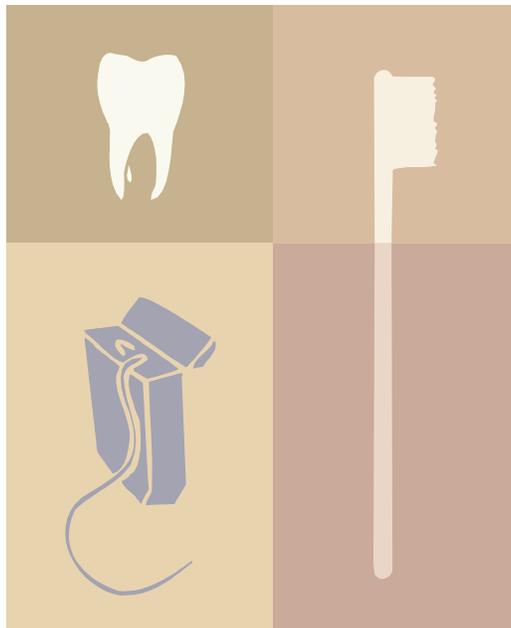




The Burden of Oral Diseases in Rhode Island



Rhode Island Oral Health Program
<http://www.health.ri.gov/disease/primarycare/oralhealth/home.htm>

December 2006

Donald L. Carcieri, Governor
State of Rhode Island

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ii Acknowledgements

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1 A National Perspective: The Significance of Oral Diseases

Oral health is a critical component of overall health and well-being. In his 2003 *National Oral Health Call to Action* U.S. Surgeon General, Vice Admiral Richard H. Carmona, M.D. encouraged individuals to work together to determine what can be done to promote oral health and prevention of oral disease in their own practices, employment settings, through professional and community organizations and in their personal lives. Dr. Carmona emphasized the importance of prevention, stating that oral health begins at birth. The goals of the *Call to Action* are:

- 1) To promote oral health,
- 2) To improve quality of life, and
- 3) To eliminate oral health disparities.

As a “map” to guide oral health improvement efforts, several Action Areas were developed.¹

1. Change perceptions of oral health. Americans must believe oral health is not separate from their general well-being. Improving the health literacy of the public, including oral health literacy, is key. Making sure other health professions are knowledgeable about oral health also is needed.
2. Replicate Effective Programs and Proven Efforts. Several states are conducting innovative programs through Medicaid to increase dental coverage.
3. Build the science base. Biomedical and behavioral research will transform our knowledge of the prevention, diagnosis and treatment of oral disease. But, this knowledge must rapidly be turned into action for the public, providers and community programs. New science should benefit all consumers, especially those who are in poorest oral health or at greatest risk.
4. Increase Oral Health Workforce Diversity, Capacity, and Flexibility. Women and minorities are underrepresented in the oral health professions, especially African Americans, Hispanics and Native Americans. Diversity should be encouraged within the dental profession and culturally-competent messages should be used as part of efforts to eliminate disparities.
5. Increase collaborations. Disease prevention and health promotion campaigns that affect oral health, as well as tobacco cessation, diet counseling, health education aimed at pregnant women and new mothers, and support for the use of oro-facial protection for sports can lead to overall improved oral health for the U.S.

Oral health includes the prevention or elimination of a number of diseases and disorders that occur in the mouth, such as dental caries (tooth decay), periodontal disease (gum disease), and oral and pharyngeal cancers. Oral diseases and disorders are progressive and cumulative, becoming more complex over time. Many oral diseases and disorders can be prevented or ameliorated by appropriate interventions by health professionals. It is generally accepted by the public health dentistry community that current spending of \$1 on oral disease prevention activities will save \$50 in future restorative and rehabilitative costs. In a 2000 report entitled *Oral Health in America*, U.S. Surgeon General David Satcher states that oral health is “integral” to general health, impacting positive childhood development, adult workplace productivity, and quality of life for older adults. National survey data reveal an explicit inverse relationship between family income and tooth decay, untreated dental disease, and oral health-related restricted-activity days. The Surgeon General calls the pronounced disparities in the oral health of Americans a “silent epidemic.” He further states that: “Those who suffer the worst oral health are found among the poor of all ages, with poor children and poor older Americans particularly vulnerable.”

2 The Burden of Oral Diseases in Rhode Island

Caries Experience (Cavities) & Untreated Decay

Nationally, dental caries (tooth decay) is the most common chronic disease of childhood; it is five times more common than childhood asthma and seven times more common than hay fever. Dental caries is a disease in which acids produced by bacteria on the teeth lead to loss of minerals from the enamel and dentin, the hard substances of teeth. Unchecked, dental caries can result in loss of tooth structure, inadequate tooth function, unsightly appearance, pain, infection and tooth loss. In children, untreated dental caries has a tremendous impact on their ability to learn and perform in school.

i. Children

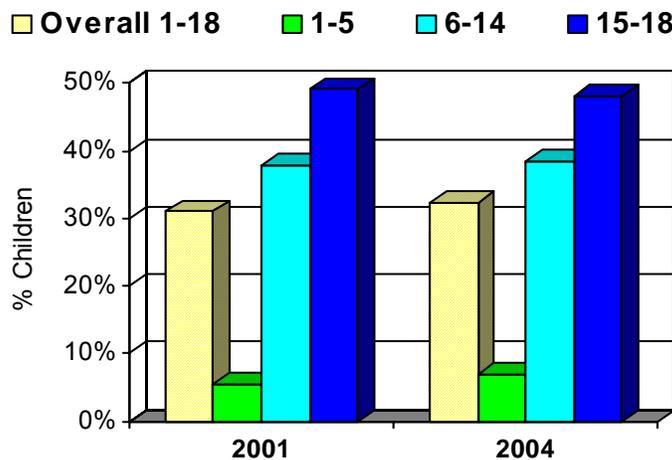
The prevalence of decay in children is measured through the assessment of caries experience (if they have ever had decay and now have fillings), untreated decay (active unfilled cavities), and urgent care (reported pain or a significant dental infection that requires immediate care). These indicators are consistent with the National Oral Health Surveillance System (NOHSS), which allows comparisons with other states and with the nation.

Historically, Rhode Island children have not escaped the consequences of almost universal oral disease. Despite significant advances in access to primary medical services afforded by RIte Smiles and RIte Care (the state's Medicaid managed care programs), access to oral health services in Rhode Island has been problematic.

Early childhood caries (ECC), with its enormous social and economic costs is of particular importance. Similar to far too many other conditions, ECC is not distributed evenly throughout the population; children from families with low incomes and some racial/ethnic minorities are affected at higher rates.^{2,3} ECC is a major problem in Rhode Island given that 1) children most at-risk for this affliction are likely to be of minority race/ethnicity and/or from families with low-income; 2) these families reside, for the most part, in the six core cities (Central Falls, Pawtucket, Providence, Newport, West Warwick, and Woonsocket); 3) children in these families typically experience more oral disease and less access to care than the general population; and 4) only 12 pediatric dentists practice in the state.^{4,5} Dental screenings performed in 2003 by the Rhode Island Department of Health (HEALTH) at selected Head Start sites statewide suggested that more than 10% of children enrolled in participating Head Start/Early Head Start programs had untreated decay and/or early childhood caries.

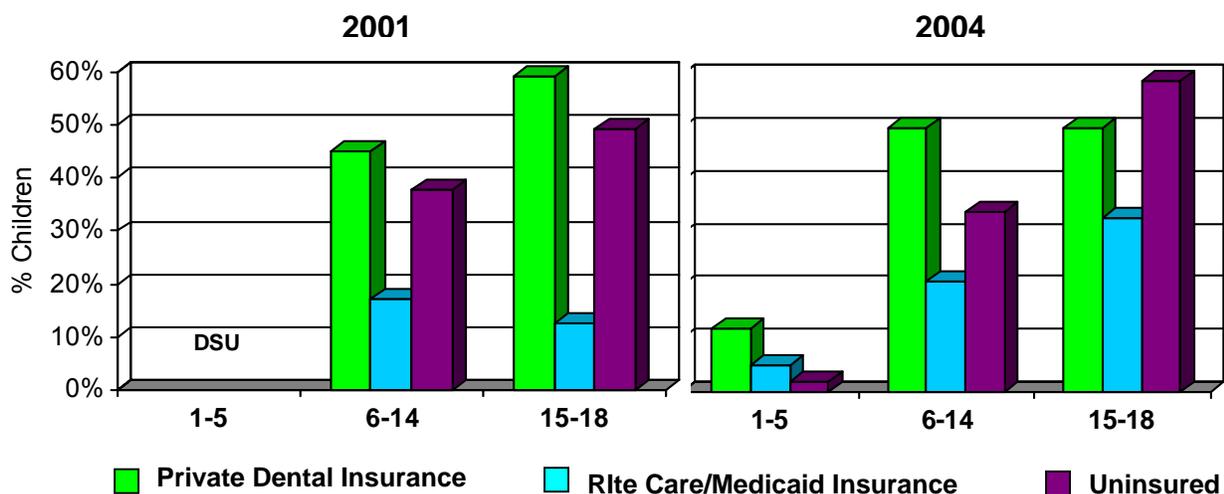
HEALTH will conduct a Basic Screening survey of 3rd graders in Spring 2007 to assess caries experience, untreated decay and urgent care. However, the presence of fillings in a child's mouth can also indicate caries experience. The Rhode Island Health Interview Survey (HIS) collects the percentage of Rhode Island children ages 1-18 that had one or more fillings in the course of their childhood. Results indicate that the percentage of children with one or more filling remained relatively constant from 2001 to 2004 (31.0% and 32.3%, respectively). As children age, they are more likely to have one or more fillings (see Figure 1). Additionally, children with private dental insurance coverage were more likely to have one or more fillings than uninsured and Rite Care/Medicaid recipients (see Figure 2).

Figure 1. Percent of Children that have one or more fillings.



Source: Health Interview Survey, 2001, 2004

Figure 2. Percent of Children that have one or more fillings by year & type of dental insurance.



Source: Health Interview Survey, 2001, 2004
 * DSU: Data is statistically unreliable for this group.

ii. Adults

People are susceptible to dental caries throughout their lifetime. Like children and adolescents, adults can experience new decay on the crown portion of the tooth. However, adults can also develop caries on the root surfaces of teeth as those surfaces become exposed to bacteria and carbohydrates as a result of gingival (gum) recession. In the most recent national examination survey, 85 percent of U. S. adults had at least one tooth with decay or a filling on the crown. Root surface caries affects 50 percent of adults aged 75 years or older.

Not only do adults experience dental caries, but a substantial proportion of that disease is untreated at any point in time. Although Rhode Island does not collect direct data on caries experience in adults, information can be gathered through the percentage of people that have had permanent teeth removed due to tooth decay or gum disease. This information is reviewed in the Tooth Loss section on page 15.

Oral and Pharyngeal Cancer

Cancer of the oral cavity or pharynx (oral cancer) is the fourth most common cancer in African American men and the seventh most common cancer in white men in the United States [Ries et al. 2004]. An estimated 28,000 new cases of oral cancer and 7,200 deaths from these cancers occurred in the United States in 2004. The 2001 age-adjusted incidence rate of oral cancer in the United States was 10.4 per 100,000 persons (adjusted to 2000 U.S. census data). Nearly 90% of oral cancer cases in the United States occur among persons aged 45 years and older. The age-adjusted incidence was more than twice as high among men (15.0) than among women (6.6), as was the mortality rate (4.1 vs. 1.6).

i. Survival Rates

Survival rates for oral cancer have not improved substantially over the past 25 years. More than 40% of persons diagnosed with oral cancer die within five years of diagnosis [Ries et al. 2004], although survival varies widely by stage of disease when diagnosed. The 5-year relative survival rate for persons with oral cancer diagnosed at a localized stage is 81%. In contrast, the 5-year survival rate is only 51% once the cancer has spread to regional lymph nodes at the time of diagnosis and is just 29% for persons with distant metastasis.

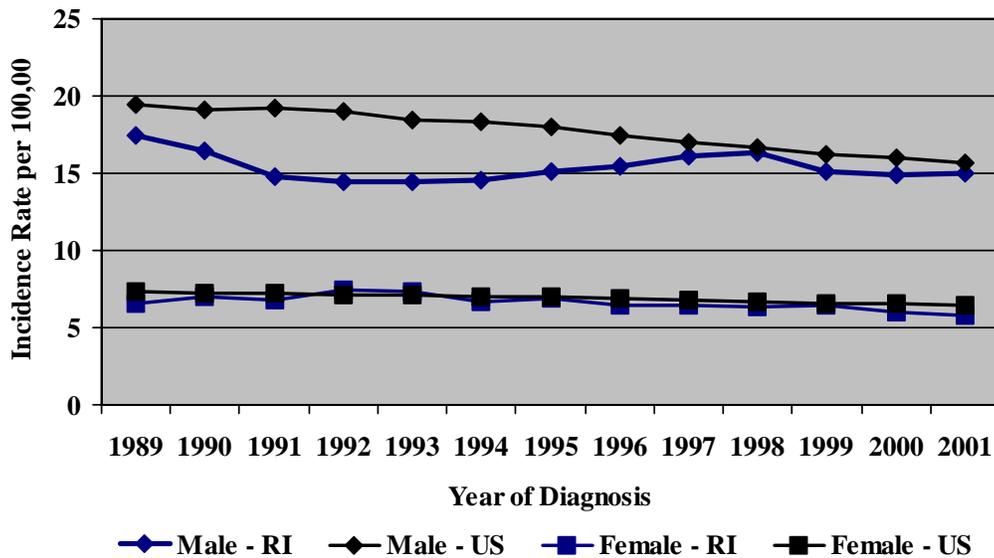
ii. Incidence Rates

Some groups experience a disproportionate burden of oral cancer. In <STATE> and nationally, African Americans are more likely than whites to develop oral cancer and much more likely to die from it. Cigarette smoking and alcohol are the major known risk factors for oral cancer in the United States, accounting for more than 75 percent of these cancers [Blot et al. 1988]. The use of tobacco, including smokeless tobacco [USDHHS 1986; IARC 2005] and cigars [Shanks & Burns 1998] also increases the risk of oral cancer. Dietary factors, particularly low consumption of fruit, and some types of viral infections also have been implicated as risk factors for oral cancer [McLaughlin et al. 1998; De Stefani et al. 1999; Levi 1999; Morse et al. 2000; Phelan 2003; Herrero 2003]. Radiation from sun exposure is a risk factor for lip cancer [Silverman et al. 1998].

The incidence rates of cancers of the oral cavity and pharynx for Rhode Island and the United States are shown in Figure 3. Overall, the incidence of oral cancer is higher in males than females. This gender differential is most likely related to parallel differentials in the rate of alcohol and tobacco use.

Between 1989 and 2001, the incidence of oral cancer in Rhode Island men fluctuated between 16.7 and 14.7 per 100,000 with no clear trend, while U.S. incidence rates declined steadily from 18.9 to 15.7. These data demonstrate that Rhode Island has not experienced a clear decline in the incidence of oral and pharyngeal cancers. This may indicate a need for additional efforts to control tobacco and alcohol use in Rhode Island among at-risk populations. For women, the incidence of oral cancer declined steadily both nationally and in the state: incidence in Rhode Island declined from a high of 7.5 in 1992 to a low of 5.8 in 2001, while U.S. rates declined to 6.4 during the same time period.

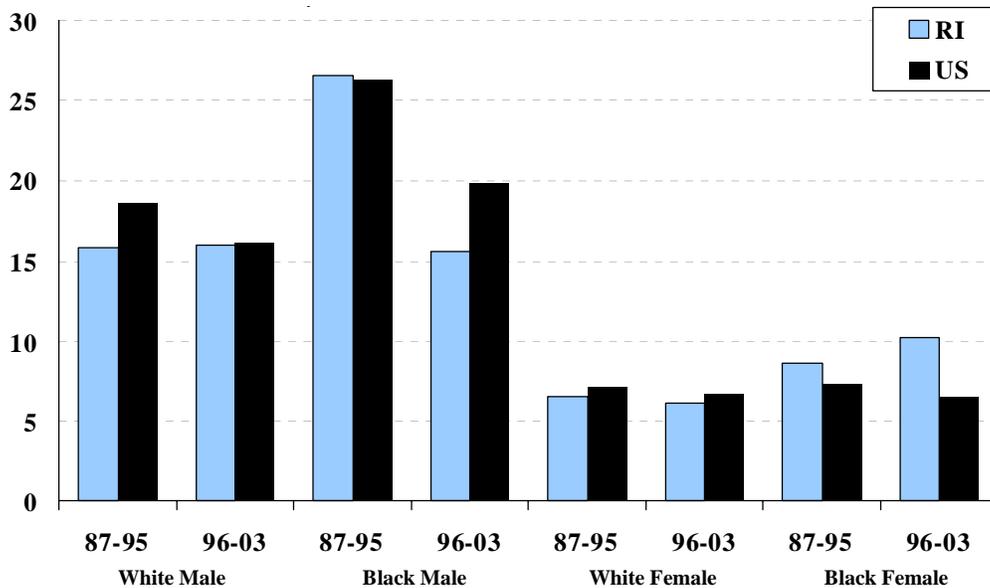
Figure 3. RI & US Oral & Pharyngeal Cancer Incidence Rates, All Ages, Male & Female *



*Incidence data provided by SEER Program. Rates calculated by the National Cancer Institute using SEER*Stat. Rates are age-adjusted to the 2000 US standard population by 5-year age groups. Rates are for invasive cancer only, unless otherwise specified.

Additionally, the incidence of oral cancer in Rhode Island remained about the same over time for white males and females, decreased for black males, and increased for black females as can be seen in Figure 4. Comparatively, U.S. incidence rates declined over time for males and females of both races. As seen in the Figure 3, a gender differential is observable across all groups, where males experience a higher incidence of oral cancer than females.

Figure 4. Cancers of the oral cavity & pharynx: age-adjusted incidence among residents, by sex, race, and year, RI/US, 1987-2003. *

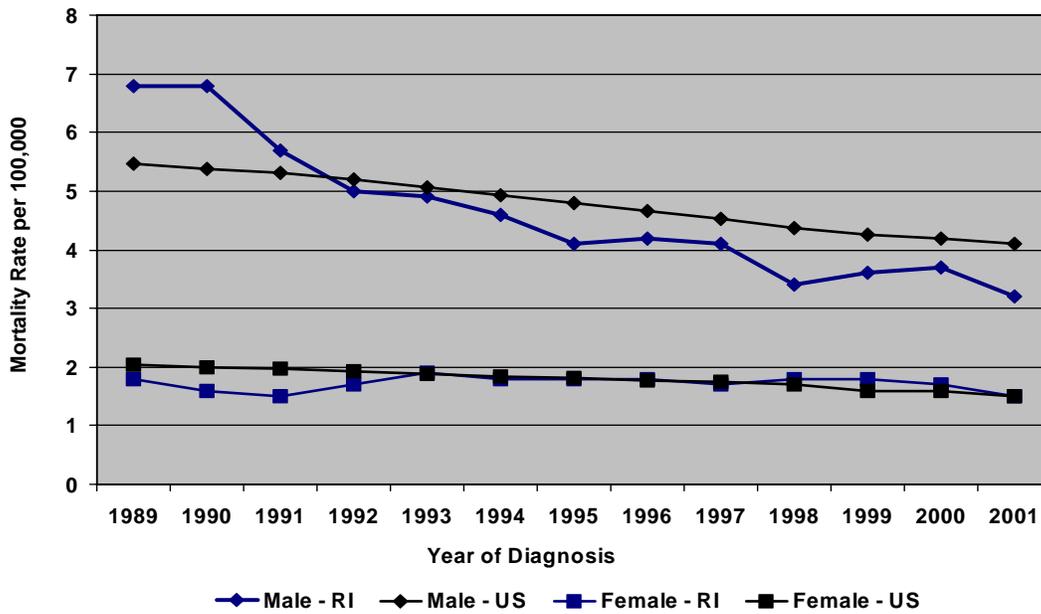


* Rates are age-adjusted to the year 2000 US standard population, expressed as cases per 100,000 population. Source: RICR, HEALTH; SEER Public-Use 1973-2003 Data; calculated with *SEER*Stat*.

iii. Mortality Rates

The oral cancer mortality rates by gender for Rhode Island and the U.S. are shown in Figure 5. As expected, mortality rates mimic the trend seen in the incidence rates and are higher for males than of females. Mortality from oral cancer declined strongly in Rhode Island males from 7.0 in 1989 to 3.2 in 2001, while the U.S. mortality rate also decreased over time from 5.5 in 1989 to 4.1 in 1998. However, it is interesting to note that Rhode Island rates were higher than U.S. rates early in the period of observation, but lower than U.S. rates late in the period of observation. Mortality from oral cancer in Rhode Island’s females fluctuated around an average rate of 1.8 throughout the observation period with no clear trend emerging. Nationally, mortality rates declined steadily from 2.0 in 1989 to 1.5 in 2001.

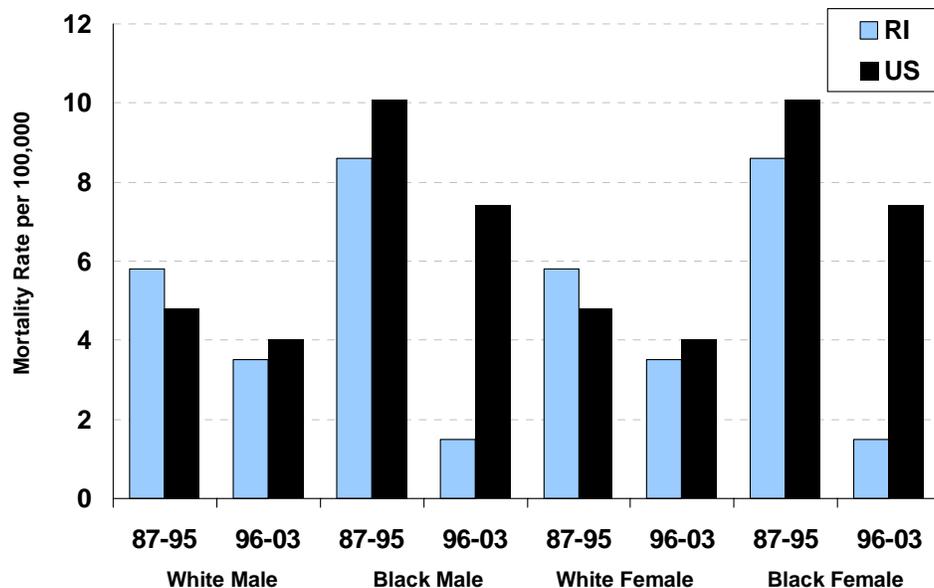
Figure 5. RI & US Oral & Pharyngeal Cancer Mortality Rates, All Ages, Male & Female *



* Rates are age-adjusted to the year 2000 US standard population, expressed as deaths per 100,000 population.
 ** Rates are five-year moving averages.
 Source: Office of Vital Records, HEALTH; SEER US Mortality 1969-2003 Data; calculated with SEER*Stat.

Oral cancer mortality rates by race and gender can be seen in Figure 6. Both nationally and in Rhode Island the oral cancer mortality rates among males and females declined steadily in both races, with very strong declines among black males and females in Rhode Island.

Figure 6. Cancers of the oral cavity and pharynx: age-adjusted mortality among resident females, by race and year, RI / US, 1987-2003. *



* Rates are age-adjusted to the year 2000 US population, expressed as deaths per 100,000 population.
 Source: Office of Vital Records, HEALTH; SEER US Mortality 1987-2003 Data; calculated with SEER*Stat.

Based on available evidence that oral cancer diagnosed at an early stage has a better prognosis, several *Healthy People 2010* objectives specifically address early detection of oral cancer: Objective 21-6 is to “Increase the proportion of oral and pharyngeal cancers detected at the earliest stage,” and Objective 21-7 is to “Increase the proportion of adults who, in the past 12 months, report having had an examination to detect oral and pharyngeal cancer” [USDHHS 2000b].

Oral and pharyngeal cancers are a significant issue in Rhode Island. Based upon the U.S. annual oral and pharyngeal cancer incidence rate of 11 per 100,000 and an annual death rate of 3 per 100,000,⁶ one can conservatively estimate approximately 110 new oral and pharyngeal cancer cases and 30 deaths per year in Rhode Island.

Tooth Loss

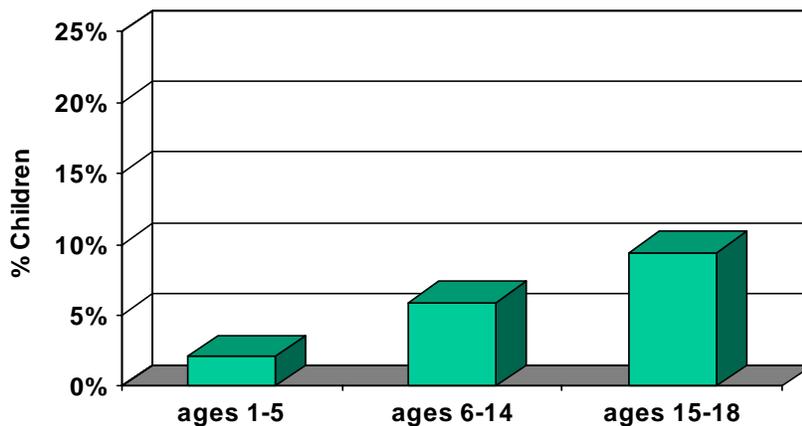
A full dentition is defined as having 28 natural teeth, exclusive of third molars (wisdom teeth) and teeth removed for orthodontic treatment or as a result of trauma. Most persons can keep their teeth for life with adequate personal, professional, and population-based preventive practices. As teeth are lost, a person's ability to chew and speak decreases and interference with social functioning can occur. The most common reasons for tooth loss in adults are tooth decay and periodontal (gum) disease. Tooth loss also can result from infection, unintentional injury, and treatment for cancer of the head and neck. In addition, certain orthodontic and prosthetic services sometimes require the removal of teeth.

Despite an overall trend toward a reduction in tooth loss in the U.S. population, not all groups have benefited to the same extent. Women tend to have more tooth loss than men of the same age group. African Americans are more likely than whites to have tooth loss. The percentage of African Americans who have lost one or more permanent teeth is more than three times as great as for whites. Among all predisposing and enabling factors, low educational level often has been found to have the strongest and most consistent association with tooth loss.

i. Children

In calendar year 2003, 6.0% of those children who had at least one dental visit during the year had at least one tooth extracted:

Figure 7. Percent of Children that had at least one tooth extracted, 2003



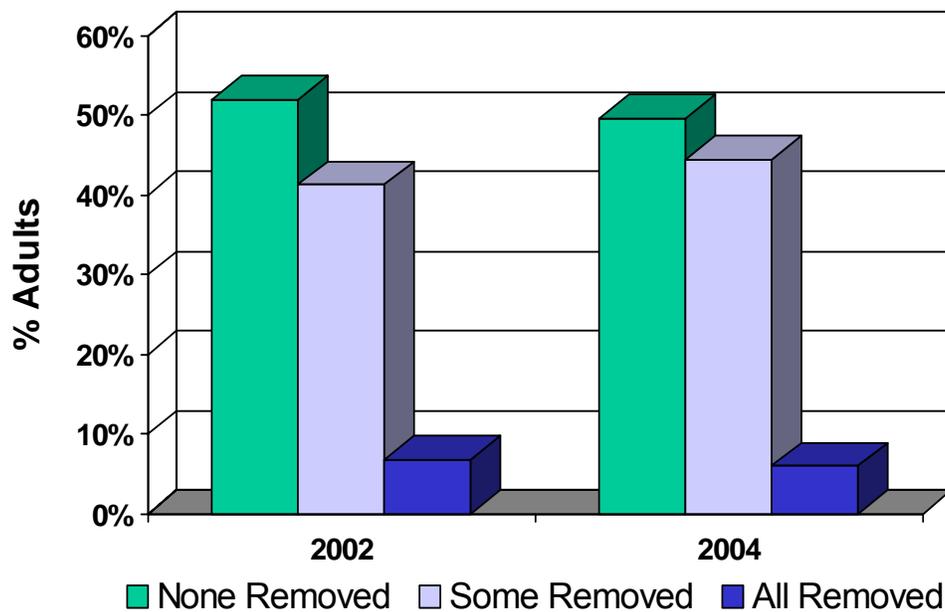
Source: Medicaid Management Information System, 2003

Parents of Rhode Island children ages 1-5 were asked if their child had ever lost a tooth or had a tooth removed by a dentist for any reason other than injury or natural tooth loss. Other reasons for tooth loss may include extraction due to tooth decay. The percent of children who had lost a tooth for these reasons decreased from 5.3% in 2001 to 3.7% in 2004 (Health Interview Survey 2001, 2004).

ii. Adults

The percent of Rhode Island adults reporting extraction of all their permanent teeth due to tooth decay and/or gum disease remained relatively constant at approximately 6.4%, while the percent of adults that did not have any teeth extracted decreased slightly from 51.9% to 49.6% between 2002 and 2004, respectively (see Figure 8).

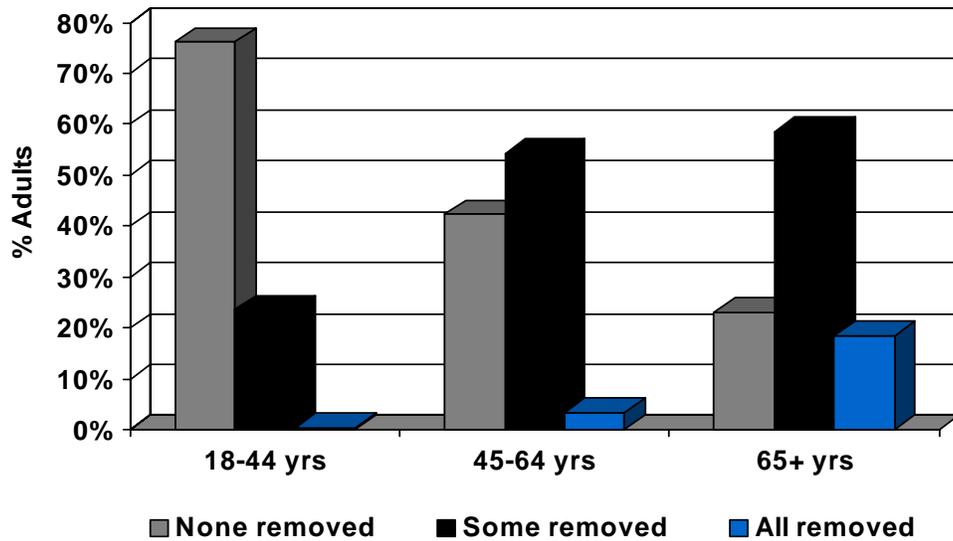
Figure 8. Percent of Adults with permanent teeth removed



Source: Behavioral Risk Factor Surveillance System, 2002, 2004

As expected, a higher percentage (76.1%) of younger adults (age 18-44 years) retained all of their permanent teeth, while that percentage decreased as the age group increased (45-64 years: 39.7%; 65+: 21.9%). Additionally, the percentage of people with all of their permanent teeth removed increase with age. These percentages and trends remained constant between 2002 and 2004.

Figure 9. Percent of Adults with permanent teeth removed, by age, 2004



Source: Behavioral Risk Factor Surveillance System

Cranio-Facial Injuries

The potential for exposure to oro-facial trauma situations is significant considering 25 million youths are participating in competitive school sports.¹ The magnitude of the problem is further reflected by a report indicating sports account for 36% of all unintentional injuries to children and adolescents.² The National Youth Sports Safety Foundation reported that dental injuries are the most common type of oro-facial injury sustained during participation in sports. Injuries appear to be more numerous in team sports, but more severe in individual sports.¹ Oro-facial injuries vary by sports; the mandatory use of protective gear by football and hockey athletes appears to limit their vulnerability when compared with soccer, basketball, and baseball athletes. However, the lack of a national database makes an accurate quantification difficult.

Fractured, displaced, or knocked-out front (incisor) teeth are the most common sports-related oro-facial injuries. Mandibular fractures are the most common oro-facial fracture: 31% of all mandibular fractures are sports related.³ Ten percent of all maxillo-facial fractures are sports related.⁴ Helmets and facemasks offer the athlete the most effective protection from oro-facial injuries; the devices are used in football, hockey, and lacrosse. The most common preventive measure used by youth and adolescent athletes is the mouth guard.

A lack of a state database makes an accurate quantification of the problem difficult. However, given there were an estimated 24,400 youngsters (boys = 14,200, girls = 10,200) participating in organized Rhode Island Interscholastic League (RIIL) sports programs, and assuming an injury rate of 13.1 injuries/100 boys/season and 5.9 injuries/100 girls/season, one can conservatively estimate 2,500 injuries in RIIL sponsored programs. Estimates of injuries in unorganized activities are more problematical since there is no accurate enumeration of participants.

Societal Impact

i. Social Impact

Oral health is related to well-being and quality of life as measured along functional, psychosocial, and economic dimensions. Diet, nutrition, sleep, psychological status, social interaction, school, and work are affected by impaired oral and craniofacial health. Oral and craniofacial diseases and conditions contribute to compromised ability to bite, chew, and swallow foods; limitations in food selection; and poor nutrition. These conditions include tooth loss, diminished salivary functions, oral-facial pain conditions such as temporomandibular disorders, alterations in taste, and functional limitations of prosthetic replacements. Oral-facial pain, as a symptom of untreated dental and oral problems and as a condition in and of itself, is a major source of diminished quality of life. It is associated with sleep deprivation, depression, and multiple adverse psychosocial outcomes.

More than any other body part, the face bears the stamp of individual identity. Attractiveness has an important effect on psychological development and social relationships. Considering the importance of the mouth and teeth in verbal and nonverbal communication, diseases that disrupt their functions are likely to damage self-image and alter the ability to sustain and build social relationships. The social functions of individuals encompass a variety of roles, from intimate interpersonal contacts to participation in social or community activities, including employment. Dental diseases and disorders can interfere with these social roles at any or all levels. Perhaps due to social embarrassment or functional problems, people with oral conditions may avoid conversation or laughing, smiling, or other nonverbal expressions that show their mouth and teeth.

ii. Economic Impact

◦ Direct Costs of Oral Diseases

Expenditures for dental services in the United States in 2003 were \$74.3 billion, 4.4% of the total spent on health care that year [Centers for Medicare & Medicaid Services 2004].

A large proportion of dental care is paid out-of-pocket by patients. Nationally in 2003, 44% of dental care was paid out-of-pocket, 49% was paid by private dental insurance, and 7% was paid by federal or state government sources. In comparison, 10% of physician and clinical services were paid out-of-pocket, 50% were covered by private medical insurance, and 33% were paid by government sources (Centers for Medicare & Medicaid Services, 2005. See <http://www.cms.hhs.gov/statistics/nhe/definitions-sources-methods/>).

◦ Indirect Costs of Oral Diseases

Oral and craniofacial diseases and their treatment place a burden on society in the form of lost days and years of productive work. In 1996, the most recent year for which national data are available, U.S. schoolchildren missed a total of 1.6 million days of school as a result of acute dental conditions, which is more than 3 days for every 100 students [USDHHS 2000a]. Acute dental conditions were responsible for more than 2.4 million days of work loss and contributed to a range of problems for employed adults, including restricted activity and bed days. In addition, conditions such as oral and pharyngeal cancers contribute to premature death and can be measured by years of life lost.

iii. Oral Disease and Other Health Conditions

Oral health and general health are integral to each other. Many systemic diseases and conditions including diabetes, HIV, and nutritional deficiencies, have oral signs and symptoms, and these manifestations may be the initial sign of clinical disease and therefore may serve to inform health care providers and individuals of the need for further assessment. The oral cavity is a portal of entry as well as the site of disease for bacterial and viral infections that affect general health status. Recent research suggests that inflammation associated with periodontitis may increase the risk of heart disease and stroke, premature births in some women, difficulty in controlling blood sugar in persons with diabetes, and respiratory infection in susceptible individuals. More research is needed in these areas.

Disparities

Dental caries is not uniformly distributed in the United States or in Rhode Island. Some groups are more likely to experience the disease and are less likely to receive treatment.

i. Socioeconomic Status

People living in low-income families bear a disproportionate burden from oral diseases and conditions. For example, despite progress in reducing dental caries in the United States, children and adolescents in families living below the poverty level experience more dental decay than do children who are economically better off. Furthermore, the caries seen in individuals of all ages from poor families is more likely to be untreated than caries in those living above the poverty level. Nationally, 50 percent of poor children aged 2 to 11 years have one or more untreated decayed primary teeth, compared with 31 percent of nonpoor children [USDHHS 2000a]. Poor adolescents aged 12 to 17 years in each racial/ethnic group have a higher percentage of untreated decay in the permanent teeth than does the corresponding nonpoor adolescent group. The pattern is similar in adults, with the proportion of untreated decayed teeth being higher among the poor than the nonpoor. At every age, a higher proportion of those at the lowest income level than at the higher income levels have periodontitis. Adults with some college (15%) have 2 to 2.5 times less destructive periodontal disease than do adults with high school (28%) or with less than high school (35%) levels of education [USDHHS 2000b]. Overall, a higher percentage of Americans living below the poverty level are edentulous (have lost all their natural teeth) than are those living above [USDHHS 2000a]. Among persons aged 65 years and older, 39 percent of persons with less than a high school education were edentulous in 1997, compared with 13 percent of persons with at least some college [USDHHS 2000b]. People living in rural areas also have a higher disease burden because of difficulties in accessing preventive and treatment services.

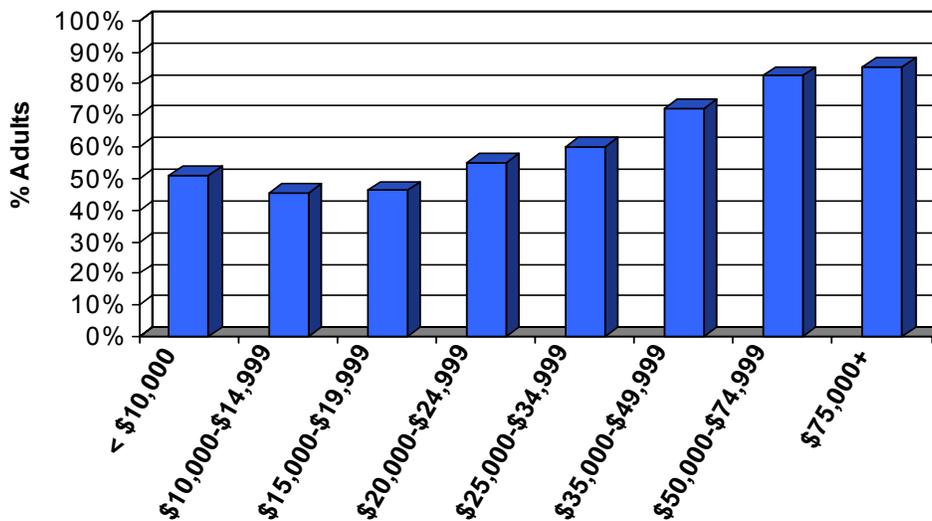
This disproportionate burden of oral disease is reflected at the state level as well, with child poverty in Rhode Island showing wide racial/ethnic disparities. In 2005, 19.5% of all Rhode Island children were poor (the highest child poverty rate in New England), up from 16% of children living in poverty in 2000^{7,8}. A comprehensive analysis of data reveals that 10.1% of White, non-Hispanic children are living below the poverty level, compared to 46.7% of Hispanic children, and 51.1% of Black/African-American children⁹. Additionally, a majority of these children live in the six “core cities”. Core cities are urban areas in which the physical, social, educational, and economic environment places the population at higher than average health risk when compared to other Rhode Island cities and towns. In 2000, 33.9% of children under 18 living in the core cities lived below the poverty

level, while only 6.8% of children under 18 living below the poverty level were living in the remainder of the state.¹⁰

On average, 35% of the State’s school-aged children meet the eligibility criteria for enrollment in the Free/Reduced-Price School Meal Program; five of the six core cities’ public schools significantly exceed this rate: Central Falls (80%); Providence (78%); Pawtucket (64%); Woonsocket (60%); and Newport (49%). Student eligibility in West Warwick’s public schools ranges from 19 – 84% and overall, the percent of students eligible for the West Warwick school lunch program is consistent with the state average.¹¹

Another important indicator of need is the number of children lacking health insurance. Given that dental insurance is most often employment-based, unemployed and part-time workers are less likely to have dental insurance. In 2000, 31% of Rhode Island children lived in families in which neither parent was employed full-time on a year-round basis.¹² Sixty-three percent of uninsured children live in families under 250% FPL thus qualifying for enrollment in Rite Care (the state’s Medicaid managed care program).¹³ This is indicated by Figure 10 below: A greater percentage of adults with the lowest income level (< \$10,000) have dental insurance compared to those with slightly higher income (\$10,000-\$19,999). However, while the availability of health insurance increases access, it does not guarantee entry into the health care system. This is particularly true for oral health services. Low family income, low educational attainment, lack of transportation, and language /cultural differences as well as the dearth of Medicaid provider participation by dentists pose real barriers to utilizing oral health care services appropriately.

Figure 10. Percent of Adults with Dental Insurance, by income, 2004



Source: Behavioral Risk Factor Surveillance System

ii. Racial & Ethnic Groups

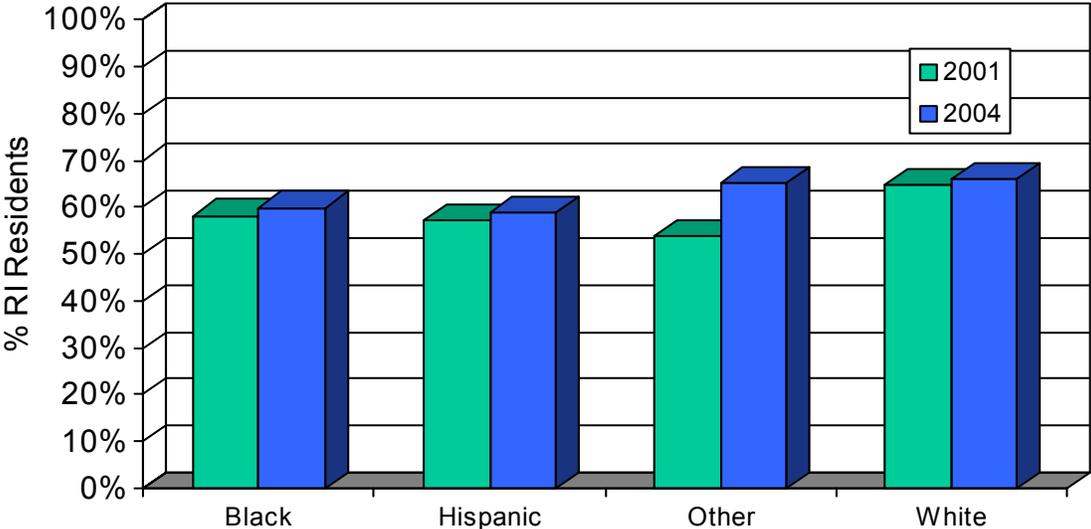
Although gains in oral health status have been achieved for the population as a whole, they have not been evenly distributed across subpopulations. Non-Hispanic blacks, Hispanics, American Indians and Alaska Natives generally have the poorest oral health of any of the racial and ethnic groups in the U.S. population. As reported above, these groups tend to be more likely than non-Hispanic whites to experience dental caries in some age groups, are less likely to have received treatment for it, and have more extensive tooth loss. African American adults in each age group are more likely than other racial/ethnic groups to have gum disease. Compared with white Americans, African Americans are more likely to develop oral or pharyngeal cancer, are less likely to have it diagnosed at early stages, and experience a worse 5-year survival rate.

Especially in urban areas, Rhode Island's changing population may account for a significant number of children experiencing dental disease. Providence, in particular, is home to an ever-growing number of immigrant families from Central and South America, Southeast Asia, and Africa who have not benefited from community water fluoridation, who may have limited knowledge of preventive oral health practices, and have limited experience with dental treatment.

Rhode Island's total population increased by 0.18% between 2002 and 2005, with substantial gains in people of minority race/ ethnicity. The minority population in Rhode Island increased from 15.7% in 2002 to 17.4% in 2005. During that period, the Hispanic population increased to 10.9% (96,510 to 112,722); Black/African-American population increased to 6.3% (54,845 to 65,032); American Indian/Alaska Native population increased by remained constant at 0.9% (9,063 to 9,077); and Asian population increased to 2.8% (28,881 to 28,964). Conversely, the population of White, non-Hispanic children decreased by 1.9% (891,813 to 873,665).¹⁴

Results of the Rhode Island Health Interview Survey indicate that race and ethnicity are not significant factors in whether a resident has dental insurance (see Figure 11). Additionally, a slight increase in the percentage of people with dental insurance was observed in each group of people between 2001 and 2004. Although the percentage of Rhode Island residents with dental insurance was relatively consistent among the various races/ethnicities, a higher percentage of White and Other residents (74.0% and 72.4%, respectively) visited the dentist in the past twelve months compared to the percentage of Black and Hispanic residents (59.9% and 62.2%, respectively) (see Figure 12).

Figure 11. Percent of RI residents with dental insurance, by race



Source: Rhode Island Health Interview Survey

iii. People with Special Health Care Needs

The oral health problems of individuals with disabilities are complex. These problems may be due to underlying congenital anomalies as well as to inability to receive the personal and professional health care needed to maintain oral health. More than 54 million persons are defined as disabled under the Americans with Disabilities Act, including almost 1 million children under 6 years of age and 4.5 million children between 6 and 16 years of age.

No national studies have been conducted to determine the prevalence of oral and craniofacial diseases among the various populations with disabilities. Several smaller-scale studies show that the population with intellectual disability or other developmental disabilities has significantly higher rates of poor oral hygiene and needs for periodontal disease treatment than the general population, due, in part, to limitations in individual understanding of and physical ability to perform personal prevention practices or to obtain needed services. Caries rates among people with disabilities vary widely among people with disabilities but overall their caries rates are higher than those of people without disabilities [USDHHS 2000a].

As can be expected, disease rates are higher and access to high quality oral health services is more limited for the state's most vulnerable populations including children with special health care needs [CSHCN]. The 2001 National Survey of Children with Special Health Care Needs reported that 78.2% of CSHCN needed dental care in the past year, which was the second highest service needed for CSHCN (prescription medicine was the most needed service at 87.9%). Additionally, dental care was the service most commonly reported as needed but not received, with more than 8% of CSNCN overall that needed but did not receive this service. A closer look at low income and uninsured CSHCN revealed a significant difference from the overall group: 16% of CSHCN below 200% of poverty and 29% of uninsured CSHCN needed dental care. It is estimated that 14.1% (approximately 35,265 children) of Rhode Island children [ages 0 to 17] have special health care needs, as compared with 12.8% nationally.¹⁵ Twenty-three percent of all households in Rhode Island include a child with at least one special health care need.¹⁶ The prevalence increases with age: 8% of children under the age of five, 16% of children ages six to 11 years, and 18% of children ages 12 to 17 have special health care needs. A higher percentage of children in low-income families in Rhode Island have special health care needs compared to those in the U.S., with approximately 17% of Rhode Island children in families with incomes less than 200% of the federal poverty threshold reporting special health care needs, compared with 13.6% nationally.¹⁷

Access to health insurance is especially important for CSHCN. Rhode Island is among the top ten states with the lowest rates of uninsured children (3.7% - three year average of 2003-2005) in the country.¹⁸ Children who meet certain disability

criteria are eligible for Medicaid and/or cash assistance through the federal Supplemental Security Income (SSI) program. As of December 31, 2005, there were 5,601 Rhode Island children under the age of 21 receiving Medical Assistance benefits because of their enrollment in SSI. In Rhode Island, the Katie Beckett eligibility provision provides Medical Assistance coverage to certain children who have serious disabling conditions, in order to enable them to be cared for at home instead of in an institution. As of December 31, 2005, there were 1,534 Rhode Island children under the age of 21 enrolled in Medical Assistance because of eligibility through the Katie Beckett provision.¹⁹

Reducing the prevalence of early childhood caries (ECC) in CSHCN, including those with disability and chronic illness, by programmatically addressing their needs through oral health promotion/disease prevention activities is consonant with *Oral Health in America: A Report of the Surgeon General*,²⁰ *Healthy People 2010: Objectives for Improving Health*,²¹ the National Oral Health Surveillance System,²² and the Rhode Island Commission on Oral Health.²³ ECC prevention/treatment is also one of the highest priorities for the Oral Health Program (OHP) at the Rhode Island Department of Health. The OHP has worked closely with Head Start/Early Head Start agencies statewide to train staff and parents in appropriate prevention measures, as well as providing leadership for the development of the Rhode Island Early Childhood Oral Health Coalition.

One of the special needs that deal specifically with oral structures is the incidence of cleft lip/palate. During 2005, there were 21 cases of cleft lip/palate (11 cases of cleft palate, 2 cases of cleft lip and 8 cases of cleft lip with cleft lip) among Rhode Island children. Additionally, there were 15 cases in 2004 and 17 cases in 2003²⁴. The Birth Defects Data Book contains data from 1999-2003 and reports that the incidence of cleft lip with and without palate occurs in 2.6 of 10,000 live births, while the incidence of cleft palate affects 7.8 in 10,000 live births²⁵.

Many of these issues were discussed at the Rhode Island Oral Health Forum for Children with Special Health Care Needs held in November 2006. Rhode Island was one of 11 states to receive funding from the Association of State and Territorial Dental Directors for a statewide forum to address the oral health of CSHCN. Family Voices of Rhode Island and the Oral Health Program collaborated to apply for this funding. The Forum provided an opportunity to solicit input from a multidisciplinary, multi-organizational group of stakeholders in developing an *Action Plan* to improve the oral health for this special population group. Key issues considered by participants included access to a medical/dental home, adequate insurance coverage, early screening, a coordinated organization of services, effective family involvement, preparation for the child's transition to adulthood, and education/training of oral health professionals willing to provide comprehensive care to children and adolescents with special health care needs.

iv. Women's Health

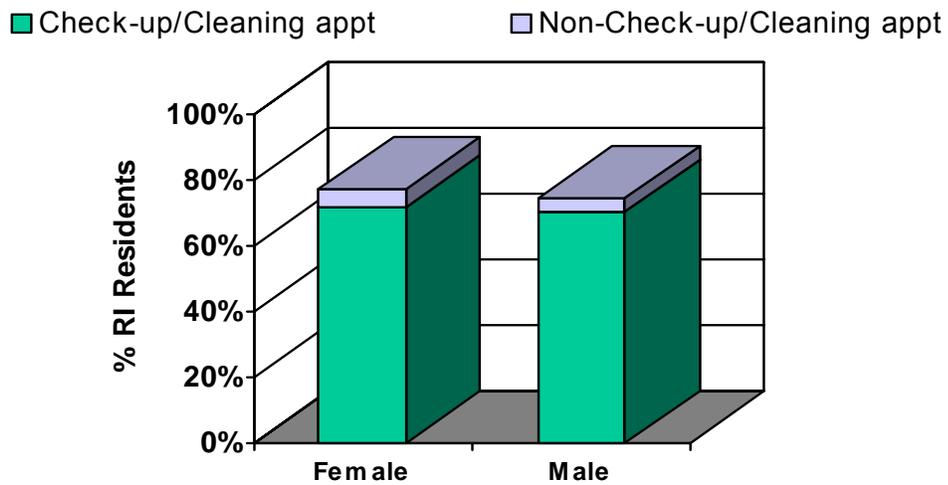
Most oral diseases and conditions are complex and are the product of interactions between genetic, socioeconomic, behavioral, environmental, and general health influences. Multiple factors may act synergistically to place some women at higher risk of oral diseases. For example, the comparative longevity of women, compromised physical status over time, and the combined effects of multiple chronic conditions and side effects from multiple medications used to treat them can result in increased risk of oral disease [Redford 1993].

Many women live in poverty, are not insured, and are the sole head of their household. For these women, obtaining needed oral health care may be difficult. In addition, gender-role expectations of women may affect their interaction with dental care providers and could affect treatment recommendations as well.

Many, but not all, national indicators show women to have better oral health status than do men [Redford 1993; USDHHS 2000a]. Women are less likely than men at each age group to have severe periodontal disease. Both African American and white women have a substantially lower incidence rate of oral and pharyngeal cancers than do African American and white men, respectively. However, a higher proportion of women than men have oral-facial pain, including pain from oral sores, jaw joints, face/cheek, and burning mouth syndrome.

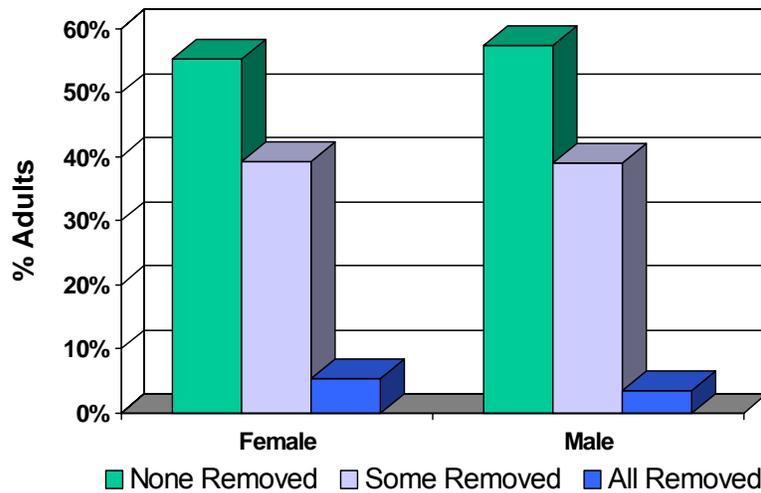
On the state level, a higher percentage of Rhode Island women report that they have seen a dentist in the past 12 months compared to of men (77.6% and 74.6%, respectively; see Figure 13). A more detailed analysis of the data reveals that a slightly higher percentage of women than men saw the dentist for both check-up/cleaning appointments and non-check-up/cleaning appointments. Additionally, a slightly higher percentage of women have had all of their teeth removed than men (see Figure 14), and the same trend is reflected in the percentage of women that have dental insurance (see Figure 15).

Figure 13. Percent of RI residents that had seen a dentist in the past 12 months, by gender, 2004



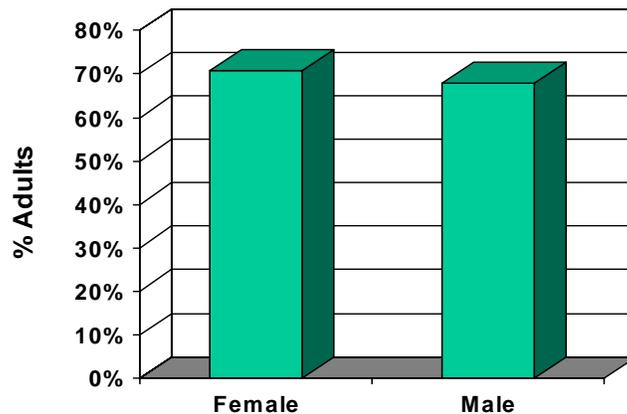
Source: Rhode Island Health Interview Survey

Figure 14. Percent of RI Adults with permanent teeth removed, by gender, 2004



Source: Behavioral Risk Factor Surveillance System

Figure 15. Percent of RI Adults with dental insurance, by gender, 2004



Source: Behavioral Risk Factor Surveillance System

v. Elders

Achieving oral health across the lifespan is not limited to maintaining healthy teeth. All elements of the craniofacial complex, including the teeth, gingiva, and tissues of face and head, must be maintained. Oral and craniofacial diseases/conditions include dental caries, periodontal disease, tooth loss, diminished salivary function, orofacial pain, oro-pharyngeal cancers, and functional limitations of prostheses. These diseases/conditions can diminish social interactions, self-esteem, appreciation for food flavors, chewing satisfaction, and overall quality of life for many elderly people. Elders experience a disproportionate rate of oral diseases and frail elders are especially vulnerable to increased morbidity as a result.

Per the U.S. Surgeon General's Report, *Oral Health in America*, the link between oral health and general health cannot be overlooked. Common chronic diseases and their medications negatively impact the oral cavity and, conversely, older individuals with physical/functional disabilities or who are medically compromised are at greater risk for oral diseases. Adults over age 65 have the highest out-of-pocket dental expenses and many elders face significant access barriers since insurance coverage for dental services through Medicare/Medicaid is virtually non-existent.

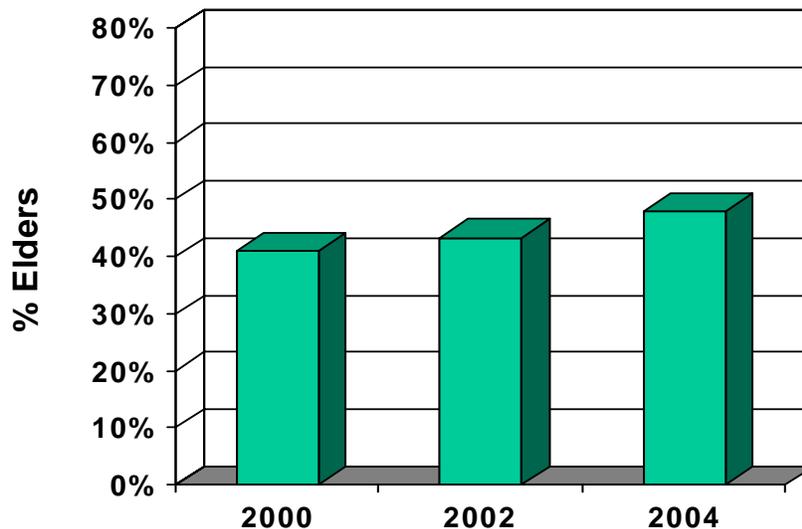
Nationally, approximately 50% of those ≥ 75 years have root caries in at least one tooth, while about 25% of older adults experience advanced periodontal disease. Elders with less education, lower income, and those of minority race/ethnicity experience greater unmet dental need. Older adults with poor general health may have difficulty maintaining adequate oral hygiene, visiting a dental office, or tolerating dental treatment due to limited dexterity, visual acuteness, mobility, and tolerance for stress. In addition, older adult smokers have a lower prevalence of tooth retention that might be related to the adverse effects of cigarette smoking.²⁶ Also, oropharyngeal cancers occur primarily in adults age 65+ years and these deadly cancers sometimes go unrecognized and untreated.

While approximately 12% of Americans are aged 65+ years, 14% of Rhode Islanders [n=143,565] are ≥ 65 years. The state ranks sixth in the nation of those ≥ 65 ; and fifth for those ≥ 75 years. Rhode Island elders are poorer than the national average also. Approximately 10% of the nation's older adults live at or below 100% of the federal poverty level (FPL); 31% at or below 200% FPL, while in Rhode Island, nearly 11% are $\leq 100\%$ FPL and 34% are $\leq 200\%$ FPL. Within Providence, the state's most diverse city, elders are the poorest in the state; nearly 19% of those ≥ 65 live at or below 100% FPL and 44% at or below $\leq 200\%$ FPL. Over half (54%) of the capitol city's population is of minority race/ethnicity and they comprise nearly half (49.6%) of the state's minority population overall.

Unfortunately, there is a dearth of current elder-specific oral disease data. The Rhode Island Behavioral Risk Factor Surveillance System (RI BRFSS) is the

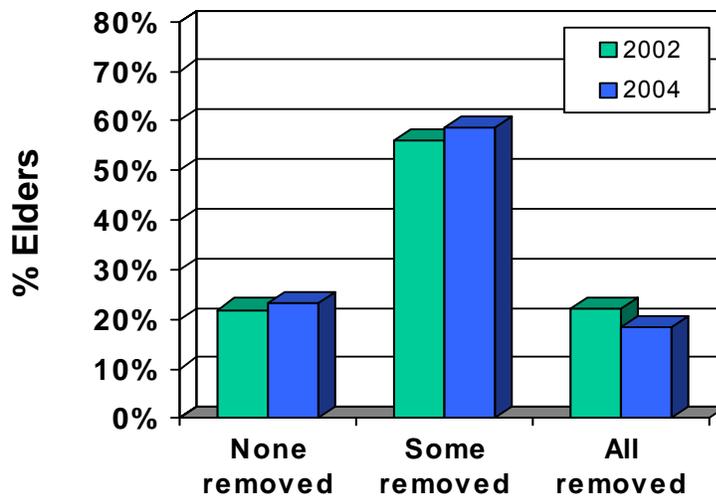
primary source of information on the oral health status and needs of the state's older adults, although the survey does not include institutionalized elders. Per 2004 RI BRFSS data, over 52% of adults ≥ 65 years of age reported that they are without dental insurance coverage and 27% reported that their last dental visit was one of more years ago; 59% of those ≥ 65 years of age indicated the loss of some, but not all, permanent teeth; while 18% reported extraction of all permanent teeth. Although these numbers are disheartening, there has been an increase of 6.9% over the past six years in the number of elders with dental insurance (see Figure 16); however, this has not affected the percentage of elders that have seen a dentist in the past twelve months, which has stayed relatively constant at 79-81% during the same time period. Another positive trend is the decreased percentage of elders that have had all their permanent teeth removed and the associated increases in the percentages of elders with either none or some of their teeth removed (see Figure 17).

Figure 16. Percent of Non-Institutionalized RI Elders (≥ 65 years) with dental insurance



Source: Behavioral Risk Factor Surveillance System, 2000, 2002, 2004

Figure 17. Percent of Non-Institutionalized RI Elders (≥ 65 years) with permanent teeth removed



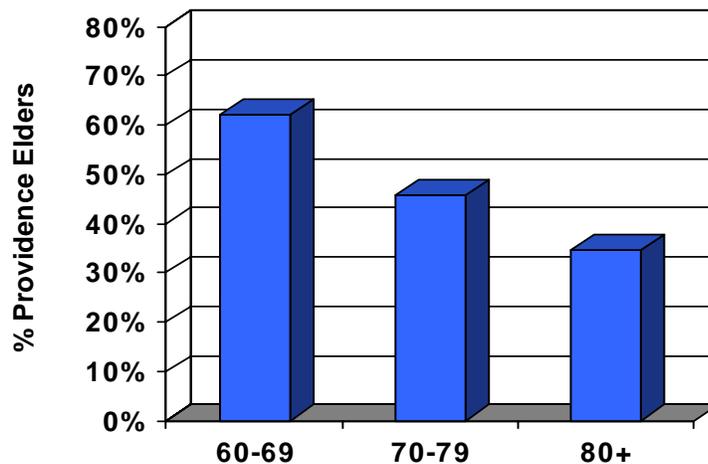
Source: Behavioral Risk Factor Surveillance System, 2002, 2004

To alleviate the dearth of information in this area, the *Providence Senior Smiles Project* was conducted in 2005 as an oral health surveillance and health promotion/disease prevention project to survey non-institutionalized elders in Providence through self-report. The project identified unmet oral health needs, established oral health promotion/disease prevention priorities, developed recommendations to address needs based on community resources, and strengthened interdepartmental/interdisciplinary partnerships for the benefit of targeted low-income and racially/ethnically diverse elders. Results of this project indicated a wide variation in the utilization of oral health services by elders as well as limited knowledge of the importance of oral health and its relationship with overall health. Providence is currently a dental health professional shortage area, and per a 2005 analysis of the city's dentist workforce conducted by the Rhode Island Department of Health, the low-income population-to-low-income full time equivalent (FTE) ratio for Providence was 10,961:1²⁷.

Data from the *Providence Senior Smiles Project* are depicted in Figures 18 - 23. Compared to 47.8.4% of statewide elders that dental insurance, a slightly higher percentage (51.0%) of Providence elders were found to report the same finding, although the Senior Smiles data shows that a higher percentage (62%) of elders age 60-69 had dental insurance, with decreasing percentages of elders with dental insurance in the 70-79 and 80+ age groups (see Figure 18). Compared to 81% of statewide elders that had seen a dentist in the last 12 months, only half that percentage (41.0%) of Providence elders were found to report the same finding (see Figure 19), while 38.2% reported that they did not have a reason to visit the dentist (see Figure 20). Of the 41.0% that visited the dentist, reasons for

the visit were the following: 39.0% had a check-up/cleaning, 27.9% had something wrong, and 25.5% were receiving follow-up care after a dentist found a problem (see Figure 21). Compared to 18.4% of statewide elders that had all their permanent teeth removed, a higher percentage (33.9%) of Providence elders were found to report the same finding (see Figure 22). Additionally, 33.1% of Providence elders reported that they avoid eating some foods due to problems with their teeth/dentures and 10.8% reported having difficulty swallowing certain foods (see Figure 23). Lastly, 49.0% of Providence elders reported having a dentist/dental clinic to address their oral health issues (see Figure 24).

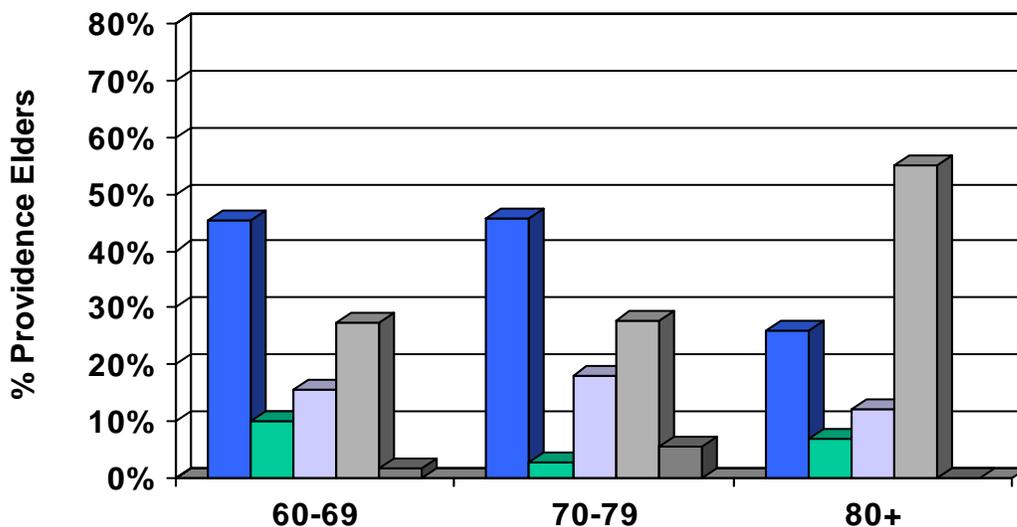
Figure 18. Percent of Non-Institutionalized Providence Elders (≥ 65 years) that have dental insurance, 2005



Source: Providence Senior Smiles Project, 2005

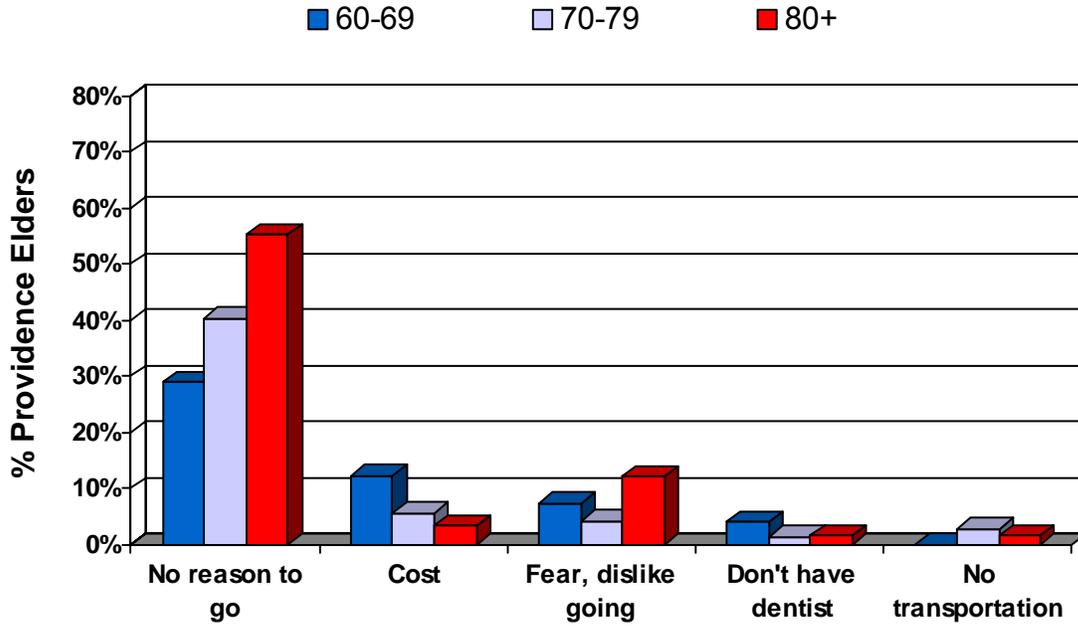
Figure 19. Percent of Non-Institutionalized RI Elders (≥ 65 years) that have seen the dentist within the last 1-5+ years, 2005

■ Within last year ■ 1-2 yrs ago ■ 2-5 yrs ago ■ 5+ yrs ago ■ Never



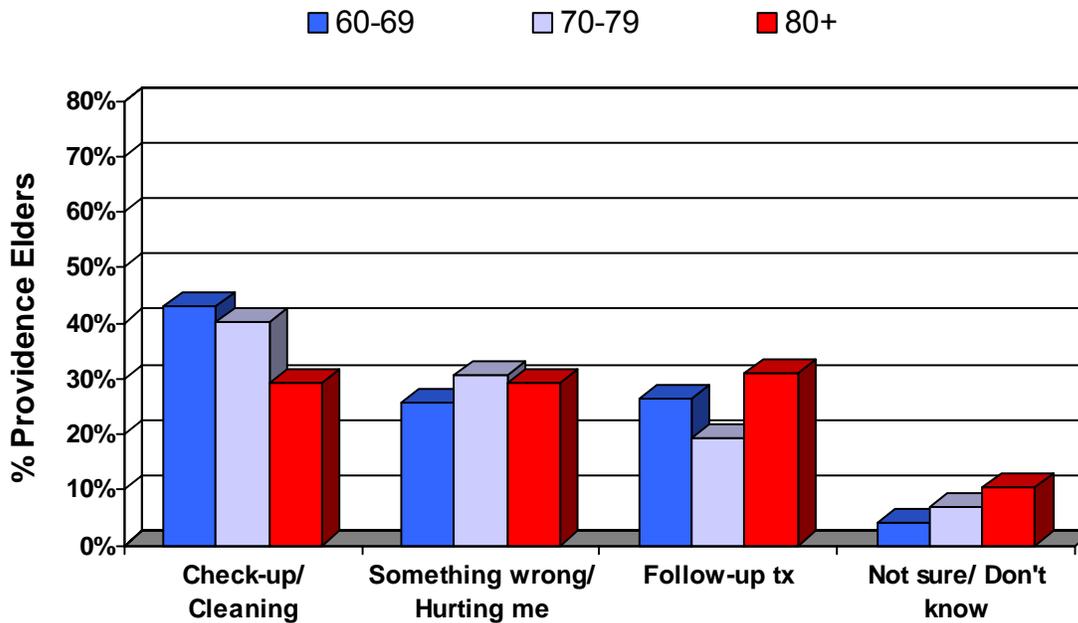
Source: Providence Senior Smiles Project, 2005

Figure 20. Percent of Non-Institutionalized RI Elders (≥ 65 years) that have not seen the dentist within the last year for specific reasons, 2005



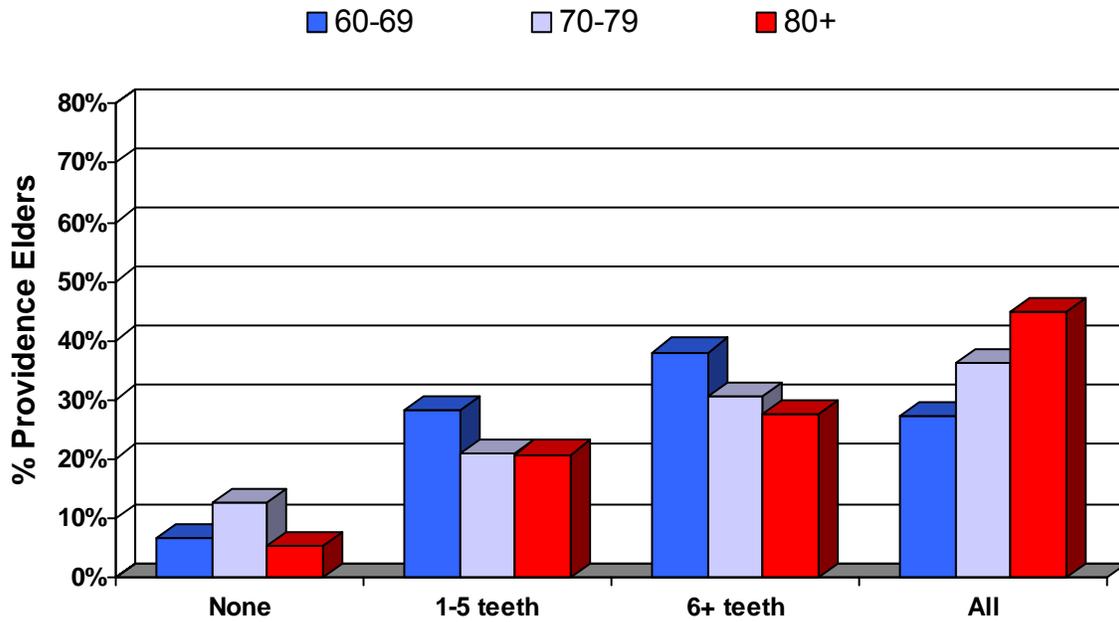
Source: Providence Senior Smiles Project, 2005

Figure 21. Percent of Non-Institutionalized RI Elders (≥ 65 years) with specific reasons for last dental visit, 2005



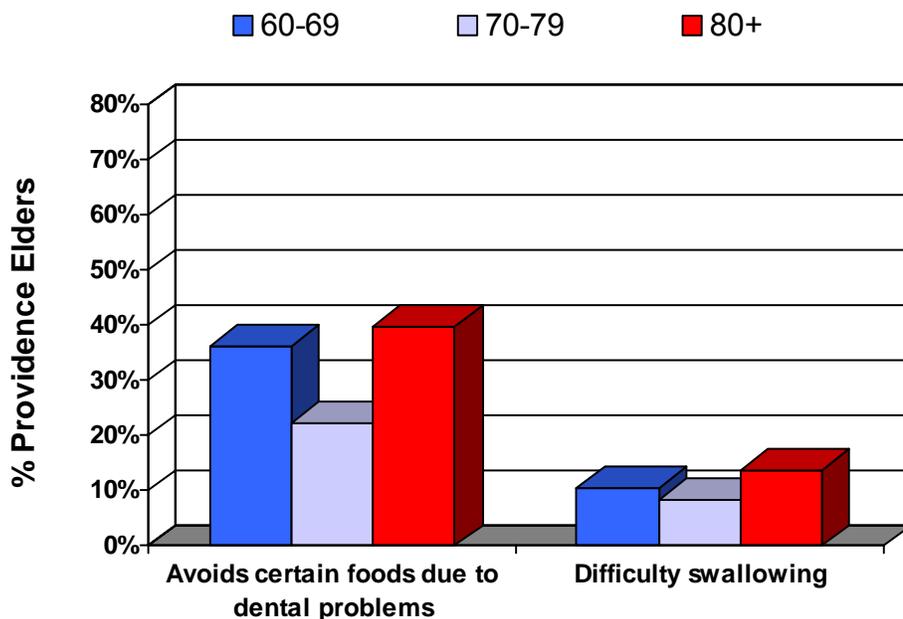
Source: Providence Senior Smiles Project, 2005

Figure 22. Percent of Non-Institutionalized RI Elders (≥ 65 years) with permanent teeth removed due to tooth decay or gum disease, 2005



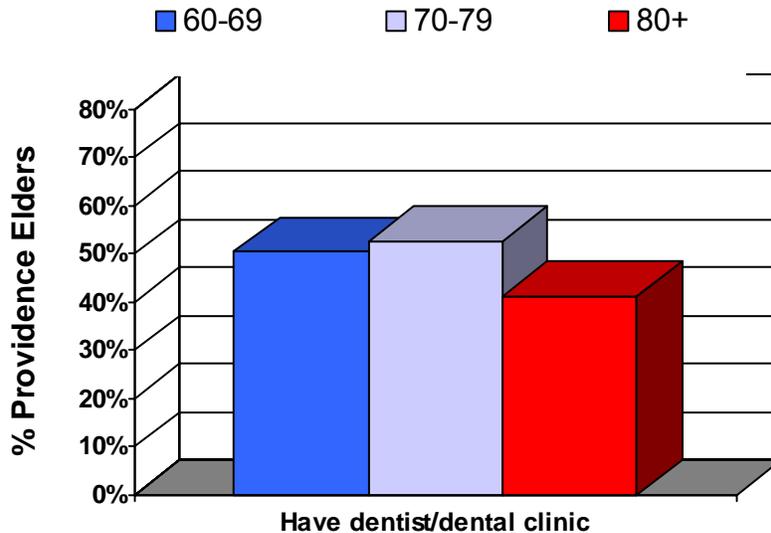
Source: Providence Senior Smiles Project, 2005

Figure 23. Percent of Non-Institutionalized RI Elders (≥ 65 years) that avoid eating certain foods due to problems with teeth/dentures or have difficulty swallowing foods, 2005



Source: Providence Senior Smiles Project, 2005

Figure 24. Percent of Non-Institutionalized RI Elders (≥ 65 years) that have a dentist/dental clinic to go to, 2005



Source: Providence Senior Smiles Project, 2005

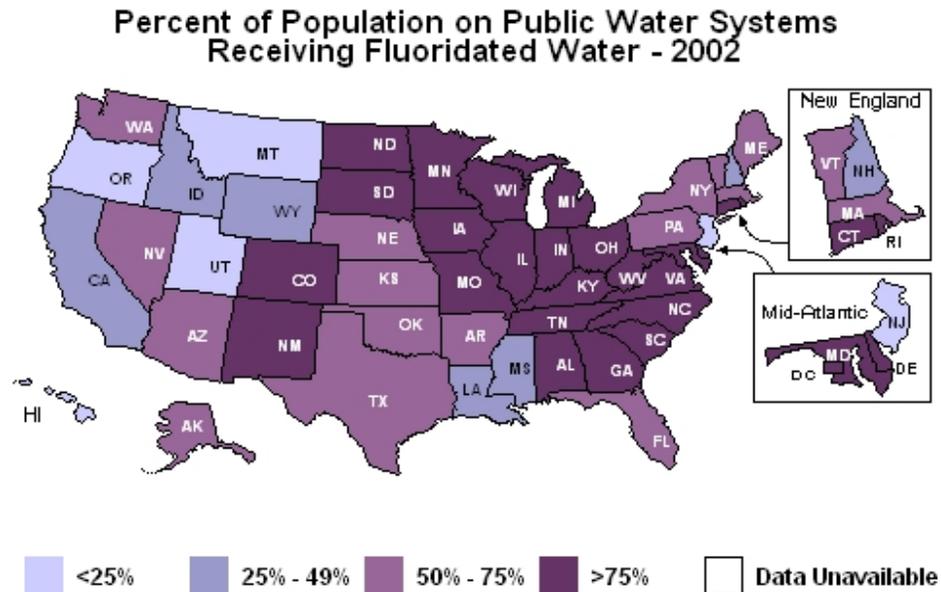
As noted above, the preceding information pertains to non-institutionalized elders in Rhode Island. A void in this information includes the oral health of elderly residents in Rhode Island’s nursing homes. Although people of every age in Rhode Island face challenges in accessing oral health care, it is this population, in particular recipients of Medicaid, that experience the highest level of challenges in accessing oral health care. Annually, there are approximately 11,750 Medicaid recipients in nursing homes statewide; however, between 2001 and 2002, only 29% of this population received any dental services.²⁸ Census projections of Rhode Island’s elder population predict that this group will increase by 49.7% by 2025.²⁹ Considering the serious health consequences associated with lapsed dental care, the lack of sufficient oral health services for the nursing home population can be considered a crisis. This well-documented problem led the Rhode Island Department of Human Services to work collaboratively with The Rhode Island Foundation to convene the Dental Care in Nursing Homes Workgroup, which was comprised of a broad group of oral health stakeholders, including state health officials, oral health professionals, nursing home medical staff and administrators, community health center directors, advocates for the elderly, and health care consultants. The Workgroup was charged with developing a strategy and potential solutions to address this crisis. Workgroup findings and recommendations were summarized in *Oral Health Care in Rhode Island Nursing Homes: The Crisis and Possible Solutions*, which is available online at http://www.rifoundation.org/matriarch/documents/RIF_Report.pdf.

3 Risk & Protective Factors Associated with Oral Disease in Rhode Island

The most common oral diseases and conditions can be prevented. Safe and effective measures are available to reduce the incidence of oral disease, reduce disparities, and increase quality of life.

Community Water Fluoridation

Community water fluoridation is the process of adjusting the natural fluoride concentration of a community's water supply to a level that is best for the prevention of dental caries. In the United States, community water fluoridation has been the basis for the primary prevention of dental caries for 60 years and has been recognized as one of 10 great achievements in public health of the 20th century. It is an ideal public health method because it is effective, eminently safe, inexpensive, requires no behavior change by individuals, and does not depend on access or availability of professional services. Water fluoridation is equally effective in preventing dental caries among different socioeconomic, racial, and ethnic groups. Fluoridation helps to lower the cost of dental care and helps residents retain their teeth throughout life [USDHHS 2000a].



Source: Water Fluoridation Reporting System 2002

Recognizing the importance of community water fluoridation, *Healthy People 2010* Objective 21-9 is to “Increase the proportion of the U.S. population served by community water systems with optimally fluoridated water to 75 percent.” In the United States during 2002, approximately 170 million persons (67 percent of

the population served by public water systems) received optimally fluoridated water [CDC 2004].

Not only does community water fluoridation effectively prevent dental caries, it is one of very few public health prevention measures that offer significant cost savings to almost all communities [Griffin et al. 2001]. It has been estimated that about every \$1 invested in community water fluoridation saves approximately \$38 in averted costs. The cost per person of instituting and maintaining a water fluoridation program in a community decreases with increasing population size.

Rhode Island has enjoyed a highly effective public water system fluoridation program covering 841,000 individuals or 85% of the total population and 89% of the population served by public water systems.³⁰ Another 77,000 individuals are served by public water systems in four cities of Washington County. Successfully fluoridating these public water systems would result in 87% of the total population and 97% of the population served by public water systems receiving the benefits of fluoridation.

Topical Fluorides and Fluoride Supplements

Because frequent exposure to small amounts of fluoride each day will reduce the risk of dental caries in all age groups, all people should drink water with an optimal fluoride concentration and brush their teeth twice daily with fluoride toothpaste [CDC 2001]. For communities that do not receive fluoridated water and persons at high risk of dental caries, additional fluoride measures might be needed. Community measures include fluoride mouth rinse or tablet programs, which typically are conducted in schools. Individual measures include professionally applied topical fluoride gels or varnish for persons at high risk of caries.

Currently, North Kingstown is the only Rhode Island community to conduct a fluoride rinse program in elementary schools. Conducted by the North Kingstown LINKS Program, the fluoride rinse program had 549 participants in primary grades (1-3) and 401 participants in intermediate grades (4-5) during the school year 2005-2006. These children comprised 57.9% of the total North Kingstown elementary school enrollment for that year. The current school year 2006-2007 had an increased number of elementary school students participating in the program, bringing the percentage of children receiving fluoride rinses in North Kingstown elementary schools up to approximately 70%.³¹

Dental Sealants

Since the early 1970s, the incidence of childhood dental caries on smooth tooth surfaces (those without pits and fissures) has declined markedly because of widespread exposure to fluorides. Most decay among school age children now occurs on tooth surfaces with pits and fissures, particularly the molar teeth.

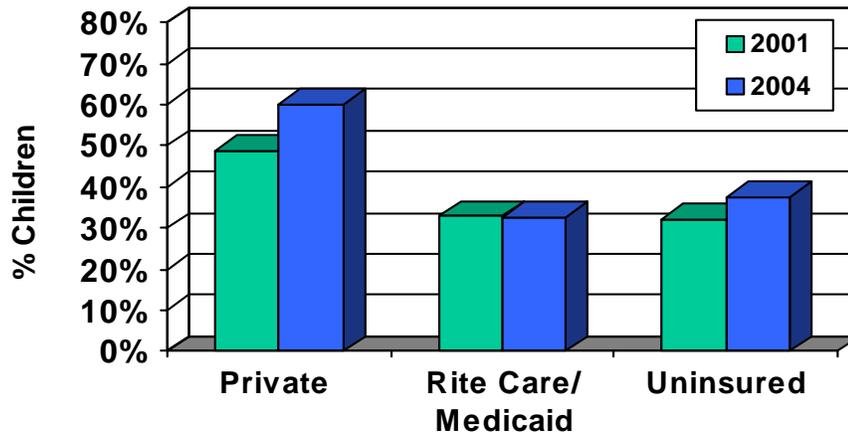
Pit-and-fissure dental sealants (plastic coatings bonded to susceptible tooth surfaces) have been approved for use for many years and have been recommended by professional health associations and public health agencies. First permanent molars erupt into the mouth at about age 6 years. Placing sealants on these teeth shortly after their eruption protects them from the development of caries in areas of the teeth where food and bacteria are retained. If sealants were applied routinely to susceptible tooth surfaces in conjunction with the appropriate use of fluoride, most tooth decay in children could be prevented [USDHHS 2000b].

Second permanent molars erupt into the mouth at about age 12 to 13 years. Pit-and-fissure surfaces of these teeth are as susceptible to dental caries as the first permanent molars of younger children. Therefore, young teenagers need to receive dental sealants shortly after the eruption of their second permanent molars.

The *Health People 2010* target for dental sealants on molars is 50 percent for 8-year-olds and 12-year-olds. The most recent estimates of the proportion of children aged 8 years with dental sealants on one or more molars are presented. Within each age group, African Americans and Mexican Americans are less likely than non-Hispanic whites to have sealants. The prevalence of sealants also varies by the education level of the head of the household.

In 2001 and 2004, parents of Rhode Island children ages 6-18 were asked if their children had ever received dental sealants. Overall, the percentage of children reported to have received sealants increased from 43.0% in 2001 to 51.1% in 2004. During the most recent survey, children with private dental insurance coverage were more likely to have received dental sealants (60.0%) than were children on RItte Care/Medicaid (32.7%) or uninsured children (37.44%) (see Figure 25).

Figure 25. Percent of RI Children that had sealants placed on teeth, by dental insurance type, 2001, 2004



Source: Health Interview Survey, 2001, 2004

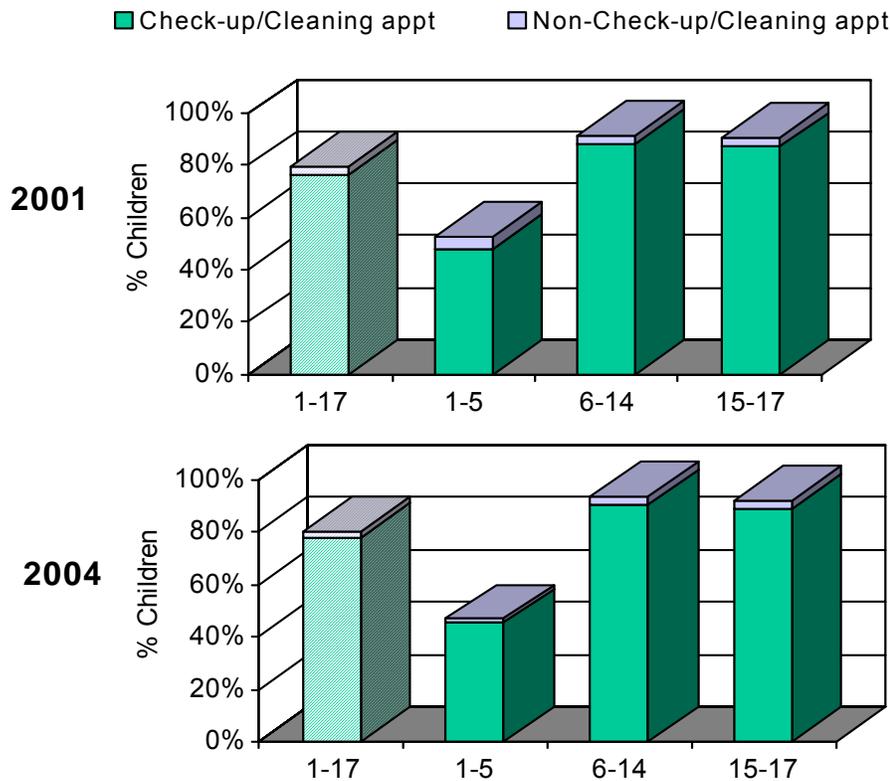
Based upon data from the Medicaid Management Information System, data can be analyzed from a single calendar year: in 2003, 13.7% of Rhode Island children ages 6 to 18 that are Medicaid recipients received at least one dental sealant. Additionally, of those children ages 6 to 14 that had at least one dental visit in calendar year 2003, 15.47% received at least one dental sealant, while less than half that percentage (7.4%) of children ages 15 to 18 had received at least one dental sealant³².

Preventive Visits

Maintaining good oral health takes repeated efforts on the part of the individual, caregivers, and health care providers. Daily oral hygiene routines and health lifestyle behaviors play an important role in preventing oral diseases. Regular preventive dental care can reduce the development of disease and facilitate early diagnosis and treatment. One measure of preventive care that is being tracked, as shown in Table VIII, is the percentage of adults who had their teeth cleaned in the past year. Having one's teeth cleaned by a dentist or dental hygienist is indicative of preventive behaviors.

For children who had seen a dentist in the past year, a vast majority of these visits were primarily for checkups or cleanings. Overall, the percentage of checkup and cleaning visits increased between 2001 and 2004 (76.8% and 78.1%, respectively) (see Figure 26).

Figure 26. Percent of RI Children that had seen a dentist in the past year

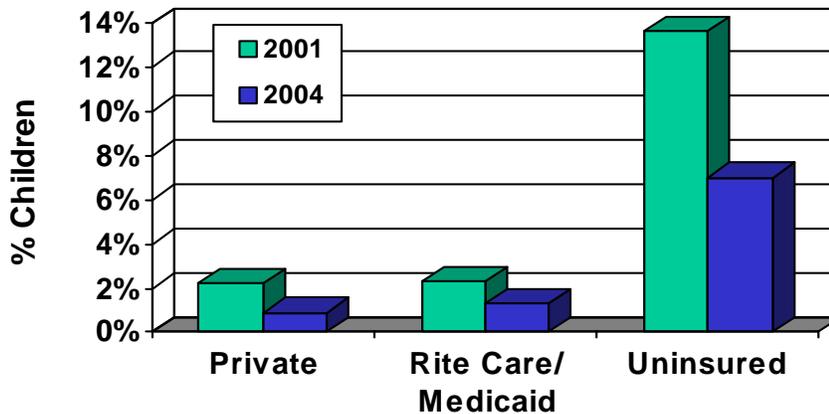


Source: Health Interview Survey, 2001, 2004

Utilization of Dental Services

Primary prevention of tooth decay or other oral disease conditions requires access and use of preventive services. Secondary prevention in oral health primarily relies on the treatment of tooth decay. Parents of Rhode Island children ages 1-18 were asked if they were not able to get dental care for their children in the past year because they couldn't afford it. Overall, the percentage of children unable to receive dental care due to expense decreased from 5.7% in 2001 to 2.8% in 2004. Uninsured children were more likely not to get dental care because of the expense than were children with private health insurance coverage and children on RItte Care/Medicaid (see Figure 27). Older children were more likely not to get dental care because of the expense than were younger children, although the number of respondents was too low to statistically analyze.

Figure 27. Percent of RI Children that needed dental care in the past 12 months but did not receive it because they could not afford it, by dental insurance type, 2001, 2004



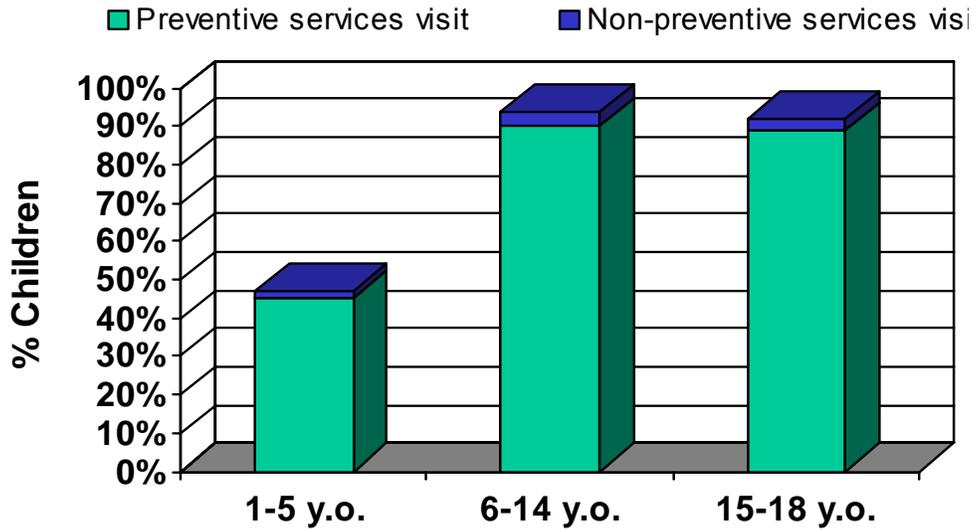
Source: Health Interview Survey, 2001, 2004

Parents of Rhode Island children ages 1-18 who were on RItte Care/Medicaid were asked if they delayed or didn't get dental care for their children because they couldn't find a dentist or didn't know a dentist who would accept their Medicaid coverage. They reported that it was more difficult to find a dentist or more people didn't know a dentist who would accept their Medicaid coverage in 2004 than in 2001 (10.3% and 8.9%, respectively). Older children on RItte Care/Medicaid were more likely to delay or not get dental care because they couldn't find a dentist who would accept their Medicaid coverage than were younger children, although the number of respondents were too low to statistically analyze.

In calendar year 2003, there were approximately 96,951 children ages 1-18 who were enrolled in RItte Care/Medicaid for some period of time and were eligible for dental benefits. Of these children, 38.2% received at least one dental visit paid

by Medicaid during the year: 34.7% visited the dentist for preventive services, while 3.5% of visited for non-preventive services. (See Figure 28.)

Figure 28. Percent of RI Children that had seen a dentist in the past 12 months for a preventive visit, by age, 2004



Source: Health Interview Survey, 2004

Tobacco Control

Use of tobacco has a devastating impact on the health and well-being of the public. More than 400,000 Americans die each year as a direct result of cigarette smoking, making it the nation's leading preventable cause of premature mortality, and smoking caused over \$150 billion in annual health-related economic losses [CDC 2002b]. The effects of tobacco use on the public's oral health are alarming. The use of any form of tobacco – including cigarettes, cigars, pipes, and smokeless tobacco – has been established as a major cause of oral and pharyngeal cancer [USDHHS 2004a]. The evidence is sufficient to consider smoking a causal factor for adult periodontitis [USDHHS 2004a]; one-half of the cases of periodontal disease in this country may be attributable to cigarette smoking [Tomar & Asma 2000]. Tobacco use substantially worsens the prognosis of periodontal therapy and dental implants, impairs oral wound healing, and increases the risk for a wide range of oral soft tissue changes [Christen et al. 1991; AAP 1999].

Comprehensive tobacco control also would have a large impact on oral health status. The goal of comprehensive tobacco control programs is to reduce disease, disability, and death related to tobacco use by:

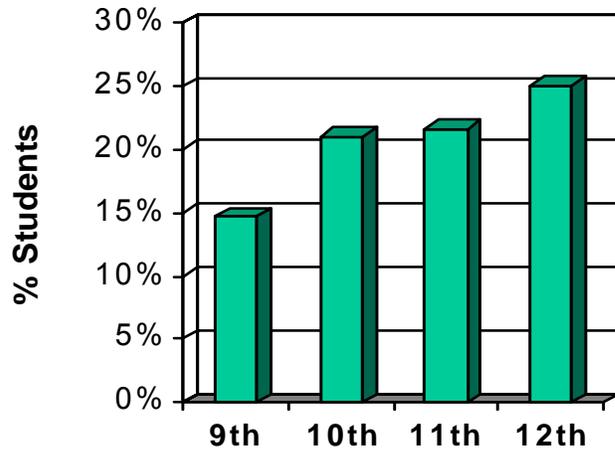
- Preventing the initiation of tobacco use among young people;
- Promoting quitting among young people and adults;
- Eliminating nonsmokers' exposure to secondhand tobacco smoke; and
- Identifying and eliminating the disparities related to tobacco use and its effects among different population groups.

The dental office provides an excellent venue for providing tobacco intervention services. More than one-half of adult smokers see a dentist each year [Tomar et al. 1996] as do nearly three-quarters of adolescents [NCHS 2004]. Dental patients are particularly receptive to health messages at periodic check-up visits, and oral effects of tobacco use provide visible evidence and a strong motivation for tobacco users to quit. Because dentists and dental hygienists can be effective in treating tobacco use and dependence, the identification, documentation, and treatment of every tobacco user they see needs to become a routine practice in every dental office and clinic [Fiore et al. 2000]. However, national data from the early 1990s indicated that just 24 percent of smokers who had seen a dentist in the past year reported that their dentist advised them to quit, and only 18 percent of smokeless tobacco users reported that their dentist *ever* advised them to quit.

In 2005, 20.2% of Rhode Island public high school students reported use of any tobacco, including cigarettes, cigars, chewing tobacco, snuff or dip, in the past 30 days. It can be observed that incidence of tobacco use increases as students age, as can be seen in Figure 29. Pleasantly, current cigarette use decreased significantly from 35% in 1997 to 16% in 2005 with only 8% of students reporting cigarette use at school.

Comparatively, 21.3% of Rhode Island adults reported in 2004 that they currently smoke cigarettes. This percentage had decreased slightly over the previous four years showing a related 2% increase in the percent of adults reporting themselves as a former smoker (see Figure 30). Age was a predictor in whether an adult was a current or former smoker: 43.7% of adults age 18-44 years reported that they were current/former cigarette smokers while 55.6% of adults age 65+ years reported the same response (see Figure 31). Correspondingly, a higher percentage (56.2) of adults age 18-44 years reported having never smoked a cigarette while only 44.4% of adults age 65+ reported the same response (see Figure 31).

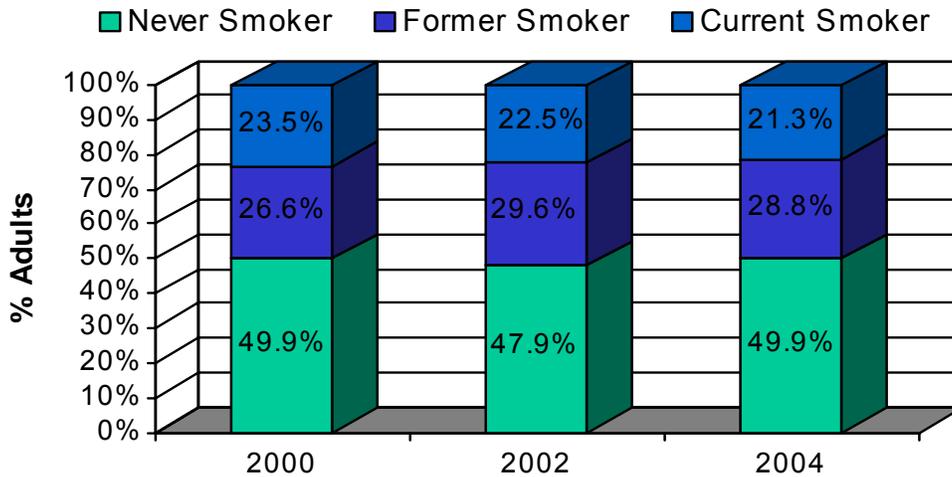
Figure 29. Incidence of tobacco* use in RI public high school students, by grade, 2005



* Includes cigarettes, cigars, chewing tobacco, snuff or dip.

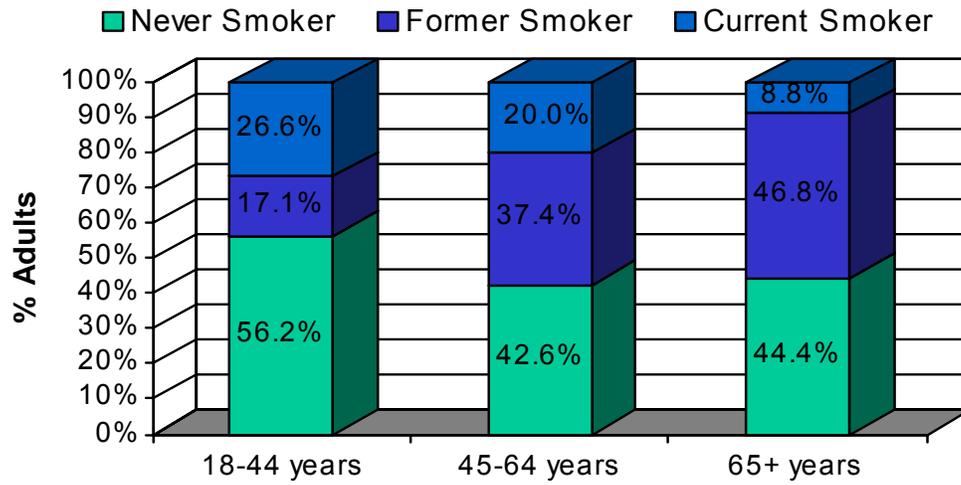
Source: Rhode Island Youth Risk Behavior Survey, 2005

Figure 30. Incidence of smoking in RI Adults, by year, 2000, 2002, 2004



Source: Behavioral Risk Factor Surveillance System, 2004

Figure 31. Incidence of smoking in RI Adults, by age, 2004



Source: Behavioral Risk Factor Surveillance System, 2004

Oral Health Education

Oral health education for the community is a process that informs, motivates, and helps people to adopt and maintain beneficial health practices and lifestyles; advocates environmental changes as needed to facilitate this goal; and conducts professional training and research to the same end [Kressin and DeSouza 2003]. Although health information or knowledge alone does not necessarily lead to desirable health behaviors, knowledge may empower people and communities to take action to protect their health.

Current Rules and Regulation for School Health Programs require that all children, in grades K-6, and one time at the secondary level, receive an annual dental examination by a dentist. For this purpost the state's school districts contract with licensed practicing Rhode Island dentists to perform this function.

The vision for health education in the state "is a comprehensive, sequential, kindergarten through grade 12 program, resulting in students who chooise to live healthy lifestyles" and establishes goals for 2005 that include: 1) Health education is recognized as a core content area in the curriculum; 2) Daily health education activities are taught by qualified health educators; 3) Schools and communities advocate for the crucial role of health education; 4) The school environment is safe and healthy; 5) Adults in schools are modeling healthy behaviors; 6) Parents are involved in student health education curricula and activities; and 7) The community serves as a resource and reinforcement of school health education.

In a recent revision of the Health Education Standards for Personal Health Performance Descriptions, oral health knowledge and performance, at a minimum, are reflected across the K-12 educational continuum in three of the seven recommended standards: Standard 1 (health promotion, disease prevention concepts); Standard 2 (accessing valid health information, products, and services) and Standard 3 (practicing health-enhancing behaviors, reducing health risks).

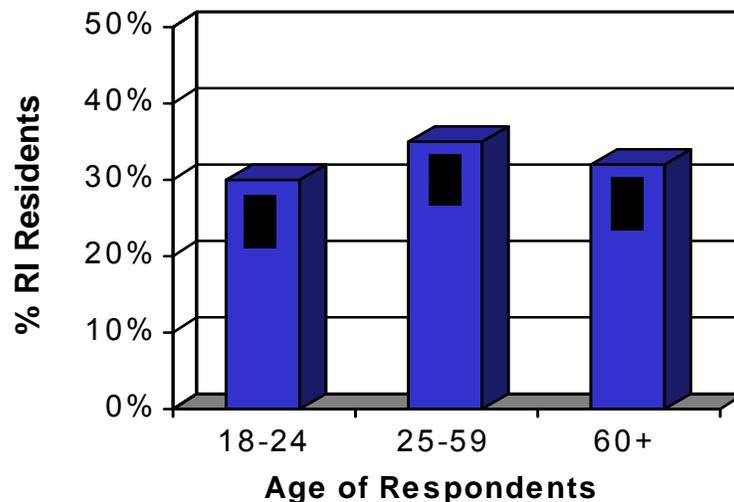
Screening of Oral Cancer

Oral cancer detection is accomplished by a thorough examination of the head and neck and an examination of the mouth including the tongue and the entire oral and pharyngeal mucosal tissues, lips, and palpation of the lymph nodes. Although the sensitivity and specificity of the oral cancer examination have not been established in clinical studies, most experts consider early detection and treatment of precancerous lesions and diagnosis of oral cancer at localized stages to be the major approaches for secondary prevention of these cancers [Silverman1998; Johnson 1999; CDC 1998]. If suspicious tissues are detected during examination, definitive diagnostic tests are needed, such as biopsies, to confirm diagnosis.

Oral cancer is more common after age 60. Known risk factors include use of tobacco products and alcohol. The risk of oral cancer is increased 6 to 28 times in current smokers. Alcohol consumption is an independent risk factor and, when combined with the use of tobacco products, accounts for most cases of oral cancer in the United States and elsewhere [USDHHS 2004]. Individuals also should be advised to avoid other potential carcinogens, such as exposure to sunlight, which can be a risk factor for lip cancer, without protection such as lip sunscreen or hats recommended).

Dental insurance coverage and routine dental visits appear to be directly related to the receipt of oral cancer examinations by patients. Although older adults are more likely to develop oral cancers, they are less likely to have dental coverage or obtain dental services in Rhode Island. (See Figure ##. *Percent of RI Residents with Dental Insurance, by age, 2001, 2004* on page ##). A 1996 study in Rhode Island found oral cancer examination rates of adults to be less than optimal: 30% of adults ages 18-24, 35% of adults ages 25-59, and 32% of adults ages 60+ reported receiving an oral cancer examination in the last year.³³

Figure 32. Percentage of RI Adults that had received an oral cancer exam in the past 12 months, by age, 1996



Source: Health Interview Survey, 1996

Another troubling issue surrounds the co-use of alcohol and tobacco products among high school students. In 1997, 5% of children in grades 9-12 used both smokeless tobacco and alcohol together while 29% used the combination of cigarettes and alcohol.³⁴ This has serious health implications as these children move into adulthood and continue these risky behaviors over time.

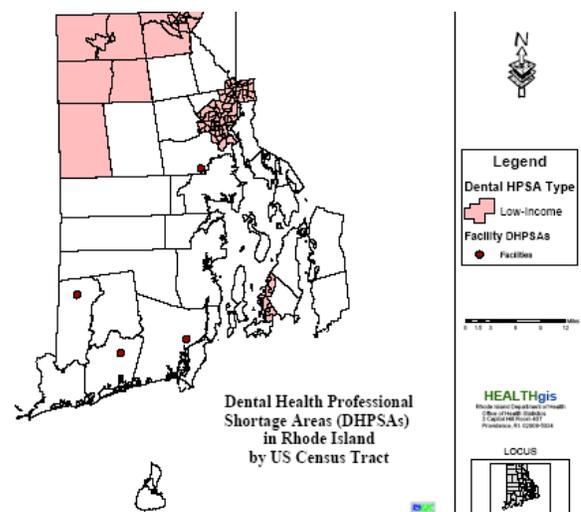
4 Provision of Dental Services in Rhode Island

Dental Workforce and Capacity

The oral health care workforce is critical to society's ability to deliver high quality dental care in Rhode Island and across the United States. Effective health policies intended to expand access, improve quality or constrain costs must take into consideration the supply, distribution, preparation and utilization of the health workforce. In recent years, Rhode Island has been fortunate to receive federal and foundation funds to support a variety of oral health initiatives. As a result, the Oral Health Program within the Rhode Island Department of Health has been revitalized, the Medicaid dental benefits program through the Rhode Island Department of Human Services has undergone significant reform, community health centers have started new or expanded existing dental clinics, and extensive partnerships focused on improving oral health outcomes for Rhode Islanders, particularly disadvantaged and underserved populations, have been developed. Despite these accomplishments, Rhode Island is facing oral health workforce challenges along many fronts. Nearly half [n = 294] of actively practicing Rhode Island dentists are approaching retirement (age 50 years or older)³⁵ and the state has a less than optimal supply of dental hygienists, dental assistants, dental laboratory technicians and/or the expert faculty to train students seeking entry to these professions. Most importantly, these shortages will likely impact the state's most vulnerable populations – children from families with low-income, children with special health care needs, disabled adults, elders in nursing facilities, and those of minority race/ethnicity.

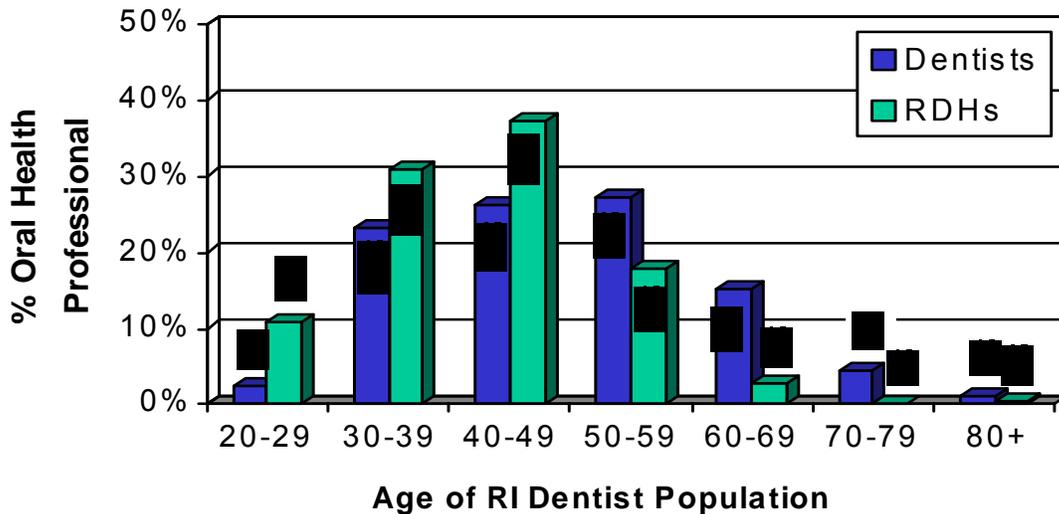
Rhode Island does not have a dental school and the 2005 enrollment included only eight Rhode Islanders attending out-of-state dental schools.³⁶ In addition, the baccalaureate degree program for dental hygienists at the University of Rhode Island has been eliminated and the Community College of Rhode Island remains the only accredited program for dental hygiene [associate degree] and certified dental assistant training in the state.

A significant proportion of Rhode Island has been designated as having insufficient capacity for low-income populations. Dental health professional shortage designations are based on the evaluation of criteria established through federal regulation to identify geographic areas or population groups with a shortage of dental services. Currently, all or part of 12 Rhode Island communities [30%] are



designated as dental health professional shortage areas (DHPSAs) by the federal Bureau of Health Professions. With no in-state dental school, the dentist shortage is expected to become more critical in the near-term given that a significant portion (48%) of the currently practicing dentist workforce is nearing or has surpassed a typical retirement age of 50+ (see Figure 33).

Figure 33. Age Range of Licensed RI Dentists & Dental Hygienists, 2005



Source: RI Department of Health, License 2000 Database, 2005

Dentists: Per HEALTH’s License 2000 Database, as of November 2005, there were 691 actively licensed dentists; of these, 603 were actively licensed with a Rhode Island practice address, and 551 were actively practicing primary care dentists [general dentists and pediatric dental specialists] with a Rhode Island practice address.

Dental Hygienists [RDHs]: Per HEALTH’s License 2000 Database, as of November 2005, there were 842 actively licensed RDHs; of these, 611 were actively licensed and practicing in Rhode Island.

Dental Assistants: In November 2004, 1,070 dental assistants were reported employed in the Rhode Island by the Rhode Island Department of Labor and Training. Approximately 329 of these dental assistants are certified dental assistants per information provided by the Dental Assisting National Board (DANB).

Dental Laboratory Technologists: Per reports of the Rhode Island Department of Labor and Training, 57 dental laboratory technologists were working in Rhode Island in 2002 and 80 in 2004.

Dental Workforce Diversity

One cause of oral health disparities is lack of access to oral health services among under-represented minorities. Increasing the number of dental professionals from under-represented racial and ethnic groups is viewed as an integral part of the solution to improving access to care [HP2010]. Data on the race/ethnicity of dental care providers were derived from surveys of professionally active dentists conducted by the American Dental Association [ADA 1999]. In 1997, 1.9% of active dentists in the United States identified themselves as black or African American, although that group comprised 12.1% of the U.S. population. Hispanic/Latino dentists comprised 2.7% of U.S. dentists, compared to 10.9% of the U.S. population that was Hispanic/Latino.

While race/ethnicity data are not reported as part of the Rhode Island licensure process, only 14% of currently licensed dentists are women³⁷ and, overall, people of minority race/ethnicity are underrepresented in the state's oral health professions and among the existing training programs. Limited diversity among the oral health workforce is a significant barrier to underserved Rhode Islanders, especially racial and ethnic minority populations living in the state's six "core" cities, which are those urban areas in which the physical, social, educational, and economic environment places the population at higher than average health risk when compared to other Rhode Island cities and towns.

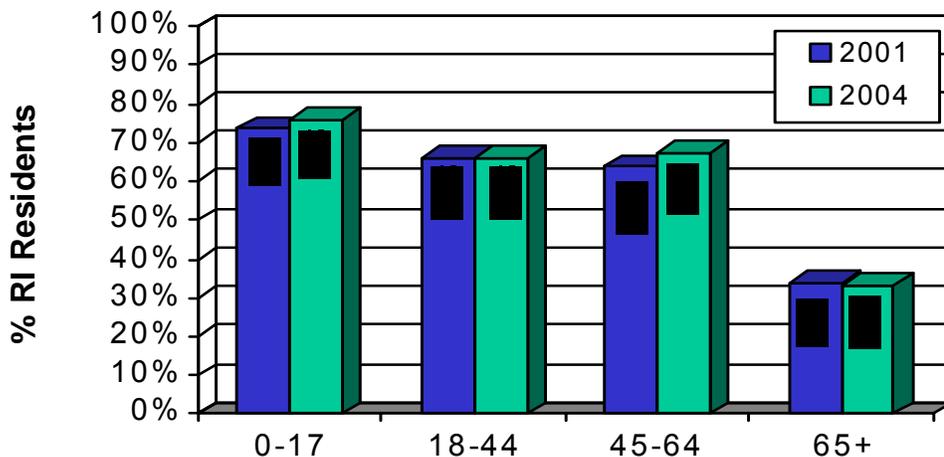
Dental Insurance in Rhode Island

Another cause for inadequate dental care is a lack of dental insurance. Due to the high cost of dental procedures, an absence of dental insurance can make treatment inaccessible. Individuals who have insurance coverage for dental treatment are more apt to receive care than persons who lack dental coverage. The 2004 BRFSS conducted by the Rhode Island Department of Health found that 69.5% of Rhode Islanders had some form of dental insurance coverage. Nationally, nearly 163 million Americans are covered by some form of dental benefit through employer-sponsored group plans or other group or individual plans, representing 55% of the US population ³⁸.

A determinant of having dental coverage in Rhode Island is age: 75.9% of Rhode Island children had dental insurance in 2004, with lower percentages of older age groups reporting the same coverage (see Figure 34). Overall, 59.2% of Rhode Island children have private dental insurance, 25.9% have RIte Care/Medicaid, and 25.5% are uninsured (see Figure 35). Hopefully, with the enrollment of children into the RIte Smiles program, the number of uninsured children will decrease over the next five years. As retirement age arrives for many residents, dental insurance normally covered by an employer is discontinued, with a resulting percentage of only 33.2% of Rhode Islanders age 65+ having dental insurance (see Figure 34).

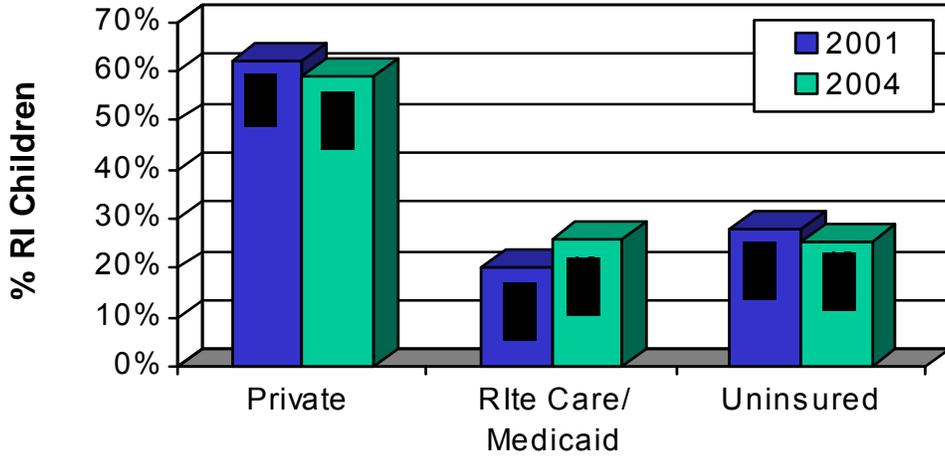
Dental coverage is also determined by income level in Rhode Island. As expected, as income level increases, the percentage of Rhode Island residents with dental coverage proportionally increases (see Figure 36) ³⁹. However, it was also reported that those with the lowest income level (< \$10,000 per year) had a higher incidence of dental coverage than those with income levels between \$10,000 and \$24,999 per year.

Figure 34. Percent of RI Residents with Dental Insurance, by age, 2001, 2004



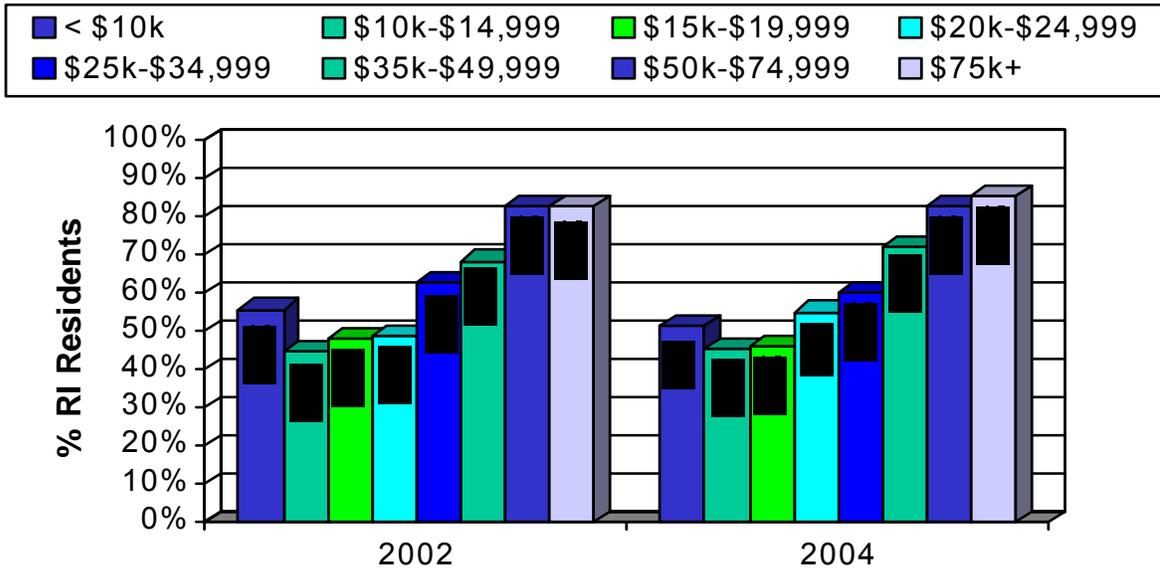
Source: Health Interview Survey, 2001, 2004

Figure 35. Percentage of RI Children (age 1-18 years) with Dental Insurance, by type of insurance, 2001, 2004



Source: Health Interview Survey, 2001, 2004

Figure 36. Percentage of RI Residents with Dental Insurance, by income, 2002, 2004



Source: Behavioral Risk Factor Surveillance System, 2002, 2004

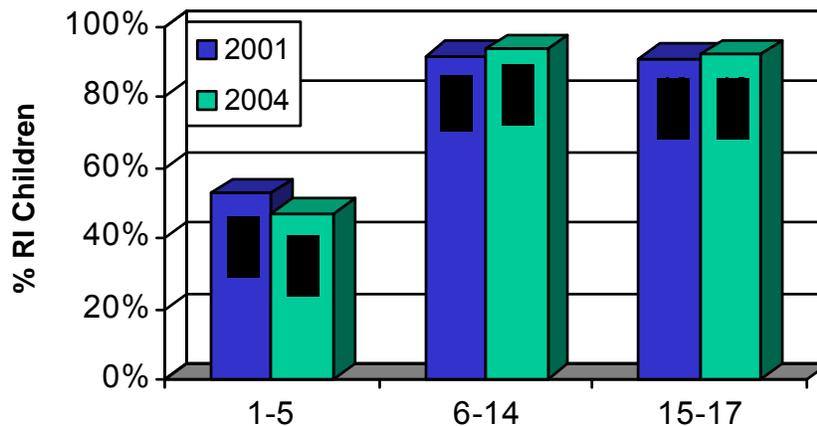
Use of Dental Services

Although appropriate home oral health care and population-based prevention are essential, professional care also is necessary to maintain optimal dental health. Regular dental visits provide an opportunity for the early diagnosis, prevention, and treatment of oral diseases and conditions for people of all ages, as well as for the assessment of self-care practices.

Adults who do not receive regular professional care can develop oral diseases that eventually require complex treatment and may lead to tooth loss and health problems. People who have lost all their natural teeth are less likely to seek periodic dental care than those with teeth, which, in turn, decreases the likelihood of early detection of oral cancer or soft tissue lesions from medications, medical conditions, and tobacco use, as well as from poor fitting or poorly maintained dentures.

The 2005 National Health Interview Survey (NHIS) reported that 76.5% of all U.S. children ages 2–17 had a dental visit in the past year, while 80.4% of the same aged children in the Northeast had visited a dentist in the past year⁴⁰. In comparison, the 2004 Rhode Island Health Interview Survey reported that Rhode Island children ages 1–17 were higher than the national average and similar to the Northeast average with 80.6% that had seen a dentist in the past year. This average is also a slight increase over 2001 data, which reported 79.8% of Rhode Island children had a dental visit in the past year. By observing the dental visits of children in different age groups (1-5 y.o., 6-14 y.o. and 15-17 y.o.), it is observed that older children age 6-17 saw the dentist at a higher frequency than the youngest age group (see Figure 37).

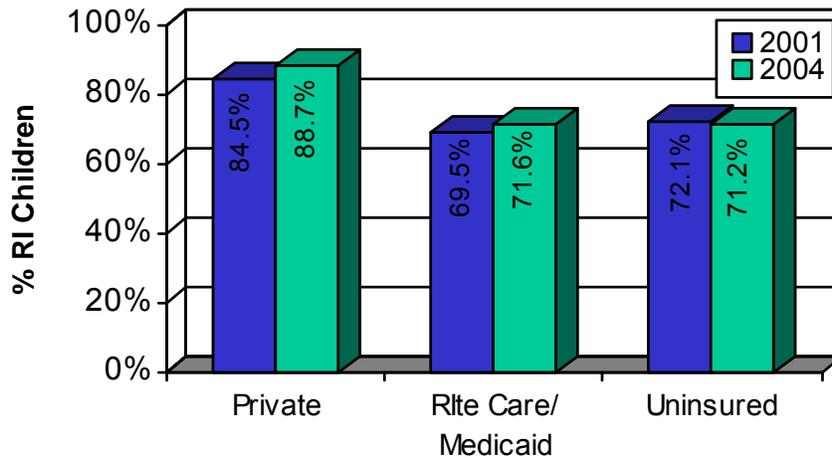
Figure 37. Percent of RI Children (age 1-17 years) that had visited a dental professional in the past year, by age, 2001, 2004



Source: Health Interview Survey, 2001, 2004

Overall, Rhode Island children with private dental insurance coverage in 2004 were more likely to have seen a dentist in the past year (88.7%) than were children either on Rite Care/Medicaid (71.6%) or uninsured (71.2%). Between 2001 and 2004 the percentage of children that had seen a dentist in the past year increased for those with private dental insurance or Rite Care/Medicaid, although uninsured children decreased slightly during that time period (see Figure 38).

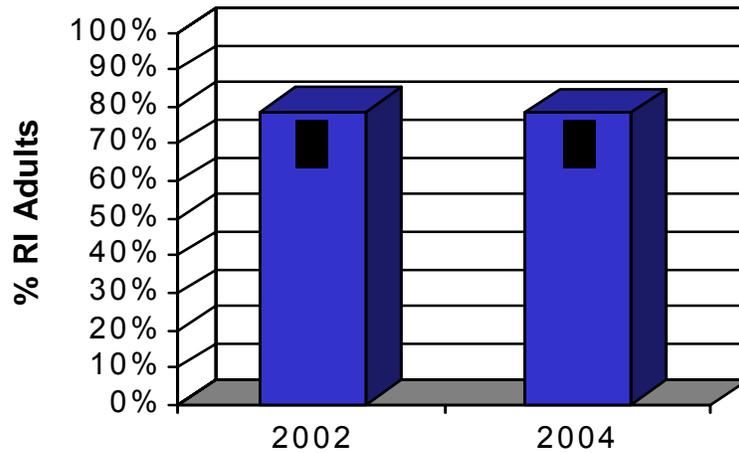
Figure 38. Percent of RI Children (age 1-18 years) that had visited a dental professional in the past year, by dental insurance coverage, 2001, 2004



Source: Health Interview Survey, 2001, 2004

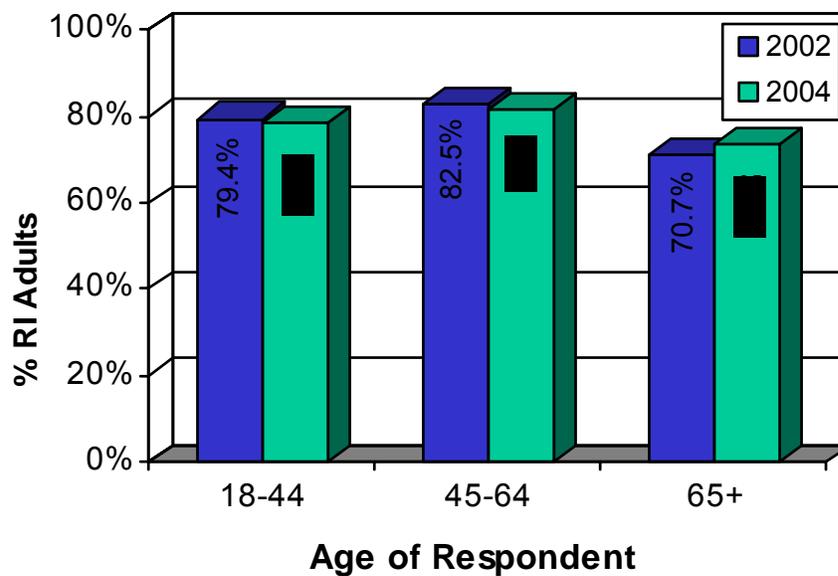
Nationally in 2005, 62.4% of Americans had visited a dental professional in the past year, while 69.1% of Northeast residents have reported the same ⁴¹. Locally, Rhode Island adults report a similar high frequency to that of children, with 78.7% having visited a dental professional in the past year, as reported in 2004, a percentage that has stayed relatively level since 2000 ⁴² (see Figure 39). When reported by age, it can be seen that 81.5% of respondents 45-64 y.o. had seen a dental professional in the past year, as reported in 2004, while slightly fewer (78.6%) 18-44 y.o. respondents and 73.3% of 65+ respondents have responded in kind (see Figure 40).

Figure 39. Percentage of RI Adults that had visited a dental professional in the past 12 months, 2002, 2004



Source: Behavioral Risk Factor Surveillance Survey, 2002, 2004

Figure 40. Percent of RI Adults that had visited a dental professional in the past year, by age, 2002, 2004



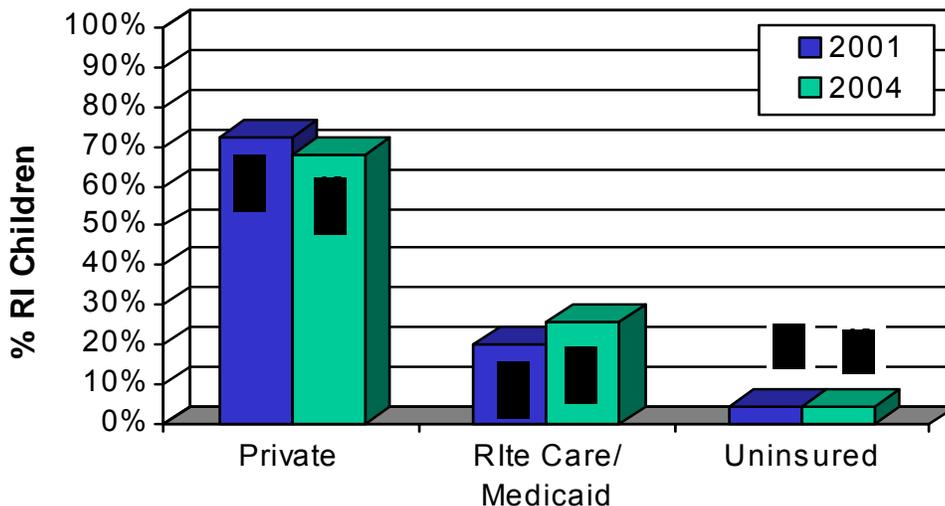
Source: Behavioral Risk Factor Surveillance System, 2002, 2004

Health Insurance Coverage in Rhode Island

Nationally in 2005, 84.1% of Americans are covered by some type of health insurance, such as private or government coverage, while at the regional level, 87.7% of Northeasterners have health insurance. Comparatively, a higher percentage (89.0%) of Rhode Islanders are covered by health insurance⁴³.

With respect to children, the 2005 National Health Interview Survey showed that 81.7% of U.S. children ages 2–17 with private health insurance coverage had a dental visit in the past year compared to 73.2% of children with Medicaid or other public coverage and 49.8% of uninsured children⁴⁴. Comparatively, in 2004, 68.0% of Rhode Island children (age 1-18 years) had private health insurance and 25.9% had RItte Care/Medicaid (see Figure 41). Between 2001 and 2004 the percentage of children with private health insurance decreased, while the percentage with RItte Care/Medicaid increased. During the same period, the percentage of uninsured children remained unchanged. (Note: The number of children covered by Medicare or military health insurance was too small for statistical analysis.)⁴⁵ Health insurance can be a determinant in oral health. In 2004, 86.5% of Rhode Island children ages 1–18 with private health insurance coverage had a dental visit in the past year versus 71.4% of children with RItte Care/Medicaid coverage and 70.2% of uninsured children⁴⁶.

Figure 41. Percentage of RI Children (age 1-18 years) with Health Insurance, by type of insurance, 2001, 2004



Source: Health Interview Survey, 2001, 2004

Medicaid – Dental

Medicaid is the primary source of health care for low-income families, elderly, and disabled people in the United States. This program became law in 1965 and is jointly funded by the Federal and State governments (including the District of Columbia and the Territories) to assist States in providing medical long-term care assistance to people who meet certain eligibility criteria. People who are not U.S. citizens can only get Medicaid to treat a life-threatening medical emergency. Eligibility is determined based on state and national criteria. Dental services are a required service for most Medicaid-eligible individuals under the age of 21, as a required component of the Early and Periodic Screening, Diagnostic and Treatment (EPSDT) benefit. Services must include at a minimum, relief of pain and infections, restoration of teeth and maintenance of dental health. Dental services may not be limited to emergency services for EPSDT recipients. Nationally, federal Medicaid expenditures for Medicaid dental services totaled \$2.3 billion in 2003, or 3% of the \$74 billion spent on dental services nationally [Centers for Medicare and Medicaid Services 2004].

Further data indicate that Rhode Island FY 2005 Medicaid expenditures for dental services totaled \$ 18.3 million; about 1% of the total FY 2005 state Medicaid budget of \$1.627 billion.⁴⁷ Currently, Rlte Care oral health services are reimbursed on a fee-for-service basis at approximately 45% of the usual, customary and reasonable fee levels. Significant participation in Rlte Care at any level is a financial burden for many dentists.⁴⁸ Dentists who do not participate in Rlte Care cite low reimbursement rates, administrative issues, high “no show” rates, and language barriers as the rationale for non-participation. In contrast, Rlte Care enrollees cite transportation, inability to find a participating provider, fear, inadequate coverage, and the attitude of dentists/staff as the most frequent barriers to accessing dental services.⁴⁹ Several areas of the state report a limited number of providers serving Rlte Care enrollees and few dental specialists. Rhode Island KIDS COUNT data indicate that in excess of 220 Rlte Care enrollees per dentist is reported for the core cities compared to 113 Rlte Care enrollees per dentist statewide.⁵⁰ However, this is an overestimate of dental access since participating dentists often place severe limits on the number of Rlte Care patients accepted for treatment and some participating dentists serve no Medicaid clients.

To increase the access to dental services for the state’s children, Rhode Island launched Rlte Smiles, a dental program designed to increase access to dental care for children enrolled in Rlte Care, in September 2006. Since its inception, the number of dentists participating in Medicaid statewide has increased from 27 to 129⁵¹. Based upon the Rlte Care delivery system, the Rlte Smiles program will be administered by UnitedHealthcare Dental and financed through reallocated Medicaid dental funds. Children eligible for the program must have been born on or after May 1, 2000, be eligible for medical assistance and not have other dental coverage. Coverage will include a wide variety of types of

care, including preventive (cleaning, fluoride), diagnostic, restorative (fillings and crowns), endodontics (root canals), oral surgery (extractions and mouth surgery), orthodontics, periodontal and prosthodontics (specialized replacement of missing teeth).

Community Health Centers & Dental Safety Net Sites

Community Health Centers (CHCs) provide family-oriented primary and preventive health care services for people living in rural and urban medically underserved communities. CHCs exist in areas where economic, geographic, or cultural barriers limit access to primary health care. The Migrant Health Program (MHP) supports the delivery of migrant health services, serving over 650,000 migrant and seasonal farm workers. Among other services provided, many CHCs and Migrant Health Centers provide dental care services.

Healthy People 2010 objective 21-14 is to “Increase the proportion of local health departments and community-based health centers, including community, migrant, and homeless health centers, that have an oral health component” [USDHHS 2000b]. In 2002, 61% of local jurisdictions and health centers had an oral health component [USDHHS 2004b]; the *Healthy People 2010* target is 75%.

The dental safety net in Rhode Island is currently comprised of 11 community health centers with dental clinics, one urgent care/community health center (Block Island Health Services), three hospital based dental centers, and the dental hygiene clinic at the Community College of Rhode Island.

Dental safety net providers are public and private non-profit organizations that provide comprehensive oral health care to children, adults and the elderly. These dental centers provide oral health care services regardless of an individual’s insurance status or ability to pay. They are a critical component of the state’s current and future health care delivery system. Although there have been impressive advances in both dental technology and in the scientific understanding of oral diseases, significant disparities remain in both the rates of dental disease and access to dental care among subgroups of the population, especially for children and adults who live below the federal poverty threshold.

Dental Safety Net Providers in Rhode Island	City/Town
Bayside Family Healthcare	North Kingstown
Blackstone Valley Community Health Care	Central Falls
Blackstone Valley Community Health Care	Pawtucket
Block Island Health Services	Block Island
Crossroads Rhode Island	Providence
East Bay Community Action Program	Newport
Northwest Health Center	Pascoag
Providence Community Health Centers	Providence
Thundermist Health Center of South County	Wakefield
Thundermist Health Center of West Warwick	West Warwick
Thundermist Health Center of Woonsocket	Woonsocket
Wood River Health Services	Hope Valley
Pediatric Dental Center/ Fatima Health Center	Pawtucket

Pediatric Dental Center/ St. Joseph Hospital	Providence
Samuels Dental Center/ Rhode Island Hospital	Providence
Community College of Rhode Island (CCRI)	Lincoln

The core set of dental services offered by dental safety net providers includes preventive care, diagnostic exams and x-rays, basic restorative care, and extractions. The Dental Hygiene Clinic at the Community College of Rhode Island provides only dental hygiene services and x-rays. Patients needing restorative services are referred to dentists. With the exception of the Joseph Samuels Dental Center at Rhode Island Hospital and St. Joseph Hospital's Pediatric Dental Center in Providence, the clinical case complexity among safety net providers is limited to procedures that do not require general anesthesia. St. Joseph Hospital's Pediatric Dental Center provides dental services under general anesthesia only to children, while the Joseph Samuels Dental Center at Rhode Island Hospital provides this type of service for children and adults.

The following information was reported by Rhode Island safety-net sites and published in a *Special Report, The Dental Safety Net in Rhode Island, June 2006* by Rhode Island Kids Count.

Staff Vacancies In The Dental Safety Net: At least one staff vacancy was reported by seven respondents in September 2005, the longest of which had been two years at the time of survey completion. Staff vacancies can have a negative impact on their ability to provide dental services to their patients. Reported recruitment challenges included low salary levels compared to the private sector and nearby states (42%), lack of in-state training and education programs for dentists (33%) and too few applicants with interest in working with underserved populations (50%). The expansion of in-state training, tuition reimbursement opportunities, and student loan repayment programs were identified as strategies that would improve their ability to recruit staff.

- Languages Spoken By Staff At Safety Net Dental Centers: Per a 2005 safety-net site survey, nearly all (88%) dental safety net providers reported that members of their dental staff spoke a language other than English. Reported languages spoken by dental safety net provider staff included Spanish, Farsi, French, Indian, Cambodian, Russian and Polish. More than half (54%) of respondents reported needing increased staff language capacity and/or better access to translation services in order to fully meet their clients' needs. Despite the diverse language capabilities of safety-net staff, the provider's language does not always match the patients and a need for interpreters/increased linguistic capability remains.
- The Impact Of Staffing On Patient Care: As a group, respondents reported that they could provide dental services to a total of 2,200 adults and children every week if their dental centers were fully staffed and all

appointments were kept. However, given staffing levels at the time of the survey and the average no-show rate of 23%, the safety net providers reported treating 1,461 patients. The average wait time reported by dental safety net providers for patients requesting appointments varied greatly. Some sites reported same day appointments, while one reported a wait of 120 days for a dental hygiene appointment. The average wait time among all dental centers was 38 business days (7.6 weeks) for a hygiene appointment and 22 days (more than 4 weeks) for an appointment with a dentist. Most sites can address dental emergencies within a day or two.

- Loan Repayment Program Participation: Six survey respondents reported having dental staff currently in a federal or state student loan repayment program. Crossroads Rhode Island, East Bay Community Action Program, Thundermist Dental Clinic of West Warwick, Thundermist Dental Clinic of South County, Wood River Health Services, and St. Joseph Hospital's Pediatric Dental Center employ dentists or dental hygienists participating in a federal and/or state loan repayment programs. Five respondents provided data on the amount of funding granted; a total of \$207,500 per year in federal and state student loan repayment funds is received by providers at these sites.

5 References

- 1 Carmona, RH. *National Oral Health Call to Action*. Hyatt Regency, Milwaukee, Wisconsin, Apr 29, 2003
- 2 Casamasasimo P, ed. 1996. *Bright Futures in Practice: Oral Health*. Arlington, VA: National Center for Education In Maternal and Child Health.
- 3 Bruerd B, Jones C, Kjrise D. 1997. Preventing baby bottle tooth decay and early childhood caries among AI/AN infants and children. *The IHS Primary Care Provider* 23(3):37-39.
- 4 *Dental services and oral health: United States 1989*. National Center for Health Statistics, Centers for Disease Control & Prevention. Hyattsville, MD. 1989.
- 5 Levin H. Personal communication. Rhode Island Board of Examiners in Dentistry. Providence RI. 2001.
- 6 *Cancer Surveillance Report: Cancer of the Oral Cavity and Pharynx in Rhode Island*. RI Department of Health. Sep 2006.
- 7 US Bureau of the Census, American Community Survey, 2005. Table R1704.
- 8 2006 Rhode Island Kids Count Factbook (2006). Providence, RI: Rhode Island KIDS COUNT.
- 9 US Bureau of the Census, American Community Survey, 2005. Table S0201.
- 10 2006 Rhode Island Kids Count Factbook (2006). Providence, RI: Rhode Island KIDS COUNT.
- 11 Ascrizzi J. Personal communication. Rhode Island Department of Elementary and Secondary Education. Providence RI. 2000.
- 12 *2003 Rhode Island Kids Count Factbook*. Rhode Island KIDS COUNT. Providence RI. 2003.
- 13 *2003 Rhode Island Kids Count Factbook*. Rhode Island KIDS COUNT. Providence RI. 2003.
- 14 US Bureau of the Census, American Community Survey, 2005. Table DP-1.
- 15 The National Survey of Children with Special Health Care Needs Chartbook 2001: Rhode Island. Health Resources & Services Administration.
- 16 *2005 Rhode Island Kids Count Factbook*. Rhode Island KIDS COUNT. Providence, RI. 2005.
- 17 The National Survey of Children with Special Health Care Needs Chartbook 2001: Rhode Island. Health Resources & Services Administration.
- 18 US Census Bureau, Current Population Survey, 2004, 2005, and 2006 Annual Social and Economic Supplements.
- 19 *2006 Rhode Island Kids Count Factbook*. Rhode Island KIDS COUNT. Providence, RI. 2006.
- 20 *Oral Health in America: A Report of the Surgeon General*. National Institute of Dental and Craniofacial Research, US Department of Health & Human Services. Bethesda, MD. Sep 2000.
- 21 *Healthy People 2010: Objectives for Improving Health*. US Department of Health & Human Services. Washington DC. Nov 2000.

-
- 22 National Oral Health Surveillance System. Division of Oral Health, Centers for
Disease Control & Prevention. Atlanta, GA. 2002.
- 23 Rhode Island Oral Health Plan, 2006. Rhode Island Oral Health Commission
and Rhode Island Department of Health. Providence RI. Dec 2006.
- 24 Viner-Brown S. Personal communication. Rhode Island Birth Defects
Program. Rhode Island Department of Health. Providence RI. 2006.
- 25 Rhode Island Birth Defect Data Book. Rhode Island Department of Health.
26 *MMWR, December 19, 2003/ 52(50); 1226-1229. CDC.*
- 27 Rhode Island Dental Workforce Symposium. Providence, RI. Dec 2005.
- 28 *Oral Health Care in Rhode Island Nursing Homes: The Crisis and Possible
Solutions.* The Rhode Island Foundation. 2005.
- 29 US Census Bureau. Projections of the Population, By Age and Sex, of States:
1995 to 2025. <http://www.census.gov/population/projections/state/stpjage.txt>
- 30 *Rhode Island Community Water Fluoridation by City/Town.* Rhode Island
Department of Health. Providence, RI 2003.
- 31 VanVierssen K. Personal communication. Director, North Kingstown LINKS
Program. 2007.
- 32 Payne, C. Baseline Oral Health Indicators. The Rhode Island State Action for
Oral health Access Project. Apr 2005.
- 33 Rhode Island Department of Health. Rhode Island Health Interview Survey,
1996. Providence, RI. 1996.
- 34 Rhode Island Department of Health. Rhode Island Youth Risk Behavior
Survey, 1997. Providence, RI. 1997.
- 35 Rhode Island Department of Health, Office of Health Professional Regulation,
License 2000 Database, Nov 2005.
- 36 American Dental Education Association, Dec 2005.
- 37 Rhode Island Department of Health, Office of Health Professional Regulation,
License 2000 Database, Nov 2005.
- 38 National Association of Dental Plans. 2006 NADP/DDPA Joint Dental Benefits
Report: Enrollment. Dallas TX.
<http://www.nadp.org/page.asp?strLoadModule=dentifactsummary&lngDentifa>
ctID=820
- 39 Rhode Island Department of Health. Rhode Island Behavioral Risk Factor
Surveillance System. Providence, RI. 2002, 2004.
- 40 Bloom B, Dey AN, Freeman G. Summary Health Statistics for US Children:
National Health Interview Survey, 2005. National Center for Health Statistics.
Vital Health Stat 10(231). 2006.
- 41 Pleis JR, Lethbridge-Cejku M. Summary health statistics for US adults:
National health interview survey, 2005. National Center for Health Statistics.
Vital Health Stat 10(232). 2006.
- 42 Rhode Island Department of Health. Rhode Island Behavioral Risk Factor
Surveillance System. Providence, RI. 2000, 2002, 2004.
- 43 DeNavas-Walt C, Proctor BD, Hill Lee C. US Census Brueau, Current
Population Reports, P60-231, Income,Poverty, and Health Insurance

Coverage in the United States: 2005, US Government printing Office, Washington, DC, 2006.

- ⁴⁴ Bloom B, Dey AN, Freeman G. Summary Health Statistics for US Children: National Health Interview Survey, 2005. National Center for Health Statistics. Vital Health Stat 10(231). 2006.
- ⁴⁵ Rhode Island Department of Health. Rhode Island Health Interview Survey, 2004. Providence, RI. 2004.
- ⁴⁶ Rhode Island Department of Health. Rhode Island Health Interview Survey, 2004. Providence, RI. 2004.
- ⁴⁷ *Rhode Island Annual Medicaid Expenditure Report*. Executive Office of Health and Human Services. Cranston RI. Dec 2006.
- ⁴⁸ *Study for Alternatives for Delivery of Medicaid Dental Services*. Rhode Island Department of Human Services. Jun 1998.
- ⁴⁹ *Dental Needs Assessment*. Rhode Island Department of Human Services. Cranston RI. Apr 1997.
- ⁵⁰ *Access to Dental Care for Children in Rhode Island, Issue Brief #11*. Rhode Island KIDS COUNT. Providence RI. Jan 2001. (updated May 2002)
- ⁵¹ Spencer A. Rlte Smiles: Improving Access to Oral Health Care. National Conference of State Legislatures. 27:480. Nov 2006.