

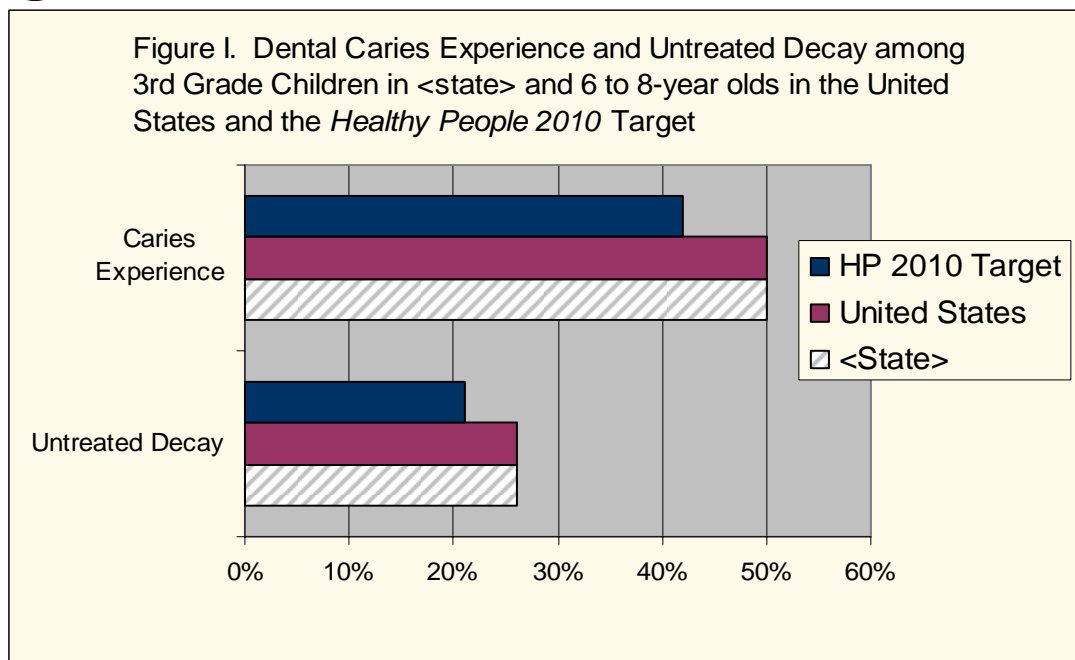
## IV. THE BURDEN OF ORAL DISEASES

- a. Prevalence of Disease and Unmet Needs
  - i. Children

Nationally, dental caries (tooth decay) is four 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.

The prevalence of decay in children is measured by assessing 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).

Caries experience and untreated decay are monitored by <STATE> as consistent with the National Oral Health Surveillance System (NOHSS), which allows comparisons with other states and with the nation. For comparisons between <STATE>, the nation, and the *Healthy People 2010* targets, see Figure I.



Source: *Healthy People 2010*, 2nd edition. U.S. Dept of Health and Human Services, November 2000.

<These data will be updated in 2006. >

<State Data Source(s). State rates are examples only.>

Dental caries is not uniformly distributed in the United States or in <STATE>. Some groups are more likely to experience the disease and are less likely to receive treatment. The most recent data for 3rd grade children in <STATE> and the nation, for selected demographic groups, are summarized in Table II.



**Table II. Dental Caries Experience, Untreated Dental Decay, and Urgent Need for Dental Care Among 6 to 8-year-old Children in the United States and Third Graders in <STATE>, by Selected Demographic Characteristics**

	Caries Experience		Untreated Decay		Urgent Need for Care
	United States <sup>a</sup> (%)	<STATE> <sup>f</sup> (%)	United States <sup>a</sup> (%)	<STATE> <sup>f</sup> (%)	<STATE> <sup>f</sup> (%)
<b>TOTAL</b>	50		26		
<b>Race or Ethnicity</b>					
American Indian or Alaska Native	91 <sup>b</sup>		72 <sup>b</sup>		
Asian or Pacific Islander	DSU		DSU		
Asian	90 <sup>c</sup>		71 <sup>c</sup>		
Native Hawaiian or other Pacific Islander	79 <sup>d</sup>		39 <sup>d</sup>		
Black or African American			36 <sup>e</sup>		
White			26 <sup>e</sup>		
Hispanic or Latino	DSU		DSU		
Mexican American	69		42		
Not Hispanic or Latino	49 <sup>e</sup>		26 <sup>e</sup>		
Black or African American, not Hispanic or Latino	56 <sup>e</sup>		39 <sup>e</sup>		
White, not Hispanic or Latino	46 <sup>e</sup>		21 <sup>e</sup>		
<b>Sex</b>					
Female	49 <sup>e</sup>		24 <sup>e</sup>		
Male	50 <sup>e</sup>		28 <sup>e</sup>		

<b>Education Level (Head of household)</b>		
Less than high school	65 <sup>e</sup>	44 <sup>e</sup>
High school graduate	52 <sup>e</sup>	30 <sup>e</sup>
At least some college	43 <sup>e</sup>	25 <sup>e</sup>
<b>Children Eligible for Free or Reduced Lunch Program</b>		
Yes		
No		
<b>Disability Status</b>		
Persons with disabilities	DNA	DNA
Persons without disabilities	DNA	DNA
<b>Select Populations</b>		
3rd grade students	60 <sup>e</sup>	33 <sup>e</sup>

Table II Sources:

*Healthy People 2010, Progress Review, 2000.* U.S. Department of Health and Human Services.

Available at [www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls](http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls).

<These data will be updated in 2006.>

DNA = Data not analyzed

DNC = Data not collected

DSU = Data are statistically unreliable or do not meet criteria for confidentiality

<sup>a</sup> All national data are for children aged 6–8 years old, 1999–2000, unless otherwise noted.

<sup>b</sup> Data are for Indian Health Service areas, 1999.

<sup>c</sup> Data are for California, 1993–1994.

<sup>d</sup> Data are for Hawaii, 1999.

<sup>e</sup> Data are from NHANES III, 1988–1994.

<sup>f</sup> <State Data Source(s)>

*ii. Adults*  
Dental Caries / Tooth Loss / Periodontal (Gum) Diseases / Oral Cancer

People are susceptible to dental caries throughout their lifetime. Like children and adolescents, adults can experience new decay on the crown (enamel covered) portion of the tooth. But adults can also develop caries on the root surfaces of teeth as those surfaces become exposed to bacteria and carbohydrates as a result of 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 [USDHHS 2000a].

Not only do adults experience dental caries, but a substantial proportion of that disease is untreated at any point in time. The prevalence of untreated dental decay in <STATE> and the United States for adults aged 35–44 years or 65–74 years, by selected demographic groups, is summarized in Table III.



**Table III. Proportion of Adults\* with Untreated Dental Caries, by Selected Age Groups and Demographic Characteristics**

	Age 35–44 Years		Age 65–74 Years	
	United States <sup>a</sup> (%)	<STATE> <sup>f</sup> (%)	United States (%)	<STATE> <sup>f</sup> (%)
<b>Healthy People 2010 Target</b>	15	15		
<b>TOTAL</b>	26		19	
<b>Race or Ethnicity</b>				
American Indian or Alaska Native	68 <sup>b</sup>			
Asian or Pacific Islander	DSU			
Asian	DNC			
Native Hawaiian and other Pacific Islander	DNC			
Black or African American	46 <sup>d</sup>			
White	24 <sup>d</sup>			
Hispanic or Latino	DSU			
Mexican American	34 <sup>c</sup>		34 <sup>c</sup>	
Not Hispanic or Latino	DNA			
Black or African American	47 <sup>d</sup>		27	
White	23 <sup>d</sup>		18 <sup>e</sup>	
<b>Sex</b>				
Female	25 <sup>d</sup>		14 <sup>c</sup>	
Male	29 <sup>d</sup>		24	
<b>Education Level</b>				
Less than high school	51 <sup>d</sup>			
High school graduate	34 <sup>d</sup>			
At least some college	16 <sup>d</sup>			
<b>Disability Status</b>				
Persons with disabilities	DNA			
Persons without disabilities	DNA			

Table III Sources:

Aged 35–54 years

U.S. Department of Health and Human Services. *Healthy People 2010, Progress Review, 2000*.

Available at [www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls](http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls).

<These data will be updated in 2006.>

Aged 65–74 years

*Health, United States, 2004*. Table 80, p. 267. Available at [www.cdc.gov/nchs/data/hs/hs04.pdf](http://www.cdc.gov/nchs/data/hs/hs04.pdf).

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<sup>a</sup> National data are for 1999–2000 unless otherwise indicated.

\* Excludes edentulous adults (persons without natural teeth).

<sup>b</sup> Data are for areas served by Indian Health Service, 1999.

<sup>c</sup> National data are for Mexican Americans.

<sup>d</sup> Data from NHANES III, 1988–1994.

<sup>e</sup> Data are statistically unreliable.

<sup>f</sup> <State Data Source(s)>

## Dental Caries / Tooth Loss / Periodontal (Gum) Diseases / Oral Cancer

A full dentition is defined as having 28 natural teeth, exclusive of third molars (the 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 head and neck cancer treatment. 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.

Data for <STATE> and the United States on the percentage of adults who have had no teeth extracted because of disease and the percentage who have lost all of their permanent teeth are presented in Table IV.





**Table IV. Proportion of Adults Aged 35–44 Years Who have Lost No Teeth and Proportion of Adults Aged 65–74 Years Who have Lost All Natural Teeth, by Selected Demographic Characteristics**

	Aged 35–44 Years No Tooth Extractions		Aged 65–74 Years Lost All Natural Teeth	
	United States <sup>a</sup> (%)	<STATE> <sup>e</sup> (%)	United States <sup>b</sup> (%)	<STATE> <sup>e</sup> (%)
<i>Healthy People 2010 Target</i>	42	42	20	20
<b>TOTAL</b>	39		25	
<b>Race or Ethnicity</b>				
American Indian or Alaska Native	23 <sup>c</sup>		25 <sup>c</sup>	
Asian or Pacific Islander	DSU		DNA	
Asian	DNC		DSU	
Native Hawaiian and other Pacific Islander	DNC		DSU	
Black or African American	12 <sup>d</sup>		34	
White	34 <sup>d</sup>		23	
2 or more races*			DSU	
American Indian or Alaska Native; White*			DSU	
Black or African American; White*			DSU	
Hispanic or Latino	DSU		20	
Mexican American*	38			
Not Hispanic or Latino	DNA		24	
Black or African American, not Hispanic	30		34	
White	43		23	
<b>Sex</b>				
Female	36		24	
Male	42		24	
<b>Education Level</b>				
Less than high school	15 <sup>d</sup>		43	
High school graduate	21 <sup>d</sup>		23	
At least some college	41 <sup>d</sup>		13	
<b>Disability Status</b>				
Persons with disabilities	DNA		34	
Persons without disabilities	DNA		20	

Table IV Sources:

\**Healthy People 2010, Progress Review, 2000*. U.S. Department of Health and Human Services.  
Available at [www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls](http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls). Accessed July 26, 2005.  
<These data will be updated in 2006.>

DNA = Data not analyzed

DNC = Data not collected

DSU = Data are statistically unreliable or do not meet criteria for confidentiality

<sup>a</sup> National data are for 1999–2000 unless otherwise indicated.

<sup>b</sup> National data are for 2002 unless otherwise indicated.

<sup>c</sup> Data are for Indian Health Service areas, 1999.

<sup>d</sup> Data are from NHANES III, 1988–1994.

<sup>e</sup> <State Data Source(s)>

## Dental Caries / Tooth Loss / Periodontal (Gum) Diseases / Oral Cancer

Gingivitis is characterized by localized inflammation, swelling, and bleeding gums without a loss of the bone that supports the teeth. Gingivitis is usually reversible with good oral hygiene. Daily removal of dental plaque from the teeth is extremely important to prevent gingivitis, which can progress to destructive periodontal disease.

Periodontitis (destructive periodontal disease) is characterized by the loss of the tissue and bone that support the teeth. It places a person at risk of eventual tooth loss unless appropriate treatment is provided. Among adults, periodontitis is a leading cause of bleeding, pain, infection, loose teeth, and tooth loss [Burt & Eklund 1999].

The prevalence of gingivitis and destructive periodontitis in <STATE> and the United States is summarized in Table V. Nationally, the prevalence of gingivitis is highest among American Indians and Alaska Natives, Mexican Americans, and adults with less than a high school education. Cases of gingivitis likely will remain a substantial problem and may increase as tooth loss from dental caries declines or as a result of the use of some systemic medications. Although not all cases of gingivitis progress to periodontal disease, all periodontal disease starts as gingivitis. The major method available to prevent destructive periodontitis, therefore, is to prevent the precursor condition of gingivitis and its progression to periodontitis.



**Table V. Proportion of Adults aged 35–44 Years with Gingivitis or Adults Aged 35–44 Years with Destructive Periodontal Disease, by Selected Demographic Characteristics**

	Aged 35–44 years Gingivitis		Aged 35–44 Years Destructive Periodontal Disease*	
	United States <sup>a</sup> (%)	<STATE> <sup>e</sup> (%)	United States <sup>b</sup> (%)	<STATE> <sup>e</sup> (%)
<b>Healthy People 2010 Target</b>	41	41	14	
<b>TOTAL</b>	48		20	
<b>Race or Ethnicity</b>				
American Indian or Alaska Native	96 <sup>c</sup>		59 <sup>c</sup>	
Asian or Pacific Islander	DSU		DSU	
Asian	DNC		DNC	
Native Hawaiian and other Pacific Islander	DNC		DNC	
Black or African American	51		33 <sup>d</sup>	
White	47		20 <sup>d</sup>	
Hispanic or Latino	DSU		DSU	
Mexican American	61		16	
Not Hispanic or Latino	DNA		DNA	
Black or African American	51		24	
White	45		17	
<b>Sex</b>				
Female	45		14	
Male	52		26	
<b>Education Level</b>				
Less than high school	60		35 <sup>d</sup>	
High school graduate	52		28 <sup>d</sup>	
At least some college	42		15 <sup>d</sup>	
<b>Disability Status</b>				
Persons with disabilities	DNA		DNA	
Persons without disabilities	DNA		DNA	

Table V Sources:

*Healthy People 2010, Progress Review, 2000.* U.S. Department of Health and Human Services.

Available at [www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls](http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls).

<These data will be updated in 2006.>

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\* Defined as 1 or more teeth with 4 mm or more loss of periodontal attachment.

<sup>a</sup> National data are from NHANES III, 1988–1994 unless otherwise indicated.

<sup>b</sup> National data are from 1999–2000 unless otherwise indicated.

<sup>c</sup> Data are for Indian Health Service areas, 1999.

<sup>d</sup> Data are from NHANES III, 1988–1994.

<sup>e</sup> <State Data Source(s)>

## Dental Caries / Tooth Loss / Periodontal (Gum) Diseases / Oral Cancer

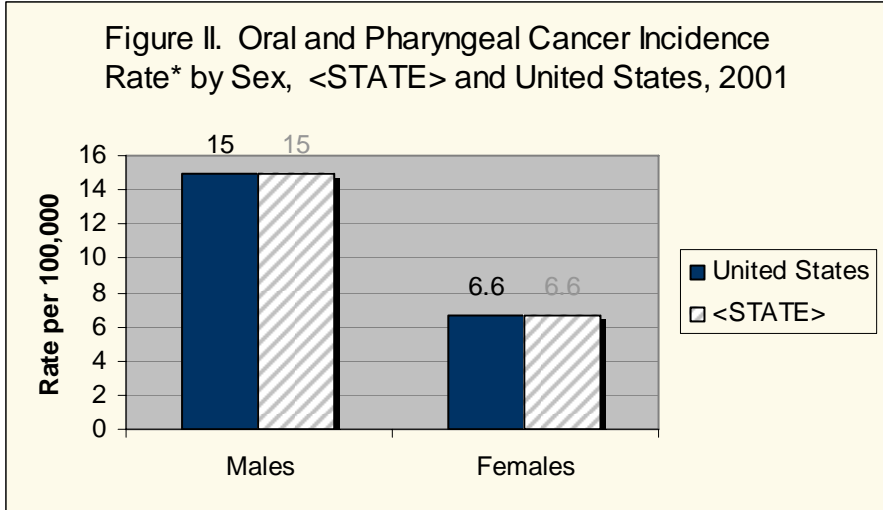
Cancer of the oral cavity or pharynx (oral cancer) is the fourth most common cancer in African American men and the seventh most common cancer in white men in the United States [Ries et al. 2004]. An estimated 28,000 new cases of oral cancer and 7,200 deaths from these cancers occurred in the United States in 2004. The 2001 age-adjusted (to the 2000 U.S. population) incidence rate of oral cancer in the United States was 10.4 per 100,000 persons. Nearly 90 percent of cases of oral cancer 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).

Survival rates for oral cancer have not improved substantially over the past 25 years. More than 40 percent 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 percent. In contrast, the 5-year survival rate is only 51 percent once the cancer has spread to regional lymph nodes at the time of diagnosis and is just 29 percent for persons with distant metastasis.

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 <STATE> and the United States is shown in Figure II. The oral cancer death rate by sex and race/Hispanic Origin for <STATE> and the United States is shown in Figure III.





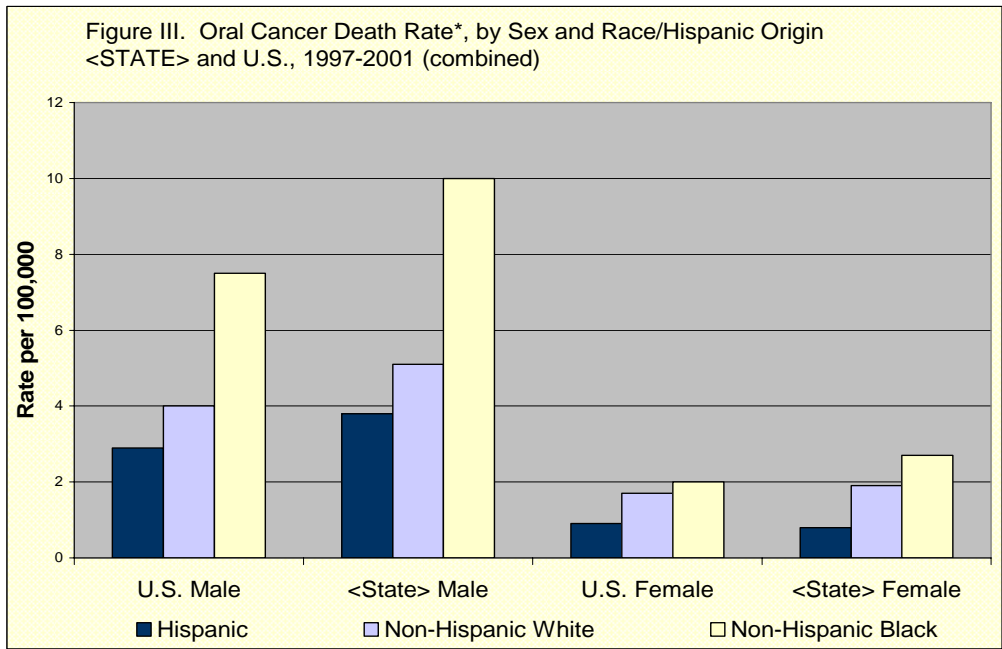
\*Per 100,000, age-adjusted to 2000 U.S. population

Source: National Cancer Institute, SEER

For more information on cancer profiles and for cancer data categorized by site, race, and sex, see: NCI state cancer profiles at <http://statecancerprofiles.cancer.gov/>.

CDC's NPCR Web site <http://apps.nccd.cdc.gov/uscs/index.asp?Year=2001>.

<State rates are examples only.>



\*Per 100,000, age-adjusted to 2000 U.S. population

Source: National Cancer Institute, SEER

For more information on cancer profiles and for cancer data categorized by site, race, and gender, see: NCI state cancer profiles at <http://statecancerprofiles.cancer.gov/>.

CDC's NPCR Web site is available at <http://apps.nccd.cdc.gov/uscs/index.asp?Year=2001>.

<State Data Source(s). State rates are examples only.>

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]. Data for <STATE> and the United States on the proportion of oral cancer cases detected at the earliest stage (stage I, localized) are presented in Table VI.





**Table VI. Proportion of Oral Cancer Cases Detected at the Earliest Stage, by Selected Demographic Characteristics**

	<b>United States*</b> (%)	<b>&lt;STATE&gt;</b> (%) <sup>c</sup>
<b>Healthy People 2010 Target</b>	50 <sup>a</sup>	50
<b>TOTAL</b>	35	
<b>Race or Ethnicity</b>		
American Indian or Alaska Native	24	
Asian or Pacific Islander	29	
Asian	DNA	
Native Hawaiian or Other Pacific Islander	DNA	
Black or African American	21	
White	38	
Hispanic or Latino	36	
Not Hispanic or Latino	34 <sup>b</sup>	
Black or African American	DNA	
White	DNA	
<b>Sex</b>		
Female	40	
Male	33	
<b>Education Level</b>		
Less than high school	DNA	
High school graduate	DNA	
At least some college	DNA	
<b>Disability Status</b>		
Persons with disabilities	DNA	
Persons without disabilities	DNA	

Table VI Sources:

*Healthy People 2010, Progress Review, 2000.* U.S. Department of Health and Human Services. Available at [www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls](http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls).

DNA = Data not analyzed

\*National data are for 1996–2000.

<sup>a</sup>*Healthy People 2010*, 2nd ed. U.S. Department of Health and Human Services, November 2000.

<These data will be updated in 2006.>

<sup>b</sup>Data are from NHANES III, 1988–1994.

<sup>c</sup> <State Data Source(s)>

## b. Disparities

### i. *Racial and 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, and 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.



### ii. *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, statistical 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.



### *iii. People with Disabilities*

The oral health problems of individuals with disabilities are complex. These problems may be due to underlying congenital anomalies as well as to an 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].



### *iv. Socioeconomic Disparities*

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.



c. Societal Impact of Oral Disease

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 / Indirect Costs of Oral Diseases

Expenditures for dental services in the United States in 2003 were \$74.3 billion, 4.4 percent 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 percent of dental care was paid out-of-pocket, 49 percent was paid by private dental insurance, and 7 percent was paid by federal or state government sources. In comparison, 10 percent of physician and clinical services were paid out-of-pocket, 50 percent were covered by private medical insurance, and 33 percent were paid by government sources (Centers for Medicare & Medicaid Services, 2005. See <http://www.cms.hhs.gov/statistics/nhe/definitions-sources-methods/>).



[Note: If your state has collected DFS and retention data regarding sealants, you may be able to use software (SEALS) to analyze cost-effectiveness. This is being developed by CDC. For more information, please contact the CDC Division of Oral Health at [oralhealth@cdc.gov](mailto:oralhealth@cdc.gov).]

Direct Costs of Oral Diseases / 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 1.6 million days of school as a result of acute dental conditions, which is more than 3 days for every 100 students. Acute dental conditions also 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 [DHHS 1999]. 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 [Dasanayake 1998; Offenbacher et al. 2001; Davenport et al. 1998; Beck et al. 1998; Scannapieco et al. 2003; Taylor 2001]. More research is needed in these areas.

