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HEALTHY PEOPLE 2000 Statistical Notes

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Operational Definitions for Year 2000 Objectives: Priority Area 13, Oral Health

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Introduction

Healthy People 2000, with its Midcourse Revisions, presents 319 objectives to improve the health of Americans by the year 2000 (1,2). Because these objectives are national, not solely Federal, the achievement of these objectives is dependent in part on the ability of health agencies at all levels of government to assess objective progress. To permit comparison of local and State health data with national data and that of other States and localities, *Healthy People 2000* objective 22.3 targets the development, dissemination, and use of collection methods that improve comparability among data collected by all levels of government. The objective states:

> Develop and disseminate among Federal, State, and local agencies procedures for collecting comparable data for each of the year 2000 national health objectives and incorporate these into Public Health Service data collection systems.

Achieving this objective entails determining and defining the information needed to measure progress toward each national health objective. The purpose of this Statistical Note is to provide definitions and data collection specifications for objectives in Priority Area 13: Oral Health, one of 22 priority areas of *Healthy People 2000*. In this publication the text (appendix A) and operational definitions of the objectives are presented, important data issues are discussed, and references are cited for expanded discussions of the data systems that provide data for the national objectives (appendix B). When appropriate, the text of questionnaire items used to measure the objectives is also provided.

Table 1 is a data comparability worktable with objective definitions, data sources and issues. This table presents the short text of each objective, the measure, the operational definition (numerator and denominator where applicable), national data source, and a brief description of data issues. The data issues for each objective are discussed in greater detail below.

Objective 13.1: Dental caries

This objective measures the percent of children 6–8 years of age and adolescents 15 years of age with experience of dental caries in either their primary or permanent teeth. There are four subobjectives targeting groups at higher risk of having caries experience: low socioeconomic status (SES) children (parents with less than high school education), American Indian/Alaska Native children and adolescents living in Indian Health Service (IHS) service areas, and black children. The exclusion of other groups may be due only to lack of data, not to absence of problems. This objective is tracked with the DMF and df indexes, which respectively provide the sum of decayed (D), missing (M), and filled (F) permanent teeth and the sum of decayed (d) and filled (f) primary teeth. DMF and df reflect the cumulative experience of caries; a value equal to or greater than 1 in any of these indexes indicates caries experience

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Table 1. Objective definitions, data sources, and issues for *Healthy People 2000* priority area 13

Objective	Measure	Operational definition: Numerator	Operational definition: Denominator	Healthy People 2000 data source	Data issues
13.1 Dental caries (in permanent or primary teeth) - Children 6-8 years - Adolescents 15 years - Special populations: a. Children 6-8 years whose parents have less than high school education. b. American Indian/ Alaska Native children 6-8 years c. Black children 6-8 years d. American Indian/ Alaska Native adolescents 15 years (permanent teeth)	Percent	Clinical diagnosis of dental caries or presence of fillings in at least one permanent or primary tooth, or evidence of missing a permanent tooth due to caries. *For examination guidelines see references 4 and 5.*	Baseline: 13.1, 13.1c: Children of specified age group. 13.1a: North Carolina's school children 6 to 8 years. Updates: 13.1, 13.1a, 13.1c Children of specified age group. Baseline and updates: 13.1b, 13.1d: American Indian/ Alaska Native children of specified age in IHS service areas.	Baseline: 13.1: National Survey of Dental Caries in U.S. School Children, 1986-87, NIH, NIDR. 13.1 a: North Carolina Oral Health School Survey, North Carolina Division of Dental Health, University of North Carolina School of Public Health, 1986. 13.1b, d: Survey of Oral Health, 1983-84, IHS, Dental Services Branch. Updates: 13.1, 13.1a, c: NHANES III, 1988-91, CDC, NCHS. 13.1b, d: Oral Health Status and Treatment Needs Survey of American Indians/Alaska Natives, 1991, IHS, Dental Services Branch.	Civilian non-institutionalized population only. Survey sampling designs are different for baselines and updates.
13.2 Untreated dental caries (in permanent or primary teeth) - Children 6-8 years - Adolescents 15 years - Special populations: a. Children 6-8 years whose parents have less than a high school education b. American Indian/Alaska Native children 6-8 years c. Black children 6-8 years d. Hispanic children 6-8 years e. Adolescents 15 years whose parents have less than a high school education f. American Indian/Alaska Native adolescents 15 years g. Black adolescents 15 years h. Hispanic adolescents 15 years	Percent	Children or adolescents with one or more decayed primary or permanent teeth that have not been restored. *For examination guidelines see references 4 and 5.*	Baseline: 13.2, 13.2c, 13.2g: Children of specified age. 13.2a, 13.2e: North Carolina's school children of specified age, whose parents have less than a high school education. 13.2d, 13.2h: Mexican-American, Puerto Rican, and Cuban children of specified age. Updates: 13.2, 13.2a, c, d, e, g, h: Children of specified age. Baseline and updates: 13.2b, 13.2f: American Indian/ Alaska Native children of specified age in IHS service areas.	Baseline: 13.2, 13.2c, 13.2g: National Survey of Dental Caries in U.S. School Children, 1986-87, NIH, NIDR. 13.2a, 13.2e: North Carolina Oral Health School Survey, North Carolina Division of Dental Health, University of North Carolina School of Public Health, 1986. 13.2 b, 13.2f: Survey of Oral Health, 1983-84, IHS, Dental Services Branch. 13.2d, 13.2h: HHANES, 1982-84, CDC, NCHS. Updates: 13.2, 13.2a, c, d, e, g, h: NHANES III, 1988-91, CDC, NCHS. 13.2b, 13.2f: Oral Health Status and Treatment Needs Survey of American Indian/ Alaska Natives, 1991, IHS, Dental Services Branch.	Civilian non-institutionalized population only. Survey sampling designs are different for baselines and updates. Data for all Hispanics are not available; HHANES provides baseline data separately for the three largest Hispanic groups residing in specific geographic areas. NHANES III provides update data for Mexican Americans only, which is used as a proxy for all Hispanics.

Table 1. Objective definitions, data sources, and issues for *Healthy People 2000* priority area 13 - Continued

Objective	Measure	Operational definition		Healthy People 2000 data source	Data issues
		Numerator	Denominator		
13.3 No tooth loss among people 35-44 years	Percent	Persons with 28 natural teeth (excluding third molars).	Number of persons in specified age group	Baseline: National Survey of Oral Health in U.S. Employed Adults and Seniors, 1985-86, NIH, NIDR. Update: NHANES III, 1988-91, CDC, NCHS.	Civilian non-institutionalized population only. Data come from examination surveys. This objective was measured for employed adults at baseline because those were the most recent data available. Updates are also for employed adults for comparability. Case definition is "no teeth lost due to caries or periodontal diseases"; however, because cause of tooth loss is not feasible to identify, the presence of 28 natural teeth (excluding third molars) is used as a proxy.
13.4 Complete tooth loss among people 65 years and over a. Low-income people (annual family income less than $15,000) b. American Indians/Alaska Natives	Percent	Persons reporting having lost all their natural teeth. *See figure 1 for survey questions.*	13.4 and 13.4a Number of persons in specified age group 13.4b: American Indian/Alaska Natives of specified age group in the IHS service areas.	Baseline and updates: 13.4, 13.4a: NHIS, CDC, NCHS. 13.4b: Oral Health Status and Treatment Needs Survey of American Indians/Alaska Natives, 1991, IHS, Dental Services Branch.	Civilian non-institutionalized population only. This objective is tracked with self-reported data; however, estimates from examination surveys are similar. Objective 13.4 does not require that teeth have been lost due to caries or periodontal disease as objective 13.3 does. The 1995 midcourse review added a subobjective for American Indians/Alaska Natives.

Table 1. Objective definitions, data sources, and issues for *Healthy People 2000* priority area 13 - Continued

Objective	Measure	Operational definition		Healthy People 2000 data source	Data issues
		Numerator	Denominator		
13.5 Gingivitis among people 35-44 years - Special populations: a. Low-income people (annual family income less than $12,500) b. American Indians/Alaska Natives c. Hispanics	Percent	Gingival bleeding in one or more sites after gently probing the gingival sulcus. *For examination guidelines see references 5 and 10.*	13.5, 13.5a: Number of persons in specified age group 13.4b: American Indian/Alaska Natives of specified age group in the IHS service areas. Baseline: 13.5c: Mexican-American, Puerto Rican, and Cuban persons of specified age. Update: 13.5c: Number of persons in specified age group	Baseline: 13.5, 13.5a: National Survey of Oral Health in U.S. Employed Adults and Seniors, 1985-86, NIH, NIDR. 13.5b: Survey of Oral Health, 1983-84, Indian Health Service, Dental Services Branch. 13.5c: HHANES, 1982-84, CDC, NCHS. Updates: 13.5, 13.5a, c: NHANES III, 1988-91, CDC, NCHS. 13.5 b: Oral Health Status and Treatment Needs Survey of American Indians/ Alaska Natives, 1991, IHS, Dental Services Branch.	Civilian non-institutionalized population only. This objective was measured for employed adults at baseline because those were the most recent data available. For comparability, updates are also for employed persons. The 1995 midcourse review increased the family income cutoff from $12,000 to $12,500. Data for all Hispanics are not available; HHANES provides baseline data separately for the three largest Hispanic groups. NHANES III provides update data for Mexican Americans only, which is used as a proxy for all Hispanics.
13.6 Periodontal diseases people 35-44 years	Percent	Loss of attachment greater than or equal to 4 mm in at least one measured site. *For examination guidelines see references 5 and 10.*	Number of persons in specified age group	Baseline: National Survey of Oral Health in U.S. Employed Adults and Seniors, 1985-86, NIH, NIDR. Updates: NHANES III, 1988-91, CDC, NCHS.	Civilian non-institutionalized population only. This objective was measured for employed adults at baseline because those were the most recent data available. For comparability, updates are also for employed persons.
13.7 Oral cancer deaths - Males 45-74 years - Females 45-74 years a. Black males 45-74 years b. Black females 45-74 years	Number of deaths per 100,000 population	Deaths due to cancer of oral cavity and/or pharynx. ICD-9 codes: 140-149	Mid-year resident population 45 to 74 years of age	National Vital Statistics System, CDC, NCHS.	Subobjectives for black men and women added during 1995 midcourse review.

Table 1. Objective definitions, data sources, and issues for *Healthy People 2000* priority area 13 - Continued

Objective	Measure	Operational definition		Healthy People 2000 data source	Data issues
		Numerator	Denominator		
13.8 Protective sealants - Children 8 years - Adolescents 14 years - Special populations: a. Black children 8 years b. Black adolescents 14 years c. Hispanic children 8 years d. Hispanic adolescents 14 years	Percent	Clinical evidence of dental sealant applied to one or more permanent molars. *For examination guidelines see references 5 and 13.* *See figure 2 for survey question.*	Number of persons in specified age group	Baseline: 13.8, 13.8 a, b, c, d: National Survey of Dental Caries in U.S. School Children, 1986-87, NIH, NIDR . Updates: 13.8,: NHANES III, 1988-91, CDC, NCHS.	Civilian non-institutionalized population only. This objective is measured with examination data; however, estimates from self-reports are similar. Subobjectives for black and Hispanic youth were added in 1995. Baseline examination data for the main objective come from a sample of school children and update data come from a non-institutionalized sample, which may include children not in school.
13.9 Water fluoridation	Percent	Persons receiving optimally fluoridated water from public systems.	U.S. population on public water systems	Fluoridation Census, CDC, NCCDPHP.	Optimal water concentration of fluoride is specific for geographic areas, based on their mean daily temperature.
13.10 Topical and systemic fluorides - People in nonfluoridated areas who use fluoride	Percent	Estimated baseline: Persons in nonfluoridated areas who use fluoride. Updates: Proxy measures: Persons reporting use of fluoride toothpaste during the past two weeks. Children 6-17 and adults 18 years and over reporting use of fluoride mouth rinse at home, and/or at school for children, during the past two weeks. Children and adolescents (2-16) reporting current use of vitamins with fluoride or any other kind of fluoride tablets, drops, or supplements. *See figure 3 for survey questions.*	Number of persons in specified age group	NHIS, CDC, NCHS.	Civilian non-institutionalized population only. Objective targets residents of non-fluoridated areas. However, it has not been analytically possible to measure this objective so far, because it is not feasible to identify a sample of people with no access to fluoridated water, or to assess water fluoridation status on self-reported surveys. An expert-based baseline measure was approximated from 1986 NHIS data. Proxy data include all persons regardless of water fluoridation status.

Table 1. Objective definitions, data sources, and issues for *Healthy People 2000* priority area 13 - Continued

Objective	Measure	Operational definition		Healthy People 2000 data source	Data issues
		Numerator	Denominator		
13.11 Baby bottle tooth decay - Parents and care givers who use preventive feeding practices for their child - Special populations: a. Parents and care givers with less than a high school education b. American Indian/Alaska Native parents and care givers c. Black parents and care givers d. Hispanic parents and care givers	Percent	Percent of children 6-23 months of age who never or no longer use a bottle, or who did not use a bottle at bedtime in the past two weeks, except bottles with plain water. *See figure 4 for survey questions.*	Number of persons in specified age group	13.11, 13.11a, c, d: NHIS, CDC, NCHS. 13.11b: Oral Health Status and Treatment Needs Survey of American Indians/ Alaska Natives, 1991, IHS, Dental Services Branch.	Civilian non-institutionalized population only. Subobjectives for black and Hispanic parents were added during the midcourse review.
13.12 Oral health screening, referral, and follow-up -Children entering school programs for the first time - Special populations: a. Black children 5 years b. Hispanic children 5 years	Percent	Children 5 years of age who had at least one dental visit in the past year. *See figure 5 for survey questions.*	Number of persons in specified age group	NHIS, CDC, NCHS.	Civilian non-institutionalized population only. Subobjectives for special populations were added during midcourse review. At least one dental visit in a year is used as proxy for screening, referral and follow-up for diagnosis, preventive activities and treatment. Question placement order in interview and wording of question changed since baseline; this may affect comparability.
13.13 Oral health care at long term institutional facilities	Existence of requirement	Long term facilities such as nursing homes, prisons, juvenile homes, and detention facilities with a requirement to provide oral health services.	Not applicable	Long Term Services Division, HCFA. Health Services Division, Federal Bureau of Prisons.	Regulation for nursing homes is for those receiving Medicaid/ Medicare reimbursement.

Table 1. Objective definitions, data sources, and issues for *Healthy People 2000* priority area 13 - Continued

Objective	Measure	Operational definition: Numerator	Operational definition: Denominator	Healthy People 2000 data source	Data issues
13.14 Regular dental visits among people 35 years and over - Special populations: a. Edentulous people b. People 65 years and over c. Blacks 35 years and over d. Mexican Americans 35 years and over e. Puerto Ricans 35 years and over	Percent	Persons reporting a dental visit during the past year. *See table 6 for survey questions.*	Number of persons in specified age group	NHIS, CDC, NCHS.	Civilian non-institutionalized population only. Subobjectives for blacks, Mexican Americans, and Puerto Ricans were added during the midcourse review. Sample size for Puerto Ricans in NHIS is not large enough to produce reliable estimates. Only Puerto Ricans living in the 50 states and the District of Columbia are included in the sample. Question placement order in interview and wording of questions changed since baseline; this may affect comparability.
13.15 Oral health care for infants with cleft lip and/or palate - Number of States with effective systems for recording and referring infants with cleft lip and/or palates. States with systems to identify infants States with systems to refer for care States with systems to follow-up States with systems to identify and refer	Number of States	States (or District of Columbia) with systems to identify and refer, identify, refer for care, and identify, refer, and follow-up for care.	Not applicable	State Public Health Dentists Survey, Illinois State Health Department, 1989 and 1993.	Objective is defined in terms of quality (effective systems), but it is measured only by presence or absence of systems.
13.16 Protective equipment in sporting and recreation events	Existence of requirement	Requirement of the use of head, face, eye, and mouth protection by the National Collegiate Athletic Association, high school football, amateur boxing, and amateur ice hockey associations.	Not applicable	NCAA rules	It is difficult to obtain relevant organization-level data. Sports included in proxy measure are those with enough responses to allow for analysis, and are not the only ones posing injury risk.
	Percent	Proxy: Children who play baseball/softball, football, soccer and report using headgear and mouth guards. *See figure 6 for survey questions for proxy measures.*	Number of persons in specified age group who play specified sport	NHIS, CDC, NCHS.	Proxy data are for civilian non-institutionalized population only.

Table 1. Objective definitions, data sources, and issues for *Healthy People 2000* priority area 13 - Continued

Objective	Measure	Operational definition: Numerator	Operational definition: Denominator	Healthy People 2000 data source	Data issues
13.17 Reduce smokeless tobacco use among men 12-24 years - Special population: a. American Indian/Alaska Native youth	Percent	Among men 12-17 years of age and American Indian/Alaska Natives: persons who have used snuff or chewing tobacco in the preceding month. Among men 18-24 years of age: persons who have used either snuff or chewing tobacco at least 20 times and who currently use snuff or chewing tobacco. *See figures 7 and 8 for survey questions.*	Number of persons in specified age group	Baseline: Men 12-17 years: NHSDA, SAMHSA. Men 18-24 years: NHIS, CDC, NCHS. 13.17a: National Medical Expenditure Survey of American Indian/Alaska Natives, NCHSR. Updates: Men 12-17 years: NHSDA, SAMHSA. Men 18-24 years and 13.17a: NHIS, NCHS, CDC.	Civilian non-institutionalized population only. This objective was added to oral health priority area in 1995. Overall objective is for men, subobjective for American Indian/ Alaska Natives includes women. Update data for American Indian/Alaska Natives come from NHIS; however, because of small sample size the estimates are unreliable (relative standard error is greater than 30%).

Data system acronyms:

HHANES	Hispanic Health and Nutrition Examination Survey
NHANES	National Health and Nutrition Examination Survey
NHIS	National Health Interview Survey
NHSDA	National Household Survey on Drug Abuse

Agency abbreviations:

AHCPR	Agency for Health Care Policy and Research
CDC	Centers for Disease Control and Prevention
HCFA	Health Care Financing Administration
IHS	Indian Health Service
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion
NCHS	National Center for Health Statistics
NCHSR	National Center for Health Services Research (now AHCPR)
NIDR	National Institute of Dental Research
NIH	National Institutes of Health
SAMHSA	Substance Abuse and Mental Health Services Administration

Other abbreviations:

ICD-9	The International Classification of Diseases, 9th revision
NCAA	National Collegiate Athletic Association
ppm	Parts per million

and a value of zero indicates no caries experience. Data on caries experience come from oral examination surveys, a highly detailed diagnosis of caries using a plain surface mirror and a #23 explorer. However, given that the objective does not measure caries experience per surface or tooth, it would be equally appropriate to use a less detailed screening procedure to identify caries experience per person such as visual detection of caries (tongue blade examination). One study comparing the more detailed exam to the screening procedures found that the latter had high validity (>90% for sensitivity, specificity, and predictive values in a sample having 30-40% prevalence of caries) for screening for dental caries and treatment needs (3). Details about the caries examination and data recording process at the surface level have been published by the National Institute of Dental Research (NIDR) (4,5). Baseline data come from the National Survey of Dental Caries in U.S. School Children, 1986–87; the North Carolina Oral Health School Survey, 1986; and the IHS Survey of Oral Health, 1983–84. Follow-up data come from the National Health and Nutrition Examination Survey III (NHANES III) and the Oral Health Status and Treatment Needs Survey of American Indians/ Alaska Natives, 1991 (see table 1).

Objective 13.2: Untreated dental caries

Objective 13.2 is measured as the percent of children ages 6–8 and adolescents 15 years of age with at least one decayed primary or permanent tooth that has not been restored. This objective is tracked with the decayed component of the DMF or df indexes and data sources described in objective 13.1. This objective includes subobjectives for children and adolescents from low SES families (parents with less than high school education) and from three race/ethnic groups: blacks, Hispanics, and American Indians/Alaska Natives. These groups often are exposed to higher risk factors for dental diseases, and may have more limited access to dental care than white children. Baseline from HHANES data are for Mexican-Americans residing in the Southwest, Cubans residing in Florida, and Puerto Ricans residing in New York. Tracking data are available only for Mexican-Americans residing in the 50 states and the District of Columbia. So far, baseline and tracking data are not available for ''all Hispanics.'' Data for American Indians/Alaska Natives are for those residing in the IHS service areas.

Objective 13.3: No tooth loss

''No tooth loss'' is also equivalent to ''tooth retention.'' Tooth retention may reflect conservative and opportune treatment, but also could reflect lack of dental visits for extraction of diseased teeth (6). Conceptually, this objective assumes that retention of teeth is positive and that tooth loss is due to caries or periodontal diseases. However, given that the cause of tooth loss is difficult to identify, the objective is measured as 28 natural teeth present, excluding third molars. The narrow age group selected to measure this objective, 35–44 years of age, helps to control for the strong effect of age on tooth loss (6). Baseline and tracking data for this objective come from oral examination surveys (see table 1). Baseline data are from the National Survey of Oral Health in U.S. Employed Adults and Seniors, 1985–86, NIH, NIDR. The limitation of baseline measures to employed persons is a result of sampling for the most current national survey prior to 1990. While updates from NHANES III, 1988–1991 are available for all non-institutionalized individuals, published numbers are restricted to employed adults for comparative purposes.

Objective 13.4: Complete tooth loss

Conceptually, complete tooth loss or edentulousness among persons 65 years and over reflects no remaining natural teeth in the mouth, regardless of the cause of loss. This objective and subobjective for the low income population are tracked with data from the National Health Interview Survey (NHIS). The questions ask for edentulous status of each arch, and responsiveness to this objective requires a ''yes'' answer for both questions (see questions in figure 1) (7). The procedures and technical notes regarding the calculations of these measures are published in the 1989 Current Estimates from the National Health Interview Survey (8). Data provided by NHIS are self-reported, so the actual dentition status is unknown; even so, estimates based on self-reports of dentition status are consistent with estimates from examination data collected by NHANES III (9). Subobjective 13.4a defines low-income persons as those with an annual family income of less than $15,000; for comparative purposes, poverty level is also used to track this subobjective. The 1995 midcourse revision for this objective was the addition of a subobjective for American Indians/ Alaska Natives.

Figure 1. National Health Interview Survey complete tooth loss questions

1989, 1991, and 1993:

- ☐ Have you lost ALL of your UPPER (permanent) natural teeth?
- ☐ Have you lost ALL of your LOWER (permanent) natural teeth?

1990:

- ☐ Have you lost ALL of your permanent teeth, both upper and lower?

Source: 1989 Dental and 1990, 1991, 1993 *Healthy People 2000* Supplements, National Health Interview Survey, National Center for Health Statistics, CDC.

Objective 13.5: Gingivitis

Objective 13.5 addresses reduction of the prevalence of gingivitis (bleeding gums) among persons 35–44 years of age. The presence of gingivitis is measured in examination surveys by ''walking'' a probe inside the gingival sulcus to determine the occurrence of bleeding (5,10). The objective is measured as the percent of persons in the 35–44 age-group with bleeding gums in at least one examined site. Baseline data are for employed persons, since these were the most recent data available at the time of formulation of the *Healthy People 2000* objectives. Updates from NHANES III, 1988–91 are available for all non-institutionalized individuals; however, published numbers are restricted to

employed adults for comparative purposes. There are subobjectives for low income population (annual family income less than $12,000 [revised to $12,500 in midcourse review]) and for American Indians/Alaska Natives and Hispanics. Baselines from HHANES data are for Mexican Americans residing in the Southwest, Cubans residing in Florida, and Puerto Ricans residing in New York. Tracking data are available only for Mexican-Americans residing in the 50 states and the District of Columbia. So far, baseline and tracking data are not available for ''all Hispanics.''

Objective 13.6: Periodontal diseases

Periodontal diseases are characterized by loss of attachment of the gingiva to the tooth. Loss of attachment is determined in clinical examination and defined as a distance between the cement-enamel junction and the bottom of the sulcus of 4 mm or more (5,10). Objective 13.6 is measured as the percent of persons 35–44 years of age with loss of attachment in at least one examined site. In these examination surveys loss of attachment was assessed by examining two randomly selected quadrants, which reduces the amount of time needed for the examination and for data processing without affecting the quality of the data. Baseline data come from the National Survey of Oral Health in U.S. Employed Adults and updates are from NHANES III; while updates are available for all non-institutionalized individuals, published numbers are restricted to employed adults for comparative purposes.

Objective 13.7: Oral cancer deaths

This objective measures the number of deaths due to cancer of the oral cavity and/or pharynx among men and women 45–74 years of age per 100,000 persons in each age-gender group. These cancers are classified as ICD-9 categories 140–149 (11), and include cancers of the lip, tongue, buccal mucosa, floor of mouth, and pharynx. Data for this objective are obtained from death certificates collected by the National Vital Statistics System; thus, these data are readily available at local and State levels. Considering the higher death rates due to oral cancers among blacks (12), the 1995 midcourse review formulated subobjectives for oral cancer deaths among black men and black women 45–74 years of age.

Objective 13.8: Protective sealants

Dental sealants are most commonly used on permanent molar teeth (13); for this reason this objective is measured in children 8 years of age and adolescents 14 years of age, when the first and second permanent molars have recently erupted, respectively. This objective is measured as the percent of children with sealants placed as a preventive procedure on any part of the occlusal (chewing) surface of at least one permanent molar. Sealants placed as a restoration are not included (5). Data on dental sealants come from examination surveys, the baseline from the National Survey of Dental Caries in U.S. School Children, 1986–87 and follow-up data from the NHANES III. Detailed examination procedures are described elsewhere (13). Self-reported data on dental sealants are also available from the NHIS for 1989, and will be collected again in 1998 (see figure 2 for survey question). In 1995, the midcourse review added specific subobjectives for black and Hispanic children, helping to target this objective to children who are more likely to be exposed to risk factors for dental caries and less likely to get treatment (14).

Figure 2. National Health Interview Survey sealants question

□ Dental sealants are special plastic coatings that are painted on the tops of the back teeth to prevent tooth decay. They are DIFFERENT from fillings, caps, crowns, and fluoride treatments. Has anyone in the family EVER had dental SEALANTS painted on their teeth?

Source: 1989 Dental Supplement, National Health Interview Survey, National Center for Health Statistics, CDC.

Objective 13.9: Water fluoridation

This objective measures the percent of persons on public water systems served by optimally fluoridated water. Optimal levels of water fluoridation can be achieved by either adding or subtracting fluoride to obtain a concentration between 0.7–1.2 ppm. The optimal fluoride concentration is determined for geographical areas based on mean daily temperature; thus States may have different levels of optimal concentration of fluoride in water. To characterize a community as optimally fluoridated, it is necessary to compare tap or water plant samples to the level the State has determined to be the optimal for that community. The CDC Fluoridation Census documents what the State health agencies have reported as the optimal fluoride level for each public water system within that State (15).

Objective 13.10: Topical and systemic fluorides

Topical fluorides refer to fluorides that are in contact with the external surface of the teeth, such as dentifrices, gels, and mouth rinses. Systemic fluorides (fluoridated water, tablets, or drops) are ingested and reach the teeth through the blood supply. Objective 13.10 addresses the use of topical and systemic fluoride among the population receiving nonfluoridated water. However, it is not feasible to identify which individuals have no access to fluoridated water because most persons are not aware of the fluoridation status of the water they consume or the water content of processed foods they eat. Therefore, this objective is measured as the percent of persons reporting use of toothpaste, children and adolescents (6–17 years) and persons 18 years of age and over reporting use of mouth rinses, and children and adolescents (2–16 years) for whom the use of supplements containing fluoride is reported regardless of the fluoridation status of their water. Information on brand names of toothpaste, tooth powder, mouthwashes, or mouth rinses is obtained to confirm the presence of fluoride (see figure 3 for survey questions). Fluoride treatments administered by dentists or dental hygienists are not included. Data to measure this objective come from the NHIS.

Figure 3. National Health Interview Survey topical and systemic fluoride questions

1986:

- ☐ What does (subject) use when (he/she) brushes (his/her) teeth: toothpaste, tooth powder, or something else?
  If toothpaste:
  - ☐ What brand did (subject) use most often during the past two weeks? Crest; Crest Tartar Control; Colgate; Dentagard; Aquafresh; Aim; Other (Specify); Don't know

1986 and 1989:

- ☐ In the past two weeks has anyone in the family used a mouthwash or mouth rinse at home?
  - ☐ What brand did (subject) use most often during the past 2 weeks? ACT, Fluorigard, Kolynos, Listermint, Reach, StanCare; Prescription fluoride rinse; Plax; Scope, Listerine, Lavoris; other (specify); don't know

If subject is a child 2–17 years of age:

- ☐ Does (child) now take part in a fluoride MOUTH RINSE program at school?

If subject is a child 0–17 years of age:

- ☐ Does (child) now take vitamins with FLUORIDE in them or any other kind of FLUORIDE tablets, drops, or supplements?

Source: 1986, 1989 Dental Supplements, National Health Interview Survey, National Center for Health Statistics, CDC.

Objective 13.11: Baby bottle tooth decay

Baby bottle tooth decay (BBTD) is a severe type of dental caries that affects anterior teeth of infants, and can progress to the destruction of the crown of these teeth. One risk factor for BBTD is feeding practices, namely use of baby bottles containing liquids other than water for extended periods of time, usually at bed time. For this reason, use of preventive feeding practices by parents and care givers is an indicator of low risk for BBTD (16). This objective is measured as the percent of children 6–23 months of age who never or no longer use a bottle, or who did not use a bottle at bedtime (except bottles with plain water) in the past two weeks. Data are collected by the NHIS for each sampled child 6–23 months of age from a family member answering the questionnaire (see figure 4 for survey questions). This objective is duplicated as objective 2.12 in the nutrition priority area.

Figure 4. National Health Interview Survey baby bottle tooth decay questions

For children 6–23 months of age:

- ☐ Has (child) ever been fed with a bottle? Do not include bottles with plain water.
  If yes:
  - ☐ Does (child) still use a bottle? Do not include bottles with plain water.
    If yes:
    - ☐ During the past 2 weeks, on how many days was (child) put to sleep with a bottle at bedtime or naptime? Do not include bottles with plain water.

Source: 1991 Healthy People 2000 Supplement (Child Health), National Health Interview Survey, National Center for Health Statistics, CDC.

Objective 13.12: Oral health screening, referral, and follow-up

This objective addresses oral health screening, referral, and follow-up among children entering school programs for the first time. Since the data available are from household survey reports of children's behavior and not from school or day care programs, the operational definition of this objective is ''children age 5 who have visited the dentist in the past year.'' This age group is representative of children entering school programs. A general dental visit question such as this one does not provide information on content of visit (screening, preventive therapies, treatment, referrals or follow-ups), but is a widely accepted proxy for access and utilization of dental care. Data to measure this objective, which are collected by the NHIS (see figure 5 for survey questions) and NHANES III, are presented as the percent of children age 5 who reported having made at least one dental visit during the past year. The 1995 midcourse review added specific subobjectives for black and Hispanic children.

Figure 5. National Health Interview Survey dental visits question

1986:

- ☐ How long has it been since (subject) LAST went to a dentist?

1989, 1990, 1991, and 1993:

- ☐ During the past 12 months, that is, since (12-month date) a year ago, about how many visits did you make to a dentist?

Source: 1986 and 1989 Dental Supplements, and 1990, 1991, 1993 *Healthy People 2000* Supplements (Oral Health), National Health Interview Survey, National Center for Health Statistics, CDC.

Objective 13.13: Oral health care at institutional facilities

This objective refers to inclusion of dental care as part of the general health care for residents of institutional facilities. Institutions specified are nursing homes, federal and non-federal prisons, juvenile homes, and detention facilities. This objective is measured by the existence of a requirement to provide dental care for persons entering the institution. The Federal Bureau of Prisons Health Services Manual requires an oral health screening within 14 days of entry into the institution. HCFA requires that nursing homes participating in Medicare and Medicaid programs facilitate access to dental care to the beneficiaries. A recently completed NCHS National Nursing Home Survey provides more information on the nature of dental care provided in these facilities.

Objective 13.14: Regular dental visits

The overall objective is measured as percent of persons 35 years of age and over who visited the dentist in the past year regardless of the reason for visit or visit's outcome. Because of their historically poor patterns of dental utilization, there are five subobjectives that target edentulous persons, persons 65 years and over, and persons 35 years and over from three racial/ethnic groups—blacks, Mexican-Americans and Puerto Ricans—residing in the 50 States and the District of Columbia (17). This objective is measured with self-reported data from the NHIS (see figure 5 for survey questions), but similar information can be obtained from the NHANES III.

Objective 13.15: Oral health care for infants with cleft lip/palate

This objective tracks the capability of States to identify, refer for care, and follow-up children with cleft lip and/or palate. The objective states that the recording and referral systems must be ''effective;'' however, the measurement only addresses the presence of the systems. Data were obtained from two surveys of State Public Health Dentists conducted by the Illinois State Health Department in 1989 and 1993.

Objective 13.16: Protective equipment in sporting and recreation events

Most traumatic injuries to the teeth from participation in sporting events can be prevented with the use of mouth guards and headgear. The use of equipment to protect head, face, eyes, and mouth during these activities is already a requirement by the National Collegiate Athletic Associations of football, hockey, and lacrosse; high school football; and amateur boxing and ice hockey. An analysis of 1991 NHIS data found low use of head and mouth protection among school age children, and interviews with associations and organizations show inconsistent compliance with this preventive activity across a range of organized sports (18). The use of protective gear by children 7–15 years of age who play baseball, football, and soccer is used as a proxy measure to address this objective. Data to measure individual use of protective gear are collected by the NHIS (see figure 6 for survey questions); ''appropriate use'' is defined as using the protective gear ''all or most of the time'' when the child plays the sport. This objective is duplicated as objective 9.19 in the unintentional injuries priority area.

Figure 6. National Health Interview Survey protective equipment in sporting and recreation events questions

For children 7–15 years of age:

- ☐ During the past 12 months, did (child) play any of these ORGANIZED sports?
  Football, baseball or softball, soccer, rugby, field hockey or ice hockey, lacrosse, wrestling, boxing, karate or judo.
  If yes:
  - ☐ Which ones did (child) play?
- ☐ During the past 12 months, when (playing) (sport in first question), how often did (child) wear a mouth guard to protect (his/her) mouth and teeth—
  All or most of the time, some of the time, once in awhile, or never?
- ☐ During the past 12 months, when (playing) (sport in first question), how often did (child) wear protective headgear—
  All or most of the time, some of the time, once in awhile, or never?

Source: 1991 Healthy People 2000 Supplement (Child Health), National Health Interview Survey, National Center for Health Statistics, CDC.

Objective 13.17: Reduce smokeless tobacco

This objective was added to priority area 13, oral health, as a duplicate in the 1995 midcourse review; it is shared with priority area 3, tobacco, as objective 3.9. Smokeless tobacco is included in the oral health priority area because persons using it are more likely than nonusers to develop leukoplakia, a precancerous oral lesion. Considering the high prevalence of use of this type of tobacco by Native American/Alaska Native youth (19), there is a subobjective for this age-ethnic group. The objective targets men because smokeless tobacco use is much less common among women in the total population. However, use of smokeless tobacco among young American Indian/Alaska Native men and women has been reported to be almost equivalent (19), for this reason the subobjective for this group includes both young men and women. Among youth 12–17 years of age, a user is someone who has used smokeless tobacco in the past month; among persons 18–24 years of age a user is someone who has used smokeless tobacco at least 20 times and currently uses it. The overall objective is tracked by self-reported use of smokeless tobacco in the National Household Survey on Drug Abuse for boys ages 12–17 years and in the NHIS for men ages 18 to 24 years (see figures 7 and 8 for survey questions). Baseline data for the subobjective come from the National Medical Expenditure Survey of American Indians/Alaska Natives conducted by NCHSR (now the Agency for Health Care Policy and Research). Follow-up data for the subobjective are obtained from the NHIS; however, estimates are unreliable because of the small sample size of American Indians/Alaska Natives in this survey.

Figure 7. National Household Survey on Drug Abuse smokeless tobacco question

- ☐ When was the MOST RECENT TIME you used chewing tobacco or snuff or other smokeless tobacco?
  Within the past month; More than one month but less than 6 months ago; 6 or more months ago but less than 1 year ago; 1 or more years ago but less than 3 years ago; 3 or more years ago; Never used smokeless tobacco in lifetime.

Source: 1988, 1992, 1993 National Household Survey on Drug Abuse, SAMHSA.

Figure 8. National Health Interview Survey smokeless tobacco questions

1987, 1991, 1992:

- ☐ Has (subject) ever used snuff, such as Skoal, Skoal Bandits, or Copenhagen?
  If yes:
  - ☐ Has (subject) used snuff at least 20 times in (his/her) entire life?
  - ☐ Does (subject) use snuff now?
- ☐ Has (subject) ever used chewing tobacco, such as Redman, Levi Garrett, or Beechnut?
  If yes:
  - ☐ Has (subject) ever used chewing tobacco at least 20 times in (his/her) entire life?
  - ☐ Does (subject) use chewing tobacco now?

1993:

- ☐ Do you use snuff now?
- ☐ Do you use chewing tobacco now?

Source: 1987, 1991, 1992, 1993 Healthy People 2000 Supplement (Tobacco), National Health Interview Survey, National Center for Health Statistics, CDC.

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Appendix A: Oral Health Objectives

13.1: Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 35 percent among children aged 6–8 and no more than 60 percent among adolescents aged 15.

13.1a: Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 45 percent among children aged 6–8 whose parents have less than a high school education.

13.1b: Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 45 percent among American Indian and Alaska Native children aged 6–8.

13.1c: Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 40 percent among black children aged 6–8.

13.1d: Reduce dental caries (cavities) so that the proportion of adolescents with one or more caries (in permanent teeth) is no more than 70 percent among American Indian and Alaska Native adolescents aged 15.

13.2: Reduce untreated dental caries so that the proportion of children with untreated caries (in permanent or primary teeth) is no more than 20 percent among children aged 6–8 and no more than 15 percent among adolescents aged 15.

13.2a: Reduce untreated dental caries so that the proportion of lower socioeconomic status children aged 6–8 (those whose parents have less than a high school education) with untreated dental caries (in permanent or primary teeth) is no more than 30 percent.

13.2b: Reduce untreated dental caries so that the proportion of American Indian and Alaska Native children aged 6–8 with untreated caries (in permanent or primary teeth) is no more than 35 percent.

13.2c: Reduce untreated dental caries so that the proportion of black children aged 6–8 with untreated caries (in permanent or primary teeth) is no more than 25 percent.

13.2d: Reduce untreated dental caries so that the proportion of Hispanic children aged 6–8 with untreated caries (in permanent or primary teeth) is no more than 25 percent.

13.2e: Reduce untreated dental caries so that the proportion of lower socioeconomic status adolescents aged 15 (those whose parents have less than a high school education) with untreated dental caries (in permanent or primary teeth) is no more than 25 percent.

13.2f: Reduce untreated dental caries so that the proportion of American Indian and Alaska Native adolescents aged 15 with untreated caries (in permanent or primary teeth) is no more than 40 percent.

13.2g: Reduce untreated dental caries so that the proportion of black adolescents aged 15 with untreated caries (in permanent or primary teeth) is no more than 20 percent.

13.2h: Reduce untreated dental caries so that the proportion of Hispanic adolescents aged 15 with untreated caries (in permanent or primary teeth) is no more than 25 percent.

13.3: Increase to at least 45 percent the proportion of people aged 35–44 who have never lost a permanent tooth due to dental caries or periodontal diseases.

NOTE: Never lost a permanent tooth is having 28 natural teeth exclusive of third molars.

13.4: Reduce to no more than 20 percent the proportion of people aged 65 and older who have lost all of their natural teeth.

13.4a: Reduce to no more than 25 percent the proportion of low-income people (annual family income less than $15,000) aged 65 and older who have lost all of their natural teeth.

13.4b: Reduce to no more than 20 percent the proportion of American Indians and Alaska Natives aged 65 and older who have lost all of their natural teeth.

13.5: Reduce the prevalence of gingivitis among people aged 35–44 to no more than 30 percent.

13.5a: Reduce the prevalence of gingivitis among low-income people (annual family income less than $12,500) aged 35–44 to no more than 35 percent.

13.5b: Reduce the prevalence of gingivitis among American Indians and Alaska Natives aged 35–44 to no more than 50 percent.

13.5c: Reduce the prevalence of gingivitis among Hispanics aged 35–44 to no more than 50 percent.

13.6: Reduce destructive periodontal diseases to a prevalence of no more than 15 percent among people aged 35–44.

NOTE: Destructive periodontal disease is one or more sites with 4 millimeters or greater loss of tooth attachment.

13.7*: Reduce deaths due to cancer of the oral cavity and pharynx to no more than 10.5 per 100,000 men aged 45–74 and 4.1 per 100,000 women aged 45–74.

Duplicate objectives: 3.17 and 16.17

13.7a*: Reduce deaths due to cancer of the oral cavity and pharynx to no more than 26.0 per 100,000 among black males aged 45–74.

Duplicate objectives: 3.17a and 16.17a

13.7b*: Reduce deaths due to cancer of the oral cavity and pharynx to no more than 6.9 per 100,000 among black females aged 45–74.

Duplicate objectives: 3.17b and 16.17b

13.8: Increase to at least 50 percent the proportion of children who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth.

NOTE: Progress toward this objective will be monitored based on prevalence of sealants in children at ages 8 and 14, when the majority of first and second molars, respectively, are erupted.

13.8a: Increase to at least 50 percent the proportion of black children aged 8 who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth.

13.8b: Increase to at least 50 percent the proportion of black children aged 14 who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth.

13.8c: Increase to at least 50 percent the proportion of Hispanic children aged 8 who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth.

13.8d: Increase to at least 50 percent the proportion of Hispanic children aged 14 who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth.

13.9: Increase to at least 75 percent the proportion of people served by community water systems providing optimal levels of fluoride.

NOTE: Optimal levels of fluoride are determined by the mean maximum daily air temperature over a 5-year period and range between 0.7 and 1.2 parts of fluoride per 1 million parts of water (ppm).

13.10: Increase use of professionally or self-administered topical or systemic (dietary) fluorides to at least 85 percent of people not receiving optimally fluoridated public water.

13.11*: Increase to at least 75 percent the proportion of parents and care givers who use feeding practices that prevent baby bottle tooth decay.

Duplicate objective: 2.12

13.11a*: Increase to at least 65 percent the proportion of parents and care givers with less than a high school education who use feeding practices that prevent baby bottle tooth decay.

Duplicate objective: 2.12a

13.11b*: Increase to at least 65 percent the proportion of American Indian and Alaska Native parents and care givers who use feeding practices that prevent baby bottle tooth decay.

Duplicate objective: 2.12b

13.11c*: Increase to at least 65 percent the proportion of black parents and care givers who use feeding practices that prevent baby bottle tooth decay.

Duplicate objective: 2.12c

13.11d*: Increase to at least 65 percent the proportion of Hispanic parents and care givers who use feeding practices that prevent baby bottle tooth decay.

Duplicate objective: 2.12d

13.12: Increase to at least 90 percent the proportion of all children entering school programs for the first time who have received an oral health screening, referral, and follow up for necessary diagnostic, preventive, and treatment services.

NOTE: School programs include Head Start, prekindergarten, kindergarten, and first grade.

13.12a: Increase to at least 90 percent the proportion of all black children aged 5 who have received an oral health screening, referral, and follow up for necessary diagnostic, preventive, and treatment services.

13.12b: Increase to at least 90 percent the proportion of Hispanic children aged 5 who have received an oral health screening, referral, and follow up for necessary diagnostic, preventive, and treatment services.

13.13: Extend to all long-term institutional facilities the requirement that oral examinations and services be provided no later than 90 days after entry into these facilities.

NOTE: Long-term institutional facilities include nursing homes, prisons, juvenile homes, and detention facilities.

13.14: Increase to at least 70 percent the proportion of people aged 35 and older using the oral health care system during each year.

13.14a: Increase to at least 50 percent the proportion of edentulous people using the oral health care system during each year.

13.14b: Increase to at least 60 percent the proportion of people aged 65 and older using the oral health care system during each year.

13.14c: Increase to at least 60 percent the proportion of blacks aged 35 and older using the oral health care system during each year.

13.14d: Increase to at least 60 percent the proportion of Mexican Americans aged 35 and older using the oral health care system during each year.

13.14e: Increase to at least 60 percent the proportion of Puerto Ricans aged 35 and older using the oral health care system during each year.

13.15: Increase to at least 40 the number of States that have an effective system for recording and referring infants with cleft lips and/or palates to craniofacial anomaly teams.

Identification and referral of infants with clefts	2000 target (number of States)
States with system to identify clefts	40
States with system to refer for care	40
States with system to follow-up	40
States with system to identify and refer	40

13.16*: Extend requirement of the use of effective head, face, eye, and mouth protection to all organizations, agencies, and institutions sponsoring sporting and recreation events that pose risk of injury.

Duplicate objective: 9.19

13.17*: Reduce smokeless tobacco use by males aged 12–24 to a prevalence of no more than 4 percent.

NOTE: For males aged 12–17, a smokeless tobacco user is someone who has used snuff or chewing tobacco in the preceding month. For males aged 18–24, a smokeless tobacco user is someone who has used either snuff or chewing tobacco at least 20 times and who currently uses snuff or chewing tobacco.

Duplicate objective: 3.9

13.17a*: Reduce smokeless tobacco use by American Indian and Alaska Native youth to a prevalence of no more than 10 percent.

Duplicate objective: 3.9a

*Duplicate objective.

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