Basic Data on Dental Examination Findings

of Persons 1-74 Years
United States, 1971-1974

Estimates of tooth loss; decayed, missing, and filled (DMF) permanent teeth and decayed, nonfunctional-carious, and filled (def) primary teeth; periodontal disease and unmet dental treatment needs for persons 1-74 years by age, sex, and race.

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PREFACE

The National Center for Health Statistics has as its mission the collection, analysis, and dissemination of data on the health of the population of the United States. One of the major programs is the Health Examination Survey, in which are conducted extensive examinations of a sample of the U.S. population. Data from this survey have been published periodically in Series 11 reports of *Vital and Health Statistics*.

Historically the published documents in Series 11 present only a small fraction of the available data. In order to make additional data available for users, the Center has for many years had a policy of preparing public use tapes for purchase by persons interested in more detailed analysis or analysis of additional variables not published in Series 11 reports. These data, however, are only easily accessible to persons with computers and support staff who can read, interpret, and analyze the data. In order to make these data more generally accessible to many users and, in particular, to persons not able to directly use data tapes, the Division of Health Examination Statistics, in the autumn of 1977, initiated a program to release, along with the data tapes, basic descriptive summary tables of data contained in those tapes.These tabular summaries have been termed "basic data publications," of which this report is one.

These basic data publications present findings of the Health and Nutrition Examination Survey of 1971-75. For each of the data sets, these publications include information on the methods used to collect the data, a descriptive summary of the tables included, an index to the tables, and the tables themselves. An appendix describes the basic format of the associated data tape. More detailed information on use of the data for additional analysis is available on request from the staff of the Division of Health Examination Statistics.

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BASIC DENTAL EXAMINATION FINDINGS
OF PERSONS 1-74 YEARS

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INTRODUCTION

Most of the dental examination findings collected during the first Health and Nutrition Examination Survey (HANES I) are summarized in this report. The findings are based on examinations given by seven dentists during 1971-74 to approximately 20,000 people aged 1-74 years. Those who were examined were part of a probability sample of approximately 28,000 selected from the civilian noninstitutionalized population of the coterminous United States, except those living on land reserved for the use of American Indians. A detailed description of the design, content, and operation of HANES I is provided in the following reports: Plan and Operation of the Health and Nutrition Examination Survey, DHEW Pub. No. (HSM) 73-1310, Series 1, Nos. 10a and 10b, Public Health Service, Washington, D.C., U.S. Government Printing Office, February 1973.

Since one main emphasis of HANES I was on nutrition, the sample was selected so that certain population groups believed to be at high risk of malnutrition (those with low incomes, preschool children, women of childbearing age, and the elderly) were oversampled at known rates. Adjusted sampling weights were later computed within 60 age, sex, and race categories in order to inflate the sample in such a manner as to reflect the U.S. population at the midpoint of the survey. The age, sex, and race distribution of the civilian noninstitutionalized U.S. population at the survey's midpoint and the distribution of the probability sample drawn from it are shown in table II of appendix III.

A subset of the sample aged 25-74 were given a more detailed health examination than those not in the subset. At 65 survey locations, a dental examination was given to the entire examined sample. After the nutrition survey was completed, the detailed examination, excluding the dental examination, given to the 25-74-year-old age group was continued until October 1975 at an additional 35 locations.

Information about each sample person examined during HANES I was obtained by means of a household interview; a general medical history; a 24-hour dietary intake recall interview; a food frequency interview; a food program questionnaire; a general medical examination; dental, dermatological, and ophthalmological examinations; anthropometric measurements; and 24 hematological, blood chemistry, and urological laboratory determinations. Hand-wrist X-rays were taken on those 1-17 years old.

Additional information was collected on the subsample of adults aged 25-74 by means of the following questionnaires, procedures, and measurements: a medical history supplement; three supplementary questionnaires concerning arthritis and respiratory and cardiovascular conditions (when applicable); a health care needs questionnaire; a general well-being questionnaire; an extended medical examination; X-rays of the chest and hip and knee joints; audiometry; electrocardiology; goniometry; spirometry; pulmonary diffusion and tuberculin tests and several laboratory determinations.

Dental Examination

The dental examiners attempted to derive their findings as uniformly as possible by following a written set of objective standards in which they had been carefully trained. The standards were guidelines that, in effect, narrowed the range of examiner variability by eliminating many borderline or questionable conditions that are frequently a source of disagreement. And to avoid other sources that might have resulted in systematic bias, the dentist did not dry or isolate teeth, remove oral debris and calculus, or probe tooth surfaces unless they showed overt signs of decay.

The dentist dictated the condition of each tooth present to a trained recorder (health technician). The teeth were classified as sound, filled, decayed, filled-defective, and nonfunctional. Missing permanent teeth were classified under one of the following four categories: unerupted, carious extraction, accidental loss, and orthodontic extraction. When missing teeth were replaced on a fixed or partial denture, condition of the tissue under the prosthesis, as well as the adequacy of the prosthesis itself, was rated. When there were no natural teeth remaining in a jaw, the condition of the jaw and the status of an artificial replacement if one was present were recorded. Appendix I describes the dental examinations in greater detail.

The next step of the examination was to assess the periodontal structures and the status of oral hygiene. The Periodontal Index (Appendix I) was used to assess the presence or absence of periodontal disease. By this system of classification, scores are assigned according to the extent of gingival inflammation, the presence or absence of periodontal pockets, and the firmness of teeth in their sockets. To assess oral hygiene by the Simplified Oral Hygiene Index, scores are recorded for all or any of six predesignated teeth. The scores indicate the extent of both debris and calculus on selected tooth surfaces. Fluoride and nonfluoride opacities and other conditions such as bleeding gums, diffuse marginal inflammation, swollen red papillae, and gingival recession were also recorded.

The occlusion of persons aged 6-21 years was appraised by a series of counts and measurements. The anteroposterior position of the lower jaw in relation to the upper jaw was recorded. Counts were made of malaligned teeth and posterior teeth in a crossbite relationship. Measurements of mandibular protrusion and anterior overjet, overbite, and openbite were taken.

An enamel biopsy was taken on persons who had an upper permanent incisor with a front surface free of cavities and fillings. The enamel sample was "polished off" from an area about one-eighth of an inch in diameter and to a depth of approximately 0.0002 inch. This is only about as much enamel as that removed during a routine cleaning by a dentist or dental hygienist. The sample was analyzed to determine the fluoride content of the tooth it was removed from.

Finally, the dental examiner, using his best clinical judgment, estimated the kind and amount of dental treatment required by every sample person. In doing so, he took into consideration the status of oral hygiene and periodontal disease, the amount and adequacy of past dental care, the responses to questions asked at the beginning of the examination about chewing and eating difficulties, the age of the individual, and the probable benefit to the individual's health and nutrition of each specific treatment plan. The treatment recommendation might have included any of several procedures ranging from a simple 1-surface filling to extraction of all remaining teeth and denture construction.

The national estimates in this report include the following: the percentages of people according to whether their upper or lower jaws, or both, were edentulous (no permanent teeth left); the average number of decayed, missing, and filled permanent teeth per person and decayed, nonfunctional-carious, and filled primary teeth per person; the percentages of people with and without gingivitis and chronic destructive periodontal disease; the average periodontal disease index (PI) per person; the average Simplified Oral Hygiene Index (OHI-S); and the percentages of people classified by type of dental care needed. Most of the estimates are shown by age, sex, and race. The definitions used for age and race are included in appendix II. No presentation is made of the numerous other demographic variables that are available. The form on which the dental findings were recorded is reproduced in appendix I.

Additional Dental Information

Additional information about self-perceived needs for dental care and the receipt of dental care is located in tape positions 277-303 and 517-547 of user tape catalog number 4091, which contains answers to questions on the Health Care Needs and General Medical History Questionnaires and the Respiratory and Cardiovascular Supplements.

FINDINGS

Edentulous Arches

An estimated 14.7 percent of the adult population aged 18-74 years have lost all of their permanent teeth. An additional 9.2 percent have lost all of their upper or lower teeth (table 1). Tooth loss in an entire arch increases steadily with advancing age: Only about 4 percent of those 18-44 years old have no teeth at all and 6 percent have none in one arch, compared with about 45 percent and 15 percent, respectively, of those 65-74 years old. More women than men 18-74 years old have two edentulous arches— 15.8 percent compared with 13.3—and more also have only one edentulous arch—10.2 percent compared with 8.0.

Decayed, Missing, and Filled Teeth

About 9 out of 10 of the people aged 6-74 years have not lost all of their permanent teeth. The average number of decayed, missing, and filled (DMF) teeth per person in the dentulous population is 13.0: 1.3 teeth decayed, 5.3 missing, and 6.4 filled (table 2). Average DMF counts increase steadily with age from a low of 1.7 for those aged 6-11 to a high of 22.5 for those aged 65-74.

White adults 18-74 years old in all age groups have consistently more DMF teeth than black adults of comparable ages—largely because more filled teeth are present. The average counts for white and black men are consistently lower than those for women of the same race and age, but the differences between comparable counts are small, ranging from a low of 0.4 teeth to a high of only 3.0. The same differentials may be

noted in the DMF estimates for children 6-11 years old and youths 12-17 years.

The average numbers of decayed, nonfunctional-carious, and filled primary teeth (def) per person are shown in table 3. Differences in the average counts associated with age, sex, and race are small, and no important trends in the occurrence of def teeth are apparent.

Periodontal Disease

The average Periodontal Index (PI) per person for the population aged 6-74 years is 0.83 (table 4). The presence and severity of gingivitis and periodontal disease are closely associated with advancing age, with the average score per person increasing steadily from 0.11 for those 6-11 years old to 2.34 for those 65-74.

The average score for males (0.96) is higher than the one for females (0.70), and that for the black population (1.28) is higher than the one for the white population (0.76). The differences in PI values associated with sex and race occur throughout all age groups.

Table 5 classifies the dentulous population 6-74 years old according to status of periodontal disease and by age and sex. The percentage without signs of inflammation and pocket formation falls rapidly and steadily with increasing age— from 86.1 percent of the youngest group (6-11 years) to 36.3 percent of the oldest (65-74 years). Comparatively few children (0.3 percent) and youths (1.3 percent) have chronic destructive disease, but comparatively many have gingivitis—13.6 percent and 32.2 percent, respectively. The percentage of adults with one tooth or more showing pocket formation becomes increasingly larger in the three oldest age groups— from 14.8 percent to 36.6 to 50.2. In every age group, a higher percent of males than females have destructive disease.

Oral Hygiene

The average Simplified Oral Hygiene Index (OHI-S) for all persons 6-74 years old is 1.00 (table 6). The index for white persons was lower than that for black persons—0.93 compared with 1.56. In persons of either race, the indexes for males were higher than those for females.

The OHI-S rises steadily with increasing age—from 0.75 for children 6-11 years old to a high of 1.43 for adults 65-74. The Simplified Debris Index (DI-S) of children and youths is many times larger than the corresponding Simplified Calculus Index (CI-S). In adults 18-44 years and older, the presence of calculus is increasingly responsible for faulty oral hygiene (tables 7 and 8).

Dental Treatment Required

An estimated 64.1 percent of the population needs dental treatment of one type or other (table 9). Comparatively more males (67.5 percent) than females (61.0 percent) need at least one type of dental service. It should be noted that the same people may be included in more than one of the estimates in the table showing those with specific treatment needs.

The percentages of those 6-44 years old needing a routine cleaning (removal of debris and calculus) were much higher than the corresponding percentages of those in the two oldest groups. Almost all of those needing periodontal disease treatment were in the three oldest age groups (18-74 years).

The percentage of all persons needing at least one filling (decay treatment— permanent and primary teeth) is 41.1, with the range running from a low of 16.1 percent of the children aged 1-5 years to a high of about 53 percent of the children and youths aged 6-17. The percentages of older adults needing extractions and prosthetic appliances (full and partial) are also, of course, much higher than the corresponding percentages of children and youths.

The average number per person of 1-surface and 2-surface fillings and fillings involving 3 surfaces or more that are needed by those who need at least one filling are shown in table 10. The estimates do not differ importantly by either sex or race.

Table 11 shows the average number per person of teeth needing to be extracted by age, sex, and race, according to the reasons for extracting the teeth. The estimates apply only to those who need at least one tooth extracted—only about 1 out of every 20 people. The average number of teeth needing to be extracted because of decay rises only slightly with increasing age, but the number needing to be extracted because of periodontal disease and other reasons (usually prosthetic considerations) rises sharply.

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LIST OF DETAILED TABLES

Table 1. Percent distribution of persons aged 6-74 years by number of edentulous arches, according to sex and age, with standard errors: United States, 1971-74

Sex and age	Total	With no arch edentulous	With one arch edentulous	With both arches edentulous	Total	With no arch edentulous	With one arch edentulous	With both arches edentulous
Both sexes		Percent distribution				Standard error		
All ages, 6-74 years................	100.0	82.6	6.7	10.7	. . .	0.51	0.28	0.43
6-17 years	100.0	99.8	0.1	0.1	. . .	0.10	0.09	0.04
6-11 years..............................	100.0	99.9	0.0	0.0	. . .	0.04	0.04	0.01
12-17 years.............................	100.0	99.7	0.2	0.1	. . .	0.19	0.17	0.08
18-74 years	100.0	76.2	9.2	14.7	. . .	0.70	0.39	0.59
18-44 years.............................	100.0	90.3	5.6	4.1	. . .	0.53	0.42	0.33
45-64 years.............................	100.0	62.7	13.5	23.8	. . .	1.42	0.86	1.26
65-74 years.............................	100.0	39.1	15.4	45.5	. . .	1.30	0.88	1.30
Male								
All ages, 6-74 years................	100.0	84.7	5.7	9.5	. . .	0.60	0.38	0.60
6-17 years	100.0	99.9	0.0	0.0	. . .	0.04	0.04	0.01
6-11 years..............................	100.0	99.9	0.1	0.0	. . .	0.08	0.08	0.02
12-17 years.............................	100.0	100.0	-	-	. . .	-	-	-
18-74 years	100.0	78.6	8.0	13.3	. . .	0.84	0.53	0.83
18-44 years.............................	100.0	92.1	4.5	3.4	. . .	0.69	0.55	0.49
45-64 years.............................	100.0	65.3	12.2	22.5	. . .	1.70	1.11	1.83
65-74 years.............................	100.0	40.9	15.5	43.6	. . .	1.52	1.13	1.77
Female								
All ages, 6-74 years................	100.0	80.6	7.6	11.8	. . .	0.60	0.37	0.47
6-17 years	100.0	99.7	0.2	0.1	. . .	0.20	0.17	0.09
6-11 years..............................	100.0	100.0	-	-	. . .	-	-	-
12-17 years.............................	100.0	99.4	0.3	0.3	. . .	0.38	0.34	0.17
18-74 years	100.0	74.0	10.2	15.8	. . .	0.81	0.50	0.63
18-44 years.............................	100.0	88.7	6.6	4.7	. . .	0.62	0.50	0.32
45-64 years.............................	100.0	60.4	14.7	24.9	. . .	1.83	1.29	1.53
65-74 years.............................	100.0	37.7	15.3	47.0	. . .	1.69	1.31	1.76

Table 2. Average number of decayed (D), missing (M), and filled (F) permanent teeth per person among persons aged 1-74 years, by race, sex, and age, with standard errors: United States, 1971-74

Sex and age	DMF teeth Total[1]	DMF teeth White	DMF teeth Black	D teeth Total[1]	D teeth White	D teeth Black	M teeth Total[1]	M teeth White	M teeth Black	F teeth Total[1]	F teeth White	F teeth Black
Both sexes					Average number of teeth							
All ages, 1-74 years	13.0	13.5	9.6	1.3	1.2	2.3	5.3	5.3	5.6	6.4	7.0	1.7
1-5 years	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	-
6-11 years	1.7	1.7	1.6	0.7	0.6	0.9	0.1	0.1	0.3	0.8	0.9	0.5
12-17 years	6.2	6.3	5.5	1.8	1.6	3.1	0.6	0.5	1.2	3.7	4.1	1.3
18-44 years	14.9	15.3	12.4	1.7	1.5	3.2	4.9	4.7	6.6	8.3	9.1	2.6
45-64 years	20.4	21.2	14.2	0.9	0.9	1.4	11.3	11.4	11.2	8.1	8.9	1.7
65-74 years	22.2	22.5	19.9	0.6	0.5	1.1	15.2	14.9	17.8	6.4	7.0	1.0
Male												
All ages, 1-74 years	12.4	12.9	8.9	1.4	1.3	2.2	4.9	4.9	5.2	6.1	6.7	1.5
1-5 years	0.1	0.1	0.1	0.1	0.1	0.1	-	-	-	0.0	0.0	-
6-11 years	1.6	1.6	1.5	0.7	0.7	0.9	0.2	0.1	0.3	0.7	0.8	0.3
12-17 years	5.7	5.8	5.1	1.7	1.5	3.0	0.5	0.4	0.9	3.5	3.9	1.2
18-44 years	14.4	14.8	11.8	1.8	1.6	3.2	4.5	4.4	6.1	8.1	8.8	2.5
45-64 years	19.8	20.7	12.7	1.0	1.0	1.1	11.0	11.1	10.4	7.9	8.7	1.2
65-74 years	21.9	22.3	19.5	0.7	0.6	1.2	15.7	15.5	17.5	5.5	6.1	0.8
Female												
All ages, 1-74 years	13.5	14.0	10.3	1.3	1.1	2.4	5.6	5.6	6.0	6.6	7.3	1.9
1-5 years	0.1	0.1	0.2	0.1	0.0	0.2	0.0	0.0	0.0	-	-	-
6-11 years	1.7	1.7	1.8	0.7	0.6	1.0	0.1	0.1	0.2	1.0	1.0	0.6
12-17 years	6.6	6.7	6.0	1.9	1.7	3.1	0.8	0.7	1.5	3.9	4.4	1.3
18-44 years	15.3	15.7	12.8	1.6	1.4	3.1	5.2	5.0	7.0	8.5	9.4	2.7
45-64 years	20.9	21.6	15.7	0.9	0.8	1.7	11.7	11.7	11.9	8.3	9.1	2.2
65-74 years	22.5	22.7	20.3	0.5	0.4	0.9	14.8	14.5	18.3	7.2	7.7	1.1
Both sexes					Standard error							
All ages, 1-74 years	0.13	0.13	0.29	0.06	0.05	0.15	0.09	0.09	0.22	0.12	0.14	0.13
1-5 years	0.04	0.03	0.09	0.04	0.03	0.09	0.01	0.01	0.01	0.01	0.01	-
6-11 years	0.06	0.06	0.13	0.04	0.04	0.09	0.02	0.02	0.06	0.05	0.06	0.08
12-17 years	0.14	0.15	0.35	0.10	0.09	0.24	0.05	0.05	0.14	0.11	0.14	0.17
18-44 years	0.18	0.17	0.54	0.07	0.07	0.23	0.15	0.15	0.42	0.13	0.16	0.21
45-64 years	0.20	0.20	0.63	0.07	0.06	0.17	0.24	0.25	0.67	0.24	0.26	0.33
65-74 years	0.21	0.23	0.68	0.04	0.03	0.14	0.28	0.29	0.74	0.29	0.32	0.14
Male												
All ages, 1-74 years	0.16	0.15	0.40	0.07	0.06	0.18	0.12	0.12	0.30	0.12	0.14	0.17
1-5 years	0.06	0.06	0.07	0.06	0.06	0.07	-	-	-	0.02	0.02	-
6-11 years	0.07	0.07	0.16	0.04	0.05	0.11	0.03	0.02	0.12	0.06	0.07	0.08
12-17 years	0.17	0.16	0.46	0.11	0.10	0.29	0.04	0.04	0.12	0.13	0.14	0.22
18-44 years	0.23	0.23	0.68	0.09	0.09	0.30	0.18	0.18	0.57	0.19	0.20	0.39
45-64 years	0.24	0.21	0.96	0.10	0.10	0.18	0.30	0.32	0.88	0.24	0.27	0.19
65-74 years	0.29	0.33	0.81	0.05	0.05	0.19	0.38	0.41	0.86	0.28	0.33	0.16
Female												
All ages 1-74 years	0.14	0.15	0.27	0.06	0.05	0.16	0.11	0.11	0.24	0.14	0.16	0.13
1-5 years	0.04	0.04	0.12	0.04	0.03	0.12	0.02	0.02	0.02	-	-	-
6-11 years	0.08	0.08	0.18	0.06	0.06	0.13	0.02	0.02	0.05	0.06	0.07	0.12
12-17 years	0.21	0.24	0.42	0.12	0.12	0.32	0.09	0.10	0.25	0.20	0.24	0.24
18-44 years	0.18	0.19	0.53	0.07	0.07	0.26	0.18	0.18	0.39	0.15	0.17	0.18
45-64 years	0.28	0.30	0.78	0.06	0.06	0.23	0.31	0.33	0.88	0.36	0.39	0.61
65-74 years	0.32	0.33	0.96	0.05	0.04	0.13	0.36	0.37	0.99	0.39	0.43	0.20

[1]Includes data for "other races," which are not shown separately.

NOTES: Filled teeth include only those with satisfactory fillings. Decayed teeth include not only teeth with caries but also filled teeth with carious lesions or defective fillings. Missing teeth include both missing and nonfunctional teeth. DMF is the total of these 3 categories.

Edentulous persons (lost all their natural teeth) were included in this table.

Table 3. Average number of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per person among persons aged 1-74 years, by race, sex, and age, with standard errors: United States, 1971-74

Sex and age	def			d teeth			e teeth			f teeth		
	Total[1]	White	Black	Total[1]	White	Black	Total[1]	White	Black	Total[1]	White	Black
Both sexes	Average number of teeth											
All ages, 1-74 years	0.4	0.4	0.4	0.2	0.2	0.3	0.0	0.0	0.1	0.2	0.2	0.1
1-5 years	1.0	1.0	1.0	0.7	0.7	0.8	0.1	0.1	0.1	0.2	0.2	0.1
6-11 years	2.7	2.8	2.1	1.2	1.2	1.2	0.3	0.3	0.3	1.2	1.4	0.5
12-17 years	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
18-44 years	-	-	-	-	-	-	-	-	-	-	-	-
45-64 years	-	-	-	-	-	-	-	-	-	-	-	-
65-74 years	-	-	-	-	-	-	-	-	-	-	-	-
Male												
All ages, 1-74 years	0.5	0.5	0.5	0.2	0.2	0.4	0.0	0.0	0.0	0.2	0.2	0.1
1-5 years	1.0	1.0	1.0	0.8	0.7	0.9	0.1	0.1	0.1	0.2	0.2	0.1
6-11 years	2.8	3.0	2.1	1.3	1.3	1.4	0.3	0.3	0.2	1.2	1.3	0.5
12-17 years	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0
18-44 years	-	-	-	-	-	-	-	-	-	-	-	-
45-64 years	-	-	-	-	-	-	-	-	-	-	-	-
65-74 years	-	-	-	-	-	-	-	-	-	-	-	-
Female												
All ages, 1-74 years	0.4	0.4	0.4	0.2	0.2	0.2	0.0	0.0	0.1	0.2	0.2	0.1
1-5 years	0.9	0.9	1.0	0.7	0.6	0.8	0.1	0.0	0.1	0.2	0.2	0.1
6-11 years	2.6	2.7	2.1	1.1	1.1	1.1	0.3	0.2	0.4	1.3	1.4	0.6
12-17 years	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
18-44 years	-	-	-	-	-	-	-	-	-	-	-	-
45-64 years	-	-	-	-	-	-	-	-	-	-	-	-
65-74 years	-	-	-	-	-	-	-	-	-	-	-	-
Both sexes	Standard error											
All ages, 1-74 years	0.01	0.01	0.03	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
1-5 years	0.06	0.06	0.11	0.05	0.06	0.09	0.01	0.01	0.04	0.02	0.02	0.02
6-11 years	0.09	0.09	0.14	0.06	0.07	0.12	0.04	0.04	0.07	0.07	0.08	0.08
12-17 years	0.01	0.02	0.03	0.01	0.01	0.02	0.00	0.00	0.01	0.01	0.01	0.00
18-44 years	-	-	-	-	-	-	-	-	-	-	-	-
45-64 years	-	-	-	-	-	-	-	-	-	-	-	-
65-74 years	-	-	-	-	-	-	-	-	-	-	-	-
Male												
All ages, 1-74 years	0.02	0.02	0.04	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.02
1-5 years	0.09	0.09	0.19	0.08	0.08	0.16	0.02	0.02	0.04	0.03	0.03	0.03
6-11 years	0.12	0.14	0.17	0.08	0.09	0.17	0.06	0.07	0.04	0.09	0.11	0.10
12-17 years	0.03	0.03	0.05	0.02	0.02	0.04	0.00	0.00	0.01	0.02	0.02	0.01
18-44 years	-	-	-	-	-	-	-	-	-	-	-	-
45-64 years	-	-	-	-	-	-	-	-	-	-	-	-
65-74 years	-	-	-	-	-	-	-	-	-	-	-	-
Female												
All ages, 1-74 years	0.02	0.02	0.03	0.01	0.01	0.02	0.01	0.00	0.02	0.01	0.01	0.02
1-5 years	0.09	0.09	0.12	0.06	0.07	0.10	0.01	0.01	0.06	0.03	0.04	0.05
6-11 years	0.11	0.11	0.21	0.07	0.07	0.13	0.04	0.03	0.13	0.09	0.10	0.13
12-17 years	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	-
18-44 years	-	-	-	-	-	-	-	-	-	-	-	-
45-64 years	-	-	-	-	-	-	-	-	-	-	-	-
65-74 years	-	-	-	-	-	-	-	-	-	-	-	-

[1]Includes data for "other races," which are not shown separately.

NOTES: Filled teeth include only those with satisfactory fillings. Decayed teeth include not only teeth with caries but also filled teeth with carious lesions or defective fillings. Nonfunctional-carious teeth are those which cannot be saved because of extensive caries. Total of these 3 categories is def..

Edentulous persons (lost all their natural teeth) were included in this table.

Table 4. Average Periodontal Index (PI) for persons aged 6-74 years, by race, sex, and age, with standard errors: United States 1971-74

Sex and age	Total[1]	White	Black	Total[1]	White	Black
Both sexes		PI			Standard error	
All ages, 6-74 years	0.83	0.76	1.28	0.█	0.03	0.06
6-11 years	0.11	0.11	0.12	0.█	0.01	0.02
12-17 years	0.32	0.29	0.53	0.█	0.02	0.06
18-44 years	0.76	0.69	1.26	0.█	0.04	0.08
45-64 years	1.57	1.42	2.78	0.█	0.09	0.20
65-74 years	2.34	2.17	3.82	0.█	0.12	0.23
Male						
All ages, 6-74 years..	0.96	0.88	1.52	0.█	0.04	0.08
6-11 years	0.14	0.14	0.15	0.█	0.02	0.04
12-17 years	0.38	0.35	0.58	0.█	0.03	0.08
18-44 years	0.91	0.83	1.57	0.█	0.06	0.15
45-64 years	1.79	1.61	3.21	0.█	0.12	0.27
65-74 years	2.81	2.61	4.20	0.16	0.16	0.29
Female						
All ages, 6-74 years..	0.70	0.65	1.07	0.03	0.03	0.07
6-11 years	0.08	0.08	0.10	0.01	0.01	0.03
12-17 years	0.26	0.22	0.47	0.02	0.03	0.07
18-44 years	0.61	0.56	1.02	0.03	0.04	0.06
45-64 years	1.37	1.24	2.37	0.09	0.09	0.29
65-74 years	1.96	1.83	3.40	0.12	0.13	0.26

[1] Includes data for "other races," which are not shown separately.

NOTE: Edentulous persons (lost all their natural teeth) have been excluded from this table.

Table 5. Percent distribution of persons aged 6-74 years by periodontal classification, according to sex and age, with standard errors: United States, 1971-74

Sex and age	Total	Periodontal classification				Total	Periodontal classification			
		No periodontal disease	Gingivitis	1-3 pockets	4 pockets or more		No periodontal disease	Gingivitis	1-3 pockets	4 pockets or more
<ins>Both sexes</ins>		Percent distribution					Standard error			
All ages, 6-74 years	100.0	58.8	24.6	4.5	12.1	...	1.65	1.40	.0.28	0.61
6-11 years	100.0	86.1	13.6	0.3	0.0	...	1.15	1.14	0.08	0.02
12-17 years	100.0	66.4	32.2	0.6	0.7	...	1.97	1.98	0.16	0.21
18-44 years	100.0	56.5	28.7	4.5	10.3	...	1.85	1.81	0.33	0.83
45-64 years	100.0	43.4	19.9	9.3	27.3	...	2.58	.1.77	0.97	1.83
65-74 years	100.0	36.3	13.5	10.5	39.7	...	2.58	1.46	0.98	2.23
<ins>Male</ins>										
All ages, 6-74 years...............	100.0	53.7	27.8	4.5.	14.1	...	1.94	1.73	0.30	0.78
6-11 years	100.0	83.3	16.4	0.3	-	...	1.82	1.81	0.18	-
12-17 years	100.0	60.9	37.3	0.8	0.9	...	2.65	2.65	0.30	0.39
18-44 years	100.0	49.8	33.2	4.7	12.3	...	2.32	2.23	0.51	1.11
45-64 years	100.0	38.8	19.8	8.7	32.7	...	2.88	2.42	1.08	2.71
65-74 years	100.0	27.8	13.1	11.5	47.6	...	3.02	1.90	1.27	3.46
<ins>Female</ins>										
All ages, 6-74 years...............	100.0	63.8	21.5	4.5	10.1	...	1.60	1.28	0.38	0.61
6-11 years	100.0	89.0	10.7	0.3	0.0	...	1.29	1.28	0.19	0.03
12-17 years	100.0	72.0	27.0	0.4	0.6	...	2.77	2.74	0.21	0.24
18-44 years	100.0	62.7	24.5	4.3	8.5	...	1.79	1.73	0.40	0.75
45-64 years	100.0	47.8	20.1	9.8	22.3	...	2.72	1.64	1.34	1.87
65-74 years	100.0	43.2	13.8	9.7	33.2	...	2.95	1.73	1.25	2.09

NOTE: Edentulous persons (lost all their natural teeth) have been excluded from this table.

Table 6. Average Simplified Oral Hygiene Index (OHI-S) for persons aged 6-74 years, by race, sex, and age, with standard errors: United States, 1971-74

Sex and age	Total[1]	White	Black	Total[1]	White	Black
Both sexes		OHI-S			Standard error	
All ages, 6-74 years	1.00	0.93	1.56	0.03	0.04	0.05
6-11 years	0.75	0.72	0.88	0.03	0.03	0.04
12-17 years	0.89	0.82	1.34	0.04	0.04	0.09
18-44 years	1.01	0.93	1.62	0.04	0.04	0.05
45-64 years	1.23	1.10	2.27	0.05	0.05	0.10
65-74 years	1.43	1.33	2.55	0.07	0.07	0.20
Male						
All ages, 6-74 years...	1.16	1.08	1.73	0.04	0.04	0.06
6-11 years	0.80	0.78	0.90	0.03	0.04	0.06
12-17 years	1.00	0.92	1.43	0.04	0.04	0.11
18-44 years	1.16	1.09	1.82	0.05	0.06	0.08
45-64 years	1.46	1.32	2.64	0.06	0.07	0.16
65-74 years	1.76	1.64	2.84	0.08	0.08	0.21
Female						
All ages, 6-74 years...	0.86	0.78	1.40	0.03	0.03	0.06
6-11 years	0.69	0.66	0.86	0.03	0.03	0.05
12-17 years	0.80	0.72	1.25	0.04	0.04	0.10
18-44 years	0.86	0.77	1.46	0.03	0.04	0.06
45-64 years	1.00	0.89	1.88	0.05	0.06	0.18
65-74 years	1.16	1.08	2.19	0.08	0.09	0.24

[1]Includes data for "other" races, which are not shown separately.

NOTE: Those persons with missing data or without at least 2 of the 6 teeth used for OHI-S have been excluded from this table.

Table 7. Average Simplified Debris Index (DI-S) for persons aged 6-74 years, by race, sex, and age, with standard errors: United States, 1971-74

Sex and age	Total[1]	White	Black	Total[1]	White	Black
Both sexes	DI-S			Standard error		
All ages, 6-74 years	0.66	0.62	0.94	0.02	0.02	0.03
6-11 years	0.72	0.70	0.84	0.03	0.03	0.04
12-17 years	0.74	0.70	0.98	0.03	0.03	0.05
18-44 years	0.61	0.57	0.89	0.03	0.03	0.04
45-64 years	0.64	0.60	1.06	0.02	0.03	0.05
65-74 years	0.75	0.71	1.23	0.04	0.03	0.09
Male						
All ages, 6-74 years	0.75	0.71	1.02	0.02	0.03	0.04
6-11 years	0.78	0.76	0.86	0.03	0.03	0.06
12-17 years	0.82	0.79	1.02	0.03	0.03	0.06
18-44 years	0.69	0.66	0.98	0.03	0.04	0.05
45-64 years	0.76	0.70	1.22	0.03	0.04	0.07
65-74 years	0.92	0.86	1.41	0.04	0.04	0.10
Female						
All ages, 6-74 years	0.57	0.53	0.86	0.02	0.02	0.04
6-11 years	0.66	0.63	0.82	0.03	0.03	0.05
12-17 years	0.65	0.60	0.94	0.03	0.03	0.07
18-44 years	0.53	0.48	0.82	0.02	0.02	0.04
45-64 years	0.53	0.49	0.89	0.03	0.03	0.08
65-74 years	0.61	0.58	1.01	0.04	0.04	0.12

[1]Includes data for "other" races, which are not shown separately.

NOTE: Those persons with missing data or without at least 2 of the 6 teeth used for DI-S have been excluded from this table.

Table 8. Average Simplified Calculus Index (CI-S) for persons aged 6-74 years, by race, sex, and age, with standard errors: United States, 1971-74

Sex and age	Total[1]	White	Black	Total[1]	White	Black
Both sexes		CI-S			Standard error	
All ages, 6-74 years	0.35	0.32	0.62	0.02	0.02	0.03
6-11 years	0.03	0.03	0.04	0.01	0.01	0.01
12-17 years	0.16	0.12	0.36	0.02	0.02	0.05
18-44 years	0.40	0.36	0.73	0.02	0.02	0.03
45-64 years	0.58	0.51	1.21	0.03	0.03	0.07
65-74 years	0.68	0.62	1.32	0.04	0.04	0.11
Male						
All ages, 6-74 years	0.41	0.37	0.72	0.02	0.02	0.03
6-11 years	0.03	0.02	0.04	0.01	0.01	0.01
12-17 years	0.17	0.13	0.41	0.02	0.02	0.07
18-44 years	0.47	0.43	0.84	0.03	0.03	0.04
45-64 years	0.70	0.62	1.42	0.04	0.04	0.11
65-74 years	0.84	0.78	1.43	0.04	0.04	0.13
Female						
All ages, 6-74 years	0.30	0.26	0.54	0.02	0.02	0.03
6-11 years	0.03	0.03	0.05	0.01	0.01	0.02
12-17 years	0.14	0.12	0.32	0.02	0.02	0.05
18-44 years	0.33	0.29	0.64	0.02	0.02	0.04
45-64 years	0.47	0.40	0.99	0.03	0.03	0.11
65-74 years	0.55	0.50	1.18	0.05	0.05	0.13

[1]Includes data for "other" races, which are not shown separately.

NOTE: Those persons with missing data or without at least 2 of the 6 teeth used for CI-S have been excluded from this table.

Table 9. Percent of persons aged 1-74 years with specific dental treatment needs, by age and sex, with standard errors: United States, 1971-74

Specific dental treatment needed	Total	1-5 years	6-11 years	12-17 years	18-44 years	45-64 years	65-74 years	Total	1-5 years	6-11 years	12-17 years	18-44 years	45-64 years	65-74 years
Both sexes				Percent								Standard error		
General (at least one of the following)	64.1	16.6	63.5	67.5	72.7	67.5	61.0	1.31	1.05	2.15	1.71	1.44	2.14	2.02
Removal of debris and calculus	19.1	2.4	28.2	27.5	22.4	13.5	8.4	1.34	0.61	2.82	2.32	1.51	1.34	1.06
Gingivitis treatment	8.9	0.0	1.9	13.4	13.8	6.9	3.5	0.67	0.01	0.33	1.18	1.05	0.77	0.67
Periodontal disease treatment	10.1	0.0	0.1	2.0	12.2	19.3	15.4	0.42	0.02	0.09	0.43	0.73	1.18	0.92
Severe malocclusion treatment	2.0	0.1	6.4	7.1	0.9	.	.	0.18	0.07	0.89	0.75	0.19	.	.
Decay treatment—permanent and primary teeth	41.1	16.1	52.7	53.6	49.3	30.1	17.9	1.12	1.03	2.14	1.53	1.55	1.50	0.77
Extractions, any reason	4.8	0.1	0.4	0.6	5.8	8.4	9.8	0.31	0.07	0.21	0.15	0.54	0.76	0.73
Fixed bridges and/or partials	16.0	-	0.1	5.8	25.3	23.3	8.5	0.93	-	0.11	0.81	1.35	1.91	0.97
Repair denture or bridge	2.7	-	-	0.0	1.9	6.7	7.7	0.25	-	-	0.02	0.22	0.80	0.74
Construct full denture	6.6	-	0.0	0.1	4.2	15.6	24.8	0.34	-	0.01	0.08	0.41	1.08	1.44
Male														
General (at least one of the following)	67.5	17.1	66.5	68.4	76.9	72.3	68.2	1.36	1.41	2.60	2.02	1.67	2.33	2.15
Removal of debris and calculus	20.8	2.2	30.6	25.8	24.9	15.7	9.7	1.47	0.56	3.08	2.40	1.76	1.58	1.15
Gingivitis treatment	10.6	0.0	2.1	17.1	16.4	7.6	3.5	0.87	0.02	0.62	1.86	1.37	1.14	0.62
Periodontal disease treatment	11.8	-	0.2	2.1	14.5	22.9	19.6	0.52	-	0.17	0.56	1.02	1.55	1.57
Severe malocclusion treatment	2.3	.	6.4	7.9	1.2	.	.	0.24	.	1.06	1.15	0.32	.	.
Decay treatment—permanent and primary teeth	43.7	16.7	55.2	52.2	52.4	33.7	21.3	1.26	1.42	2.68	1.76	1.94	2.12	1.20
Extractions, any reason	5.3	0.2	0.5	0.5	6.2	9.8	12.2	0.40	0.13	0.28	0.24	0.69	1.15	1.01
Fixed bridges and/or partials	15.4	-	0.3	5.2	24.0	23.4	9.8	1.03	-	0.21	0.89	1.67	2.29	1.18
Repair denture or bridge	2.5	-	.	-	1.7	6.3	7.8	0.26	-	-	-	0.34	0.89	0.96
Construct full denture	6.7	-	0.0	-	4.0	16.2	29.1	0.47	-	0.02	-	0.59	1.51	1.93
Female														
General (at least one of the following)	61.0	16.1	60.5	66.4	68.9	63.1	55.5	1.42	1.30	2.59	2.42	1.53	2.70	2.23
Removal of debris and calculus	17.6	2.7	25.8	29.3	20.1	11.4	7.5	1.33	0.85	3.06	2.77	1.49	1.64	1.34
Gingivitis treatment	7.4	-	1.7	9.6	11.5	6.2	3.5	0.57	-	0.44	1.42	0.94	0.78	0.86
Periodontal treatment	8.6	0.0	0.1	1.9	10.1	16.0	12.1	0.49	0.04	0.05	0.47	0.70	1.47	0.98
Severe malocclusion treatment	1.8	0.2	6.4	6.2	0.7	.	.	0.21	0.14	1.15	0.90	0.14	.	.
Decay treatment—permanent and primary teeth	38.7	15.5	50.1	55.0	46.4	26.9	15.2	1.19	1.33	2.55	2.05	1.62	1.72	1.14
Extractions, any reason	4.4	-	0.4	0.6	5.5	7.1	8.0	0.34	-	0.24	0.27	0.54	0.82	0.93
Fixed bridges and/or partials	16.7	-	0.0	6.3	26.5	23.2	7.5	0.93	-	0.03	1.13	1.26	2.01	1.03
Repair denture or bridge	3.0	-	.	0.0	2.1	7.1	7.7	0.32	-	-	0.04	0.26	1.07	0.93
Construct full denture	6.6	-	.	0.2	4.4	15.0	21.6	0.40	-	-	0.17	0.42	1.29	1.56

Table 10. Average number of 1-, 2-, and 3-surface fillings needed to restore the permanent teeth of those persons aged 1-74 years who need at least 1 filling, by race, sex, and age, with standard errors: United States, 1971-74

Sex and age	1-surface fillings			2-surface fillings			3-surface fillings		
	Total[1]	White	Black	Total[1]	White	Black	Total[1]	White	Black
Both sexes	Average number of fillings								
All ages, 1-74 years	1.8	1.7	2.2	0.6	0.6	0.8	0.3	0.4	0.3
1-5 years	0.9	0.5	1.3	0.6	0.9	0.3	-	-	-
6-11 years	1.6	1.6	1.6	0.5	0.5	0.5	0.1	0.1	0.1
12-17 years	2.5	2.4	2.8	0.6	0.6	0.8	0.2	0.2	0.3
18-44 years	1.9	1.8	2.6	0.7	0.6	1.0	0.4	0.4	0.4
45-64 years	1.1	1.1	1.1	0.5	0.5	0.6	0.4	0.5	0.2
65-74 years	0.7	0.7	0.7	0.4	0.4	0.3	0.3	0.3	0.1
Male									
All ages, 1-74 years	1.8	1.7	2.2	0.6	0.6	0.8	0.3	0.4	0.3
1-5 years	0.6	0.5	1.0	0.8	1.0	-	-	-	-
6-11 years	1.5	1.5	1.6	0.5	0.5	0.6	0.1	0.1	0.0
12-17 years	2.4	2.3	2.7	0.6	0.5	1.0	0.2	0.2	0.3
18-44 years	1.9	1.8	2.6	0.7	0.6	1.0	0.4	0.4	0.4
45-64 years	1.1	1.1	1.0	0.6	0.6	0.6	0.4	0.5	0.1
65-74 years	0.6	0.7	0.7	0.5	0.6	0.2	0.3	0.3	0.2
Female									
All ages, 1-74 years	1.8	1.7	2.2	0.6	0.5	0.9	0.4	0.4	0.3
1-5 years	1.4	1.0	1.4	0.4	-	0.4	-	-	-
6-11 years	1.6	1.6	1.6	0.4	0.4	0.4	0.1	0.1	0.2
12-17 years	2.5	2.5	2.8	0.6	0.6	0.7	0.2	0.2	0.2
18-44 years	1.9	1.8	2.5	0.7	0.6	1.1	0.4	0.4	0.4
45-64 years	1.1	1.1	1.2	0.5	0.4	0.6	0.4	0.5	0.2
65-74 years	0.7	0.7	0.6	0.3	0.3	0.5	0.3	0.3	0.1
Both sexes	Standard error								
All ages, 1-74 years	0.06	0.06	0.10	0.02	0.02	0.06	0.0▇	0.02	0.03
1-5 years	0.38	0.42	0.39	0.40	0.82	0.34	▇	-	-
6-11 years	0.07	0.09	0.13	0.04	0.05	0.11	0.0	0.02	0.05
12-17 years	0.09	0.10	0.18	0.05	0.05	0.11	0.0	0.03	0.05
18-44 years	0.08	0.08	0.15	0.03	0.03	0.10	0.0	0.03	▇
45-64 years	0.08	0.08	0.15	0.05	0.05	0.09	0.0	0.06	▇
65-74 years	0.06	0.07	0.11	0.06	0.07	0.06	0.0	0.04	▇
Male									
All ages, 1-74 years	0.06	0.07	0.13	0.03	0.03	0.09	0.0	0.02	0.04
1-5 years	0.38	0.43	0.71	0.62	0.87	.	0.0	-	-
6-11 years	0.09	0.10	0.18	0.07	0.09	0.13	0.0	0.04	0.01
12-17 years	0.09	0.11	0.19	0.06	0.06	0.15	0.0	0.03	0.09
18-44 years	0.10	0.11	0.25	0.04	0.04	0.14	0.0	0.03	0.09
45-64 years	0.11	0.11	0.20	0.08	0.09	0.11	0.0	0.06	▇
65-74 years	0.07	0.09	0.15	0.11	0.14	0.05	0.0	0.06	▇
Female									
All ages, 1-74 years	0.06	0.07	0.13	0.03	0.02	0.07	0.02	0.03	0.04
1-5 years	0.47	0.71	0.61	0.36	-	0.39	-	-	-
6-11 years	0.10	0.12	0.19	0.07	0.07	0.15	0.02	0.02	0.10
12-17 years	0.14	0.15	0.35	0.06	0.06	0.12	0.02	0.03	0.05
18-44 years	0.07	0.07	0.16	0.03	0.03	0.11	0.03	0.03	0.06
45-64 years	0.09	0.09	0.19	0.05	0.05	0.14	0.06	0.07	0.09
65-74 years	0.08	0.09	0.17	0.05	0.05	0.12	0.06	0.07	0.04

[1]Includes data for "other" races, which are not shown separately.

Table 11. Average number of teeth that have to be extracted among those persons aged 1-74 years needing at least 1 tooth extracted, by reason for extraction, race, sex, and age, with standard errors: United States, 1971-74

Sex and age	Decayed permanent teeth			Periodontal disease			Other reasons		
	Total[1]	White	Black	Total[1]	White	Black	Total[1]	White	Black
Both sexes	Average number of teeth needing extraction								
All ages, 1-74 years	0.7	0.6	1.1	6.7	6.8	6.0	3.2	3.1	3.5
1-5 years	-	-	-	-	-	-	1.9	1.9	-
6-11 years	0.3	0.3	0.3	-	-	-	2.0	2.0	·1.0
12-17 years	0.4	0.3	0.8	-	-	-	1.7	1.7	1.7
18-44 years	0.7	0.6	1.2	7.5	7.6	5.4	2.8	2.8	2.6
45-64 years	1.0	0.8	1.6	6.6	6.7	6.4	4.1	3.7	5.7
65-74 years	1.7	1.4	2.9	6.0	6.1	5.6	3.9	4.0	3.5
Male									
All ages, 1-74 years	0.7	0.7	1.1	6.9	6.8	6.1	2.9	2.9	2.9
1-5 years	-	-	-	-	-	-	1.9	1.9	-
6-11 years	0.3	0.3	0.3	-	-	-	2.7	2.8	1.0
12-17 years	0.3	0.2	0.7	-	-	-	1.6	1.7	1.6
18-44 years	0.7	0.6	1.2	8.7	8.4	5.9	2.5	2.6	2.3
45-64 years	1.1	1.1	1.6	6.3	6.3	6.5	3.4	3.2	4.1
65-74 years	2.3	2.0	3.4	6.0	6.2	5.3	3.7	3.7	3.6
Female									
All ages, 1-74 years	0.7	0.5	1.1	6.6	6.9	5.8	3.5	3.4	4.0
1-5 years	-	-	-	-	-	-	-	-	-
6-11 years	0.2	0.2	0.3	-	-	-	1.0	1.0	-
12-17 years	0.4	0.3	0.9	-	-	-	1.8	1.8	2.0
18-44 years	0.8	0.7	1.2	6.3	6.7	5.0	3.0	3.0	2.9
45-64 years	0.8	0.6	1.5	6.9	7.4	6.2	4.9	4.3	7.4
65-74 years	1.0	0.9	2.2	6.0	6.0	5.9	4.1	4.3	3.4
Both sexes	Standard error								
All ages, 1-74 years	0.04	0.04	0.10	0.40	0.46	0.71	0.15	0.18	0.31
1-5 years	-	-	-	-	-	-	0.70	0.70	-
6-11 years	0.05	0.05	0.06	-	-	-	0.73	0.75	0.71
12-17 years	0.04	0.03	0.13	-	-	-	0.12	0.15	0.65
18-44 years	0.06	0.06	0.15	0.84	0.99	1.42	0.20	0.22	0.29
45-64 years	0.12	0.11	0.34	0.56	0.56	1.15	0.37	0.37	0.88
65-74 years	0.19	0.16	0.58	0.36	0.37	1.04	0.43	0.57	0.33
Male									
All ages, 1-74 years	0.05	0.06	0.09	0.48	0.57	1.05	0.21	0.23	0.31
1-5 years	-	-	-	-	-	-	0.70	0.70	-
6-11 years	0.06	0.07	0.11	-	-	-	0.98	1.06	0.71
12-17 years	0.05	0.04	0.16	-	-	-	0.38	0.61	0.85
18-44 years	0.07	0.07	0.16	1.30	1.49	1.69	0.26	0.30	0.28
45-64 years	0.17	0.19	0.34	0.68	0.56	1.89	0.54	0.56	1.07
65-74 years	0.28	0.24	0.84	0.53	0.59	1.11	0.57	0.73	0.57
Female									
All ages, 1-74 years	0.05	0.05	0.12	0.61	0.71	0.82	0.20	0.23	0.47
1-5 years	-	-	-	-	-	-	-	-	-
6-11 years	0.06	0.06	0.10	-	-	-	0.32	0.32	-
12-17 years	0.06	0.04	0.22	-	-	-	0.36	0.37	1.41
18-44 years	0.07	0.07	0.18	1.00	1.15	1.86	0.23	0.25	0.40
45-64 years	0.11	0.10	0.43	0.83	0.94	1.23	0.43	0.36	0.89
65-74 years	0.15	0.15	0.30	0.61	0.68	1.67	0.53	0.70	0.60

[1]Includes data for "other" races, which are not shown separately.

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APPENDIXES

CONTENTS

APPENDIX FIGURE

LIST OF APPENDIX TABLES

APPENDIX I

THE DENTAL EXAMINATION

The Examination

The dental examination findings were recorded on a form which eliminated the time-consuming task of coding and keypunching. The form (figure I), four pages bound at the left-hand margin, was fed into an Optical Mark Page Reader that read the findings and entered the data directly on IBM cards.

Instructions for determining the conditions of individual teeth and recording the information were as follows:

1. Primary tooth present—A primary tooth was coded as "D," and its status was also coded.

2. Permanent tooth present—Only the status of a permanent tooth was coded.

3. Normal—Unfilled teeth without carious lesions were coded as "3."

4. Carious—Unfilled teeth with carious lesions were coded according to the surfaces involved.

5. Filled (including crown)—Teeth with satisfactory fillings and no carious lesions were coded according to the surfaces involved.

6. Filled defective (or tooth both filled and carious)—Filled or crowned teeth with new or recurrent carious lesions were coded according to the surfaces involved. Noncarious filled teeth were coded in the same way when the restoration was loose, or fractured, and the base or pulpal wall of the cavity preparation was ex-

posed. Teeth with temporary fillings or crowns were coded as filled defective.

7. Nonfunctional-carious—When decay had penetrated the pulp chamber of a tooth, the tooth was coded under "XD." Carious teeth are nonfunctional when there was:
   a. Visible evidence of a periapical abscess or pulpal exposure,
   b. Visible evidence of extensive undermining of all enamel walls or if roots only were remaining.

8. Retained deciduous teeth—When any portion of the succedaneous tooth could be seen, it was given an appropriate status code under teeth present and also coded "XD" and "D."

9. Missing teeth (unerupted, extracted, and replaced)—When neither a primary nor a permanent tooth was present (the tooth space may have been vacant or the missing tooth may have been replaced by a fixed or removable partial denture), a code was recorded indicating the status of the tooth space. For persons 35 years old or under, the reason that the tooth was missing should have been determined. When there was doubt, it was scored as missing because of decay. The codes were as follows:

   2 = Unerupted, primary

   0 = Unerupted, permanent

   IR = Extracted, caries

   1 = Extracted, accident, orthodontics, impaction

Confidentiality has been assured the individual as set forth in 22 FR 1687

HEALTH AND NUTRITION EXAMINATION SURVEY IV
DENTAL EXAMINATION

NAME

	:0:	::1::	::2:	::3:	::4:		::5:	▬	::7:	::8: ::9:
	:0:	::1::	▬	::3:	::4:	STAND	::5:	::6:	::7:	::8: ::9:
	:0:	::1::	::2:	::3:	::4:	AND	::5:	▬	::7:	::8: ::9:
	:0:	::1::	::2:	▬	::4:	CONTROL	::5:	::6:	::7:	::8: ::9:
	:0:	▬	::2:	::3:	::4:		::5:	::6:	::7:	::8: ::9:

EXAMINEE

AGE :0: ::1:: ::2: ::3: ::4: TENS :5: ::6: ::7: ::8: ::9:   :0: ::1:: ::2: ::3: ::4:   :5: ::6: ::7: ::8: ::9:

:0: ::1:: ::2: ::3: ::4: UNITS :5: ::6: ::7: ::8: ::9:   :0: ::1:: ::2: ::3: ::4:   :5: ::6: ::7: ::8: ::9:

SEX—RACE   MW EW MN FN   MO FO   :0: ::1:: ::2: ::3: ::4:   :5: ::6: ::7: ::8: ::9:

UPPER LEFT	UPPER RIGHT		LOWER LEFT	LOWER RIGHT
XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X / 60 40 50 / 61 41 51 / 62 F R 42 52 / 63 FD RD 43 53	CENTRAL	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS
XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X / 60 40 50 / 61 41 51 / 62 F R 42 52 / 63 FD RD 43 53	LATERAL	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS
XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X / 60 40 50 / 61 41 51 / 62 F R 42 52 / 63 FD RD 43 53	CUSPID	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS
XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X / 60 40 50 / 61 41 51 / 62 F R 42 52 / 63 FD RD 43 53	1ST BICUSPID	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS
XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X / 60 40 50 / 61 41 51 / 62 F R 42 52 / 63 FD RD 43 53	2ND BICUSPID	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS
XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X / 60 40 50 / 61 41 51 / 62 F R 42 52 / 63 FD RD 43 53	1ST MOLAR	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS	XD D 2 0 IR / 6X 3 0 4X 5X OCC / 60 40 50 LIN / 61 41 51 BUC / 62 F R 42 52 MES / 63 FD RD 43 53 DIS

Figure I. Dental Examination form.

DENTAL EXAMINATION

:0:	:1:	:2:	:3:	:4:		:5:	6	:7:	:8:	:9:
:0:	:1:	1	:3:	:4:	STAND	:5:	:6:	:7:	:8:	:9:
:0:	:1:	:2:	:3:	:4:	AND	6	:6:	:7:	:8:	:9:
:0:	:1:	:2:	3	:4:	CONTROL	:5:	:6:	:7:	:8:	:9:
:0:	1	:2:	:3:	:4:		:5:	:6:	:7:	:8:	:9:

UPPER LEFT / UPPER RIGHT / LOWER LEFT / LOWER RIGHT (2ND MOLAR)

UPPER LEFT						UPPER RIGHT							LOWER LEFT						LOWER RIGHT				
:XD	::::	:2:	:0:	:IR		:XD	::::	:2:	:0:	:IR		:XD	::::	:2:	:0:	:IR		:XD	::::	:2:	:0:	:IR
:8X	:3:	:0:	:4X	:5X	OCC	:6X	:3:	:0:	:4X	:5X	2ND	:6X	:3:	:0:	:4X	:5X	OCC	:6X	:3:	:0:	:4X	:5X
:80	::::	::::	:40	:50	LIN	:60	::::	::::	:40	:50	M O L A R	:60	::::	::::	:40	:50	LIN	:60	::::	::::	:40	:50
:61	::::	::::	:41	:51	BUC	:61	::::	::::	:41	:51		:61	::::	::::	:41	:51	BUC	:81	::::	::::	:41	:51
:82	:F:	:R:	:42	:52	MES	:82	:F:	:R:	:42	:52		:82	:F:	:R:	:42	:52	MES	:62	:F:	:R:	:42	:52
:83	:FD	:RD	:43	:53	DIS	:83	:FD	:RD	:43	:53		:83	:FD	:RD	:43	:53	DIS	:63	:FD	:RD	:43	:53

(3RD MOLAR)

UPPER LEFT						UPPER RIGHT							LOWER LEFT						LOWER RIGHT				
:XD	::::	:2:	:0:	:IR		:XD	::::	:2:	:0:	:IR		:XD	::::	:2:	:0:	:IR		:XD	::::	:2:	:0:	:IR
:8X	:3:	:0:	:4X	:5X	OCC	:8X	:3:	:0:	:4X	:5X	3RD	:6X	:3:	:0:	:4X	:5X	OCC	:6X	:3:	:0:	:4X	:5X
:60	::::	::::	:40	:50	LIN	:60	::::	::::	:40	:50	M O L A R	:60	::::	::::	:40	:50	LIN	:60	::::	::::	:40	:50
:81	::::	::::	:41	:51	BUC	:81	::::	::::	:41	:51		:61	::::	::::	:41	:51	BUC	:81	::::	::::	:41	:51
:82	:F:	:R:	:42	:52	MES	:82	:F:	:R:	:42	:52		:82	:F:	:R:	:42	:52	MES	:82	:F:	:R:	:42	:52
:83	:FD	:RD	:43	:53	DIS	:83	:FD	:RD	:43	:53		:83	:FD	:RD	:43	:53	DIS	:83	:FD	:RD	:43	:53

PERIODONTAL INDEX / TOOTH SPACE / OPACITIES

NO P. I. :::::

PERIODONTAL INDEX				QUADRANT	MISSING OR ROOTS ONLY		TOOTH SPACE	MISSING OR ROOTS ONLY	QUADRANT	PERIODONTAL INDEX			
Mild Gingivitis	Gingivitis	Pocket Formation	Advanced Destruction							Mild Gingivitis	Gingivitis	Pocket Formation	Advanced Destruction
I	2	6	8			X		X		I	2	6	8
:1:	:1:	:1:	:1:			:1:	3RD MOLAR	:17:		:17:	:17:	:17:	:17:
:2:	:2:	:2:	:2:			:2:	2ND MOLAR	:18:		:18:	:18:	:18:	:18:
:3:	:3:	:3:	:3:	UPPER ARCH RIGHT		:3:	1ST MOLAR	:19:	LOWER ARCH LEFT	:19:	:19:	:19:	:19:
:4:	:4:	:4:	:4:			:4:	2ND BI	:20:		:20:	:20:	:20:	:20:
:5:	:5:	:5:	:5:			:5:	1ST BI	:21:		:21:	:21:	:21:	:21:
:6:	:6:	:6:	:6:			:6:	CUSPID	:22		:22	:22	:22	:22
:7:	:7:	:7:	:7:			:7:	LATERAL	:23:		:23:	:23:	:23:	:23:
:8:	:8:	:8:	:8:			:8:	CENTRAL	:24:		:24:	:24:	:24:	:24:
I	2	6	8			X		X		I	2	6	8
:9:	:9:	:9:	:9:			:9:	CENTRAL	:25		:25	:25	:25	:25
:10:	:10:	:10:	:10:			:10:	LATERAL	:26:		:26:	:26:	:26:	:26:
:11:	:11:	:11:	:11:	UPPER ARCH LEFT		:11:	CUSPID	:27:	LOWER ARCH RIGHT	:27:	:27:	:27:	:27:
:12:	:12:	:12:	:12:			:12:	1ST BI	:28:		:28	:28	:28	:28
:13:	:13:	:13:	:13:			:13:	2ND BI	:29		:29	:29	:29	:29
:14:	:14:	:14:	:14:			:14:	1ST MOLAR	:30		:30:	:30:	:30:	:30:
:15:	:15:	:15:	:15:			:15:	2ND MOLAR	:31		:31:	:31.	:31.	:31.
:16:	:16:	:16:	:16:			:16:	3RD MOLAR	:32		:32	:32	:32	:32

:NA: / :NA: / :NA:

OPACITIES

	NON-FLUORIDE	FLUORIDE
NONE	::::	::::
MILD	::::	::::
MODERATE-SEVERE	::::	::::
NA	::::	::::

OTHER CONDITIONS

OTHER CONDITIONS	YES	NO
BLEEDING GUMS	::::	::::
DIFFUSE MARGINAL INFLAMMATION	::::	::::
SWOLLEN RED PAPILLAE	::::	::::
RECESSION	::::	::::

FOUR OR MORE PAIRS OF OPPOSING SERVICEABLE POSTERIOR TEETH	::::	PRESENT
	::::	ABSENT
ORTHODONTIC APPLIANCE	::::	PRESENT
	::::	ABSENT

ORAL HYGIENE INDEX

UPPER ARCH

RIGHT		ANTERIOR		LEFT	
DEBRIS	CALCULUS	DEBRIS	CALCULUS	DEBRIS	CALCULUS
:0: NONE :0:		:0: NONE :0:		:0: NONE :0:	
:1: 1/3 :1:		:1: 1/3 :1:		:1: 1/3 :1:	
:2: 2/3 :2:		:2: 2/3 :2:		:2: 2/3 :2:	
:3: 2/3+ :3:		:3: 2/3+ :3:		:3: 2/3+ :3:	
:NA: :NA:		:NA: :NA:		:NA: :NA:	

LOWER ARCH

RIGHT		ANTERIOR		LEFT	
DEBRIS	CALCULUS	DEBRIS	CALCULUS	DEBRIS	CALCULUS
:0: NONE :0:		:0: NONE :0:		:0: NONE :0:	
:1: 1/3 :1:		:1: 1/3 :1:		:1: 1/3 :1:	
2 2/3 :2:		:2: 2/3 2		:2: 2/3 :2:	
:3: 2/3+ :3:		:3: 2/3+ :3:		:3: 2/3+ :3:	
:NA: :NA:		:NA: :NA:		:NA: :NA:	

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Figure I. Dental Examination form—Con.

DENTAL EXAMINATION

::0::	::1::	::2:	::3:	::4:		::5:	::7::	::8:	::9:
::0::	::1::	::2:	::3:	::4:	STAND	::5:	::6:	::7:	::8:	::9:
::0:	::1::	::2:	::3:	::4:	AND	::6:	::7:	::8:	::9:
::0:	::1::	::2:	::3:	CONTROL ::4:	::5:	::6:	::7:	::8:	::9:
::0:	::1:	::2:	::3:	::4:	::5:	::6:	::7:	::8:	::9:

BUCCAL SEGMENT RELATION

RIGHT	LEFT	
::1::	::1::	MESIAL–SEVERE
::2:	::2:	–MODERATE
::3:	::3:	NORMAL
::4:	::4:	DISTAL–MODERATE
::5:	::5:	–SEVERE
:NA:	:NA:	NOT APPLICABLE

| ::::: | ::::: | PRIMARY ARCH |

POSTERIOR CROSSBITE

RIGHT BUCCAL	RIGHT LINGUAL	LEFT BUCCAL	LEFT LINGUAL
::0:	::0:	::0:	::0:
::1::	::1::	::1::	::1::
::2:	::2:	::2:	::2:
::3:	::3:	::3:	::3:
::4:	::4:	::4:	::4:
::5:	::5:	::5:	::5:
:NA:	:NA:	:NA:	:NA:

ENAMEL BIOPSY

:NO: TEETH ABSENT

:NO: EQUIPMENT FAILURE

:NO: OTHER REASON _____

:YES: TOOTH

::7:: ::8::

::10: ::9::

HLD INDEX (HANDICAPPING LABIO–LINGUAL DEVIATIONS)

OVERJET		MANDIBULAR PROTRUSION			INCISOR RELATIONSHIP	OVERBITE			OPENBITE			LABIO-LINGUAL SPREAD		DEFORMITY
::0:	::0:	::0:	::0:		OPENBITE (MM)	::0:	::0:		::0:	::0:		::0:	::0:	::::: ABSENT
::1::	::1::	::1::	::1::		4+	::1::	::1::		::1::	::1::		::1::	::1::	
::2:	::2:	::2:	::2:		2+–4	::2:	::2:		::2:	::2:		::2:	::2:	::::: PRESENT
::3:	::3:	::3:	::3:		0–2	::3:	::3:		::3:	::3:		::3:	::3:	
	::4:		::4:		OVERBITE		::4:			::4:			::4:	
	::5:		::5:		::4: INC 3RD		::5:			::5:			::5:	
	::6:		::6:		::5: MID 3RD		::6:			::6:			::6:	
	::7:		::7:		::6: GIN 3RD		::7:			::7:			::7:	
	::8:		::8:		::7: TISSUE		::8:			::8:			::8:	
	::9:		::9:		::8: IMPINGING OVERBITE		::9:			::9:			::9:	
	:NA:		:NA:		:NA: NOT APPLICABLE		:NA:			:NA:			:NA:	

MALALIGNED TEETH

UPPER   :NA:

ANTERIOR

::0: ::1: ::2: ::3: ::4: MINOR ::5: ::6:

::0: ::1: ::2: ::3: ::4: MAJOR ::5: ::6:

POSTERIOR

::0: ::1:: ::2: ::3: ::4: MINOR ::5: ::6: ::7: ::8: ::9:

::0: ::1:: ::2: ::3: ::4: MAJOR ::5: ::6: ::7: ::8: ::9:

LOWER

ANTERIOR

::0: ::1: ::2: ::3: ::4: MINOR ::5: ::6:

::0: ::1: ::2: ::3: ::4: MAJOR ::5: ::6:

POSTERIOR

::0: ::1: ::2: ::3: ::4: MINOR ::5: ::6: ::7: ::8: ::9:

::0: ::1: ::2: ::3: ::4: MAJOR ::5: ::6: ::7: ::8: ::9:

EXAMINER ::1: ::2: ::3:   RECORDER ::1: ::2: ::3:

::4: ::5: ::6: ::7: ::8:   ::4: ::5: ::6: ::7: ::8:

EDENTULOUS ARCHES–DENTURE STATUS

	ABSENT	PRESENT	DEFECTIVE
UPPER	:::::	:::::	:::::
LOWER	:::::	:::::	:::::

WHEN YOU EAT,	YES	NO
DO YOU USE AN UPPER PLATE?	:::::	:::::
DO YOU USE A LOWER PLATE?	:::::	:::::

REMARKS: PRESENT :::::   ABSENT :::::

_____

_____

_____

_____

_____

_____

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IBM H99625

Figure 1. Dental Examination form—Con.

DENTAL EXAMINATION

	0	1	2	3	4	5	6	7	8	9
STAND	::0::	::1::	::2::	::3::	::4::	::5::	▬◑▬	::7::	::8::	::9::
AND	::0::	::1::	▬▉▬	::3::	::4::	::5::	::6::	::7::	::8::	::9::
CONTROL	::0::	::1::	::2::	::3::	::4::	▬◑▬	::6::	::7::	::8::	::9::
	::0::	::1::	::2::	▬◑▬	::4::	::5::	::6::	::7::	::8::	::9::
	::0::	▬◄▬	::2::	::3::	::4::	::5::	::6::	::7::	::8::	::9::

TREATMENT NEEDS

YES NO

- ::::: NO APPARENT NEED FOR DENTAL CARE
- ::::: ::::: REMOVAL OF DEBRIS AND CALCULUS
- ::::: ::::: GINGIVITIS TREATMENT
- ::::: ::::: PERIODONTAL DISEASE TREATMENT
- ::::: ::::: SEVERE MALOCCLUSION TREATMENT
- ::::: ::::: DECAYED PRIMARY TEETH

INTERVIEW

DO YOU HAVE ANY TROUBLE;   YES   NO

CHEWING STEAKS, CHOPS OR FIRM MEATS? :::::   :::::
BITING APPLES OR CORN-ON-THE-COB?   :::::   :::::
BITING OR CHEWING ANY OTHER FOODS? :::::   :::::

	0	1	2	3	4		5	6	7	8	9
ONE–SURFACE FILLINGS	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::
TWO–SURFACE FILLINGS	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::
THREE (OR MORE)– SURFACE FILLINGS	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::
EXTRACTIONS	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::

::::: ::::: DECAYED PERMANENT TEETH

	0	1	2	3	4		5	6	7	8	9
ONE–SURFACE FILLINGS	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::
TWO–SURFACE FILLINGS	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::
THREE (OR MORE)– SURFACE FILLINGS	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::
EXTRACTIONS	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::

::::: ::::: EXTRACTIONS, PERIODONTAL DISEASE

	0	1	2	3	4		5	6	7	8	9
	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::

::::: ::::: EXTRACTIONS, OTHER

	:::::	:::::	:::::	:::::		TENS					
	:::::	:::::	:::::	:::::	:::::	UNITS	:::::	:::::	:::::	:::::	:::::

::::: ::::: FIXED BRIDGES AND/OR PARTIAL DENTURES INDICATED
REPLACING TEETH NO.'S

	::1:	::2:	::3:	::4:	::5:	::6:	::7::	::8::
UPPER ARCH	:9:	:10:	:11:	:12:	:13:	:14:	:15:	:16:
LOWER ARCH	:17:	:18:	:19:	:20:	:21:	:22:	:23:	:24:
	:25:	:26:	:27:	:28:	:29:	:30:	:31:	:32:

NO. OF BRIDGES	:1:	:2:	:3:	:4:	:5::	:6::
NO. OF PARTIALS	:1:	:2::	:3:	:4:	:5::	:6::

::::: ::::: REPAIR OR RELINE OF
DENTURE OR BRIDGE

REPAIR   F.U. :::::   F.L. :::::   P.U. :::::   P.L. :::::

RELINE   F.U. :::::   F.L. :::::   P.U. :::::   P.L. :::::

::::: ::::: CONSTRUCT DENTURE(S)

F.U. :::::   F.L. :::::

Figure I. Dental Examination form—Con.

F = Missing, replaced on a fixed bridge. The reason for extraction was also coded if the sample person was 35 years or under.

FD = Missing, replaced on a defective fixed bridge. The reason for extraction was also coded if the sample person was age 35 or under.

Fixed bridges were defective:

A. When one of the abutment teeth was nonfunctional because of either caries or loss of supporting structure, or when there was visible evidence of periapical pathology.

B. When the connection of the pontic with its abutment was broken.

C. When an abutment crown or inlay was defective because of one of the following reasons:
   1. The tooth structures exposed by abrasion of the crown or inlay were carious.
   2. A carious lesion at one of the margins of the restoration had resulted in extensive undermining of an enamel wall.

The Periodontal Index (PI)

Scores are assigned according to these criteria:

0—Negative. There is neither overt inflammation in the investing tissues nor loss of function due to destruction of supporting tissues.

1—Mild gingivitis. There is an overt area of inflammation in the free gingivae, but the area does not circumscribe the tooth.

2—Gingivitis. Inflammation completely circumscribes the tooth, but there is no apparent break in the epithelial attachment.

6—Gingivitis with pocket formation. The epithelial attachment has been broken and there is a pocket (not merely a deepened gingival crevice due to swelling in the free gingivae). There is no interfer-

ence with normal masticatory function; the tooth is firm in its socket and has not drifted.

8—Advanced destruction with loss of masticatory function. The tooth may be loose; may have drifted; may sound dull on percussion with a metallic instrument.

RULE: When in doubt, assign the lesser score.

Each tooth present in the mouth, unless it is a root, was scored, and the arithmetic average of all scores was the individual's PI.

The Simplified Oral Hygiene Index (OHI-S)

Selected surfaces of six teeth were used in making this estimation of oral hygiene status. For the purposes of this examination each surface that was used, buccal or lingual, was considered to encompass half of the circumference of the tooth. The buccal surface of a molar, for example, was considered to include half of the mesial surface and half of the distal.

On both sides of the arch the posterior tooth assessed was the most anterior, fully erupted permanent molar or, in its absence, the most distal fully erupted primary molar. In most cases, this was a first permanent molar; in other cases it was a first or second primary molar or a second permanent molar. The buccal surfaces of upper molars and the lingual of lower molars were examined. In the anterior portion of the mouth, the labial surfaces of the upper right central incisor and the lower left central incisor were examined. When these teeth were missing, only the adjacent central incisor was examined.

Examining for oral debris.—The surface area covered by debris was estimated by running a No. 5 explorer along the surface being examined and noting the occlusal or incisal extent of the debris as it was removed from the tooth surface and adhered to the explorer.

Scores were assigned according to the following criteria:

0—No debris or stain present.

1—(a) Soft debris covering not more than the gingival third of the tooth surface, or (b) the presence of extrinsic stains with-

out debris regardless of surface area covered.

2—Soft debris covering more than one-third but not more than two-thirds of the exposed tooth surface.

3—Soft debris covering more than two-thirds of the exposed tooth surface.

Examining for oral calculus.—A No. 5 explorer was also used to estimate the surface area covered by supragingival calculus and to probe for subgingival calculus.

Scores were assigned according to the following criteria:

0—No calculus present.

1—Supragingival calculus covering not more than one-third of the exposed tooth surface.

2—Supragingival calculus covering more than one-third but not more than two-thirds of the exposed tooth surface, and/or the presence of individual flecks of subgingival calculus around the cervical portion of the tooth.

3—Supragingival calculus covering more than two-thirds of the exposed tooth surface and/or a continuous heavy band of subgingival calculus around the cervical portion of the tooth.

Edentulous Arches—Denture Status

No entry was made in this section unless at least one arch was edentulous. An arch with erupted or partly erupted teeth was considered edentulous if a full denture was being used.

Absent.—No teeth (or roots) were present in the arch and the examinee did not have a denture either in his mouth or on his person at the time of examination.

Present.—A denture was present in the mouth and not defective at the time of examination.

Defective.—There is visible evidence that the denture was causing extensive destruction of the primary stress-bearing areas of the ridge or palate. Tissue in these areas may have been acutely inflamed; bone resorption may have occurred; hyperthrophied tissue may have been present. The denture was also defective if it was in the possession of the examinee at the time of the examination but not in the mouth. If a denture status code for either or both arches was marked, the following should also be true:

A. The spaces for the appropriate arch (or arches) under Status of Tooth Spaces, Periodontal Index, and Malaligned Teeth should be left blank.

B. The "NA" spaces for the appropriate arch (or arches) under OHI should be marked.

C. The "NA" spaces under Opacities, Buccal Segment Relation, Posterior Crossbite, Incisor Relationship, and Handicapping Labio-Lingual Deviations (HLD) index should be marked.

Treatment Needs

This estimate was based on the examiner's clinical judgment. Certain factors, however, should have been kept in mind when it was decided whether missing teeth ought to be replaced and when all remaining teeth in an arch ought to be extracted and a full denture constructed. In addition to the status of oral hygiene and periodontal disease, the examinee's age, his responses to the questions about chewing and eating, and the probable benefit of recommended service to the individual's health and nutrition were all taken into account.

A "yes" or "no" was reported for each area of need. Counts of the numbers of fillings and extractions needed were recorded when appropriate, and teeth to be replaced by fixed bridges or partial dentures were indicated. The type of denture was marked in the area provided for repair, reline, and construction of dentures.

— O O O —

APPENDIX II
DEMOGRAPHIC TERMS

Age.—Two ages were recorded for each examinee: the age at last birthday at the time of examination and at the time of the census interview. The age criterion for inclusion in the sample used in this survey was defined as age at time of census interview. The adjustment and weighting procedures used to produce national estimates were based on the age at interview. Data in the detailed tables and text of the report are shown by age at the time of the examination, except that those few who became 75 years by the time of the examination are included in the 65-74-year group.

Race.—Race was recorded as "white," "Negro," or "other." "Other" includes Japanese, Chinese, American Indian, Korean, Eskimo, and all races other than white and Negro. Mexicans were included with "white" unless definitely known to be American Indian or of other non-white race. Negroes and persons of mixed Negro and other parentage were recorded as "Negro." When a person of mixed racial background was uncertain about his race, the race of his father was recorded.

———— O O O ————

APPENDIX III

STATISTICAL NOTES

The Survey Design

The sample design for HANES I is basically a three-stage, stratified, probability sample of loose clusters of persons in land-based segments. The sample was designed to be representative of the civilian noninstitutionalized population, aged 1-74 years, living within the coterminous United States, with the exception that all persons residing upon reservation lands set aside for the use of American Indians would be excluded.

In the first stage of the design, 65 primary sampling units (PSU's) were selected with probability proportional to size from the approximately 1,900 PSU's into which the United States has been divided. A PSU consists of a county, a small group of contiguous counties, or a standard metropolitan statistical area. Before selecting the 65 PSU's for inclusion in HANES I, the approximately 1,900 PSU's were first grouped into 40 strata of which 15 contained only a single large metropolitan area with a population of more than 2 million. All 15 of the largest PSU's and 2 PSU's from each of the other 25 strata were selected.

At the second stage of the design a sample of segments, consisting of approximately six households each, was systematically selected within each selected PSU. Although the 1970 census data were used as the frame for sampling within PSU's when they became available, the calendar of operations required that the 1960 census data be used for the first 44 selected PSU's. Generally there were three types of segments used:

1. Segments from the census listing books

2. Area segments which are defined geographically

3. Permit segments, using updated lists of building permits issued in sample PSU's.

At the third stage of sampling, a list of all eligible persons was made within each selected segment. From this list persons were then systematically selected for inclusion in HANES I.

A more complete description of the survey design is included in *Vital and Health Statistics,* Series 1-Nos. 10a and 14.

Since the design of HANES I is a complex multistage probability sample, it is necessary to use complex procedures in the derivation of estimates. Three basic operations are involved.

1. *Inflation by the reciprocal of the probability of selection.*—The probability of selection from each step of selection in the design (PSU, segment, and sample person).

2. *Nonresponse adjustment.*—The estimates are inflated by a multiplication factor calculated within each PSU for each of five selected income groups. The numerator of these factors consists of the sum of the weights for *sample persons* resulting from the reciprocal of the probability of selection and the denominator consists of the sum of the weights for *examined persons* also resulting from the reciprocal of the probability of selection.

3. *Poststratification by age-sex-race.*—The estimates are ratio adjusted within each of 60 age-sex-race cells to an independent estimate, provided by the U.S. Bureau of the Census, of the population of each cell as of the midpoint of the

Table I. Number of sample persons aged 1-74 years who received a dental examination, by sex and age: United States, 1971-74

Age	Total	Male	Female
	Number of sample persons		
All ages, 1-74 years...........	20,749	8,819	11,930
1-5 years................................	2,953	1,502	1,451
6-11 years..............................	2,019	1,001	1,018
12-17 years............................	2,132	1,068	1,064
18-44 years............................	7,318	2,235	5,083
45-64 years............................	2,861	1,358	1,503
65-74 years............................	3,466	1,655	1,811

survey. The effect of the ratio-estimating process is to make the sample more closely representative of the civilian non-institutionalized population by age, sex, and race, which thereby reduces sampling variance.

Dental findings were recorded for 20,749 persons classified in table I by age and sex; the estimated civilian noninstitutionalized U.S. population aged 1-74 years is shown in table II by age, race, and sex.

The estimates closely approximate the U.S. population as estimated by the U.S. Bureau of the Census as of the midpoint of the survey sample design. The figures in table II may differ slightly from the census estimates because the latter are based upon the ages of sample persons at the time they were examined, whereas the poststratification was based upon the ages at interview. Because certain analyses must be done on the basis of age at examination, the population estimates for the sake of consistency have also been based upon age at examination.

Reliability of Estimates

Since the statistics presented in this report are based on a sample, they will differ somewhat from the figures that would have been obtained if the survey had been conducted on the complete population. In other words, the statistics are subject to sampling variability.

The standard error is primarily a measure of sampling variability, but may also include part of the variation that arises in the measurement process. The standard errors presented in tables 1-11 have been calculated by a technique referred to as "balanced repeated replication."

Table II. HANES I population estimates for examination locations 1-65, by sex, race, and age at examination

Age at examination	Estimated population						
	Total	Male			Female		
		All races	White	Black	All races	White	Black
Total	193,976,381	94,239,866	82,740,899	10,413,986	99,736,515	86,867,546	11,999,935
1 year.......................	3,313,458	1,693,074	1,401,508	280,212	1,620,384	1,327,657	257,289
2-3 years..................	6,963,162	3,553,765	2,997,107	479,362	3,409,397	2,872,581	505,442
4-5 years..................	6,672,346	3,378,503	2,866,374	485,872	3,293,843	2,755,016	511,134
6-7 years..................	7,193,663	3,652,322	3,060,888	573,867	3,541,341	2,951,927	576,578
8-9 years..................	7,696,597	3,880,396	3,279,649	586,419	3,816,201	3,257,936	539,855
10-11 years..............	8,465,793	4,381,730	3,732,593	563,823	4,084,063	3,424,070	617,793
12-14 years..............	12,335,321	6,312,519	5,397,061	879,377	6,022,802	5,122,189	836,252
15-17 years..............	12,318,434	6,207,169	5,311,596	812,321	6,111,265	5,233,091	853,294
18-19 years..............	7,352,200	3,673,321	3,206,467	404,045	3,678,879	3,158,930	504,417
20-24 years..............	17,325,038	8,109,775	7,094,036	866,201	9,215,263	7,972,486	1,073,358
25-34 years..............	26,936,001	13,002,514	11,594,115	1,231,793	13,933,487	12,160,578	1,646,337
35-44 years..............	22,268,477	10,675,731	9,515,530	1,004,953	11,592,746	10,111,458	1,318,050
45-54 years..............	23,313,316	11,150,110	10,039,124	1,056,837	12,163,206	10,879,167	1,237,459
55-64 years..............	19,049,001	9,072,586	8,274,948	702,647	9,976,415	9,037,157	871,098
65-74 years..............	12,773,574	5,496,351	4,969,903	486,257	7,277,223	6,603,303	651,579

NOTE: The numbers in this table constitute estimates and closely approximate the U.S. population as estimated by the U.S. Bureau of the Census as of Nov. 1, 1972.

The need for this specialized technique for estimating standard errors arises because of the complexity of the sample design of HANES I which makes it inappropriate to calculate them by a technique that does not account for the complex sample design. (See *Vital and Health Statistics,* Series 2-No. 14.) It must be noted that estimates of standard errors are themselves subject to errors that may be large if the number of cases upon which the estimates are based is small.

Standard errors of estimates shown in tables 1-11 have been computed using the balanced half-sample replication procedure.

If a reader wants to know whether proportionately more females than males are totally edentulous, the following procedure can be used. The procedure used to test the significance of the difference between the percents for females and males consists of dividing the difference between the percents by the standard error of the difference; that is, a Z-statistic can be computed, where

$$Z = d/S_d.$$

An approximation of the standard error of the difference

$$d = P_f - P_m$$

is given by the formula

$$S_d = (S_{P_f}^2 + S_{P_m}^2)^{\frac{1}{2}}$$

where

P_f = percent for females
P_m = percent for males

and

$$S_{P_f} \text{ and } S_{P_m}$$

are the standard errors, respectively, of P_f and P_m. This estimate might be an overestimate or underestimate of the actual standard error of the difference where two groups or measures are respectively positively or negatively correlated.

For our example,

$$Z = \frac{11.8 - 9.5}{(0.47^2 + 0.60^2)^{\frac{1}{2}}}$$

$$= 3.03$$

Because Z is at least 1.96, the difference is significant at the 95-percent level.

Alternatively, the reader may want to compute a confidence interval (95 percent, for example) around the percent for females. That should be done in the following manner:

$$p \pm 1.96\, S_p$$

For $p = 11.8$ and $S_p = 0.47$ the resultant 95-percent confidence interval for the percent of females who are totally edentulous is 10.88 to 12.72. In other words, the probability that the true estimate lies within that interval is 95 percent.

———— O O O ————

APPENDIX IV
HANES I TAPE SUMMARIES

DEMOGRAPHIC DATA SUMMARY — HANES I

Tape
positions

NOTE: The following income questions were asked only if "Total Family Income" was less than $7,000

During Past Year Did You or Any Members of Your Family Receive Money From:

Tape
positions

Treatment Needs

Occlusion Data

Malaligned Teeth

Malaligned Teeth

Denture Questions

Interview Questions

Other Conditions — Indicators of Vitamin C Deficiency

———— ○ ○ ○ ————

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