness of Treatment for Dental Caries on Primary and Permanent *Teeth by Medicaid Enrollment Status (2nd Grade)*



	All	Enrolled	Not Enrolled
Complete Treatment*	33.7%	48.6%	25.8%
Incomplete Treatment*	66.3%	51.4%	74.2%

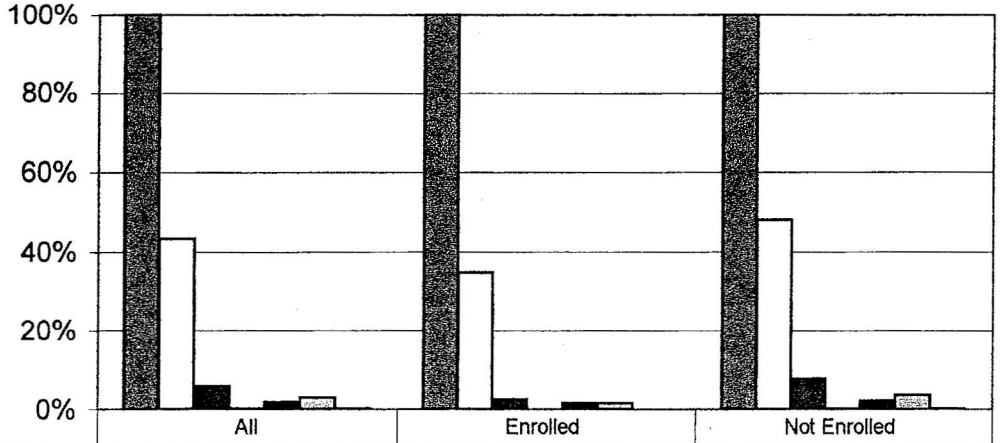
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 57.
Percentage of Children Needing Referral for Any Dental Care by Urgency Level and Medicaid Enrollment Status (2nd Grade)



	All	Enrolled	Not Enrolled
No Treatment*	55.0%	64.1%	50.3%
Non-Urgent Care Needed*	38.4%	30.6%	42.5%
Urgent Care Needed	6.6%	5.2%	7.2%

Figure 58. Percentage of Children Needing Referral for Any Dental Care by Type of Care and Medicaid Enrollment Status (2nd Grade)



	All	Enrolled	Not Enrolled
Preventive	100.0%	100.0%	100.0%
Restorative*	43.5%	34.8%	48.1%
Extraction*	6.0%	2.6%	7.9%
Prosthodontic	0.1%	0.0%	0.1%
Endodontic	2.0%	1.6%	2.2%
Orthodontic*	3.0%	1.6%	3.7%
Periodontic Advanced	0.1%	0.0%	0.1%

* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Key Findings – 8th Grade Schoolchildren

Sociodemographic Composition

The mean age of the 802 participating children in 8th grade was 13.9 years, with 55.1% female and 44.9% male. Hispanic children comprised 64.4% of children in the survey, Black children 23.1%, Anglo children 6.7%, Asian children 4.5% and children of other race/ethnicity or multiracial/multiethnic 1.2%. Hispanic children were the largest racial/ethnic group enrolled in the Texas Health Steps (EPSDT, Medicaid) program at any level of family income. Only 27.7% of all eighth grade students in the survey were enrolled in Medicaid at the time of the study, with 47.1% having ever been enrolled in Medicaid.

More than half (55.8%) of the eighth grade students were from families with an income of less than $16,000 per year. Of these children 42.6% (23.9% overall) were enrolled in Texas Health Steps, and almost all can be presumed to be financially qualified for the program. More than a third (33.8%) were from families with an annual income of $16-30,000 and 11.8% of these (4.0% overall) were enrolled in Medicaid. Another 10.3% were from families with an income greater than $30,000 per year, and 2.6% (0.3% overall) were enrolled in Texas Health Steps.

Medicaid enrollment rates of these adolescents lags somewhat compared with children in Grade 2. This is not surprising considering the incremental increases in eligibility of adolescents under OBRA 1989 and the very recent Texas Medicaid expansion to age 19 under Phase 1 of Children's Health Insurance Program (CHIP).

There was no systematic effect on Medicaid enrollment of household size or gender, though children from single adult households were more often enrolled in Medicaid than not (43.3% vs. 20.5%, $p<0.05$). Differences in this summary are reported at this level of probability.

Findings from Social Survey Questionnaires

Parents and guardians of children enrolled in Medicaid were more likely to perceive their child's general health as excellent (23.7% vs. 16.5%) and their oral health as excellent or very good (33.2% vs. 20.1%). Those with children not enrolled were more likely to perceive their general health as fair (15.6% vs. 8.4%), and their oral health as fair (39.0% vs. 25.7%).

Children enrolled in Texas Health Steps were twice as likely to have had a dental visit in the past year (64.5% vs. 32.2%). Also, they were more likely to have attended a dentist for a check-up or follow-up reason (83.1% vs. 62.2%). Children not enrolled were more likely to have last attended for pain or a problem (17.1% vs. 9.4%) and to never have had a dental visit (19.7% vs. 6.9%).

Those children enrolled were more likely to have a usual place of dental care than those children not enrolled (81.6% vs. 57.1%). This was more likely to have been a community health center (38.7% vs. 21.5%) or a private dentist (41.5% vs. 33.85) for children enrolled versus those not enrolled in Texas Health Steps.

Children not enrolled in Medicaid cited cost (47.3%), no perceived reason to go (27.6%), and not having a dentist (8.0%) as major reasons for not having an annual dental visit. Children enrolled cited no reason to go (31.3%), cost (15.6%), inability to get to the dental office or clinic (15.6%), not having a dentist (14.1%), and other reason (7.8%) for non attendance. It is notable that cost was perceived as a barrier to dental care by sixteen percent of children enrolled currently in Texas Health Steps.

Children enrolled were less likely to be in need of dental care and unable to get it during the past year (12.5% vs. 26.2%). For those children not enrolled in this situation cost was by far the major barrier (77.8%), plus not having a dentist (5.2%). For enrolled children in need of dental care but unable to get it, all the previously cited barriers to attendance were reported, including cost (34.6%), not having a dentist (23.1%), inability to get to the office or clinic (15.4%) and other reasons (23.1%).

Enrollees were more likely to have had no difficulty with acceptance of coverage or payment for dental care over the past year (75.7% vs. 48.2%). However, many more children not enrolled compared to those enrolled had not tried to access dental care (38.0% vs. 12.4%). More than two-fifths (43.5%) of the children not enrolled in Texas Health Steps pay for dental care from the family budget, 29.3% did not know how they would pay for dental care, and 24.6% of them had private dental insurance. This is contrasted with 38.5% of these children who are not enrolled in Medicaid having private general health insurance.

Findings from Clinical Dental Inspections

Children in 8th grade typically have a fully erupted permanent dentition, excluding the third molars. The longest erupted teeth, first permanent molars, will have been present in the mouth for about eight years.

Dental caries prevalence was higher in children enrolled in Medicaid versus children not enrolled (62.2% vs. 49.0%). This is however an unbalanced comparison since the group of children not enrolled includes some children of somewhat higher socioeconomic status who would not be financially qualified for Medicaid. Thus the children not enrolled can be expected to have somewhat less dental caries, as was found in the survey.

Children enrolled in Texas Health Steps were more likely to have filled teeth (56.2% vs. 33.3%) and children not enrolled had more decayed (untreated) teeth (15.2% vs. 24.3%).

Adolescents enrolled in Medicaid were more likely to have preventive dental sealants on molar teeth (36.4% vs. 20.1%); than those not enrolled in Medicaid currently. The national goal for protective dental sealants set in Healthy People 2000 is 50% for adolescents.

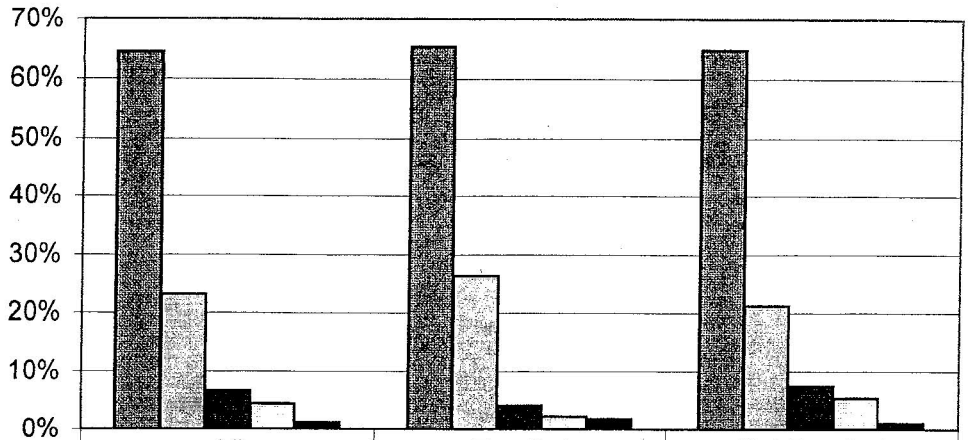
As expected the distribution of dental caries in the population surveyed is skewed, with 28% of children having 80% of the dental caries. The same picture of treated and untreated dental caries is observed if caries indices are considered, rather than the percent of children affected by dental caries. Children enrolled had on average more filled teeth (2.3 vs. 1.1) and children not enrolled had more decayed teeth (0.26 vs. 0.42), despite the lower burden of dental caries in the latter group.

Dental caries has been experienced by 53% of these schoolchildren in 8th grade. Enrollment in the Texas Health Steps (EPSDT, Medicaid) is associated with an enhanced rate of treatment completion, 75.6% of those enrolled versus 50.4% of those not enrolled in the program.

Referral for non-urgent dental care was more often indicated for children not enrolled compared to children enrolled (27.0% vs. 18.4%). This difference existed by enrollment status for restorative care as more children not enrolled needed restorations.

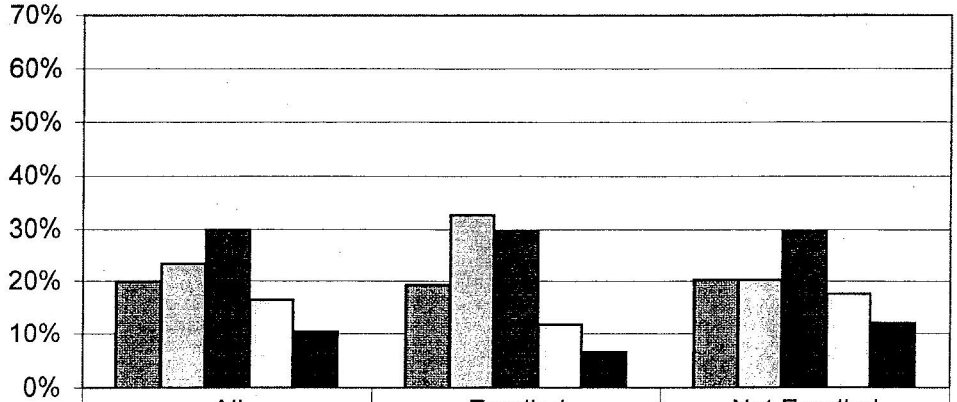
Forty-three percent of eighth grade children from families with an income less than $16,000 per year were enrolled in Medicaid. Of all such enrollees, 63% had a dental visit in the past year, versus 26% of students not enrolled in Medicaid. Thus the overall proportion of these financially qualified children in 8th grade who were both enrolled and received annual Medicaid dental services is just over a quarter (27%).

Figure 3.
Percentage of Children by Race/Ethnicity and Medicaid Enrollment Status
(8th Grade)



	All	Enrolled	Not Enrolled
Hispanic	64.4%	65.3%	64.8%
Black	23.1%	26.4%	21.2%
Anglo	6.7%	4.2%	7.5%
Asian	4.5%	2.3%	5.5%
Other or Multiracial	1.2%	1.9%	1.1%

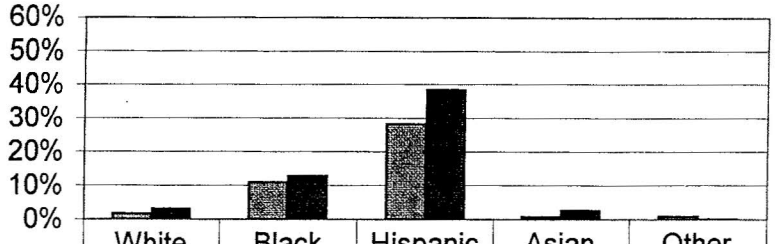
Figure 4.
Percentage of Children by Education Level of their
Parent/Guardian and Child's Medicaid Enrollment Status
(8th Grade)



	All	Enrolled	Not Enrolled
Elem. School	19.9%	19.3%	20.3%
Some High School*	23.3%	32.5%	20.3%
High School Grad.	29.9%	29.7%	29.7%
Some College*	16.5%	11.8%	17.7%
College Grad.	10.4%	6.6%	12.0%

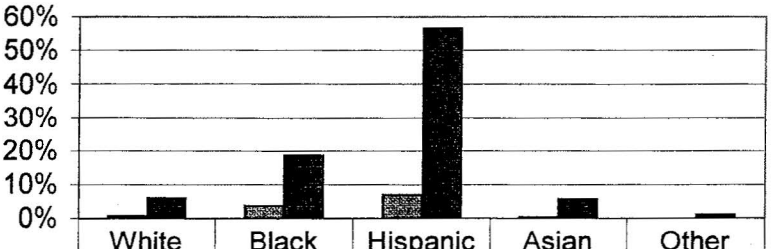
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 7.
Percentage of Children in Families with Income
< $16,000 by Race/Ethnicity and Medicaid Enrollment Status
(8th Grade)



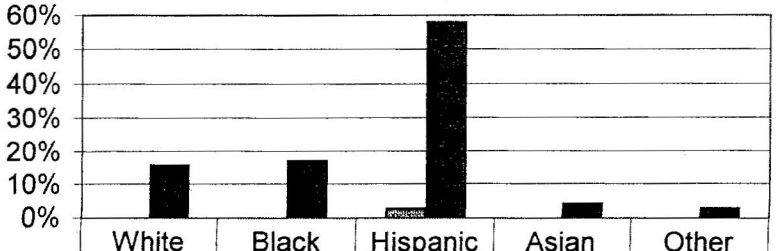
	White	Black	Hispanic	Asian	Other
Enrolled	1.7%	10.9%	28.2%	0.7%	1.0%
Not Enrolled	3.2%	12.9%	38.4%	2.7%	0.2%

Figure 8.
Percentage of Children in Families with Income $16,000 -
$30,000 by Race/Ethnicity and Medicaid Enrollment Status
(8th Grade)



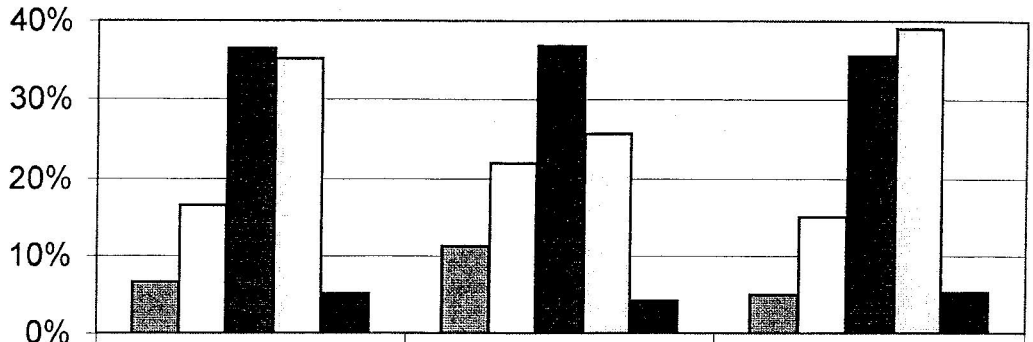
	White	Black	Hispanic	Asian	Other
Enrolled	0.8%	3.7%	6.9%	0.4%	0.0%
Not Enrolled	6.1%	18.8%	56.3%	5.7%	1.2%

Figure 9.
Percentage of Children in Families with Income
> $30,000 by Race/Ethnicity and Medicaid Enrollment Status
(8th Grade)



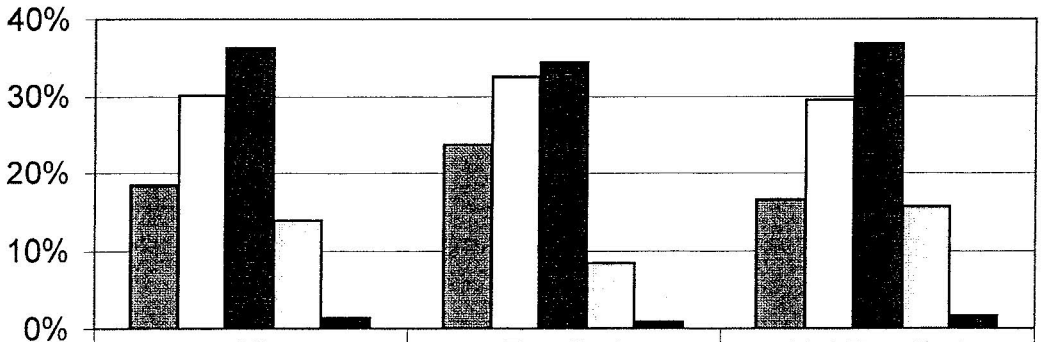
	White	Black	Hispanic	Asian	Other
Enrolled	0.0%	0.0%	2.6%	0.0%	0.0%
Not Enrolled	15.8%	17.1%	57.9%	3.9%	2.6%

Figure 14. Percentage of Children by Perceived Oral Health and Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
Excellent*	6.6%	11.2%	5.0%
Very Good*	16.6%	22.0%	15.1%
Good	36.5%	36.9%	35.6%
Fair*	35.2%	25.7%	39.0%
Poor	5.1%	4.2%	5.2%

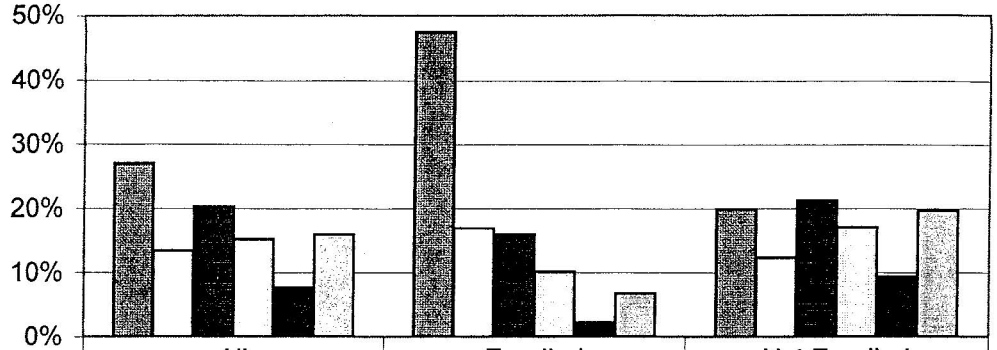
Figure 15. Percentage of Children by Perceived General Health and Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
Excellent*	18.3%	23.7%	16.5%
Very Good	30.2%	32.6%	29.5%
Good	36.3%	34.4%	36.8%
Fair*	13.8%	8.4%	15.6%
Poor	1.4%	0.9%	1.6%

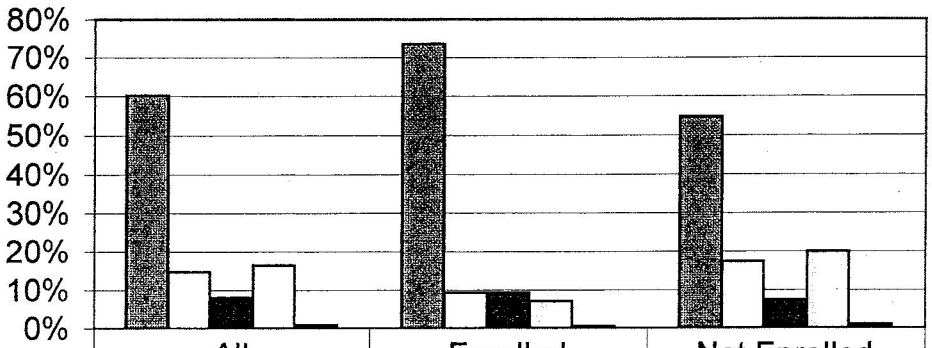
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 16. Percentage of Children by Last Dental Visit and Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
Past 6 months*	27.1%	47.5%	19.9%
6-12 months	13.5%	17.1%	12.4%
1-2 years	20.3%	16.1%	21.3%
2-5 years*	15.3%	10.1%	17.2%
5 or more years*	7.7%	2.3%	9.4%
Never*	16.1%	6.9%	19.7%

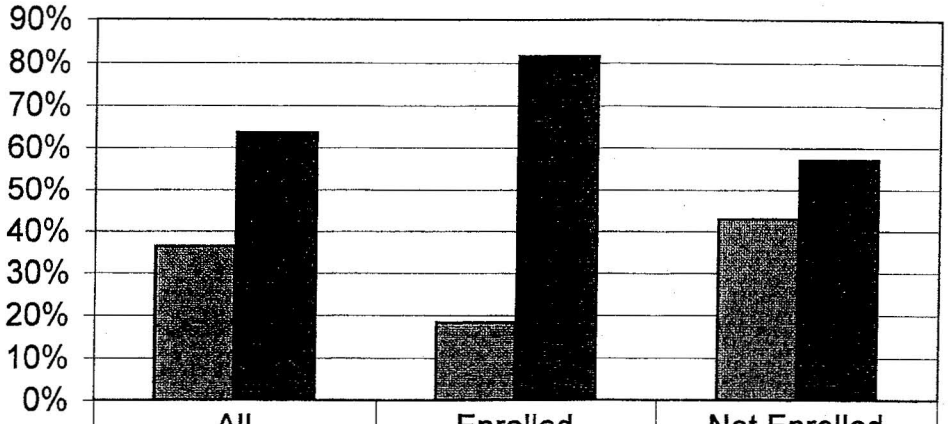
Figure 17. Percentage of Children by Reason for Last Dental Visit and Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
Check-up*	60.2%	73.7%	54.8%
Pain*	14.7%	9.4%	17.1%
Follow-up	8.0%	9.4%	7.4%
No Visit*	16.3%	7.0%	19.9%
Inconsistent Resp.	0.8%	0.5%	0.9%

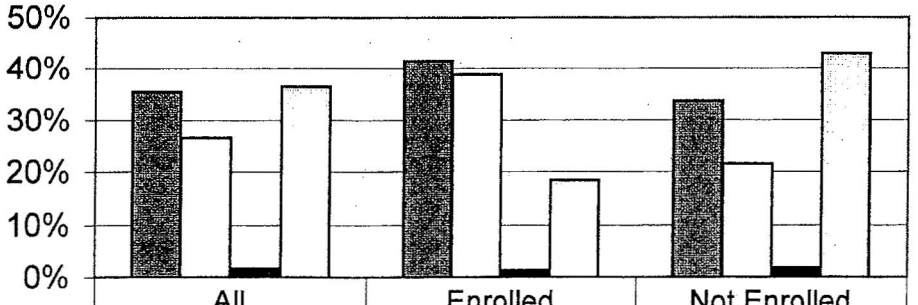
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 18.
Percentage of Children by Usual Place for
Dental Care and Medicaid Enrollment Status
(8th Grade)



	All	Enrolled	Not Enrolled
No Usual Place*	36.4%	18.4%	42.9%
Has Usual Place*	63.6%	81.6%	57.1%

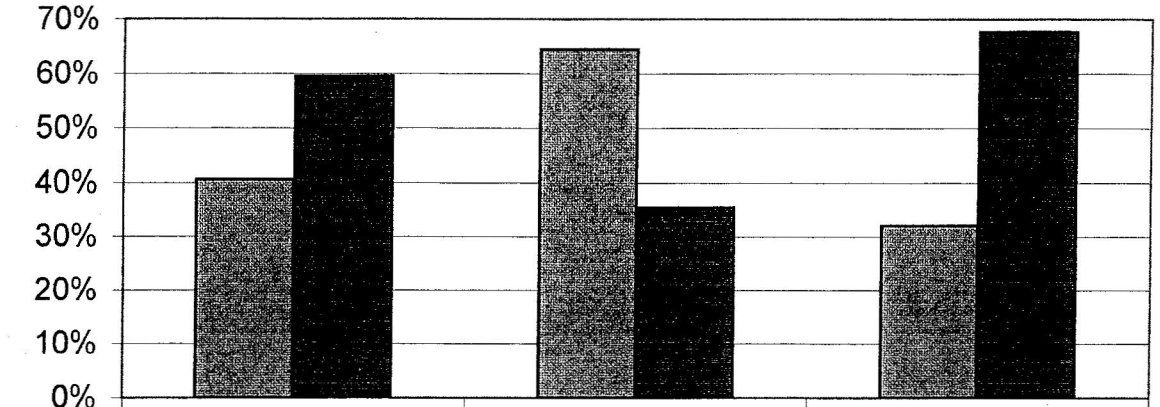
Figure 19.
Percentage of Children by Usual Site for
Dental Care and Medicaid Enrollment Status
(8th Grade)



	All	Enrolled	Not Enrolled
Private Dental Office*	35.5%	41.5%	33.8%
Public Dental Clinic*	26.5%	38.7%	21.5%
Emergency Room or Other Site	1.7%	1.4%	1.8%
No Usual Place*	36.4%	18.4%	42.9%

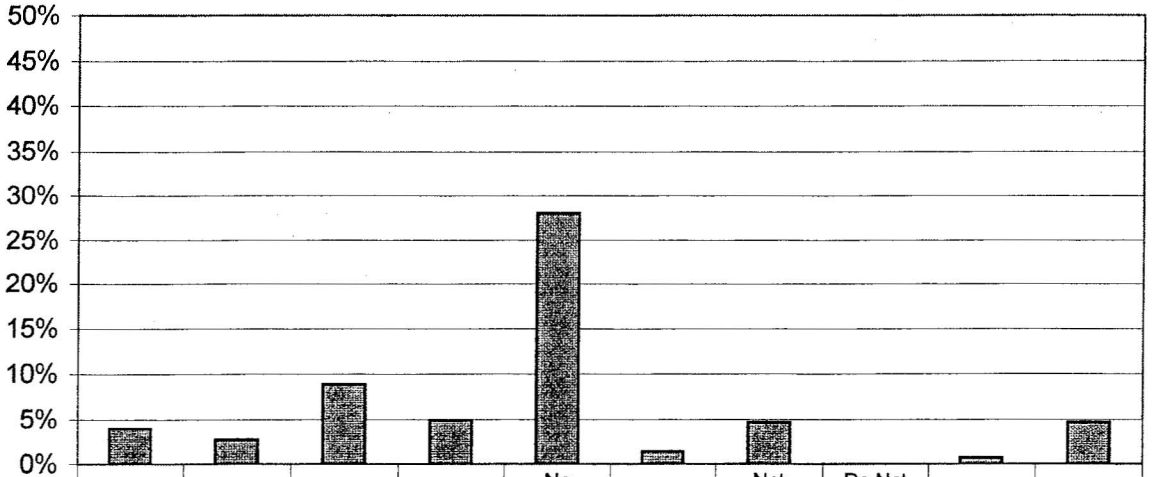
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 20.
Percentage of Children by Dental Visit
Past Year and Medicaid Enrollment Status
(8th Grade)



	All	Enrolled	Not Enrolled
Yes*	40.5%	64.5%	32.2%
No*	59.5%	35.5%	67.8%

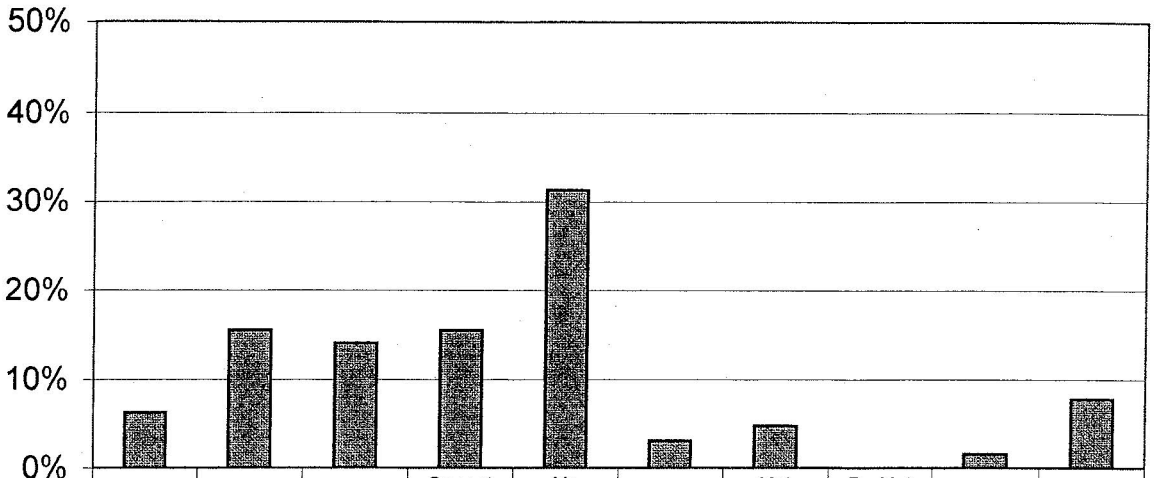
Figure 21.
Percentage of Children by Reason for No Dental Visit Last Year
(All Children--8th Grade)



	Fear	Cost	No Dentist	Cannot Get There	No Reason To Go	Other Priorities	Not Thought of It	Do Not Trust Dent.	Speak Diff. Lang.	Other
All	4.0%	2.8%	8.9%	4.9%	28.0%	1.4%	4.7%	0.0%	0.7%	4.7%

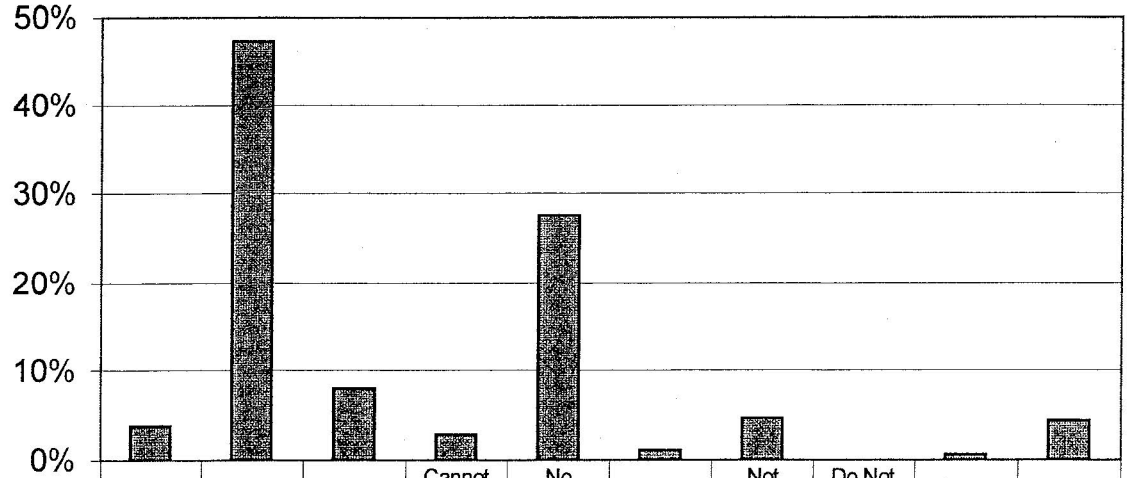
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 22.
Percentage of Children by Reason for No Dental Visit Last Year
(Children Enrolled in Medicaid--8th Grade)



	Fear	Cost*	No Dentist	Cannot Get There*	No Reason To Go	Other Priorities	Not Thought of It	Do Not Trust Dent.	Speak Diff. Lang.	Other
Enrolled	6.3%	15.6%	14.1%	15.6%	31.3%	3.1%	4.7%	0.0%	1.6%	7.8%

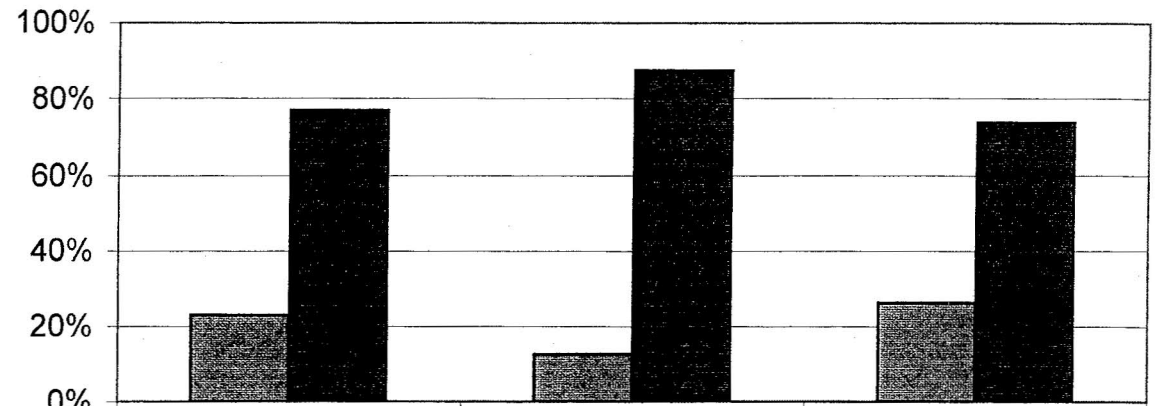
Figure 23.
Percentage of Children by Reason for No Dental Visit Last Year
(Children Not Enrolled in Medicaid--8th Grade)



	Fear	Cost*	No Dentist	Cannot Get There*	No Reason To Go	Other Priorities	Not Thought of It	Do Not Trust Dent.	Speak Diff. Lang.	Other
Not Enrolled	3.7%	47.3%	8.0%	2.8%	27.6%	1.1%	4.6%	0.0%	0.6%	4.3%

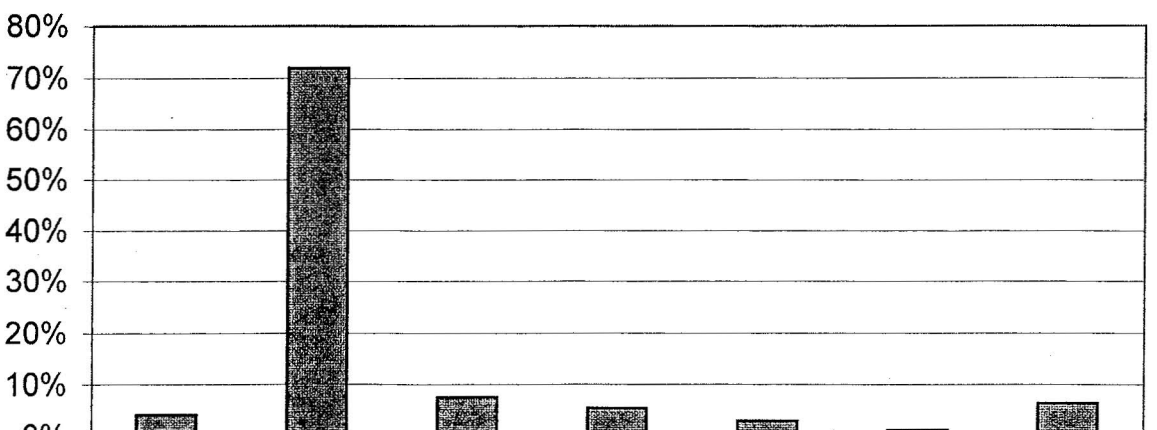
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 24.
Percentage of Children by Need for Dental Care But Could Not Get It in Past Year and Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
Yes*	23.0%	12.5%	26.2%
No*	77.0%	87.5%	73.8%

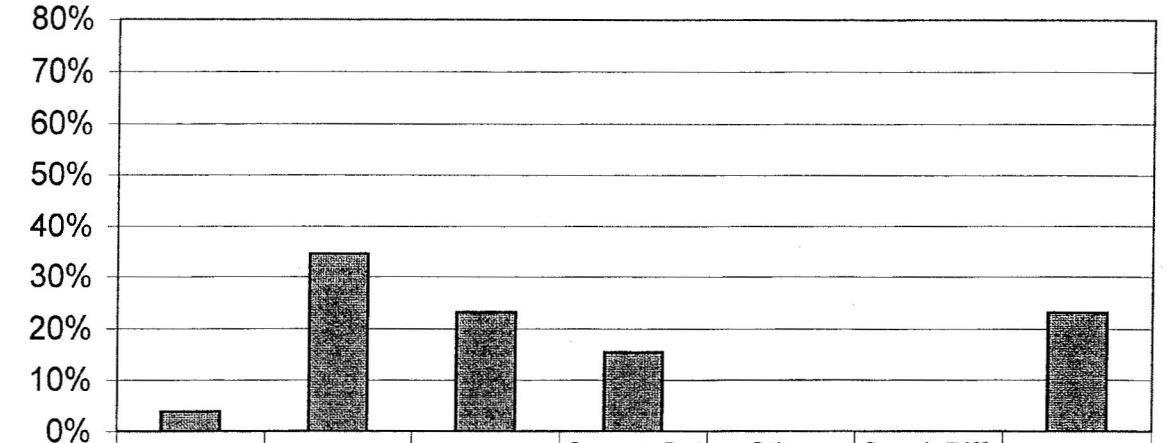
Figure 25.
Percentage of Children by Reason for Not Getting Needed Dental Care in Past Year (All Children--8th Grade)



	Fear	Cost	No Dentist	Cannot Get There	Other Priorities	Speak Diff. Lang.	Other
All	4.2%	72.0%	7.7%	5.4%	3.0%	1.2%	6.5%

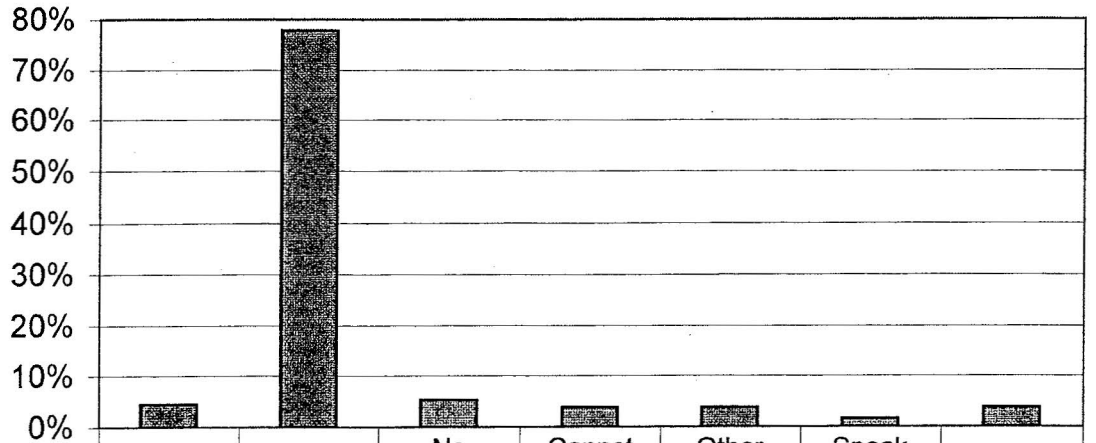
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 26.
Percentage of Children by Reason for Not Getting Needed Dental Care in Past Year
(Children Enrolled in Medicaid--8th Grade)



	Fear	Cost*	No Dentist*	Cannot Get There	Other Priorities	Speak Diff. Lang.	Other*
Enrolled	3.8%	34.6%	23.1%	15.4%	0.0%	0.0%	23.1%

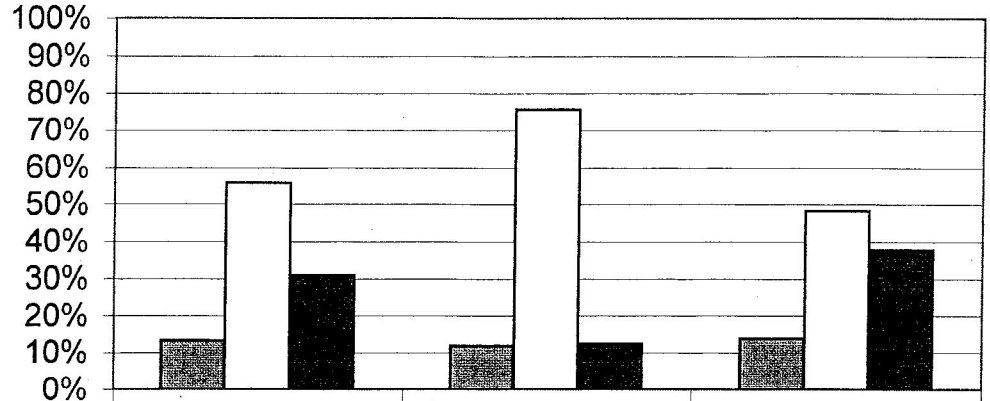
Figure 27.
Percentage of Children by Reason for Not Getting Needed Dental Care in Past Year
(Children Not Enrolled in Medicaid--8th Grade)



	Fear	Cost*	No Dentist*	Cannot Get There	Other Priorities	Speak Diff. Lang.	Other*
Not Enrolled	4.4%	77.8%	5.2%	3.7%	3.7%	1.5%	3.7%

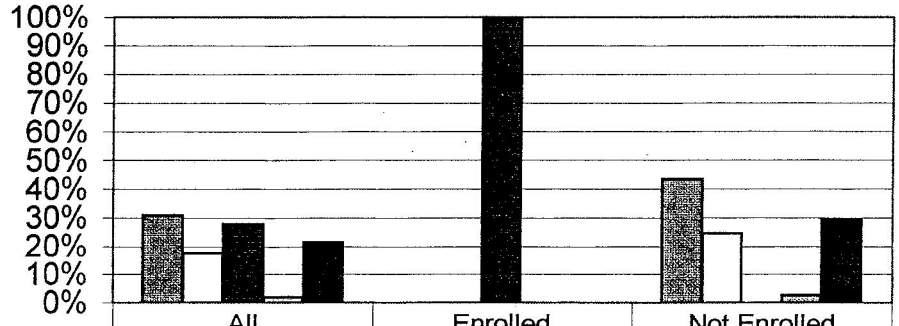
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 28. Percentage of Children by Difficulty with *Acceptance of Coverage or Payment for Dental Care* During Past Year and Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
Yes	13.2%	11.9%	13.8%
No*	55.9%	75.7%	48.2%
Have Not Tried*	30.9%	12.4%	38.0%

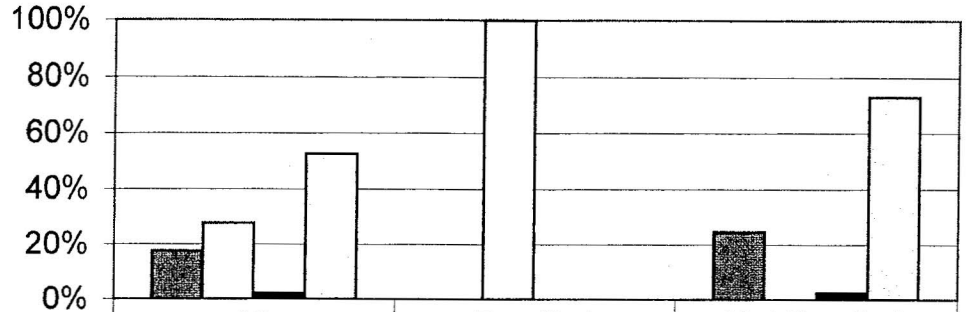
Figure 29.
Percentage of Children by How Dental Care is Paid Currently and Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
Family Pays Costs	31.0%	0.0%	43.5%
Private Insurance	17.6%	0.0%	24.6%
Medicaid	27.8%	100.0%	0.0%
Other	2.1%	0.0%	2.6%
Do Not Know How It Would Be Paid	21.5%	0.0%	29.3%

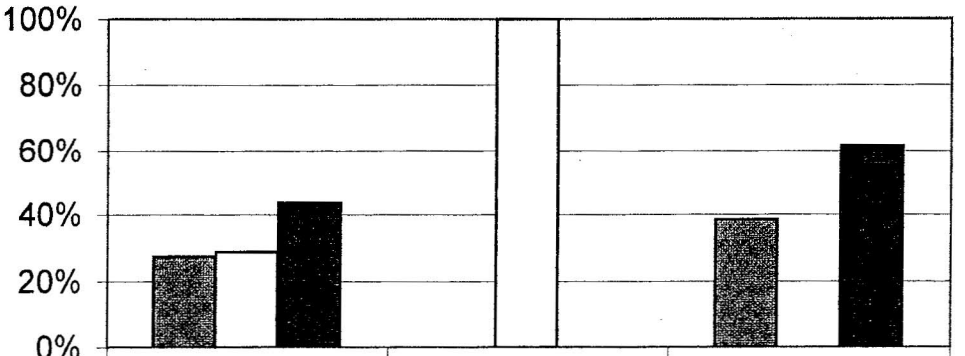
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 30.
Percentage of Children by Dental Insurance or
Dental Coverage and Medicaid Enrollment Status
(8th Grade)



	All	Enrolled	Not Enrolled
Private Insurance	17.6%	0.0%	24.6%
Medicaid	27.8%	100.0%	0.0%
Other Coverage	2.1%	0.0%	2.6%
None	52.5%	0.0%	72.9%

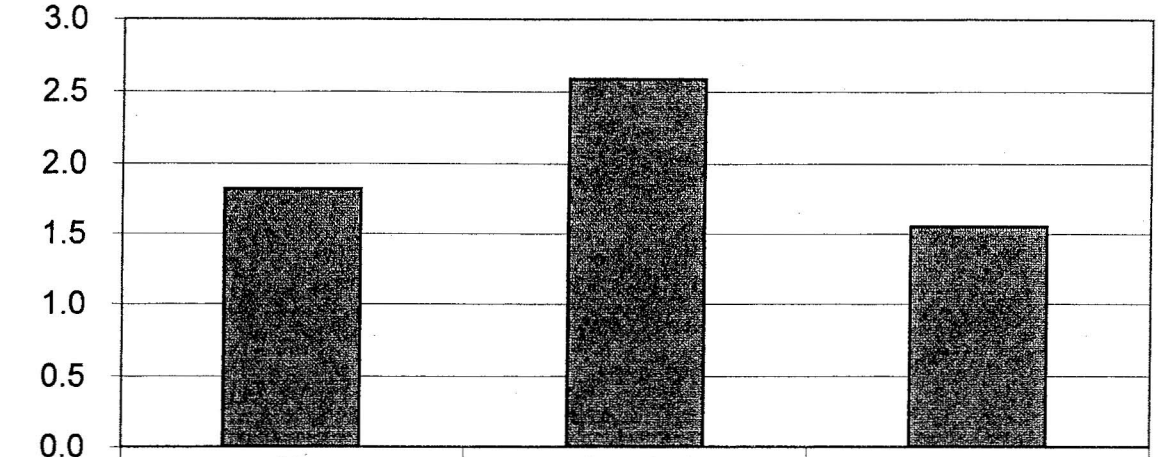
Figure 31.
Percentage of Children by Medical Insurance or
General Health Coverage and Medicaid Enrollment Status
(8th Grade)



	All	Enrolled	Not Enrolled
Private Insurance	27.4%	0.0%	38.5%
Medicaid	28.9%	100.0%	0.0%
None	43.8%	0.0%	61.5%

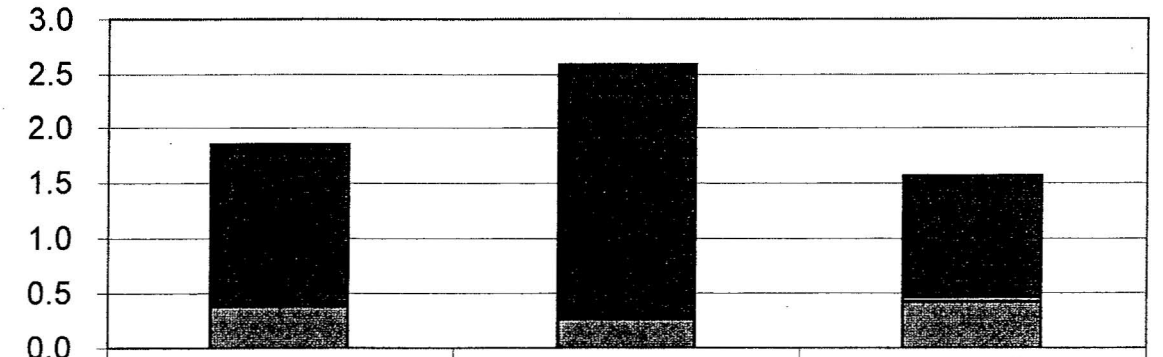
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 32.
Mean Number of Decayed, Missing, and Filled Teeth per Child by Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
DMFT*	1.82	2.59	1.55

Figure 33.
Mean Number of Decayed, Missing, and Filled Teeth per Child by Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
■ FT*	1.44	2.30	1.10
□ MT	0.03	0.03	0.04
▩ DT*	0.38	0.26	0.42

* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 41.
Percentage of Children with Decayed Teeth by Medicaid Enrollment Status (8th Grade)

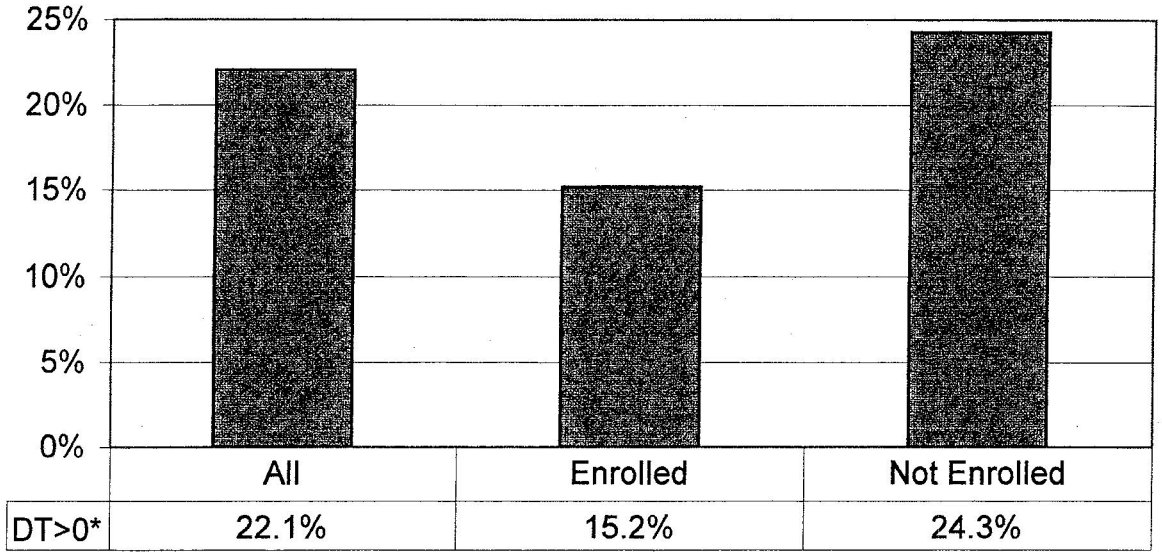
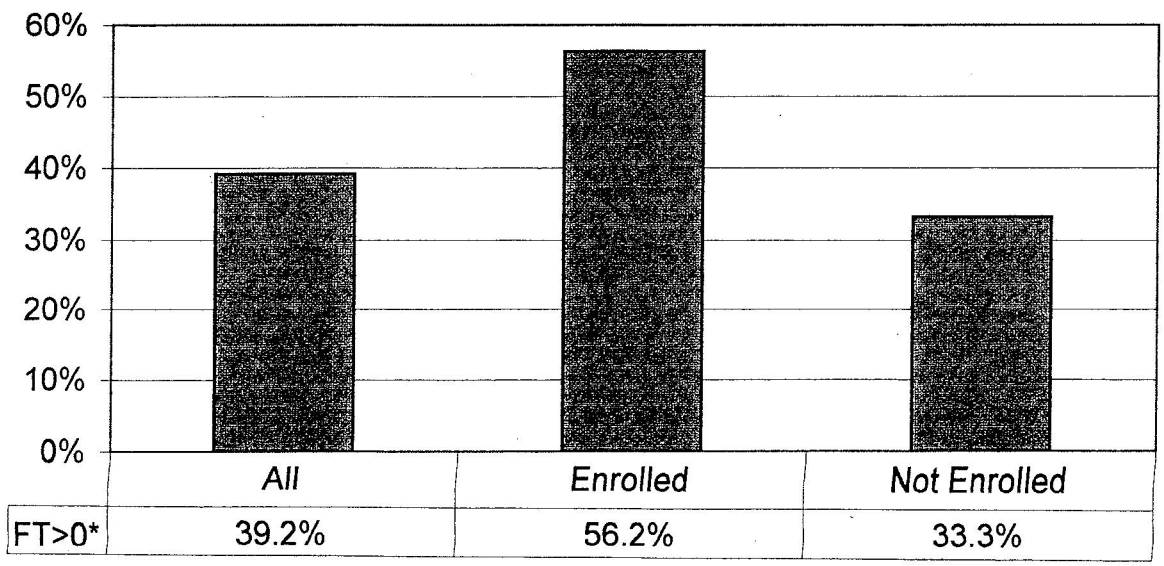


Figure 42.
Percentage of Children with Filled Teeth by Medicaid Enrollment Status (8th Grade)



* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 43.
Percentage of Children with Missing Teeth by Medicaid Enrollment Status (8th Grade)

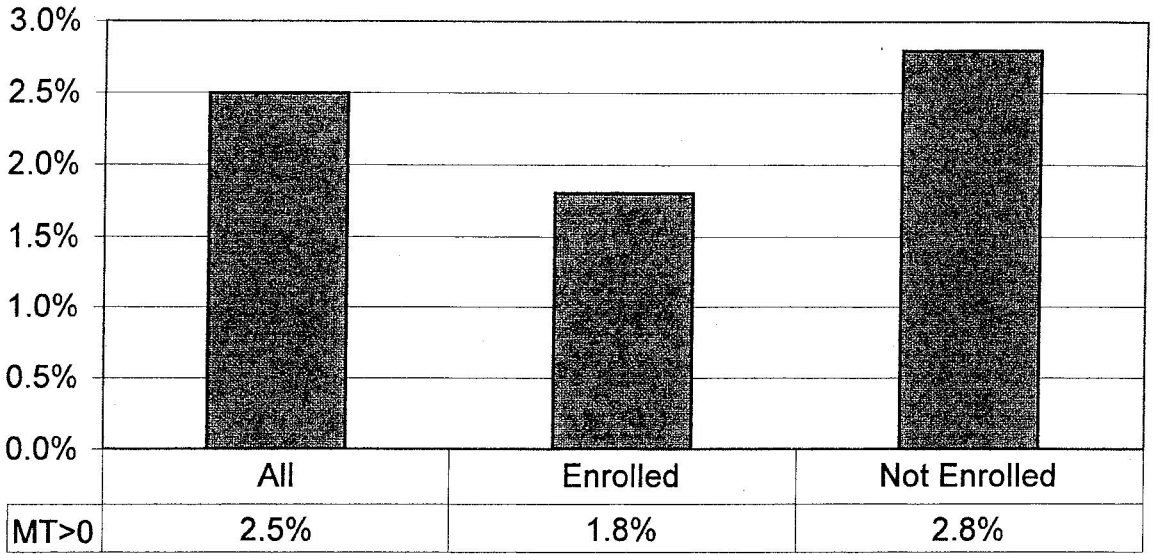
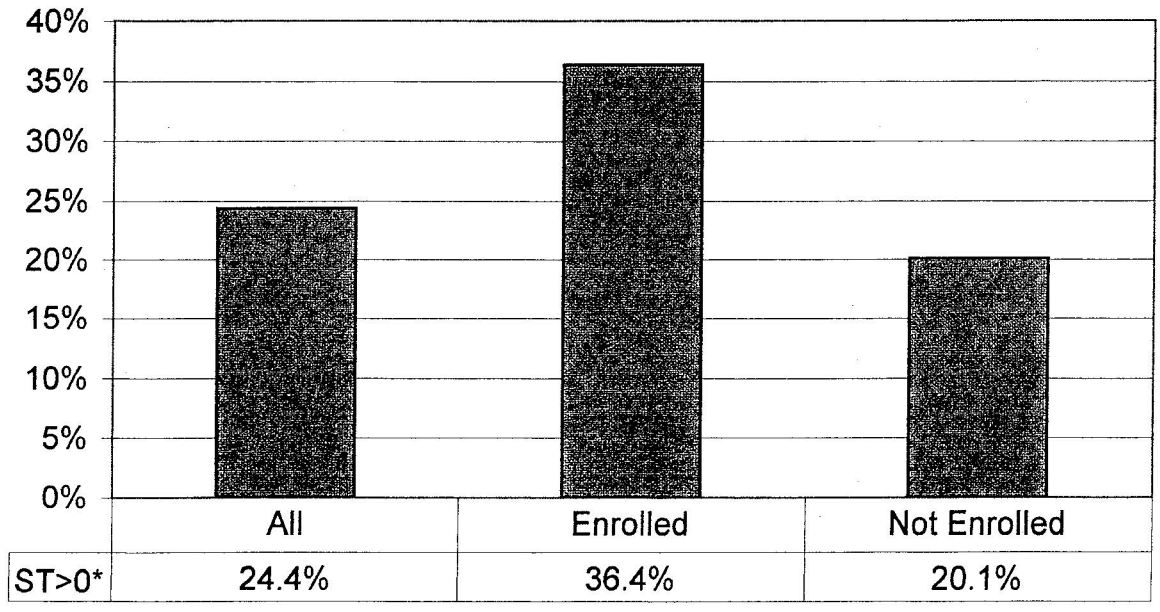
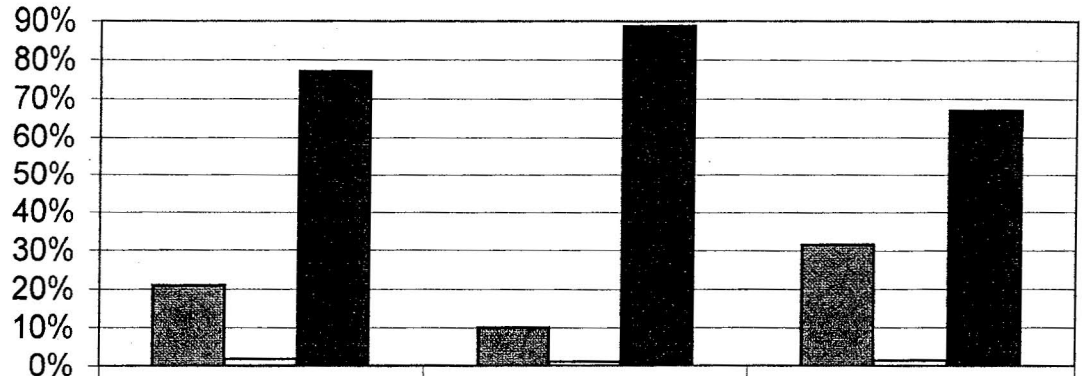


Figure 44. Percentage of Children who Received Protective Dental Sealant on the Occlusal (Chewing) Surfaces of Permanent Molar Teeth by Medicaid Enrollment Status (8th Grade)



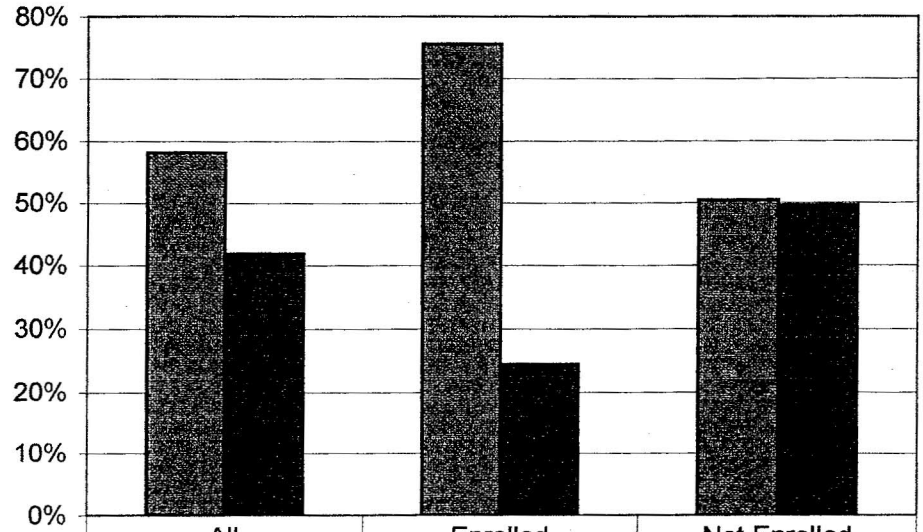
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 45.
Percent of Affected Permanent Teeth Which are Decayed, Missing, or Filled by Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
D/DMFT*	21.0%	10.0%	31.6%
M/DMFT	1.8%	1.1%	1.5%
F/DMFT	77.2%	88.9%	66.9%

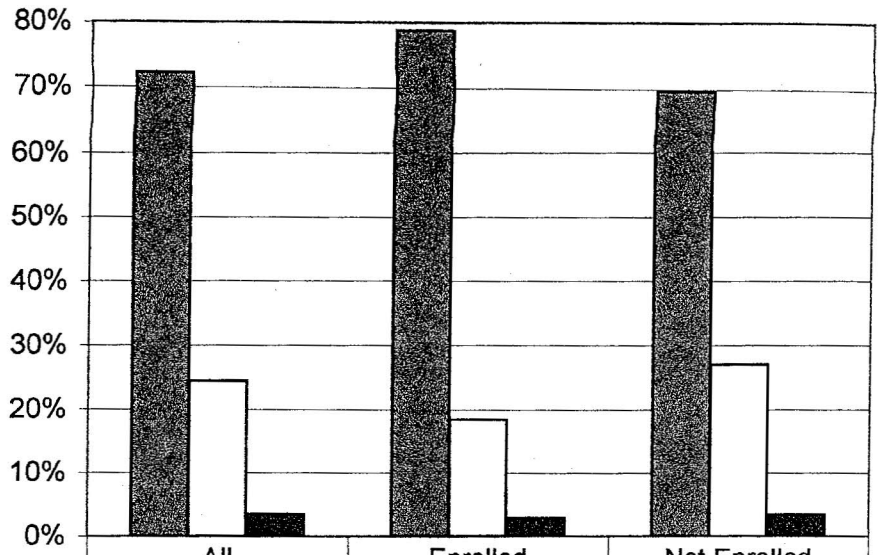
Figure 46. Percentage of Children with Completeness/Incompleteness of Treatment for Dental Caries by Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
Complete Treatment*	58.1%	75.6%	50.4%
Incomplete Treatment*	41.9%	24.4%	49.6%

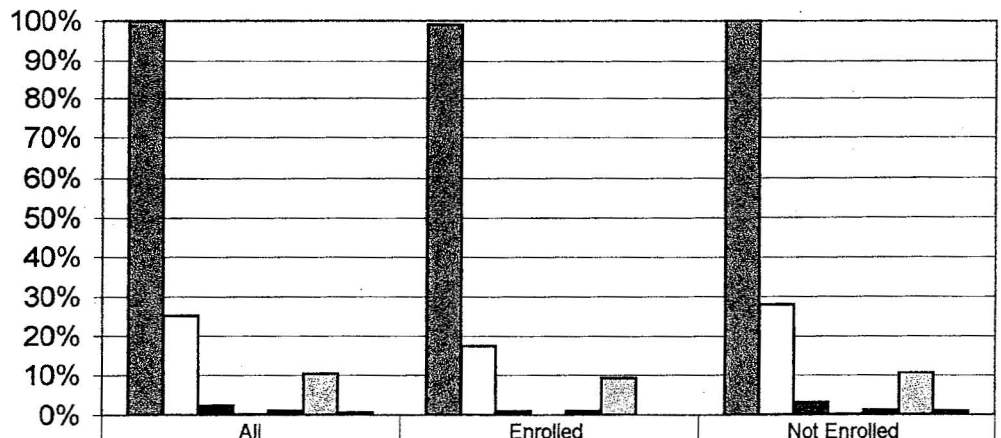
* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Figure 47. Percentage of Children Needing Referral for Any Dental Care by Urgency Level and Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
No Treatment*	72.2%	78.8%	69.7%
Non-Urgent Care Needed*	24.4%	18.4%	27.0%
Urgent Care Needed	3.4%	2.8%	3.4%

Figure 48. Percentage of Children Needing Referral for Any Dental Care by Type of Care and Medicaid Enrollment Status (8th Grade)



	All	Enrolled	Not Enrolled
Preventive*	99.8%	99.1%	100.0%
Restorative*	25.2%	17.5%	27.9%
Extraction	2.4%	0.9%	3.0%
Prosthodontic	0.1%	0.0%	0.2%
Endodontic	1.1%	0.9%	1.1%
Orthodontic	10.3%	9.2%	10.6%
Periodontic Advanced	0.6%	0.0%	0.9%

* Statistically Significant at Alpha = .05 for Comparisons of Enrolled in Medicaid and Not Enrolled in Medicaid

Key Findings – Preschool Children (2 – 3 Years of Age)

The contract for the oral health assessment of preschool children called for a statewide convenience *sample of 100 children with a solely descriptive analysis.*

The data set used for analysis consisted of 110 preschool children (2 – 3years of age) who completed both the dental inspections and social survey questionnaires. The sample size for the oral health variables from the dental inspections equals 110. The sample sizes for the social survey variables vary depending on the number of responses for specific questions. The analysis of the social variables are based on the number of responses to individual survey questions and the frequencies for non-response to specific social survey questions are outlined in the Findings section of this report. It should be noted that individual responses to a question are based only upon those preschool children with responses and the sum of the responses equals 100%. Incorrectly summing the percents of all responses plus the percent of non-responses will lead to a total greater than 100%.

Highlights and Features

Sociodemographic Composition

The mean age of the 110 preschool children was 2.5 years with 55.5% female and 44.5% male. The racial/ethnic distribution of these children was 70% Hispanic, 18% Black, 6% Anglo, 3% Asian, and 3% other race or ethnicity. The educational attainment of the parent or guardian was 24% at elementary level, 30% some high school, 26% completed high school, and 20% at a college level.

More than three-fourths (80%) of children were from families with an annual household income under $16,000. Eighteen percent were at the $16-30,000 level and 2% over $30,000 per year. Seventeen percent were single adult households. The modal household size was five (26%).

Survey participants were selected from a listing of enrollees in the Texas Health Steps (EPSDT, Medicaid) program, and 88% were so enrolled at the time of the social survey and dental inspection.

Findings from Social Survey Questionnaires

These parents or guardians were more likely to perceive their child's general health as excellent or very good (60%), than to perceive their child's oral health as excellent or very good (41%).

Two-thirds (61%) of children had a dental visit in the past year, but 30% never had one. For 7% of these preschool children this visit was for pain or other dental problem. Seventy-four percent reported having a usual place of dental care. For 42% of these children this was a private dental visit and for 32% a community health center.

Cited reasons for not having a dental visit in the past year were no reason to go (23%), not having a dentist (18%), fear (15%), being unable to get to an office or clinic (15%), cost (9%), had not considered a dental visit (9%) and other reasons (11%). One quarter (26%) of children did not have a usual place for dental care.

Six percent of these young children had a dental problem in the past year but the parent or guardian could not get needed dental care. The reasons cited included fear, cost, unable to find a dentist who would accept Medicaid, the child was not Medicaid eligible at the time, and other reasons.

Only 3% of these young children had private dental insurance, 7% said the family would pay for dental care, 3% did not know how dental care would be paid for, and as expected the great majority (86%) relied on Texas Health Steps.

Only a third (37%) of parents of these children themselves had a dental visit in the past year; for 31% it had been more than 2 years, and 16% never had a dental visit themselves. For 35% of the parents with a prior personal dental visit, it had been for pain or a dental problem.

Factors related to susceptibility of early childhood caries in these children included the following: 17% only began eating chopped foods from the table after 12 months of age, 52% had a history of going to bed or taking a nap with a bottle, and of those one fifth (20%) usually had sweetened liquids other than plain water, milk or formula in the bottle.

Thirty-one percent of the preschool children had been weaned from a bedtime bottle by 12 months, but another 25% took until 18 months, 9% took up to 2 years or longer, and currently 35% still used a bottle at bed or nap time.

Seventy-two percent of parents cleaned their child's teeth everyday with a toothbrush and fluoride toothpaste. They began this typically at 12 months of age (age range 5-24 months).

Findings from Clinical Dental Inspections

Dental caries in these children was assessed at two levels:

(i) at the traditional level of frankly decayed teeth (dt), missing teeth due to dental caries (mt), and filled teeth (ft), and

(ii) at the earlier stage of uncavitated enamel lesions.

The latter are potentially remineralizable with change in diet, with fluoride use such as in toothpaste and professionally applied fluoride varnish and with oral hygiene, i.e., tooth brushing to control dentobacterial plaque.

Nineteen percent of these children had a history of dental caries in the traditional sense of decayed teeth, missing teeth due to caries, or restorations (d, m or f teeth).

Overall 13% of the preschool children had untreated tooth decay, 7% had filled teeth and 1% had missing teeth. The treatment completion rate was 44% of affected teeth were filled and the missing rate was 4.5% of affected teeth. The mean dmft per child was 0.8, comprised of mean decayed teeth - 0.41 dt, missing teeth - 0.04 mt, and filled teeth - 0.35 ft.

Thirty-three percent of children who had experienced tooth decay had their treatment (fillings) complete. Only 1% had preventive dental sealants.

An additional 16% solely had early enamel caries, so that a total of 29% of the children required remineralization and/or restoration of caries (13%+16%).

Urgent care was needed by one percent of these children, and 12% were in need of non-urgent care, other than prevention and remineralization.

Need for general anesthesia or sedation in support of dental treatment was characterized in this survey, which the contract refers to as "need for hospitalization" and "child's willingness to cooperate." The consensus panel's method of assessment (see Methods section and Appendix G of this Report) called for (i) rating the Godoy Scale of severity and pattern of early childhood caries known as Baby Bottle Tooth Decay (BBTD). Eighty-three children were not affected, 18 children were affected and 9 children were treated previously. It also required (ii) an assessment of non-tolerance for the dental inspection; 16 were so assessed, and 1 of these had already had treatment. The Godoy scale did not account for 9 children with dental caries, but not of the BBTD pattern, so (iii) these were added to the above assessment.

A schema of treatment modalities by invasiveness, described in the presented data and Appendix G, was applied to estimate that 90% of these 2-3 year old children with early or late clinical evidence of dental caries (24% overall) could be managed by application of prevention, remineralization and minimal restoration. This schema calls for appropriate involvement of parent and dental provider in intensive prevention and less invasive restorative methods. Periodic reassessment will be needed and success of remineralization and prevention will not be universal. However for the 90% of

affected children use of general anesthesia and sedation will at least be deferred, and dental caries progression slowed if not arrested. In some cases the child at reassessment will have reached an age and developmental stage at which needed conventional restorative dental treatment is then feasible. In other cases general anesthesia or sedation may then be necessary. In all cases the long term success of treatment will be better assured by a greater degree of preventive control of the disease on the part of dental provider and parent. Costs of general anesthesia, and hospitalization will be reduced overall, as will their inherent risks.

Need for general anesthesia or sedation in support of dental treatment was judged from the schema to apply to the remaining 10% of affected children (3% overall). The more advanced stage of their disease indicated need for restorative treatment plus intensive prevention. This can be expected to require general anesthesia or sedation. Overcoming the back log of treatment by itself does not ensure future dental caries prevention. The dental provider and parent must be preventively engaged for a successful outcome. Medicaid periodicity and guidance should allow for such a process.

Because of the small sample size required in the contract and the fact that this largely Medicaid enrolled group may not be representative of Medicaid dental care recipients that are 2-3 years of age, caution should be exercised in not regarding these projections as determinations of treatment needs. The projections would certainly change with age. The schema should be prospectively tested for process, outcome, and efficiency.

Assessment of "Need for Hospitalization" and "Child's Willingness to Cooperate"*

The TDH contract called for assessment of these two characteristics of 2-3 year old preschool children. A consensus panel was convened on this subject and its criteria are outlined in Appendix G. The panel interpreted these two characteristics to mean the need for general anesthesia and/or sedation in support of dental treatment.

- **(a) Distribution by severity of Baby Bottle Tooth Decay / Nursing Caries (BBTD) (Godoy scale of four maxillary incisors, based on most severely affected tooth.)**

Godoy Scale	Children	Description* (Cumulative of maxillary incisors)
0	83	not affected
1	9	enamel only affected, not cavitated, 'white spot' caries
2	2	pinpoint cavitation only, with 'white spot' caries
3	5	cavitated but affecting single surface(s) only and does not encircle the tooth
4	1	cavitation encircles at least one tooth; incisal edge may be lost due to caries, but pulpal involvement not suspected
5	1	pulpal involvement suspected or observed
9	9	tooth extracted or crowned for caries; reason for this treatment is suspected but not directly observed as caries
	110	

(b) Not tolerant of the dental inspection = 16

15 had no caries (0) and 1 was already treated (9). 16/110 14.5%

(i) Godoy categories 1 and 2 are judged potentially remineralizable with behavior change for diet, fluoride toothpaste/varnish use and plaque control.* (11/27, 40.7% of those affected)

(ii) Category 3 were judged* suitable for remineralization plus conventional minimal restorative treatment provided (a) only one or two primary teeth were affected, not just maxillary incisors, and (b) they were tolerant of the dental inspection. For the five children so categorized, these conditions were both met. (5/27, 18.5% of those affected)

(iii) Category 4 and 5, 2 children, (plus Category 3 children who had >2 primary teeth affected or were not tolerant of the inspection – none categorized thus)* were judged to need the support of sedation or general anesthesia to be treated. (2/27, 7.4% of those affected)

* The rationale for this approach was derived by a consensus panel, whose report is excerpted in Appendix G.

(iv) Category 9, 9 children already treated with crowns and fillings, and assumed to have had the BBTD pattern of caries (9/27, 33.3% of those affected). Of these 9, recurrent or untreated caries was evident in two children. Two had 2 decayed teeth and one of these also had one tooth with incipient decay. Both were tolerant of the dental inspection. This indicates the importance of ongoing prevention, after treatment, since 22% (2/9) had evidence of caries after extensive treatment.

(c) Distribution of caries affecting other than the four maxillary incisors.

While 24.5% (27/110) of children had evidence of BBTD pattern of caries affecting the four maxillary incisors at any level of severity or treated, 32.7% (36/110) had a history of such caries of <u>any</u> primary teeth. To complete the full picture of caries experience it is necessary to account for the caries which affects only teeth other than the four maxillary incisors. There were nine such children (8.25%, 9/110)

7 had enamel caries, not cavitated, 'white spot' early caries. 3 had 1 tooth, 4 had 2 teeth affected. These were judged manageable by remineralization and sealants.

2 had decayed teeth (dt).
1 had 2 dt (occlusal of molars) and was tolerant of the dental inspection
1 had 4 dt (occlusal of molars), and was judged to require GA/sedation support for treatment.

A combined schema of treatment modalities by degree of invasiveness can be described as follows. It is not a reliable assessment of treatment needs because of the small descriptive sample of 110, but provides an estimate of the proportion of children requiring the support of general anesthesia and/or sedation ("hospitalization" and "cooperation") for more invasive dental treatment.

<u>Schema of treatment modalities, by invasiveness – combining (a), (b), and (c)</u>

Treatment	Children with 4 maxillary incisors affected	Children already treated, with caries	Children with other than 4 max. incisors affected	Total Children
Conventional prevention remineralization and minimal restoration	16 (9+2+5) (Godoy 1, 2, part of 3)	2 (Godoy 9)	8 (7+1) (7 incipient caries, 1x2 dt)	26
Prevention, remineralization and restoration supported by anesthesia/ sedation	2 (1+1) (Godoy, rest of 3, 4, 5)	-	1 (4 dt)	3
				29
Children already treated and free of caries (9-2)				7
Children with a history of caries				36/110

In Summary:

89.6% (26/29) of those with early or late clinical evidence of caries were judged to need conventional prevention, remineralization and minimal restoration, or 23.6% (26/110) overall.

According to the consensus panel criteria, need for general anesthesia and/or sedation in support of dental treatment ("need for hospitalization" and "child's (un)willingness to cooperate") would apply to "the rest of Category 3 plus 4 and 5" as described above. This involves 10.3% (3/29) of those children with early or late clinical evidence of dental caries, and 2.7% (3/110) overall.

How Do Texas Children Compare?

In the United States national objectives have been established to reduce dental caries experience and untreated dental caries in children. Also, the increase in protective dental sealants as a measure to prevent tooth decay in children has been established as a national goal. These objectives are compared in the following text and three figures.

Dental Caries Experience

The present statewide Texas survey conducted in 1998 among predominately low income schoolchildren shows that 66% of schoolchildren 8 years of age and 53% schoolchildren 14 years of age have experienced dental caries. This compares to a national survey with a representative sample which found that 52% of children aged 6-8 and 61% of children aged 15 had experienced caries in their permanent or primary teeth. At the younger age level the Texas subgroup of low-income schoolchildren had a higher rate of dental caries experience compared to the national average for children 6-8 years of age. This subgroup of 8 year old children in Texas will not meet the Year 2000 National Objective for dental caries experience set at 35% for children aged 6-8. In contrast, adolescents aged 14 from lower income families in schools in Texas had a lower rate of dental caries experience (53%) than the national average for children aged 15 (61%), and exceeded the goal for the Year 2000 Objectives, set at 60% for caries experience among 15 year old teens.

Untreated Dental Caries

This statewide survey in Texas found that 44% of schoolchildren 8 years of age from predominately low income families have untreated dental caries. In comparison, nationally 29% of children 6-8 years of age had untreated dental caries in permanent or primary teeth. In the Texas survey, low income adolescents fared better with 22% of students 14 years of age with decayed teeth. In comparison, the most recent national survey reported 44% of children aged 15 had untreated dental caries. Again, this group of Texas children aged 8 will miss by a great margin the Year 2000 Oral Health Objective set at 20% but the low income adolescent Texans will surpass the national goal set at 30% for untreated dental caries.

Protective Dental Sealants

Much attention has been focused at the national, state, and local level during the 1990s to increase the use of protective dental sealants across the U.S. The national goal established for the Year 2000 has aimed to achieve a 50% rate of preventive sealants in children 8 and 14 years of age. Unfortunately, low-income schoolchildren in Texas will not reach this national benchmark as the Texas statewide survey found that only that 16% of 8 year old schoolchildren and 24% of 14 year old students received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth. At a national level, 23% of 8 year old children had dental sealants and this rate is higher compared to 16% for low income 2nd grade schoolchildren in Texas. Nationally 24% of adolescent 14 year old children had dental sealants and this rate was equal to the rate for adolescent Texans from families with low incomes. Neither will reach the goal of 50%.

Summary

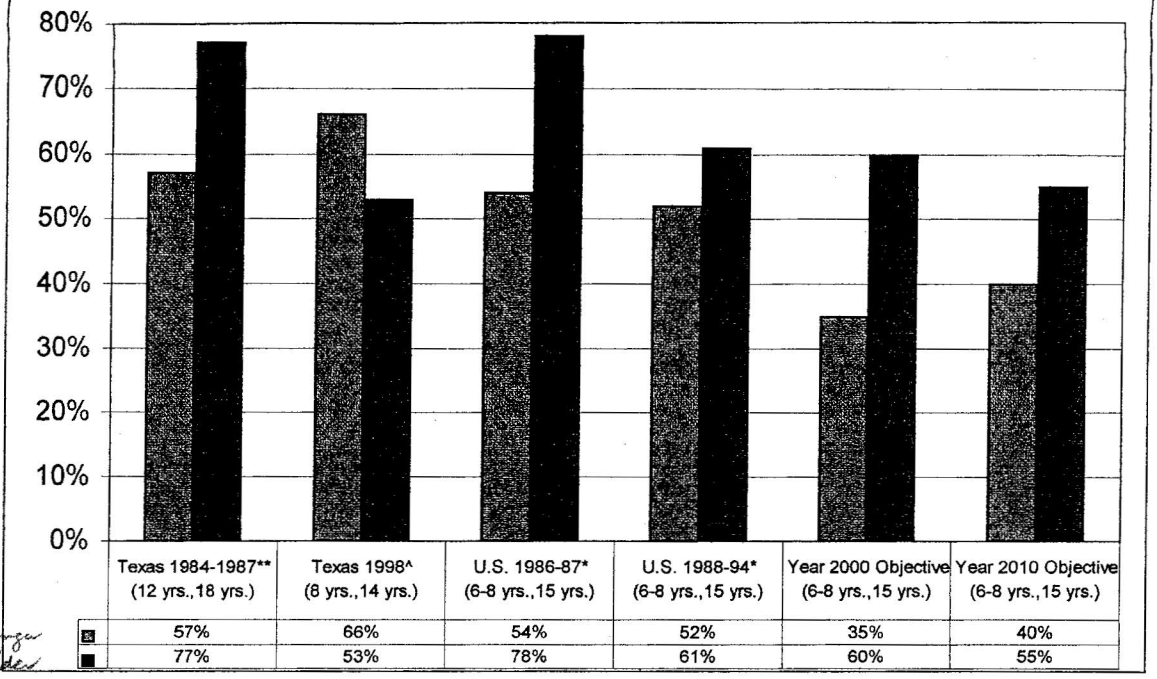
Younger schoolchildren from lower income families in Texas more often have dental caries and less often is it treated compared to their peers nationally. Also, they are less likely to have preventive dental sealants, and will not meet these national goals for oral health in the year 2000.

Adolescents in schools from lower income families in Texas had lower rates of dental caries experience and more treatment than their national counterparts, and will meet these national oral health objectives. Although they were as likely to have protective dental sealants as adolescents nationally, they will not meet this national oral health goal.

More concentrated efforts are necessary especially for younger aged children as Texas failed to reach any of the Year 2000 benchmarks established for children at age 8. Expanded coordinated efforts will be needed across Texas to reach the new national oral health objectives set for Year 2010. These objectives for the next decade set the standard for greater achievements and improvements in children's oral health.

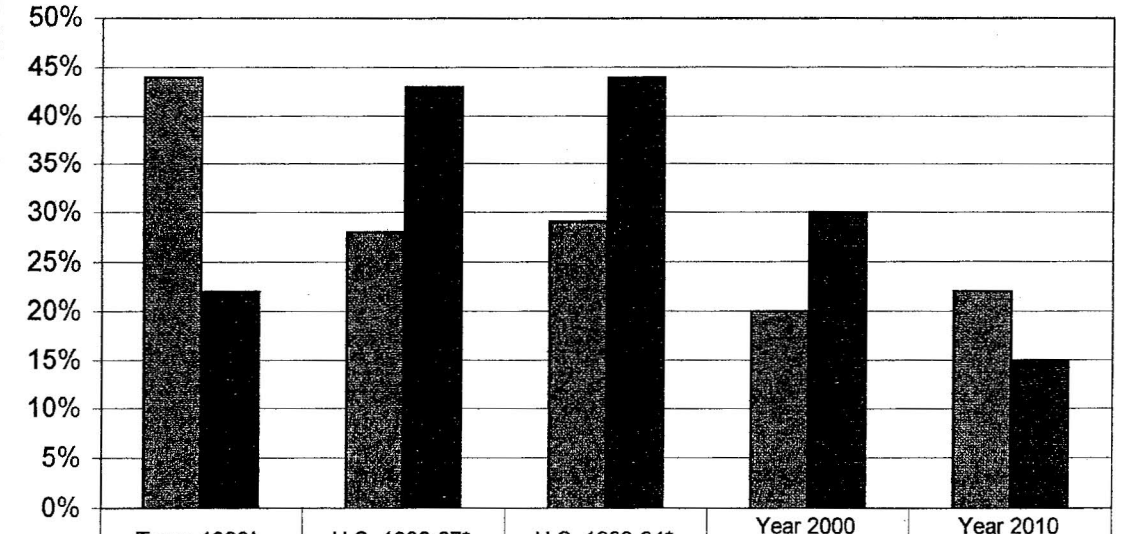
The preventive emphasis must grow, over the restorative tradition of filling dental caries, and a fresh preventive approach on younger children is warranted for the future. A greater focus on preventive measures such as protective dental sealants and fluorides at the community and individual level are essential to decrease the overall burden of dental caries and to make greater strides in reducing oral health disparities among children. Through earlier periodic guidance and prevention the Texas Health Steps program has the potential to reduce dental caries, and not merely treat its consequences. Community prevention programs, such as in schools, Head Start and child care centers and WIC programs are a complementary approach to reducing the large caries burden in children from lower income families.

Dental Caries Experience



	Texas 1984-1987** (12 yrs.,18 yrs.)	Texas 1998^ (8 yrs.,14 yrs.)	U.S. 1986-87* (6-8 yrs.,15 yrs.)	U.S. 1988-94* (6-8 yrs.,15 yrs.)	Year 2000 Objective (6-8 yrs.,15 yrs.)	Year 2010 Objective (6-8 yrs.,15 yrs.)
Younger	57%	66%	54%	52%	35%	40%
Older	77%	53%	78%	61%	60%	55%

Untreated Dental Caries

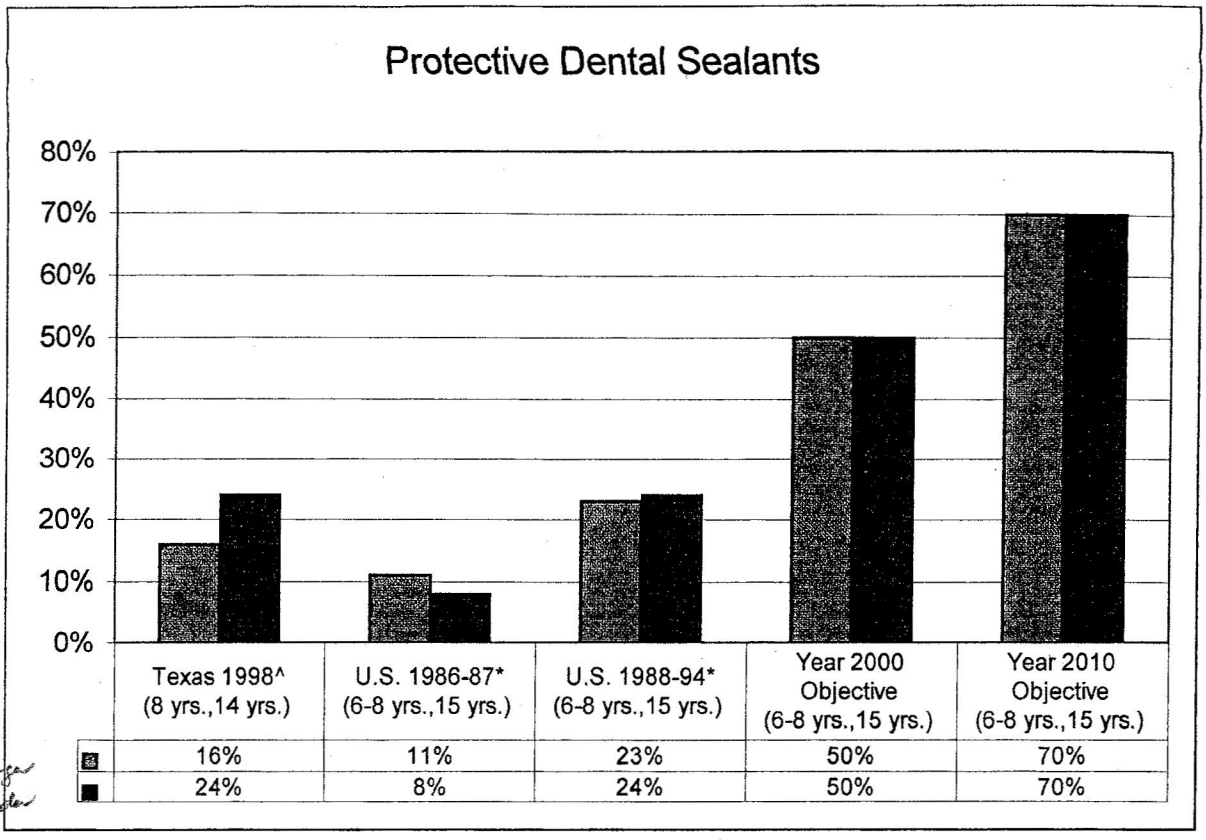


	Texas 1998^ (8 yrs.,14 yrs.)	U.S. 1986-87* (6-8 yrs.,15 yrs.)	U.S. 1988-94* (6-8 yrs.,15 yrs.)	Year 2000 Objective (6-8 yrs.,15 yrs.)	Year 2010 Objective (6-8 yrs.,15 yrs.)
Younger	44%	28%	29%	20%	22%
Older	22%	43%	44%	30%	15%

* National Survey with National Representative Sample of Children 6-8 and 15 years of Age NIDR 1986-87 and NHANES III Phase I-1988-1994

** Statewide Survey with Representative Sample in Schoolchildren, 6th Grade (12 years of age) and 12 Grade (18 years of age). Not an exact age comparison.

^ Present Statewide Survey (90% have family income < $30,000 per year).



* National Survey with National Representative Sample of Children 6-8 and 15 years of Age NIDR 1986-87 and NHANES III Phase I-1988-1994

^ Present Statewide Survey (90% have family income < $30,000 per year).

Selected Recommendations – Opportunities for Action

To improve the oral health of children in Texas several actions are recommended based on the findings of this statewide survey. Coordinated and collaborative efforts involving a variety of organizations and individuals across Texas will be necessary to attain major improvements in children's oral health. Along with parents and families, actions are needed by multiple groups such as government agencies, professional organizations, non-profit groups, and academic institutions. Organizations in the private, public, and non-profit sectors need to work in tandem at the state and local level with dental professionals, health and social service providers, child care, school personnel, public officials and others to assure improvements in the oral health of children in Texas.

Urge Promotion and Implementation of Community-Based Prevention

Support the initiation and maintenance of community-based prevention efforts like community water fluoridation.

Support local community water fluoridation efforts.

Develop community awareness campaigns for community water fluoridation in non-fluoridated areas.

Support Community-Based and Individual-Based Prevention Strategies to Prevent Tooth Decay in Children Especially Young Children

Integrate a prevention and early intervention orientation and focus into the Texas Health Steps (Medicaid, EPSDT) and Children's Health Insurance Program (CHIP) for all children.

Integrate for all children effective measures that are provided by professionals based on risk assessments into the Texas Health Steps (Medicaid, EPSDT) and Children's Health Insurance Program (CHIP). Demonstration programs are needed for the prevention of tooth decay in the primary teeth of children. These actions need to start with parents during the prenatal period, continue with infants and toddlers, and proceed throughout the preschool time and elementary school years. Innovative policies, programs, and professional practices need to be developed, implemented, and evaluated to provide early prevention and intervention services with sufficient intensity over time to be effective in preventing tooth decay during early childhood.

<u>Community-Based Strategies</u>

Support innovative campaigns through education, promotion, and community awareness to reach parents, caregivers, the media, and policymakers about practices that can be adopted to prevent early childhood caries.

Increase access to preventive services by maximizing state and local resources to support community-based dental programs. Model preventive dental programs, such as dental sealant programs that are based in or linked with child care centers and schools, should be replicated in areas across the state.

Increase fluoride mouthrinse programs in schools in non-fluoridated areas until water fluoridation can be achieved in the community.

Individual-Based Strategies

Promote widespread application of preventive measures such as dental preventive sealants and fluoride varnishes, particularly in children at risk for tooth decay, by reducing professional and personal barriers to their use.

Increase prescription of dietary fluoride supplements by medical and dental professionals in non-fluoridated areas until water fluoridation can be achieved in the community.

In programs supported by TDH such as Texas Health Steps (Medicaid, EPSDT) and Children's Health Insurance Program (CHIP) ensure coverage of all "medically necessary" evaluations, parental guidance and care to allow for the contemporary management of oral disease in children, e.g., dietary guidance, parent and child instructions in fluoride use and plaque control.

Support pilot projects and provide waivers at the local level to encourage investigations of innovative policies, programs, and practices for oral disease prevention and treatment for individuals and groups.

Improve Access to Dental Care

Maximize enrollment in public and private insurance programs that include dental coverage (e.g., Texas Health Steps (Medicaid, EPSDT), Children's Health Insurance Program (CHIP), and Texas Healthy Kids Corp. Increase awareness about the availability of no-cost and low-cost health insurance and dental coverage for children.

Increase access to dental care by ensuring that every child has an identified "dental home," a usual place to receive dental care.

Utilize multiple strategies to expand current enrollment and assure continuity and periodicity of dental care by streamlining or reforming policies (e.g., extend Medicaid coverage to one year, etc.) that produce barriers and prevent children from receiving needed regular dental care.

Eliminate barriers that families face in trying to access dental care for their children. Further study is needed to assess why some barriers described in this study contribute to the lack of regular dental visits and to determine effective ways to eliminate these identified barriers. For example, many parents seem unaware of the benefits of regular preventive dental attendance and said they had no reason to go, some enrolled parents said cost was a barrier and why this would be so is not apparent, and parents of preschoolers were fearful about dental care of their young children.

Decrease barriers to ensure that dental professionals are available and accessible in communities for children and their families (e.g., decrease distances to offices or clinics, increase available appointments, etc.).

Improve transportation assisting families to reach a dental office or dental clinic and to assure that children receive needed dental care.

Facilitate collaboration and referral between school-based dental programs (e.g., fluoride mouthrinse programs, dental sealant programs, and screenings) and dental offices and clinics to assure linkages with ongoing dental care.

Increase incentives and decrease disincentives to maximize participation of dentists in Texas Health Steps (Medicaid, EPSDT) and Children's Health Insurance Program (CHIP), and Texas Healthy Kids Corp. (e.g., reimbursement rates at reasonable level, streamlined administrative paperwork, etc.).

Increase capacity of traditional and safety-net providers to provide dental services to children and their families.

Utilize innovative strategies to promote access to dental care by ensuring that a sufficient number of *dental providers are available in communities to meet the actual dental care needs of children.*

Ensure access to primary dental care of parents so they can attain oral health themselves, be more fully informed oral health teachers of their own children, and have less reason to be fearful about more routine dental care sought early for their children.

Establish performance standards in publicly funded dental programs (e.g., Texas Health Steps (Medicaid, EPSDT), Children's Health Insurance Program (CHIP) to assure evaluation of outcome measures for the improvement of children's oral health.

Develop community awareness campaigns through education and promotion to increase the awareness of the importance of regular dental visits for children to prevent and detect dental problems early. Promote awareness among parents and caregivers about the need for early and periodic screening, diagnosis, prevention, and treatment for children, commencing by one year of age.

Increase the competence of dental and dental hygiene graduates and practicing professionals to manage early childhood caries for individuals and communities at both the preventive and interceptive levels. These actions are provided for under the 1999-2004 Texas State Health Plan, Goal 4, namely, "to create a health care workforce trained and equipped to use education and prevention as the primary approach to helping Texas achieve optimal health."

Strengthen Capacity of the Public Sector

Support efforts of public health agencies at the state and local level to conduct periodic assessments of oral health needs of Texan children and their families (e.g., status of oral diseases, dental care needs, evaluation of existing resources, available capacity, gaps in services and resources, effectiveness of interventions, etc.).

Provide support, training, and technical assistance at the local and community levels for assessment of oral health needs, development and implementation of oral health policies, programs, and practices, and evaluation of outcomes to assure that identified oral health needs are addressed in local communities.

Assure that necessary oral health services are available and accessible in communities for children and their families that need them. Support the provision of needed private and public dental services in communities and as necessary provide direct dental services in communities where needed dental services are not available or accessible.

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