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Decayed, Missing, and Filled Teeth Among Children

United States

Estimates of decayed, missing, and filled (DMF) permanent teeth and decayed, nonfunctional-carious, and filled (def) primary teeth among children by age, race, sex, and selected demographic characteristics, with a brief discussion of prevailing trends.

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DECAYED, MISSING, AND FILLED TEETH AMONG CHILDREN

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INTRODUCTION

In December 1965 the Division of Health Examination Statistics successfully concluded a survey of the health of the Nation's children aged 6-11 years. The survey, which began in July 1963, was the second of the Health Examination Survey programs, or "cycles," which, launched successively, produce statistical information about the health of specific segments of the U.S. population. The conduct and operation of the children's cycle closely followed a blueprint prepared for the preceding adult cycle. Examinations were conducted at 40 randomly selected locations in 25 States by means of mobile examination centers manned by physicians, dentists, psychologists, nurses, and technicians.[1]

The target population totaled approximately 24 million children (table III, appendix III). It was defined as all noninstitutional U.S. children aged 6-11 living in the United States (including Alaska and Hawaii) except those living on lands reserved for the use of American Indians. To obtain statistically valid estimates about the health of so many people, a probability sample was designed and selected by a complex, scientific procedure (appendix III). The sample consisted of approximately 7,400 children, or about 185 at each location.

Each sample child whose parents consented to his or her participation in the survey received the same examination. Many tests undergone by the children and many measurements recorded by examiners focused on factors related to biological and psychological aspects of growth and development. A pediatrician examined the nose, throat, and ears; heart; and neuromuscular system of each child. The teeth and their supporting structures were examined by a dentist, and intellectual development, school achievement, and personality development were measured by a psychologist. Other procedures included tests of vision, hearing, exercise tolerance, grip strength, and breathing capacity. Blood-pressure levels and electrocardiograms were recorded as well as height, weight, and other body measurements.

The dental examination was conducted by five dentists employed at various times during the survey. The examiners derived their findings on a uniform basis by following as closely as possible written, objective standards. The standards were guidelines which, in effect, narrowed the range of examiner variability by eliminating many borderline or questionable conditions that are persistent sources of examiner disagreement. To avoid procedures that might have introduced systematic bias, the examining dentists were forbidden to dry or isolate teeth, to remove oral debris and calculus, and to probe tooth surfaces that were not overtly decayed.

Teeth were classified as sound, filled, decayed, filled-defective, and nonfunctional-carious. The absence of permanent teeth was noted and classified under one of four headings: unerupted, extracted because of decay, lost because of accidental injury, and extracted because of crowding. Artificial teeth and exposed root remnants were also recorded. Radiographs of the teeth were not taken. An adjustable examining chair, a

standard light source, and a mouth mirror and explorer were used during the examination, which usually lasted about 10 minutes.

Definitions of the dental conditions and procedures for conducting the examinations were largely the same as those followed during the survey of adults conducted during 1960-62.[2] The same two dentists who trained new examiners during the adult survey also trained and periodically reviewed the findings of the other examiners during the survey of children. Definitions and criteria for the examinations and the training of examiners and review of their procedures are described in appendix I.

There is reason to believe that interexaminer variability during the survey was small and that it did not significantly affect the dental findings on children (appendix I). There is also reason to believe that the findings on children are comparable with those previously obtained on adults. Nevertheless, it should be realized that, while both the standardized examination procedure and the training of examiners undoubtedly increased the comparability of findings, they undoubtedly also reduced the sensitivity of the examination. Thus findings in some instances are conservative compared with those that would be obtained by clinical evaluations. Specifically, counts of nonfunctional and decayed teeth are systematically underestimated from the clinical viewpoint, whereas complementary counts of sound and functional teeth are correspondingly overestimated. Estimates of filled and missing teeth, on the other hand, are derived from more objective counts which are highly comparable by any standard.

At the close of the survey, 96.0 percent of 7,417 sample children had been examined. Information about the dental condition of the 298 unexamined children is not available. There are grounds, however, for assuming that nonresponse did not seriously bias the estimates based on survey findings. Nonrespondents made up only a small proportion of the entire sample, and, moreover, information collected by household interview about both respondents and nonrespondents revealed no marked differentials in response rates associated with various demographic characteristics including age, sex, race, geographic region, population density, parents' education, and family income.[1]

This report contains national estimates of the number of decayed, missing, and filled teeth among children by age, sex, race, and other selected demographic characteristics. In the text and tables that follow, the occurrence of decay among specified groups of children is described by citing the mean number of decayed (D), missing (M), and filled (F) teeth per person found among them. DMF teeth are defined as the total number of *permanent* teeth that are decayed, filled, and either missing or indicated for extraction (nonfunctional-carious). Children aged 6-11 almost never lose teeth because of periodontal disease, but many frequently lose teeth as a result of neglected decay. Other children sometimes lose teeth as a result of accidents or have them extracted because of crowding. Thus when teeth lost because of accidents and orthodontic extractions are excluded, DMF counts for children accurately record the number of permanent teeth that have been attacked by decay at least once.

The number of *primary* teeth present and previously attacked by decay is indicated by the mean number of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child. The def index does not include missing teeth because cross-sectional surveys such as the Health Examination Survey cannot determine whether missing primary teeth had been decayed before they were either shed or extracted. Thus the def index provides a count of the number of primary teeth present at the time of examination that had been attacked by decay at least once.

The components of both the DMF and the def index—decayed (untreated) teeth, filled teeth, and missing or nonfunctional teeth—are also presented by specified demographic characteristics. Each component is an indicator of the relative adequacy or inadequacy of dental care received. Specifically, a relatively large F or f component reflects favorably on the adequacy of previous care whereas, by contrast, relatively large D or d and M or e components indicate lower levels of care.

FINDINGS

Permanent Teeth

Age—On the basis of examinations, approximately 24 million U.S. children aged 6-11 years averaged an estimated 1.4 DMF teeth per child. The estimate consists of 0.5 decayed, 0.1 missing, and 0.8 filled permanent teeth. The mean number of DMF teeth per child increased slowly but steadily with age, rising from only a fraction of a tooth among the youngest children to a high of about three teeth among the oldest (table 1 and figure 1).

The gradual accumulation of DMF teeth with advancing age largely resulted from an increasing number of filled and decayed teeth (table 1). By contrast, permanent teeth classified as missing—those too extensively decayed for restoration as well as those previously extracted because of decay—were relatively few, adding only a small fraction to the DMF index for even the oldest children. For instance, the mean DMF count per child for 11-year-old girls (3.2) consisted almost entirely of filled (1.9) and decayed (1.0) teeth.

Table 2 shows the number and percent of children by specified numbers of DMF and D, M, and F teeth. Approximately one-half of all children had no DMF teeth, and approximately one-fourth had either one or two DMF teeth. The remaining children had three DMF teeth or more, but those with more than five were comparatively few—about 730,000. In addition, an estimated three-fourths of all children had no untreated decayed permanent teeth whereas, by contrast, about 6 percent had four decayed teeth or more. About 95 percent of the children had no missing permanent teeth, and about 70 percent had no filled permanent teeth.

The accumulation with age of decayed, missing, and filled permanent teeth is shown in table 3. While about 86 percent of 6-year-old children had no DMF teeth, only about 24 percent of 11-year-old children had none. The greater frequency of D, M, and F teeth among older children is also to be noted. For instance, about 92 percent of 6-year-old children had no decayed (untreated) teeth, but only about 64 percent of 11-year-old children had none.

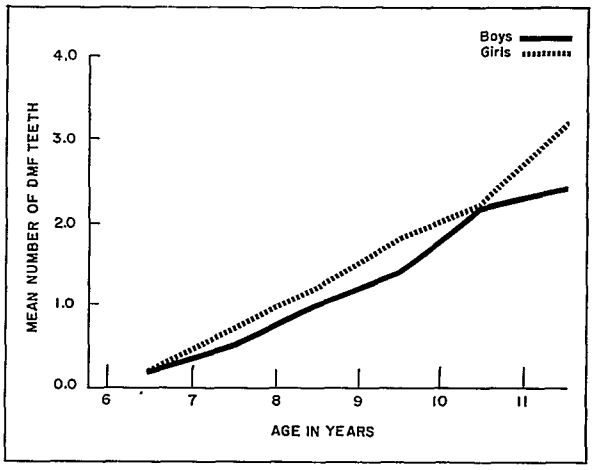

Figure 1. Mean number of decayed, missing, and filled (DMF) teeth per child, by age and sex.

The foregoing estimates clearly indicate the relatively low incidence of decay of the permanent teeth during childhood. The small annual increments of DMF teeth are largely due to the fact that more permanent teeth erupt during ages 6-11 than at any other time. Thus not only were there many children who had only a few permanent teeth but there were some who had none at all. Furthermore most children had teeth which, because they had only recently erupted, had been exposed but briefly to the risk of decay.

Only about four of every 100 permanent teeth among 6-year-old children had been attacked by decay. Among 11-year-old children, about 12 of every 100 teeth were decayed, missing, and filled. Thus as the permanent dentition nears completion, the rising proportion of DMF teeth augurs the greater frequency of tooth decay that is typical of adolescence and early adulthood. For instance, previous estimates based on the examinations conducted during 1960-62 indicate that men and women 18-24 years of age averaged about 14 DMF teeth per person,[2] while the comparable figure for 11-year-old children was about three DMF teeth per person.

Sex—The mean number of decayed, missing, and filled teeth per child varied by sex among white children but not among Negro children (table 1 and figure 2). Among the white children, girls of almost every age averaged slightly more DMF teeth per child than did boys of the same age.

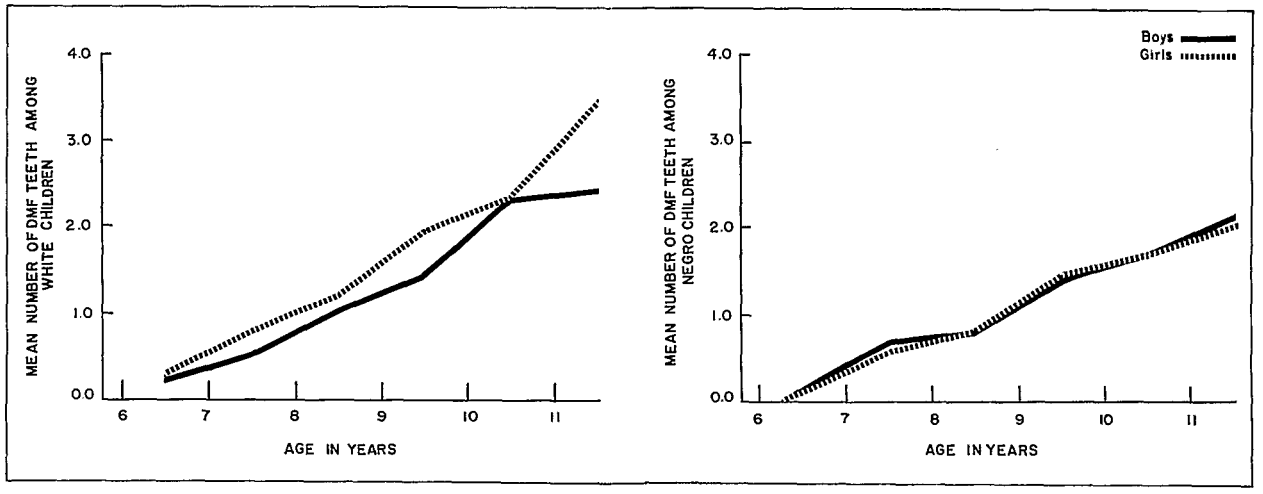

Figure 2. Mean number of decayed, missing, and filled (DMF) teeth per child, by age, race, and sex.

As a result, the DMF index for white girls is 1.6 whereas that for white boys is 1.3. Among Negro children, however, boys and girls of every given year of age had approximately equal numbers of DMF teeth, resulting in the same overall index (1.1) for boys and girls.

The proportion of permanent teeth attacked by decay was also higher among white girls than white boys—11.7 per 100 teeth as against 10.3 per 100 (table 4). At every given age other than 10, girls had more DMF teeth per 100 permanent teeth than did boys.

While the mean number of DMF teeth per child did not vary significantly by sex among Negro children, the number of DMF teeth per 100 permanent teeth among Negro children did appear to be related to sex (table 4). Curiously, however, the difference by sex among Negro children ran counter to that prevailing among white children. Of every 100 permanent teeth among Negro boys, an estimated 8.0 were decayed, missing, and filled; the proportion among Negro girls was 7.0 per 100. In addition, the proportion of DMF teeth in the permanent dentition of Negro boys exceeded that of Negro girls at every given year of age.

The mean number of erupted permanent teeth per child is shown by age, race, and sex in table A. At every given year of age white boys had fewer erupted teeth than did white girls, while Negro boys had fewer than Negro girls. The fewer erupted teeth and the concurrently higher proportion of DMF teeth among Negro boys suggest that they are somewhat more prone to dental decay than are Negro girls. Among white children, on the other hand, girls had both more permanent teeth and proportionately more DMF teeth. As a result, the estimates do not necessarily reflect a difference by sex in proneness to decay because variations in DMF teeth per 100 permanent teeth could reflect a difference in posteruptive exposure time.

Race—Table 1 and figure 3 also reveal a difference associated with race in the occurrence of DMF teeth. The pattern is a consistent one, for at every given age white girls had slightly more DMF teeth per child than did Negro girls, and white boys had slightly more than did Negro boys. The difference by race arose from the larger number of filled teeth per person among white children. Negro children had more decayed (untreated) teeth per child, but the margin of difference in decayed teeth was not enough to offset the larger margin of filled teeth found among white children. The number of missing teeth per child varied only slightly by race.

Estimates of the mean number of erupted permanent teeth per child also indicate that Negro children generally erupt teeth earlier than white children of the same sex (table A). The greater number of DMF teeth per child among white children than among Negro children suggests

Table A. Mean number of erupted permanent teeth among children, by age, race, and sex: United States, 1963-65

Age	Total[1]		White		Negro	
	Boys	Girls	Boys	Girls	Boys	Girls
6-11 years	12.5	14.0	12.4	13.8	13.6	15.3
6 years	4.7	5.6	4.5	5.3	5.5	7.1
7 years	8.8	9.8	8.7	9.6	9.8	10.6
8 years	11.1	12.0	11.0	11.9	11.9	12.6
9 years	13.4	15.2	13.3	15.0	14.1	16.7
10 years	16.8	19.0	16.5	18.6	18.5	21.0
11 years	21.2	23.6	20.9	23.3	23.0	25.1

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

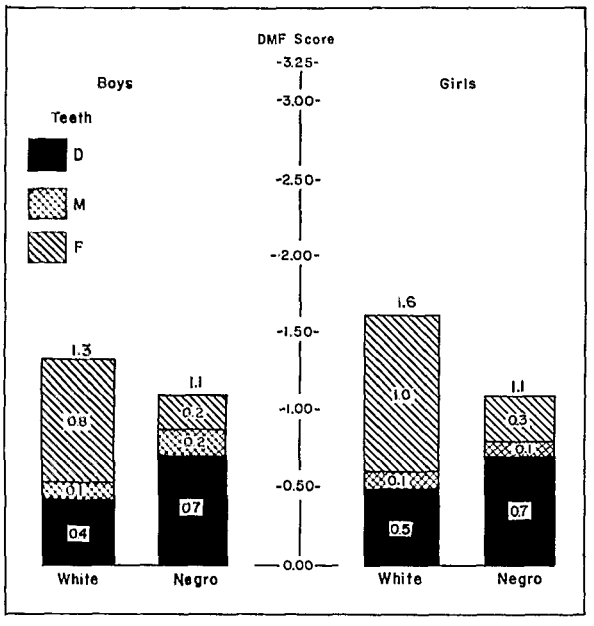

Figure 3. Mean number of decayed (D), missing (M), and filled (F) teeth and mean number of DMF components for boys and girls, by race.

that the former are more prone to dental decay than are the latter.

Primary Teeth by Age, Sex, and Race

Table 5 contains estimates of the mean number of decayed, nonfunctional-carious, and filled primary teeth per child by age, sex, and race. The mean number of def teeth declined with advancing age from a high of about four among 7- and 8-year-old children to a low of approximately one per person among 11-year-old children. White boys had slightly more def teeth than did white girls—3.2 per boy compared with 3.0 per girl—as did Negro boys compared with Negro girls—2.5 and 2.2, respectively. The difference by sex between the mean number of def teeth per child occurred in all age groups except the youngest of both races. The number of primary teeth present is shown by year of age, race, and sex in table B.

The mean number of def teeth per child was higher for white (3.1) than for Negro children (2.3). Within every given age group white boys had

Table B. Mean number of primary teeth among children, by age, race, and sex: United States, 1963-65

Age	Total[1]		White		Negro	
	Boys	Girls	Boys	Girls	Boys	Girls
6-11 years	10.5	9.3	10.6	9.5	9.8	8.5
6 years	17.0	16.4	17.1	16.6	16.5	15.4
7 years	13.7	12.9	13.8	12.9	13.2	12.5
8 years	11.9	10.9	11.9	10.9	11.5	10.6
9 years	9.7	8.0	9.8	8.2	9.3	6.7
10 years	6.6	5.0	6.8	5.3	5.1	3.3
11 years	3.6	1.9	3.8	2.1	2.3	1.2

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

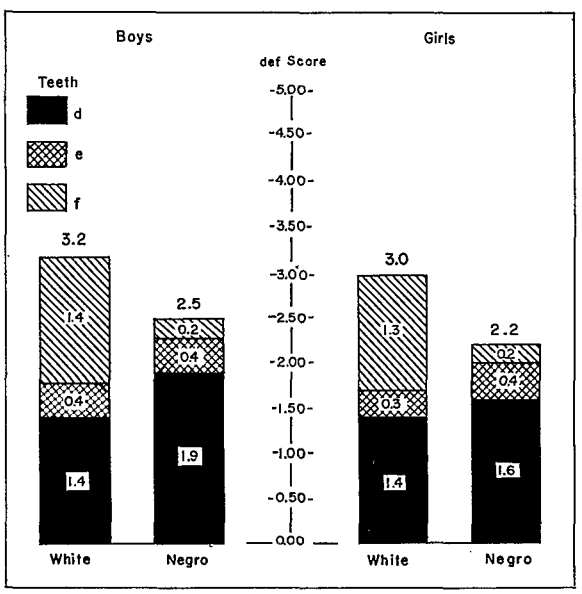

Figure 4. Mean number of decayed (d), nonfunctional-carious (e), and filled (f) teeth and mean number of def components for boys and girls, by race.

slightly more def teeth per child than did Negro boys, and white girls had slightly more than Negro girls. There was relatively little variation by sex in the mean number per child of any def component. The higher def indexes for white children are due to a greater number of filled teeth per child (figure 4). Negro children had more decayed (untreated) teeth than did white children, 1.7 and 1.4 per child, respectively, but white children had an even larger number of filled teeth per child--1.4 compared with only 0.2. The number and percent distributions of children by specified number of def teeth and sex are shown in table 6.

Other Demographic Variables

In the earlier survey of U.S. adults the frequency of decayed, missing, and filled teeth was found to vary significantly by levels of income and education.[2] The mean number of DMF teeth per person among adults with natural teeth increased with higher levels of income and education, primarily due to a greater number of filled

teeth. This was true for both young (18-34 years) and older adults (35-79 years).

To determine whether similar trends also prevail among children, the U.S. population 6-11 years of age was classified by specified ranges of both family income and parents' education. It was also classified by geographic region of residence.

After children were classified in this manner, any differences that appeared in the mean number of DMF teeth among various groups were examined. For example, mean DMF counts for white boys whose family income was within five income ranges were examined to determine whether the mean count within one income range differed significantly from those within other ranges. In addition, mean DMF counts for all income ranges were compared to determine whether the number of DMF teeth trended higher or lower with increasing income. The comparisons were made among children of the same race and sex. Since DMF counts differed importantly by age as well as by race and sex, allowance was made for differences in the age distribution of the children within each income and education group.

Expected (age-adjusted) values were calculated by weighting the age-specific mean DMF counts for the total U.S. population of children within specific sex-race groups by the age distribution of children within given ranges of income and education. Actual and expected values may be expected to differ by chance. But when the difference is not statistically significant, it can be generally assumed that differences between DMF teeth for component age groups fluctuate randomly.

Because of the relatively limited number of sample children, sampling variability for specific age groups is usually quite large. It is for this reason that summary comparisons of actual and expected counts were preferred to a comparison of mean age-specific counts.

DMF teeth by income and education—The mean number of DMF teeth was weakly associated with levels of yearly family income (table 7). Children whose families had lower incomes tended to have fewer DMF teeth than those whose families had higher incomes. Among children of all races, for example, boys in families with yearly income of less than $7,000 had 1.2 DMF teeth per child, while those whose family income was $10,000 or more per year had 1.4 per child. The same general trend occurred among girls of all races.

Because there are many more white children than Negro children in the United States, estimates for all children chiefly reflect the findings recorded for the white children. It will be noted here that the direct association of income with the mean number of DMF teeth per person prevailed among both white boys and white girls and that the corresponding mean numbers of DMF teeth per child for children of all races and for white children are about the same. Among Negro children, on the other hand, the estimates in table 7 suggest that income and the number of DMF teeth are inversely associated. For example, Negro children with family incomes under $7,000 per year tended to have slightly more DMF teeth on the average than did those with higher incomes.

Table 8 contains estimates of the actual and expected DMF indexes of children classified by sex, race, and educational attainment of the parent or guardian designated "head of household." Unlike family income, the education of parents was not associated with the mean number of DMF teeth per child.

Differences in the DMF index associated with sex and race continued to prevail among children whose families had the same level of income and among those whose parents had the same level of education. For example, within every given range of family income white girls had slightly more DMF teeth per child than did white boys. Except for two income groups, the mean number of DMF teeth per child was higher for white boys and girls than for Negro children of the same sex. Thus the difference in DMF teeth by sex and by race was not due to underlying differences in either family income or parents' education.

DMF components—Both family income and the education of parents were significantly correlated with the decayed and filled components of the DMF index (tables 7 and 8). For instance, white girls whose parents had completed less than 5 years of school had about one decayed tooth per person. In addition, relatively few had filled permanent teeth (0.1 per child). By contrast, white girls whose parents had completed 17 years of formal education or more had only 0.2 de-

cayed teeth per child and about 1.4 filled teeth. In short, the estimates indicate that children from economically and educationally advantaged households had significantly more filled and significantly fewer missing and decayed teeth than did children from less advantaged households. Although the increments of D, M, and F teeth associated with various levels of income and education were not large, many differences between actual and expected estimates per person are statistically significant.

The def index and its components—The mean number of decayed, nonfunctional-carious, and filled primary teeth per child was not significantly associated with levels of family income (table 9). However, white boys whose parents had 9 years of formal education or more and Negro boys whose parents had 12 years of formal education or more tended to have fewer def teeth than those of the same race whose parents were less educated (table 10). This difference by education among boys of both races is also reflected in the differences between actual and expected mean numbers of def teeth per person.

The components of the def index among white children were strongly associated with levels of both family income and parents' education (tables 9 and 10). White boys and girls from more advantaged families had, on the one hand, fewer decayed and nonfunctional-carious primary teeth per child but had, on the other hand, a larger number of filled primary teeth per child than did white children of the same sex from less advantaged families. For example, white boys whose parents had completed less than 5 years of school had about twice as many decayed teeth per child as those whose parents had 12 years of formal education or more. In addition, hardly any of the former had filled teeth whereas the latter had an estimated 1.6 per child.

The def components were less consistently associated with income and education among Negro children than among white. The most apparent association for Negro children occurred among boys, where an inverse relationship between decayed teeth and family income was found.

Region of residence—Table 11 contains estimates of the mean number of DMF teeth per person by sex, race, and geographic region. Children living in the Northeast and South Regions had higher DMF counts per child than those living elsewhere and children living in the West had lower counts. Most of the differences between actual and expected DMF indexes were not statistically significant.

The mean number of decayed teeth per child, missing teeth per child, and filled teeth per child are shown by sex, race, and region in table 11. Children in the South had significantly more decayed and significantly fewer filled teeth than expected. In addition, children in the West had significantly fewer decayed teeth per child than expected.

Estimates of the mean number of def teeth and def components per person by region generally followed the same pattern as DMF teeth (table 12). For example, children in the South had relatively more decayed and relatively fewer filled teeth per child than expected. By contrast, children in the West had significantly fewer decayed teeth than expected.

DISCUSSION

Most of the differences in the occurrence of DMF teeth that are associated with demographic characteristics of children are not especially large. Many of them do not occur consistently throughout the various subgroups of a particular classification. However, as the 1960-62 survey showed, the same differentials also prevail among U.S. adults, and in most instances they are both larger and more consistent than those described above.[2] For example, at all ages from 18 through 79 years, white adults had substantially more DMF teeth (about six per person) than did Negro adults. Thus the difference by race noted among children seems to be a real one that can be expected to persist into adulthood. Its cause has not been fully explained, but a dietary factor is generally believed to be involved.

DMF differences by sex were also found among U.S. adults, white and Negro men having slightly fewer DMF teeth per person than women of comparable race and age. The cause of the difference associated with sex is not known. Findings by geographic region for children and adults are not comparable because of differences

between the two surveys in the definition of the geographic regions.

The association among children of decayed and filled teeth with family income is noteworthy. It can be demonstrated most strikingly by combining permanent and primary teeth as shown in figure 5. Although the total number of decayed plus filled teeth varies only slightly by family income, indicating that the need for filling during childhood is about the same among children of all income groups, the number of filled teeth per person is directly and strongly related to rising income. By contrast, untreated decayed teeth decline with rising income, presenting a picture that is almost the mirror image of filled teeth. The same relationship reflecting the high correlation between dental care, or the lack of it, and dental health was also found among adults.

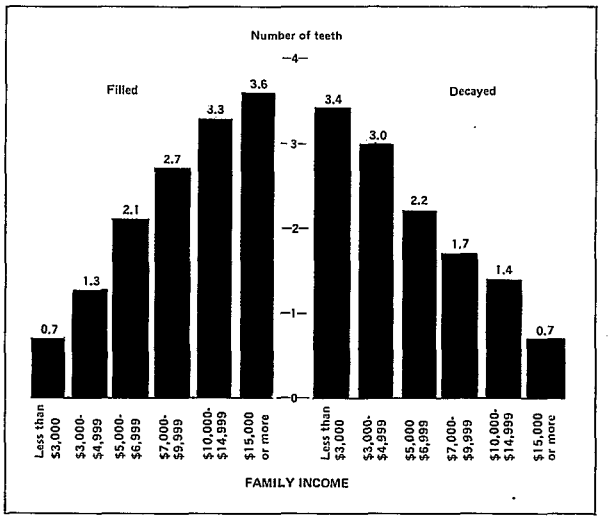

Figure 5. Average numbers of filled and of decayed primary and permanent teeth per child, by family income.

SUMMARY

Approximately 24 million U.S. children 6-11 years of age had an estimated DMF index of 1.4, consisting of 0.5 decayed, 0.1 missing, and 0.8 filled permanent teeth per child. The estimated def index was 3.0, consisting of 1.4 decayed, 0.4 nonfunctional, and 1.2 filled primary teeth per child.

The estimates are based on examinations conducted during 1963-65 on 7,119 children who constituted a probability sample of the noninstitutional U.S. population aged 6-11 years. The dental examinations were conducted at 40 locations in 25 States by five dentists trained to obtain their findings on a uniform basis.

The mean number of DMF teeth increased slowly but steadily with age, rising from only a fraction of a tooth among the youngest children to a high of about three teeth among the oldest. The estimated mean number of def teeth declined with advancing age from a high of about four among 7- and 8-year-old children to a low of about one among 11-year-old children.

The occurrence of decayed, missing, and filled permanent teeth varied by sex among white children but not among Negro children. Among the former, girls of every given age except 10 averaged slightly more DMF teeth per child than did boys of the same age. As a result, the DMF index was 1.6 for white girls and 1.3 for white boys. Among Negro children, boys and girls of any given age had approximately equal numbers of DMF teeth, resulting in the same index (1.1) for boys and girls.

The mean number of decayed, missing, and filled teeth per child also varied by race. At every given age white girls had slightly more DMF teeth than did Negro girls, and except for two age groups white boys had slightly more than Negro boys. The DMF index for white and Negro boys was 1.3 and 1.1, respectively, and for white and Negro girls 1.6 and 1.1 respectively. Although Negro children had more untreated decayed teeth per child than did white children, the latter had an even larger margin of filled teeth. Differences by sex and race for decayed, nonfunctional, and filled primary teeth generally paralleled those for permanent teeth, except that boys tended to have slightly more def teeth than girls of the same race.

The number of DMF teeth was slightly associated with levels of yearly family income. The association was a direct one among white children and an inverse one among Negro children. Unlike family income, parents' education was not associated with the mean number of decayed, missing, and filled permanent teeth per child. In addition, although the mean number of def teeth per child was not strongly associated with family income, white boys whose parents had 9 years of

formal education or more and Negro boys whose parents had 12 years of formal education or more tended to have fewer def teeth than those of the same race whose parents had less education.

The components of the DMF and def indexes were associated with both family income and parents' education. Boys and girls from more advantaged families tended to have, on the one hand, fewer missing and decayed permanent teeth and fewer nonfunctional and decayed primary teeth but tended to have, on the other hand, more filled teeth than children from less advantaged families. The relationship of the components with family income and parents' education was stronger among white children than among Negro children.

The number of DMF and def teeth also varied significantly by place of residence. For example, children in the Northeast and South Regions had more decayed, missing, and filled teeth than expected. Children in the West had fewer DMF teeth than expected. In addition, children in the South had more decayed and fewer filled permanent teeth per child than expected, and children in the Northeast Region had significantly more filled teeth. Regional variations in the mean number of def teeth per child were also evident.

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[2]National Center for Health Statistics: Decayed, missing, and filled teeth in adults. *Vital and Health Statistics.* PHS Pub. No. 1000-Series 11-No. 23. Public Health Service. Washington. U.S. Government Printing Office, Feb. 1967.

LIST OF DETAILED TABLES

Table 1. Mean number of decayed (D), missing (M), and filled (F) permanent teeth per child, by age, sex, and race: United States, 1963-65

Age and sex	All DMF teeth			D teeth		
	Total[1]	White	Negro	Total[1]	White	Negro
Both sexes 6-11 years	1.4	1.4	1.1	0.5	0.4	0.7
Boys						
6-11 years	1.2	1.3	1.1	0.4	0.4	0.7
6 years	0.2	0.2	0.1	0.1	0.1	0.1
7 years	0.5	0.5	0.7	0.2	0.2	0.6
8 years	1.0	1.0	0.8	0.4	0.4	0.7
9 years	1.4	1.4	1.4	0.6	0.5	1.0
10 years	2.2	2.3	1.7	0.7	0.7	0.9
11 years	2.4	2.4	2.1	0.7	0.7	1.2
Girls						
6-11 years	1.5	1.6	1.1	0.5	0.5	0.7
6 years	0.2	0.3	0.1	0.1	0.1	0.1
7 years	0.7	0.8	0.6	0.4	0.4	0.4
8 years	1.2	1.2	0.8	0.4	0.4	0.6
9 years	1.8	1.9	1.4	0.6	0.5	0.9
10 years	2.2	2.3	1.7	0.7	0.6	0.8
11 years	3.2	3.4	2.0	1.0	1.0	1.2

Age and sex	M teeth			F teeth		
	Total[1]	White	Negro	Total[1]	White	Negro
Both sexes 6-11 years	0.1	0.1	0.1	0.8	0.9	0.2
Boys						
6-11 years	0.1	0.1	0.2	0.7	0.8	0.2
6 years	0.0	0.0	-	0.1	0.1	-
7 years	0.0	0.0	0.0	0.2	0.2	0.1
8 years	0.0	0.0	0.0	0.5	0.6	0.1
9 years	0.1	0.0	0.2	0.8	0.9	0.1
10 years	0.2	0.1	0.3	1.4	1.5	0.5
11 years	0.2	0.2	0.4	1.4	1.6	0.5
Girls						
6-11 years	0.1	0.1	0.1	0.9	1.0	0.3
6 years	-	-	-	0.1	0.2	-
7 years	0.0	0.0	0.0	0.3	0.4	0.1
8 years	0.0	0.0	0.0	0.7	0.8	0.2
9 years	0.1	0.1	0.2	1.1	1.2	0.3
10 years	0.2	0.2	0.2	1.4	1.5	0.6
11 years	0.2	0.2	0.2	1.9	2.2	0.5

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

NOTE: Filled teeth include only teeth 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 three categories.

Table 2. Number and percent distribution of children by number of decayed (D), missing (M), and filled (F) permanent teeth, according to sex: United States, 1963-65

Number of affected teeth	All DMF teeth				D teeth			
	Boys		Girls		Boys		Girls	
	Number in thousands	Percent	Number in thousands	Percent	Number in thousands	Percent	Number in thousands	Percent
Total	11,728	100.0	11,486	100.0	11,728	100.0	11,486	100.0
0	6,352	54.2	5,494	47.8	8,960	76.4	8,503	74.0
1	1,347	11.5	1,375	12.0	1,344	11.5	1,401	12.2
2	1,347	11.5	1,378	12.0	748	6.4	834	7.3
3	905	7.7	950	8.3	358	3.0	371	3.2
4	1,295	11.0	1,611	14.0	200	1.7	201	1.8
5	196	1.7	238	2.1	35	0.3	35	0.3
6	109	0.9	176	1.5	42	0.4	65	0.6
7	72	0.6	65	0.6	16	0.1	29	0.2
8	36	0.3	58	0.5	4	0.0	28	0.2
9	28	0.2	59	0.5	12	0.1	8	0.1
10	13	0.1	31	0.3	-	-	3	0.0
11	4	0.0	27	0.2	7	0.0	4	0.0
12	13	0.1	15	0.1	3	0.0	4	0.0
13 or more	12	0.1	9	0.1	-	-	-	-

Number of affected teeth	M teeth				F teeth			
	Boys		Girls		Boys		Girls	
	Number in thousands	Percent	Number in thousands	Percent	Number in thousands	Percent	Number in thousands	Percent
Total	11,728	100.0	11,486	100.0	11,728	100.0	11,486	100.0
0	11,151	95.1	10,794	94.0	8,531	72.7	7,753	67.5
1	324	2.8	403	3.5	785	6.7	813	7.1
2	157	1.3	186	1.6	780	6.6	882	7.7
3	63	0.5	55	0.5	577	4.9	634	5.5
4	18	0.2	33	0.3	886	7.6	1,141	9.9
5	5	0.0	8	0.1	80	0.7	116	1.0
6	-	-	4	0.0	54	0.4	73	0.6
7	8	0.1	-	-	25	0.2	20	0.2
8	3	0.0	4	0.0	7	0.0	22	0.2
9	-	-	-	-	-	-	15	0.1
10	-	-	-	-	4	0.0	7	0.1
11	-	-	-	-	-	-	2	0.0
12	-	-	-	-	-	-	7	0.1
13 or more	-	-	-	-	-	-	1	0.0

NOTE: Filled teeth include only teeth 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 three categories.

Table 3. Percent distribution of children by number of decayed (D), missing (M), and filled (F) permanent teeth, according to sex and age: United States, 1963-65

Number of teeth	Boys						Girls					
	6 years	7 years	8 years	9 years	10 years	11 years	6 years	7 years	8 years	9 years	10 years	11 years
DMF teeth	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0	87.0	75.6	57.1	47.5	30.9	28.5	85.4	65.8	51.8	36.5	28.6	19.2
1	8.0	10.3	13.9	11.6	11.0	13.8	7.3	11.5	15.3	14.8	13.0	9.6
2	3.5	6.6	13.3	15.9	15.8	13.1	4.0	12.4	11.9	13.3	14.9	15.1
3	0.6	4.0	8.5	8.6	12.5	11.6	1.4	4.4	7.8	11.2	14.3	10.4
4	0.9	3.4	6.6	13.7	19.4	21.9	1.8	4.9	11.3	19.7	21.1	25.4
5	-	0.1	0.2	1.3	4.7	3.7	-	0.7	1.2	2.3	2.6	5.6
6	-	-	0.1	0.3	1.9	3.3	-	0.2	0.4	1.2	2.3	5.3
7	-	-	0.2	0.5	1.3	1.6	-	-	-	0.7	0.4	2.3
8	-	-	-	-	1.1	0.7	-	0.1	-	0.2	1.3	1.4
9	-	-	-	0.3	0.6	0.6	-	-	0.1	-	0.8	2.2
10	-	-	-	-	0.2	0.5	-	-	-	0.1	0.4	1.1
11	-	-	-	0.2	-	-	-	-	0.2	-	0.3	0.9
12	-	-	-	-	0.6	0.1	-	-	-	-	-	0.8
13	-	-	-	-	-	0.2	-	-	-	-	-	-
14	-	-	-	-	-	0.3	-	-	-	-	-	0.2
15	-	-	-	-	-	0.1	-	-	-	-	-	-
16 or more	-	-	-	-	-	-	-	-	-	-	-	0.2
D teeth	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0	91.9	84.9	76.3	73.1	66.7	66.4	91.7	78.0	75.5	69.4	68.3	61.7
1	5.4	8.9	12.6	11.1	14.9	15.5	5.7	11.8	12.9	14.4	13.4	14.7
2	2.3	3.7	6.5	8.5	8.6	8.3	1.8	7.4	7.0	8.7	8.8	9.7
3	0.5	1.4	3.3	3.1	4.7	5.0	0.2	1.2	2.4	4.8	5.2	5.6
4	-	1.0	1.1	2.9	2.7	2.4	0.5	1.1	1.7	1.7	2.4	3.1
5	-	-	-	0.4	0.8	0.6	-	0.2	-	0.2	0.7	0.7
6	-	-	0.2	0.4	0.7	0.8	-	0.2	0.4	0.4	0.7	1.6
7	-	-	-	0.3	0.3	0.1	-	-	-	0.1	-	1.4
8	-	-	-	-	-	0.2	-	0.1	-	0.2	0.4	0.7
9	-	-	-	-	0.2	0.4	-	-	-	-	-	0.4
10	-	-	-	-	-	-	-	-	-	-	-	0.1
11	-	-	-	-	0.2	0.1	-	-	0.2	-	-	-
12 or more	-	-	-	-	-	0.1	-	-	-	-	-	0.2
M teeth	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0	98.7	98.6	97.7	96.0	90.7	88.6	99.6	98.1	96.9	94.3	90.5	84.2
1	0.9	0.7	1.3	3.0	4.9	5.7	0.4	1.4	2.1	3.2	4.7	9.4
2	0.2	0.5	0.7	0.6	3.1	2.9	-	0.4	0.6	1.9	2.5	4.3
3	0.1	-	0.2	0.2	0.5	2.2	-	-	0.3	0.3	1.2	1.1
4	-	0.1	0.2	-	0.3	0.3	-	0.2	-	0.4	0.6	0.6
5	-	-	-	-	0.2	-	-	-	-	-	0.2	0.2
6	-	-	-	-	-	-	-	-	-	-	-	0.2
7	-	-	-	0.2	-	0.2	-	-	-	-	-	-
8 or more	-	-	-	-	0.2	-	-	-	-	-	0.2	-
F teeth	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0	95.4	89.2	77.3	69.2	53.9	52.4	93.8	85.0	71.6	58.4	52.4	43.7
1	3.1	4.4	7.2	6.8	8.5	10.1	1.7	4.5	7.9	10.4	10.0	7.7
2	0.8	2.8	7.2	9.9	10.7	8.0	2.2	4.6	8.0	9.9	8.9	12.3
3	0.3	1.6	4.3	5.5	8.0	9.5	1.1	3.1	4.1	5.6	10.6	8.7
4	0.4	1.9	4.1	8.0	15.3	15.4	1.2	2.8	8.0	14.3	15.1	18.2
5	-	-	-	0.4	1.7	2.0	-	-	0.3	0.8	1.6	3.4
6	-	-	-	-	1.2	1.5	-	-	-	0.2	0.6	3.0
7	-	-	-	0.2	0.2	0.9	-	-	-	0.2	-	0.9
8	-	-	-	-	0.1	0.2	-	-	-	-	0.3	0.8
9	-	-	-	-	-	-	-	-	-	-	0.3	0.5
10	-	-	-	-	0.2	-	-	-	-	-	-	0.4
11	-	-	-	-	-	-	-	-	-	-	0.1	-
12	-	-	-	-	-	-	-	-	-	-	-	0.4
13	-	-	-	-	-	-	-	-	-	-	-	-
14 or more	-	-	-	-	-	-	-	-	-	-	-	0.1

NOTE: Filled teeth include only teeth 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 three categories.

Table 4. Number of decayed, missing, and filled teeth per 100 erupted permanent teeth among children, by age, sex, and race: United States, 1963-65

Age and sex	Total[1]	White	Negro
Both sexes 6-11 years	10.5	11.0	7.5
Boys			
6-11 years	10.0	10.3	8.0
6 years	3.7	4.0	2.3
7 years	5.6	5.4	6.8
8 years	8.6	8.9	6.8
9 years	10.5	10.6	9.6
10 years	13.4	14.2	9.0
11 years	11.2	11.6	9.0
Girls			
6-11 years	11.0	11.7	7.0
6 years	4.3	4.9	1.8
7 years	7.6	8.0	5.2
8 years	9.9	10.5	6.4
9 years	11.9	12.5	8.6
10 years	11.8	12.6	8.1
11 years	13.5	14.4	7.8

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

NOTE: Filled teeth include only teeth 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.

Table 5. Mean number of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by age, sex, and race: United States, 1963-65

Age and sex	All def teeth			d teeth		
	Total[1]	White	Negro	Total[1]	White	Negro
Both sexes 6-11 years	3.0	3.1	2.3	1.4	1.4	1.7
Boys						
6-11 years	3.1	3.2	2.5	1.5	1.4	1.9
6 years	3.4	3.4	2.9	1.9	1.8	2.5
7 years	3.9	4.0	3.6	2.0	1.8	2.8
8 years	4.0	4.1	3.0	1.8	1.7	2.4
9 years	3.4	3.5	2.7	1.6	1.5	2.0
10 years	2.6	2.8	1.5	1.0	1.1	1.0
11 years	1.4	1.4	1.0	0.6	0.6	0.4
Girls						
6-11 years	2.9	3.0	2.2	1.4	1.4	1.6
6 years	3.6	3.6	3.2	2.0	1.9	2.8
7 years	3.7	3.8	3.0	2.0	2.0	2.3
8 years	3.8	3.9	2.8	1.7	1.6	1.9
9 years	3.1	3.2	2.1	1.3	1.3	1.6
10 years	2.2	2.4	1.4	0.9	1.0	0.6
11 years	0.9	1.0	0.6	0.4	0.4	0.3

Age and sex	e teeth			f teeth		
	Total[1]	White	Negro	Total[1]	White	Negro
Both sexes 6-11 years	0.4	0.4	0.4	1.2	1.4	0.2
Boys						
6-11 years	0.4	0.4	0.4	1.3	1.4	0.2
6 years	0.3	0.3	0.3	1.1	1.3	0.1
7 years	0.5	0.5	0.7	1.4	1.6	0.1
8 years	0.5	0.5	0.3	1.7	1.9	0.4
9 years	0.4	0.4	0.6	1.4	1.6	0.1
10 years	0.3	0.3	0.4	1.2	1.4	0.2
11 years	0.2	0.2	0.4	0.6	0.6	0.2
Girls						
6-11 years	0.4	0.3	0.4	1.1	1.3	0.2
6 years	0.4	0.4	0.3	1.2	1.4	0.1
7 years	0.4	0.4	0.3	1.3	1.5	0.3
8 years	0.4	0.4	0.5	1.6	1.8	0.4
9 years	0.4	0.4	0.4	1.4	1.6	0.2
10 years	0.4	0.3	0.5	0.9	1.0	0.3
11 years	0.2	0.2	0.2	0.4	0.4	0.1

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

NOTE: 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 three categories is def.

Table 6. Number and percent distribution of children by number of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth, according to sex: United States, 1963-65

Number of affected teeth	All def teeth				d teeth			
	Boys		Girls		Boys		Girls	
	Number in thousands	Percent	Number in thousands	Percent	Number in thousands	Percent	Number in thousands	Percent
Total	12,064	100.0	11,689	100.0	12,064	100.0	11,689	100.0
0	3,618	30.0	3,778	32.3	6,214	51.5	6,400	54.8
1	1,257	10.4	1,310	11.2	1,873	15.5	1,563	13.4
2	1,191	9.9	1,198	10.2	1,103	9.1	1,155	9.9
3	1,189	9.8	1,118	9.6	951	7.9	812	6.9
4	1,119	9.3	1,050	9.0	667	5.5	569	4.9
5	934	7.7	813	7.0	440	3.6	418	3.6
6	812	6.7	817	7.0	287	2.4	315	2.7
7	614	5.1	530	4.5	189	1.6	147	1.2
8	609	5.0	458	3.9	163	1.3	132	1.1
9	325	2.7	243	2.1	86	0.7	51	0.4
10	139	1.2	136	1.2	42	0.4	39	0.3
11	131	1.1	82	0.7	19	0.2	36	0.3
12	46	0.4	64	0.5	9	0.1	16	0.1
13	43	0.4	37	0.3	8	0.1	22	0.2
14 or more	35	0.3	57	0.5	11	0.1	15	0.1

Number of affected teeth	e teeth				f teeth			
	Boys		Girls		Boys		Girls	
	Number in thousands	Percent	Number in thousands	Percent	Number in thousands	Percent	Number in thousands	Percent
Total	12,064	100.0	11,689	100.0	12,064	100.0	11,689	100.0
0	9,688	80.3	9,413	80.5	7,818	64.8	7,735	66.2
1	1,279	10.6	1,308	11.2	884	7.3	899	7.7
2	537	4.4	541	4.6	880	7.3	821	7.0
3	247	2.0	208	1.8	621	5.1	598	5.1
4	175	1.5	106	0.9	520	4.3	585	5.0
5	48	0.4	57	0.5	419	3.5	339	2.9
6	39	0.3	33	0.3	342	2.8	309	2.6
7	18	0.2	12	0.1	280	2.3	152	1.3
8	23	0.2	5	0.0	242	2.0	165	1.4
9	-	-	4	0.0	26	0.2	54	0.4
10	7	0.1	-	-	21	0.2	23	0.2
11	-	-	-	-	8	0.1	11	0.1
12	3	0.0	4	0.0	-	-	-	-
13	-	-	-	-	3	0.0	-	-
14 or more	-	-	-	-	-	-	-	-

NOTE: 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 three categories is def.

Table 7. Differences between actual and expected DMF indexes and between actual and expected mean numbers of decayed (D), missing (M), and filled (F) permanent teeth per child, by sex, race, and family income: United States, 1963-65

Family income and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
	DMF index					
Total[1]						
Less than $3,000	1.2	1.2	0.0	1.5	1.5	0.0
$3,000-$4,999	1.2	1.2	0.0	1.3	1.5	-0.2
$5,000-$6,999	1.2	1.2	0.0	1.5	1.6	-0.1
$7,000-$9,999	1.3	1.3	0.0	1.6	1.5	0.1
$10,000-$14,999	1.4	1.3	0.1	1.8	1.6	0.2
$15,000 or more	1.4	1.2	0.2	1.8	1.6	0.2
Unknown	1.0	1.2	-0.2	1.4	1.6	-0.2
White						
Less than $3,000	1.2	1.2	0.0	1.7	1.6	0.1
$3,000-$4,999	1.1	1.2	-0.1	1.4	1.6	-0.2
$5,000-$6,999	1.2	1.2	0.0	1.6	1.6	0.0
$7,000-$9,999	1.4	1.3	0.1	1.7	1.6	0
$10,000-$14,999	1.4	1.3	0.1	1.8	1.6	0
$15,000 or more	1.3	1.2	0.0	1.8	1.7	0.1
Unknown	1.0	1.3	-0.3	1.5	1.7	-0.2
Negro						
Less than $3,000	1.0	1.1	-0.1	1.1	1.0	0.1
$3,000-$4,999	1.4	1.0	0.4	1.1	1.0	0.1
$5,000-$6,999	1.2	1.1	0.1	1.1	1.1	0.0
$7,000-$9,999	0.5	1.1	-0.6	0.9	1.1	-0.2
$10,000-$14,999	0.7	1.0	-0.3	0.5	0.6	-0.1
$15,000 or more	-	-	-	-	-	-
Unknown	1.0	1.2	-0.2	0.8	1.3	-0.5
	Mean number of D teeth					
Total[1]						
Less than $3,000	0.7	0.4	0.3	1.0	0.5	0.5
$3,000-$4,999	0.6	0.4	0.2	0.6	0.5	0.1
$5,000-$6,999	0.4	0.4	0.0	0.5	0.5	0.0
$7,000-$9,999	0.4	0.5	-0.1	0.4	0.5	-0.1
$10,000-$14,999	0.3	0.5	-0.2	0.2	0.5	-0.3
$15,000 or more	0.2	0.4	-0.2	0.2	0.5	-0.3
Unknown	0.4	0.5	-0.1	0.4	0.5	-0.1
White						
Less than $3,000	0.8	0.4	0.4	1.1	0.5	0.6
$3,000-$4,999	0.4	0.4	0.0	0.6	0.5	0.1
$5,000-$6,999	0.4	0.4	0.0	0.4	0.5	-0.1
$7,000-$9,999	0.4	0.4	0.0	0.4	0.5	-0.1
$10,000-$14,999	0.3	0.4	-0.1	0.2	0.5	-0.3
$15,000 or more	0.2	0.4	-0.2	0.2	0.5	-0.3
Unknown	0.4	0.4	0.0	0.4	0.5	-0.1
Negro						
Less than $3,000	0.7	0.7	0.0	0.7	0.7	0.0
$3,000-$4,999	0.9	0.7	0.2	0.7	0.7	0.0
$5,000-$6,999	0.8	0.7	0.1	0.8	0.7	0.1
$7,000-$9,999	0.4	0.7	-0.3	0.5	0.7	-0.2
$10,000-$14,999	0.2	0.6	-0.4	0.3	0.5	-0.2
$15,000 or more	-	-	-	-	-	-
Unknown	0.4	0.8	-0.4	0.4	0.8	-0.4

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

Table 7. Differences between actual and expected DMF indexes and between actual and expected mean numbers of decayed (D), missing (M), and filled (F) permanent teeth per child, by sex, race, and family income: United States, 1963-65—Con.

Family income and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
Total[1]	Mean number of M teeth					
Less than $3,000	0.1	0.1	0.0	0.2	0.1	0.1
$3,000-$4,999	0.1	0.1	0.0	0.1	0.1	0.0
$5,000-$6,999	0.1	0.1	0.0	0.1	0.1	0.0
$7,000-$9,999	0.0	0.1	-0.1	0.1	0.1	0.0
$10,000-$14,999	0.0	0.1	-0.1	0.0	0.1	-0.1
$15,000 or more	-	-	-	-	-	-
Unknown	0.1	0.1	0.0	0.1	0.1	0.0
White						
Less than $3,000	0.1	0.1	0.0	0.2	0.1	0.1
$3,000-$4,999	0.1	0.1	0.0	0.1	0.1	0.0
$5,000-$6,999	0.1	0.1	0.0	0.1	0.1	0.0
$7,000-$9,999	0.0	0.1	-0.1	0.1	0.1	0.0
$10,000-$14,999	0.0	0.1	-0.1	0.0	0.1	-0.1
$15,000 or more	-	-	-	-	-	-
Unknown	0.1	0.1	0.0	0.1	0.1	0.0
Negro						
Less than $3,000	0.1	0.1	0.0	0.2	0.1	0.1
$3,000-$4,999	0.2	0.1	0.1	0.1	0.1	0.0
$5,000-$6,999	0.2	0.1	0.1	0.1	0.1	0.0
$7,000-$9,999	0.0	0.2	-0.2	0.1	0.1	0.0
$10,000-$14,999	-	-	-	-	-	-
$15,000 or more	-	-	-	-	-	-
Unknown	0.1	0.2	-0.1	-	-	-
Total[1]	Mean number of F teeth					
Less than $3,000	0.3	0.7	-0.4	0.3	0.9	-0.6
$3,000-$4,999	0.5	0.7	-0.2	0.6	0.9	-0.3
$5,000-$6,999	0.7	0.7	0.0	1.0	0.9	0.1
$7,000-$9,999	0.9	0.7	0.2	1.2	0.9	0.3
$10,000-$14,999	1.1	0.7	0.4	1.4	0.9	0.5
$15,000 or more	1.2	0.7	0.5	1.7	1.0	0.7
Unknown	0.5	0.7	-0.2	0.9	1.0	-0.1
White						
Less than $3,000	0.4	0.8	-0.4	0.4	1.0	-0.6
$3,000-$4,999	0.6	0.8	-0.2	0.7	1.0	-0.3
$5,000-$6,999	0.8	0.8	0.0	1.1	1.0	0.1
$7,000-$9,999	1.0	0.8	0.2	1.2	1.0	0.2
$10,000-$14,999	1.2	0.8	0.4	1.5	1.0	0.5
$15,000 or more	1.2	0.8	0.4	1.6	1.1	0.5
Unknown	0.5	0.8	-0.3	1.0	1.0	0.0
Negro						
Less than $3,000	0.2	0.2	0.0	0.2	0.3	-0.1
$3,000-$4,999	0.2	0.2	0.0	0.4	0.2	0.2
$5,000-$6,999	0.2	0.2	0.0	0.1	0.3	-0.2
$7,000-$9,999	0.0	0.2	-0.2	0.3	0.3	0.0
$10,000-$14,999	0.4	0.2	0.2	0.2	0.1	0.1
$15,000 or more	-	-	-	-	-	-
Unknown	0.5	0.2	0.3	0.4	0.3	0.1

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

NOTE: Filled teeth include only teeth 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 three categories.

Table 8. Differences between actual and expected DMF indexes and between actual and expected mean numbers of decayed (D), missing (M), and filled (F) permanent teeth per child, by sex and race and by education of head of household: United States, 1963-65

Education and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
	DMF index					
Total[1]						
None or less than 5 years	1.1	1.3	-0.2	1.1	1.6	-0.5
5-7 years	1.3	1.3	0.0	1.7	1.6	0.1
8 years	1.5	1.4	0.1	1.6	1.6	0.0
9-11 years	1.3	1.2	0.1	1.5	1.5	0.0
12 years	1.2	1.2	0.0	1.5	1.5	0.0
13-15 years	1.1	1.2	-0.1	1.5	1.3	0.2
16 years	1.3	1.2	0.1	1.8	1.6	0.2
17 years or more	1.5	1.4	0.1	1.7	1.5	0.2
Unknown	0.6	1.1	-0.5	1.2	1.4	-0.2
White						
None or less than 5 years	1.1	1.4	-0.3	1.2	1.6	-0.4
5-7 years	1.4	1.2	0.2	1.9	1.8	0.1
8 years	1.5	1.4	0.1	1.8	1.7	0.1
9-11 years	1.3	1.2	0.1	1.6	1.6	0.0
12 years	1.2	1.2	0.0	1.6	1.6	0.0
13-15 years	1.2	1.3	-0.1	1.5	1.4	0.1
16 years	1.3	1.2	0.1	1.8	1.7	0.1
17 years or more	1.5	1.4	0.1	1.7	1.6	0.1
Unknown	0.3	0.9	-0.6	1.5	1.5	0.0
Negro						
None or less than 5 years	1.0	1.0	0.0	0.9	1.1	-0.2
5-7 years	1.1	1.2	-0.1	1.2	1.1	0.1
8 years	1.4	1.2	0.2	0.9	1.0	-0.1
9-11 years	1.1	1.0	0.1	1.1	1.1	0.0
12 years	1.0	1.0	0.0	1.1	1.0	0.1
13-15 years	0.6	1.1	-0.5	0.4	0.9	-0.5
16 years	1.6	1.1	0.5	0.3	0.7	-0.4
17 years or more	0.4	1.4	-1.0	2.2	1.2	1.0
Unknown	1.2	1.2	0.0	0.9	0.9	0.0

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

Table 8. Differences between actual and expected DMF indexes and between actual and expected mean numbers of decayed (D), missing (M), and filled (F) permanent teeth per child, by sex and race and by education of head of household: United States, 1963-65—Con.

Education and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
	Mean number of D teeth					
Total						
None or less than 5 years	0.8	0.5	0.3	0.9	0.5	0.4
5-7 years	0.8	0.5	0.3	1.1	0.6	0.5
8 years	0.6	0.5	0.1	0.6	0.5	0.1
9-11 years	0.5	0.4	0.1	0.6	0.5	0.1
12 years	0.4	0.4	0.0	0.3	0.5	-0.2
13-15 years	0.2	0.4	-0.2	0.3	0.5	-0.2
16 years	0.2	0.4	-0.2	0.3	0.5	-0.2
17 years or more	0.2	0.5	-0.3	0.2	0.5	-0.3
Unknown	0.5	0.4	0.1	0.5	0.5	0.0
White						
None or less than 5 years	0.9	0.4	0.5	1.0	0.5	0.5
5-7 years	0.8	0.4	0.4	1.2	0.5	0.7
8 years	0.6	0.4	0.2	0.6	0.5	0.1
9-11 years	0.5	0.4	0.1	0.6	0.5	0.1
12 years	0.3	0.4	-0.1	0.3	0.5	-0.2
13-15 years	0.2	0.4	-0.2	0.3	0.4	-0.1
16 years	0.2	0.4	-0.2	0.2	0.5	-0.3
17 years or more	0.2	0.4	-0.2	0.2	0.5	-0.3
Unknown	0.2	0.3	-0.1	0.5	0.5	0.0
Negro						
None or less than 5 years	0.6	0.7	-0.1	0.7	0.7	0.0
5-7 years	0.7	0.8	-0.1	0.9	0.7	0.2
8 years	0.8	0.8	0.0	0.6	0.6	0.0
9-11 years	0.7	0.7	0.0	0.6	0.7	-0.1
12 years	0.7	0.7	0.0	0.6	0.7	-0.1
13-15 years	0.6	0.7	-0.1	0.3	0.6	-0.3
16 years	1.2	0.7	0.5	0.3	0.5	-0.2
17 years or more	0.4	0.9	-0.5	1.3	0.7	0.6
Unknown	1.0	0.8	0.2	0.6	0.6	0.0

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

Table 8. Differences between actual and expected DMF indexes and between actual and expected mean numbers of decayed (D), missing (M), and filled (F) permanent teeth per child, by sex and race and by education of head of household: United States, 1963-65—Con.

Education and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
	Mean number of M teeth					
Total						
None or less than 5 years	0.1	0.1	0.0	0.1	0.1	0.0
5-7 years	0.2	0.1	0.1	0.2	0.1	0.1
8 years	0.2	0.1	0.1	0.2	0.1	0.1
9-11 years	0.1	0.1	0.0	0.1	0.1	0.0
12 years	0.0	0.1	-0.1	0.1	0.1	0.0
13-15 years	-	-	-	0.0	0.1	-0.1
16 years	-	-	-	-	-	-
17 years or more	-	-	-	-	-	-
Unknown	-	-	-	0.1	0.1	0.0
White						
None or less than 5 years	0.1	0.1	0.0	0.1	0.1	0.0
5-7 years	0.1	0.1	0.0	0.2	0.1	0.1
8 years	0.1	0.1	0.0	0.2	0.1	0.1
9-11 years	0.1	0.1	0.0	0.1	0.1	0.0
12 years	0.0	0.1	-0.1	0.1	0.1	0.0
13-15 years	-	-	-	0.0	0.1	-0.1
16 years	-	-	-	-	-	-
17 years or more	-	-	-	-	-	-
Unknown	-	-	-	0.1	0.1	0.0
Negro						
None or less than 5 years	0.1	0.1	0.0	0.1	0.1	0.0
5-7 years	0.2	0.2	0.0	0.1	0.1	0.0
8 years	0.3	0.2	0.1	0.2	0.1	0.1
9-11 years	0.2	0.1	0.1	0.1	0.1	0.0
12 years	0.1	0.1	0.0	0.1	0.1	0.0
13-15 years	-	-	-	-	-	-
16 years	-	-	-	-	-	-
17 years or more	-	-	-	0.1	0.1	0.0
Unknown	-	-	-	-	-	-

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

Table 8. Differences between actual and expected DMF indexes and between actual and expected mean numbers of decayed (D), missing (M), and filled (F) permanent teeth per child, by sex and race and by education of head of household: United States, 1963-65—Con.

Education and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
	Mean number of F teeth					
Total[1]						
None or less than 5 years	0.2	0.7	-0.5	0.1	0.9	-0.8
5-7 years	0.4	0.7	-0.3	0.4	1.0	-0.6
8 years	0.7	0.8	-0.1	0.8	1.0	-0.2
9-11 years	0.6	0.7	-0.1	0.8	0.9	-0.1
12 years	0.8	0.7	0.1	1.1	0.9	0.2
13-15 years	0.9	0.7	0.2	1.2	0.8	0.4
16 years	1.0	0.7	0.3	1.5	0.9	0.6
17 years or more	1.3	0.8	0.5	1.4	0.9	0.5
Unknown	0.1	0.6	-0.5	0.6	0.8	-0.2
White						
None or less than 5 years	0.1	0.9	-0.8	0.1	1.0	-0.9
5-7 years	0.5	0.8	-0.3	0.5	1.1	-0.6
8 years	0.8	0.9	-0.1	1.0	1.1	-0.1
9-11 years	0.7	0.8	-0.1	0.8	1.0	-0.2
12 years	0.8	0.8	0.0	1.2	1.0	0.2
13-15 years	1.0	0.8	0.2	1.2	0.9	0.3
16 years	1.1	0.8	0.3	1.5	1.1	0.4
17 years or more	1.3	0.9	0.4	1.4	1.0	0.4
Unknown	0.1	0.6	-0.5	1.0	1.0	0.0
Negro						
None or less than 5 years	0.2	0.2	0.0	0.0	0.3	-0.3
5-7 years	0.2	0.2	0.0	0.3	0.3	0.0
8 years	0.2	0.2	0.0	0.1	0.2	-0.1
9-11 years	0.2	0.2	0.0	0.4	0.3	0.1
12 years	0.1	0.2	-0.1	0.3	0.2	0.1
13-15 years	-	-	-	0.1	0.2	-0.1
16 years	0.4	0.2	0.2	-	-	-
17 years or more	-	-	-	0.8	0.3	0.5
Unknown	0.2	0.3	-0.1	0.2	0.2	0.0

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

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

Table 9. Differences between actual and expected def indexes and between actual and expected mean numbers of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by sex, race, and family income: United States, 1963-65

Family income and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
Total[1]	def index					
Less than $3,000	3.0	3.2	-0.2	2.9	2.9	0.0
$3,000-$4,999	3.4	3.1	0.3	2.9	2.9	0.0
$5,000-$6,999	3.2	3.1	0.1	2.9	2.9	0.0
$7,000-$9,999	3.0	3.1	0.1	3.0	3.0	0.0
$10,000-$14,999	3.2	3.1	0.1	3.1	2.9	0.2
$15,000 or more	2.6	3.1	-0.5	2.9	2.8	0.1
Unknown	3.1	3.1	0.0	2.6	2.8	-0.2
White						
Less than $3,000	3.3	3.3	0.0	3.3	3.0	0.3
$3,000-$4,999	3.4	3.2	0.2	2.9	3.0	-0.1
$5,000-$6,999	3.4	3.2	0.2	3.0	3.0	0.0
$7,000-$9,999	3.1	3.2	-0.1	3.0	3.1	-0.1
$10,000-$14,999	3.2	3.2	0.0	3.1	3.0	0.1
$15,000 or more	2.6	3.2	-0.6	2.9	2.9	0.0
Unknown	3.3	3.2	0.1	2.7	3.0	-0.3
Negro						
Less than $3,000	2.5	2.5	0.0	2.0	2.2	-0.2
$3,000-$4,999	3.3	2.4	0.9	2.8	2.3	0.5
$5,000-$6,999	1.8	2.5	-0.7	2.2	2.1	0.1
$7,000-$9,999	1.1	2.5	-1.4	1.5	2.1	-0.6
$10,000-$14,999	2.7	2.3	0.4	3.5	2.9	0.6
$15,000 or more	-	-	-	-	-	-
Unknown	1.6	2.5	-0.9	1.8	1.9	-0.1
Total[1]	Mean number of d teeth					
Less than $3,000	2.1	1.5	0.6	2.0	1.4	0.6
$3,000-$4,999	2.1	1.5	0.6	1.7	1.4	0.3
$5,000-$6,999	1.5	1.5	0.0	1.3	1.4	-0.1
$7,000-$9,999	1.1	1.5	-0.4	1.1	1.4	-0.3
$10,000-$14,999	0.8	1.4	-0.6	1.1	1.4	-0.3
$15,000 or more	0.6	1.5	-0.9	0.4	1.3	-0.9
Unknown	1.4	1.5	-0.1	1.3	1.4	-0.1
White						
Less than $3,000	2.3	1.4	0.9	2.3	1.4	0.9
$3,000-$4,999	1.9	1.4	0.5	1.6	1.4	0.2
$5,000-$6,999	1.5	1.4	0.1	1.2	1.4	-0.2
$7,000-$9,999	1.1	1.4	-0.3	1.1	1.4	-0.3
$10,000-$14,999	0.8	1.4	-0.6	1.1	1.4	-0.3
$15,000 or more	0.6	1.4	-0.8	0.4	1.3	-0.9
Unknown	1.5	1.4	0.1	1.3	1.3	0.0
Negro						
Less than $3,000	1.9	1.9	0.0	1.6	1.6	0.0
$3,000-$4,999	2.5	1.8	0.7	2.0	1.7	0.3
$5,000-$6,999	1.3	1.9	-0.6	1.4	1.5	-0.1
$7,000-$9,999	1.1	1.8	-0.7	1.1	1.5	-0.4
$10,000-$14,999	0.2	1.7	-1.5	2.2	2.2	0.0
$15,000 or more	-	-	-	-	-	-
Unknown	1.1	1.9	-0.8	1.2	1.3	-0.1

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

Table 9. Differences between actual and expected def indexes and between actual and expected mean numbers of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by sex, race, and family income: United States, 1963-65—Con.

Family income and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
Total[1]	Mean number of e teeth					
Less than $3,000	0.6	0.4	0.2	0.5	0.3	0.2
$3,000-$4,999	0.5	0.4	0.1	0.5	0.3	0.2
$5,000-$6,999	0.4	0.4	0.0	0.4	0.3	0.1
$7,000-$9,999	0.2	0.4	-0.2	0.2	0.3	-0.1
$10,000-$14,999	0.2	0.4	-0.2	0.2	0.4	-0.2
$15,000 or more	0.1	0.4	-0.3	0.1	0.3	-0.2
Unknown	0.5	0.4	0.1	0.3	0.3	0.0
White						
Less than $3,000	0.6	0.4	0.2	0.6	0.3	0.3
$3,000-$4,999	0.5	0.4	0.1	0.5	0.3	0.2
$5,000-$6,999	0.4	0.4	0.0	0.4	0.3	0.1
$7,000-$9,999	0.2	0.4	-0.2	0.2	0.3	-0.1
$10,000-$14,999	0.2	0.4	-0.2	0.2	0.3	-0.1
$15,000 or more	0.1	0.4	-0.3	0.0	0.3	-0.3
Unknown	0.6	0.4	0.2	0.3	0.3	0.0
Negro						
Less than $3,000	0.5	0.4	0.1	0.3	0.4	-0.1
$3,000-$4,999	0.7	0.4	0.3	0.5	0.4	0.1
$5,000-$6,999	0.2	0.4	-0.2	0.5	0.4	0.1
$7,000-$9,999	0.0	0.4	-0.4	0.2	0.3	-0.1
$10,000-$14,999	-	-	-	0.3	0.4	-0.1
$15,000 or more	-	-	-	-	-	-
Unknown	0.2	0.5	-0.3	0.1	0.4	-0.3
Total[1]	Mean number of f teeth					
Less than $3,000	0.3	1.3	-1.0	0.4	1.1	-0.7
$3,000-$4,999	0.8	1.2	-0.4	0.7	1.2	-0.5
$5,000-$6,999	1.3	1.2	0.1	1.3	1.1	0.2
$7,000-$9,999	1.7	1.3	0.4	1.6	1.2	0.4
$10,000-$14,999	2.2	1.2	1.0	1.8	1.2	0.6
$15,000 or more	2.0	1.2	0.8	2.4	1.1	1.3
Unknown	1.1	1.2	-0.1	1.0	1.1	-0.1
White						
Less than $3,000	0.4	1.4	-1.0	0.5	1.3	-0.8
$3,000-$4,999	1.0	1.4	-0.4	0.8	1.3	-0.5
$5,000-$6,999	1.4	1.4	0.0	1.4	1.3	0.1
$7,000-$9,999	1.8	1.4	0.4	1.6	1.3	0.3
$10,000-$14,999	2.2	1.4	0.8	1.8	1.3	0.5
$15,000 or more	1.9	1.4	0.5	2.4	1.2	1.2
Unknown	1.2	1.4	-0.2	1.1	1.3	-0.2
Negro						
Less than $3,000	0.1	0.2	-0.1	0.2	0.2	0.0
$3,000-$4,999	0.2	0.2	0.0	0.2	0.2	0.0
$5,000-$6,999	0.3	0.2	0.1	0.3	0.2	0.1
$7,000-$9,999	0.0	0.2	-0.2	0.1	0.2	-0.1
$10,000-$14,999	2.5	0.2	2.3	0.9	0.3	0.6
$15,000 or more	-	-	-	-	-	-
Unknown	0.3	0.2	0.1	0.5	0.2	0.3

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

NOTE: 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 three categories is def.

Table 10. Differences between actual and expected def indexes and between actual and expected mean numbers of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by sex and race and by education of head of household: United States, 1963-65

Education and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
	def index					
Total[1]						
None or less than 5 years	3.1	3.1	0.0	2.6	2.9	-0.3
5-7 years	3.4	3.1	0.3	3.2	2.8	0.4
8 years	3.3	3.0	0.3	2.9	2.8	0.1
9-11 years	3.1	3.2	-0.1	3.0	2.9	0.1
12 years	3.1	3.2	-0.1	2.8	2.9	-0.1
13-15 years	3.0	3.2	-0.2	3.2	3.1	0.1
16 years	3.1	3.1	0.0	2.7	2.9	-0.2
17 years or more	2.7	3.0	-0.3	3.4	3.0	0.4
Unknown	4.0	3.3	0.7	2.6	3.1	-0.5
White						
None or less than 5 years	3.3	3.1	0.2	2.9	3.0	-0.1
5-7 years	3.9	3.2	0.7	3.5	3.0	0.5
8 years	3.3	3.1	0.2	2.9	2.9	0.0
9-11 years	3.2	3.2	0.0	3.3	3.1	0.2
12 years	3.2	3.3	-0.1	2.8	3.0	-0.2
13-15 years	3.0	3.3	-0.3	3.2	3.2	0.0
16 years	3.2	3.2	0.0	2.6	3.0	-0.4
17 years or more	2.7	3.1	-0.4	3.4	3.1	0.3
Unknown	5.0	3.5	1.5	3.2	3.2	0.0
Negro						
None or less than 5 years	2.4	2.6	-0.2	1.7	2.1	-0.4
5-7 years	2.4	2.3	0.1	2.7	2.1	0.6
8 years	3.7	2.3	1.4	2.8	2.3	0.5
9-11 years	2.7	2.6	0.1	1.9	2.1	-0.2
12 years	2.1	2.5	-0.4	1.9	2.3	-0.4
13-15 years	2.0	2.5	-0.5	2.7	2.5	0.2
16 years	2.9	2.4	0.5	2.6	2.9	-0.3
17 years or more	1.4	2.1	-0.7	3.5	2.2	1.3
Unknown	2.2	2.3	-0.1	2.0	2.4	-0.4

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

Table 10. Differences between actual and expected def indexes and between actual and expected mean numbers of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by sex and race and by education of head of household: United States, 1963-65—Con.

Education and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
	Mean number of d teeth					
Total[1]						
None or less than 5 years	2.4	1.4	1.0	2.0	1.4	0.6
5-7 years	2.3	1.5	0.8	2.3	1.4	0.9
8 years	1.8	1.4	0.4	1.8	1.4	0.4
9-11 years	1.6	1.5	0.1	1.6	1.4	0.2
12 years	1.3	1.5	-0.2	1.1	1.4	-0.3
13-15 years	0.8	1.5	-0.7	1.1	1.5	-0.4
16 years	0.8	1.5	-0.7	0.6	1.4	-0.8
17 years or more	0.6	1.4	-0.8	0.9	1.4	-0.5
Unknown	2.8	1.6	1.2	1.7	1.5	0.2
White						
None or less than 5 years	2.6	1.4	1.2	2.2	1.4	0.8
5-7 years	2.6	1.4	1.2	2.5	1.3	1.2
8 years	1.7	1.4	0.3	1.7	1.3	0.4
9-11 years	1.6	1.4	0.2	1.7	1.4	0.3
12 years	1.3	1.4	-0.1	1.1	1.4	-0.3
13-15 years	0.7	1.4	-0.7	1.0	1.5	-0.5
16 years	0.8	1.4	-0.6	0.5	1.3	-0.8
17 years or more	0.6	1.4	-0.8	0.8	1.4	-0.6
Unknown	3.7	1.6	2.1	1.9	1.4	0.5
Negro						
None or less than 5 years	2.1	2.0	0.1	1.4	1.6	-0.2
5-7 years	1.7	1.7	0.0	1.8	1.5	0.3
8 years	2.8	1.7	1.1	2.4	1.8	0.6
9-11 years	1.9	2.0	-0.1	1.4	1.5	-0.1
12 years	1.6	1.9	-0.3	1.4	1.7	-0.3
13-15 years	2.0	1.9	0.1	2.1	1.8	0.3
16 years	1.2	1.8	-0.6	2.5	2.1	0.4
17 years or more	1.7	1.5	0.2	2.2	1.5	0.7
Unknown	1.1	1.7	-0.6	1.3	1.8	-0.5

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

Table 10. Differences between actual and expected def indexes and between actual and expected mean numbers of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by sex and race and by education of head of household: United States, 1963-65—Con.

Education and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
	Mean number of e teeth					
Total[1]						
None or less than 5 years	0.6	0.4	0.2	0.5	0.3	0.2
5-7 years	0.6	0.4	0.2	0.6	0.3	0.3
8 years	0.6	0.4	0.2	0.4	0.3	0.1
9-11 years	0.5	0.4	0.1	0.5	0.3	0.2
12 years	0.3	0.4	-0.1	0.2	0.3	-0.1
13-15 years	0.1	0.4	-0.3	0.2	0.4	-0.2
16 years	0.1	0.4	-0.3	0.1	0.3	-0.2
17 years or more	0.1	0.4	-0.3	0.2	0.4	-0.2
Unknown	1.0	0.4	0.6	0.7	0.4	0.3
White						
None or less than 5 years	0.7	0.4	0.3	0.6	0.3	0.3
5-7 years	0.7	0.4	0.3	0.6	0.3	0.3
8 years	0.6	0.4	0.2	0.4	0.3	0.1
9-11 years	0.5	0.4	0.1	0.5	0.3	0.2
12 years	0.3	0.4	-0.1	0.2	0.3	-0.1
13-15 years	0.1	0.4	-0.3	0.2	0.4	-0.2
16 years	0.1	0.4	-0.3	0.1	0.3	-0.2
17 years or more	0.1	0.4	-0.3	0.2	0.4	-0.2
Unknown	1.0	0.4	0.6	0.9	0.4	0.5
Negro						
None or less than 5 years	0.3	0.5	-0.2	0.2	0.4	-0.2
5-7 years	0.4	0.4	0.0	0.6	0.4	0.2
8 years	0.6	0.4	0.2	0.4	0.3	0.1
9-11 years	0.6	0.4	0.2	0.4	0.4	0.0
12 years	0.3	0.4	-0.1	0.2	0.4	-0.2
13-15 years	0.0	0.4	-0.4	0.5	0.4	0.1
16 years	0.2	0.4	-0.2	-	-	-
17 years or more	-	-	-	0.6	0.4	0.2
Unknown	1.1	0.5	0.6	0.2	0.4	-0.2

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

Table 10. Differences between actual and expected def indexes and between actual and expected mean numbers of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by sex and race and by education of head of household: United States, 1963-65—Con.

Education and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
	Mean number of f teeth					
Total[1]						
None or less than 5 years	0.0	1.2	-1.2	0.1	1.1	-1.0
5-7 years	0.5	1.2	-0.7	0.4	1.1	-0.7
8 years	0.9	1.2	-0.3	0.6	1.1	-0.5
9-11 years	0.9	1.3	0.4	0.9	1.1	-0.2
12 years	1.5	1.3	0.2	1.4	1.1	0.3
13-15 years	2.0	1.3	0.7	1.9	1.2	0.7
16 years	2.2	1.2	1.0	2.0	1.1	0.9
17 years or more	2.0	1.2	0.8	2.3	1.2	1.1
Unknown	0.2	1.3	-1.1	0.4	1.3	-0.9
White						
None or less than 5 years	0.0	1.4	-1.4	0.2	1.3	-1.1
5-7 years	0.7	1.4	-0.7	0.4	1.3	-0.9
8 years	1.0	1.4	-0.4	0.7	1.2	-0.5
9-11 years	1.1	1.4	-0.3	1.1	1.3	-0.2
12 years	1.6	1.4	0.2	1.5	1.3	0.2
13-15 years	2.2	1.4	0.8	2.0	1.3	0.7
16 years	2.3	1.4	0.9	2.0	1.3	0.7
17 years or more	2.0	1.4	0.6	2.3	1.3	1.0
Unknown	0.3	1.5	-1.2	0.3	1.4	-1.1
Negro						
None or less than 5 years	0.0	0.2	-0.2	0.0	0.2	-0.2
5-7 years	0.2	0.2	0.0	0.3	0.2	0.1
8 years	0.3	0.2	0.1	0.0	0.2	-0.2
9-11 years	0.2	0.2	0.0	0.2	0.2	-0.0
12 years	0.2	0.2	0.0	0.3	0.2	0.1
13-15 years	-	-	-	0.1	0.3	-0.2
16 years	1.5	0.2	1.3	0.2	0.3	-0.1
17 years or more	-	-	-	0.7	0.3	0.4
Unknown	-	-	-	0.4	0.2	0.2

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

NOTE: 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 three categories is def.

Table 11. Differences between actual and expected DMF indexes and between actual and expected mean numbers of decayed (D), missing (M), and filled (F) permanent teeth per child, by sex, race, and region: United States, 1963-65

Region and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
Total[1]	DMF index					
Northeast	1.6	1.2	0.4	1.8	1.5	0.3
Midwest	1.3	1.3	0.0	1.6	1.6	0.0
South	1.3	1.2	0.1	1.8	1.6	0.2
West	0.9	1.2	-0.3	1.0	1.5	-0.5
White						
Northeast	1.6	1.2	0.4	1.8	1.5	0.3
Midwest	1.3	1.3	0.0	1.6	1.6	0.0
South	1.4	1.2	0.2	2.0	1.7	0.3
West	0.9	1.2	-0.3	1.1	1.6	-0.5
Negro						
Northeast	1.4	1.1	0.3	1.5	1.1	0.4
Midwest	0.9	1.1	-0.2	0.8	1.1	-0.3
South	1.1	1.0	0.1	1.1	1.1	0.0
West	0.8	1.1	-0.3	0.6	1.0	-0.4
Total[1]	Mean number of D teeth					
Northeast	0.4	0.4	0.0	0.5	0.5	0.0
Midwest	0.4	0.5	-0.1	0.4	0.5	-0.1
South	0.8	0.4	0.4	1.0	0.5	0.5
West	0.2	0.4	-0.2	0.2	0.5	-0.3
White						
Northeast	0.4	0.4	0.0	0.5	0.5	0.0
Midwest	0.4	0.4	0.0	0.4	0.5	-0.1
South	0.7	0.4	0.3	1.1	0.5	0.6
West	0.2	0.4	-0.2	0.2	0.5	-0.3
Negro						
Northeast	0.7	0.7	0.0	0.8	0.7	0.1
Midwest	0.6	0.7	-0.1	0.5	0.7	-0.2
South	0.9	0.7	0.2	0.8	0.7	0.1
West	0.3	0.7	-0.4	0.2	0.6	-0.4

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

Table 11. Differences between actual and expected DMF indexes and between actual and expected mean numbers of decayed (D), missing (M), and filled (F) permanent teeth per child, by sex, race, and region: United States, 1963-65—Con.

Region and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
Total[1]	Mean number of M teeth					
Northeast	0.1	0.1	0.0	0.1	0.1	0.0
Midwest	0.1	0.1	0.0	0.1	0.1	0.0
South	0.1	0.1	0.0	0.2	0.1	0.1
West	0.0	0.1	-0.1	0.0	0.1	-0.1
White						
Northeast	0.1	0.1	0.0	0.1	0.1	0.0
Midwest	0.1	0.1	0.0	0.1	0.1	0.0
South	0.1	0.1	0.0	0.2	0.1	0.1
West	0.0	0.1	-0.1	0.0	0.1	-0.1
Negro						
Northeast	0.1	0.2	-0.1	0.1	0.1	0.0
Midwest	0.1	0.2	-0.1	0.1	0.1	0.0
South	0.2	0.1	0.1	0.2	0.1	0.1
West	0.1	0.2	-0.1	0.0	0.1	-0.1
Total[1]	Mean number of F teeth					
Northeast	1.0	0.7	0.3	1.2	0.9	0.3
Midwest	0.8	0.7	0.1	1.0	0.9	0.1
South	0.4	0.7	-0.3	0.5	1.0	-0.5
West	0.6	0.7	-0.1	0.8	0.9	-0.1
White						
Northeast	1.1	0.8	0.3	1.3	1.0	0.3
Midwest	0.9	0.8	0.1	1.1	1.0	0.1
South	0.5	0.8	-0.3	0.7	1.1	-0.4
West	0.7	0.8	-0.1	0.9	1.0	-0.1
Negro						
Northeast	0.6	0.2	0.4	0.6	0.2	0.4
Midwest	0.2	0.2	0.0	0.2	0.2	0.0
South	0.0	0.2	-0.2	0.1	0.3	-0.2
West	0.4	0.2	0.2	0.3	0.2	0.1

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

NOTE: Filled teeth include only teeth 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 three categories.

Table 12. Differences between actual and expected def indexes and between actual and expected mean numbers of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by sex, race, and region: United States, 1963-65

Region and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
Total[1]	def index					
Northeast	3.3	3.1	0.2	3.2	3.0	0.2
Midwest	3.0	3.1	-0.1	2.9	2.9	0.0
South	3.4	3.1	0.3	3.1	2.8	0.3
West	2.9	3.1	-0.2	2.5	2.9	-0.4
White						
Northeast	3.4	3.2	0.2	3.3	3.1	0.2
Midwest	3.2	3.2	0.0	3.0	3.0	0.0
South	3.6	3.2	0.4	3.3	2.9	0.4
West	3.0	3.2	-0.2	2.5	3.0	-0.5
Negro						
Northeast	2.5	2.4	0.1	2.7	2.2	0.5
Midwest	1.4	2.4	-1.0	1.6	2.2	-0.6
South	3.0	2.6	0.4	2.4	2.2	0.2
West	2.2	2.4	-0.2	1.8	2.3	-0.5
Total[1]	Mean number of d teeth					
Northeast	1.4	1.5	-0.1	1.4	1.4	0.0
Midwest	1.3	1.5	-0.2	1.3	1.4	-0.1
South	2.2	1.5	0.7	2.0	1.4	0.6
West	1.1	1.5	-0.4	1.0	1.4	-0.4
White						
Northeast	1.3	1.4	-0.1	1.3	1.4	-0.1
Midwest	1.3	1.4	-0.1	1.3	1.4	-0.1
South	2.1	1.4	0.7	2.1	1.3	0.8
West	1.1	1.4	-0.3	1.0	1.4	-0.4
Negro						
Northeast	1.8	1.8	0.0	1.7	1.6	0.1
Midwest	1.0	1.8	-0.8	1.1	1.6	-0.5
South	2.4	1.9	0.5	1.8	1.6	0.2
West	1.2	1.8	-0.6	1.3	1.7	-0.4

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

Table 12. Differences between actual and expected def indexes and between actual and expected mean numbers of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by sex, race, and region: United States, 1963-65—Con.

Region and race	Boys			Girls		
	Actual	Expected	Difference	Actual	Expected	Difference
Total[1]	Mean number of e teeth					
Northeast	0.4	0.4	0.0	0.4	0.4	0.0
Midwest	0.3	0.4	-0.1	0.3	0.3	0.0
South	0.5	0.4	0.1	0.4	0.3	0.1
West	0.2	0.4	-0.2	0.2	0.3	-0.1
White						
Northeast	0.5	0.4	0.1	0.5	0.3	0.2
Midwest	0.3	0.4	-0.1	0.3	0.3	0.0
South	0.5	0.4	0.1	0.5	0.3	0.2
West	0.2	0.4	-0.2	0.2	0.3	-0.1
Negro						
Northeast	0.4	0.4	0.0	0.3	0.4	-0.1
Midwest	0.3	0.4	-0.1	0.3	0.4	-0.1
South	0.6	0.4	0.2	0.4	0.4	0.0
West	0.3	0.4	-0.1	0.2	0.4	-0.2
Total[1]	Mean number of f teeth					
Northeast	1.4	1.2	0.2	1.4	1.2	0.2
Midwest	1.4	1.2	0.2	1.3	1.1	0.2
South	0.7	1.2	-0.5	0.6	1.1	-0.5
West	1.5	1.2	0.3	1.3	1.2	0.1
White						
Northeast	1.6	1.4	0.2	1.6	1.3	0.3
Midwest	1.5	1.4	0.1	1.4	1.3	0.1
South	0.9	1.4	-0.5	0.7	1.2	-0.5
West	1.6	1.4	0.2	1.4	1.3	0.1
Negro						
Northeast	0.4	0.2	0.2	0.7	0.2	0.5
Midwest	0.1	0.2	-0.1	0.1	0.2	-0.1
South	0.0	0.2	-0.2	0.1	0.2	-0.1
West	0.6	0.2	0.4	0.3	0.2	0.1

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

NOTE: 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 three categories is def.

APPENDIX I

THE DENTAL EXAMINATION AND THE TRAINING OF EXAMINERS

The Examination

Two forms were used to record dental findings on sample children examined during 1963-65. The first one had diagrams of the teeth, and the condition of each tooth was noted in the tooth's corresponding diagram. This initial form was replaced by a form which eliminated the time-consuming task of coding and keypunching (see figure I). The procedures and findings of the examination were not affected by this change in forms.

Instructions for determining the condition of individual teeth and recording the information in section 4, "Status of Tooth Spaces," on the new form were as follows:

Primary tooth present.—Primary tooth present coded under "P" in "Primary Teeth" section, and status coded under "Teeth Present."

Permanent tooth present.—Status coded only under "Teeth Present."

Teeth present.—In the section "Teeth Present" the following codes were used:

Normal.—Unfilled teeth without carious lesions were scored under "N."

Carious.—Unfilled teeth with carious lesions were marked under "D." Initially each tooth was examined visually for evidence of decay, decalcified areas, opacity of marginal ridges, and undermined enamel in pits and fissures. Once observed, suspected lesions were considered carious only when a break in the enamel could be demonstrated with an explorer.

Filled (including crown).—Teeth with satisfactory fillings or crowns and no carious lesions were scored under "F." Filled or crowned teeth with new or recurrent carious lesions were scored FD. (This required a mark under "F" and a mark under "D.") Noncarious filled teeth were indicated in like manner when the restoration was loose or when it was fractured and the base or pulpal wall of the cavity preparation was exposed. Teeth with temporary fillings or crowns were also scored FD.

Nonfunctional-carious.—When decay had penetrated the pulp chamber of a tooth, the tooth was scored either under "XD" or if only roots were remaining, under "XR." Carious teeth were nonfunctional when there was visible evidence of

1. Periapical abscess or pulpal exposure.
2. Extensive undermining of all enamel walls.

Retained deciduous tooth and roots.—When any portion of the succedaneous tooth could be seen, it was given an appropriate score under "Test Present" and the deciduous tooth was scored XP under "Primary Teeth" if any portion of the crown of the deciduous tooth was present and XR under "Primary Teeth" if only roots were remaining.

Missing tooth (unerupted, extracted, or replaced).—When neither a primary nor a permanent tooth was present (tooth space may be vacant or missing tooth may be replaced by a fixed or removable partial denture), a code was recorded to indicate the reason the permanent tooth was missing; when appropriate an additional code was recorded to indicate the status of the tooth space. These codes were as follows:

"O" designates unerupted teeth.

"C" designates teeth extracted because of caries.

"S-X" designates teeth extracted

Because of accident (tooth spaces 7, 8, 9, 10, 23, 24, 25, 26).

For orthodontic reasons (tooth spaces 4, 5, 12, 13, 20, 21, 28, 29).

Because of impaction (tooth spaces 1, 16, 17, 32).

The Examiners

Each of the 7,109 sample children who received dental examinations during 1963-65 was examined by one of five dentists. The dentists included two senior examiners, A and B, who trained and supervised the other dentists, C, D, and E.

Sample children were not assigned randomly or equally among the various examiners. At most survey locations children were examined by only one dentist—C, D, or E. At 14 of 40 locations, however, a small

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

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL CENTER FOR HEALTH STATISTICS

PHS-4611-5
REV. 3-66

Form Approved:
Budget Bureau No. 68-R1700

DENTAL EXAMINATION — HEALTH EXAMINATION SURVEY

Name _____

Date of Birth: _____ MO _____ DAY _____ YEAR

1. SAMPLE NUMBER →

2. EXAMINER 1 2 3 RECORDER 1 2 3 — 0 1 2 3 4 5 6 7 8 9 Stand

4 5 6 7 8 4 5 6 7 8 — 0 1 2 3 4 5 6 7 8 9

3. EDENTULOUS ARCHES – DENTURE STATUS — 0 1 2 3 4 5 6 7 8 9

	Absent	Present	Defective
Upper			
Lower			

Examinee — 0 1 2 3 4 5 6 7 8 9

4. STATUS OF TOOTH SPACES

Quadrant	Primary Teeth: Present (P)	Primary Teeth: Crown (XP)	Primary Teeth: Root (XR)	Tooth Space	Teeth Present: Normal (N)	Teeth Present: Carious-Defective (D)	Teeth Present: Filled (F)	Teeth Present: Non-Functional Carious: Crown (XD)	Teeth Present: Non-Functional Carious: Root (XR)	Tooth Space	Permanent Teeth Missing: Missing Space Closed (MSC)	Permanent Teeth Missing: Unerupted (O)	Permanent Teeth Missing: Extracted: Caries (C)	Permanent Teeth Missing: Extracted: Orth, Accident, Impaction (S-X)	Permanent Teeth Missing: Replaced (R)	Tooth Space	5. PERIODONTAL INDEX: Mild Gingivitis (1)	Gingivitis (2)	Pocket Formation (6)	Advanced Destruction (8)
	P	XP	XR		N	D	F	XD	XR		MSC	O	C	S-X	R		1	2	6	8
UPPER ARCH RIGHT				3rd Molar	1	1	1	1	1	3rd Molar	1	1	1	1	1	3rd Molar	1	1	1	1
				2nd Molar	2	2	2	2	2	2nd Molar	2	2	2		2	2nd Molar	2	2	2	2
				1st Molar	3	3	3	3	3	1st Molar	3	3	3		3	1st Molar	3	3	3	3
	4	4	4	2nd Bi	4	4	4	4	4	2nd Bi	4	4	4	4	4	2nd Bi	4	4	4	4
	5	5	5	1st Bi	5	5	5	5	5	1st Bi	5	5	5	5	5	1st Bi	5	5	5	5
	6	6	6	Cuspid	6	6	6	6	6	Cuspid	6	6	6		6	Cuspid	6	6	6	6
	7	7	7	Lateral	7	7	7	7	7	Lateral	7	7	7	7	7	Lateral	7	7	7	7
	8	8	8	Central	8	8	8	8	8	Central	8	8	8	8	8	Central	8	8	8	8
	P	XP	XR		N	D	F	XD	XR		MSC	O	C	S-X	R		1	2	6	8
UPPER ARCH LEFT	9	9	9	Central	9	9	9	9	9	Central	9	9	9	9	9	Central	9	9	9	9
	10	10	10	Lateral	10	10	10	10	10	Lateral	10	10	10	10	10	Lateral	10	10	10	10
	11	11	11	Cuspid	11	11	11	11	11	Cuspid	11	11	11		11	Cuspid	11	11	11	11
	12	12	12	1st Bi	12	12	12	12	12	1st Bi	12	12	12	12	12	1st Bi	12	12	12	12
	13	13	13	2nd Bi	13	13	13	13	13	2nd Bi	13	13	13	13	13	2nd Bi	13	13	13	13
				1st Molar	14	14	14	14	14	1st Molar	14	14	14		14	1st Molar	14	14	14	14
				2nd Molar	15	15	15	15	15	2nd Molar	15	15	15		15	2nd Molar	15	15	15	15
				3rd Molar	16	16	16	16	16	3rd Molar	16	16	16	16	16	3rd Molar	16	16	16	16
	P	XP	XR		N	D	F	XD	XR		MSC	O	C	S-X	R		1	2	6	8
LOWER ARCH LEFT				3rd Molar	17	17	17	17	17	3rd Molar	17	17	17	17	17	3rd Molar	17	17	17	17
				2nd Molar	18	18	18	18	18	2nd Molar	18	18	18		18	2nd Molar	18	18	18	18
				1st Molar	19	19	19	19	19	1st Molar	19	19	19		19	1st Molar	19	19	19	19
	20	20	20	2nd Bi	20	20	20	20	20	2nd Bi	20	20	20	20	20	2nd Bi	20	20	20	20
	21	21	21	1st Bi	21	21	21	21	21	1st Bi	21	21	21	21	21	1st Bi	21	21	21	21
	22	22	22	Cuspid	22	22	22	22	22	Cuspid	22	22	22		22	Cuspid	22	22	22	22
	23	23	23	Lateral	23	23	23	23	23	Lateral	23	23	23	23	23	Lateral	23	23	23	23
	24	24	24	Central	24	24	24	24	24	Central	24	24	24	24	24	Central	24	24	24	24
	P	XP	XR		N	D	F	XD	XR		MSC	O	C	S-X	R		1	2	6	8
LOWER ARCH RIGHT	25	25	25	Central	25	25	25	25	25	Central	25	25	25	25	25	Central	25	25	25	25
	26	26	26	Lateral	26	26	26	26	26	Lateral	26	26	26	26	26	Lateral	26	26	26	26
	27	27	27	Cuspid	27	27	27	27	27	Cuspid	27	27	27		27	Cuspid	27	27	27	27
	28	28	28	1st Bi	28	28	28	28	28	1st Bi	28	28	28	28	28	1st Bi	28	28	28	28
	29	29	29	2nd Bi	29	29	29	29	29	2nd Bi	29	29	29	29	29	2nd Bi	29	29	29	29
				1st Molar	30	30	30	30	30	1st Molar	30	30	30		30	1st Molar	30	30	30	30
				2nd Molar	31	31	31	31	31	2nd Molar	31	31	31		31	2nd Molar	31	31	31	31
				3rd Molar	32	32	32	32	32	3rd Molar	32	32	32	32	32	3rd Molar	32	32	32	32

IBM HANDSET

Figure I. Dental Examination—Health Examination Survey.

subsample was examined by either A or B or, as occurred at three locations, by both A and B. Thus the senior dentists examined relatively few sample children. The number and percent of children examined by each dentist were as follows:

	Number of sample children examined	*Percent of sample children examined*
5 dentists	7,109	100.0
A	467	6.6
B	394	5.5
C	3,200	45.0
D	2,188	30.8
E	860	12.1

Most examinations completed by the senior dentists resulted from a planned series of replicate examinations. As a rule, the findings of the senior dentist were made part of the sample child's examination record, and the findings of the dentist with whom he was paired were kept separate. The primary aim of the replicate examinations was to correct any examiner divergence from the accepted examination procedures.

Throughout the replicate examinations the senior dentist completed his examination first, dictating his findings to a trained recorder. After completing the examination, the senior dentist recorded the findings of the other dentist, who had previously been absent from the examining room. Appreciable interexaminer differences as well as any procedure that diverged from the accepted one were discussed and, if indicated, either resolved or corrected while the sample child was still present. However, the findings originally recorded were not altered.

To indicate the level of agreement among examiners, the results of the replicate examinations are shown in table I. The direction of the disagreements that occurred is shown by a plus or minus sign. A plus sign indicates that a finding of the senior dentist was higher than that of another dentist, while a minus sign indicates the opposite.

The data suggest that the level of agreement between the senior dentists and other dentists was high, ranging from 72 percent perfect agreement on untreated decayed teeth to about 93 percent perfect agreement on missing teeth and those indicated for extraction. In measuring decayed teeth, where examiner agreement was lowest, disagreement of more than one tooth occurred in only about 7 percent of the replicate examinations. In addition, although systematic interexaminer differences may have existed in the survey, as they do in most surveys, results of the replicate examinations suggest that such differences were small and did not seriously bias the dental findings.

Table I. Percent distribution of differences in dental findings between senior dentists and other dentists on 393 replicate examinations: Health Examination Survey, 1963-65

Dental findings	All replicate examinations	Differences observed in number of affected teeth								
		-4 or more	-3	-2	-1	0	+1	+2	+3	+4 or more
DMF teeth	100.0	0.2	1.8	1.3	10.2	74.3	9.7	2.5	-	-
def teeth	100.0	0.2	0.2	2.5	9.7	75.8	9.2	2.0	0.2	-
D and d teeth	100.0	0.5	1.2	2.0	11.8	71.6	10.0	2.4	0.1	0.1
M and e teeth	100.0	0.1	-	0.6	2.9	92.8	2.5	1.0	-	-
F and f teeth	100.0	-	0.1	0.6	4.3	89.2	4.1	1.0	0.5	0.1

APPENDIX II

DEMOGRAPHIC AND SOCIOECONOMIC TERMS

Age.—The age recorded for each child was the age at last birthday on the date of examination. The age criterion for inclusion in the sample used in this survey was defined in terms of age at time of interview. Since the examination usually took place 2 to 4 weeks after the interview, some of those who were 11 years old at the time of interview became 12 years old by the time of the examination. There were 72 such cases. In the adjustment and weighting procedures used to produce national estimates, these 72 were included in the 11-year-old group.

Race.—The race classification recorded by observation was confirmed by comparison with the race classification on the child's birth certificate. Race was recorded as "white," "Negro," or "other races." The last category included American Indian, Chinese, Japanese, and all races other than white or Negro. Mexican persons were included with "white" unless definitely known to be American Indian or of another race other whan white. Negroes and persons of mixed Negro and other parentage were recorded as "Negro."

Family income.—The income recorded was the total income received during the past 12 months by the head of the household and all other household members related to the head by blood, marriage, or adoption. This income was the gross cash income (excluding pay in kind, e.g., meals, living quarters, or supplies provided in place of cash wages) except in the case of a family with its own farm or business, in which case net income was recorded. Also included in the family income figure were allotments and other money received by the family from a member of the Armed Forces whether he was living at home or not.

Education of head of household.—The highest grade that had been completed in school was recorded. The only grades counted were those which had been completed in a regular graded school where persons were given formal education, either public or private school, either day or night school, and either full-time or part-time attendance. A regular school is one which advances a person toward an elementary or high school diploma or a college, university, or professional school degree. Education in vocational, trade, or business schools outside the regular school system was not counted in determining the highest grade of school completed.

Geographic region.—For purposes of stratification, the United States was divided as follows into four broad geographic regions of approximately equal population which correspond closely to those used by the U.S. Bureau of the Census.

Region	*States Included*
Northeast	Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania
South	Delaware, Maryland, District of Columbia, West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Arkansas
Midwest	Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, and Missouri
West	Washington, Oregon, California, Nevada, New Mexico, Arizona, Texas, Oklahoma, Kansas, Nebraska, North Dakota, South Dakota, Idaho, Utah, Colorado, Montana, Wyoming, Alaska, and Hawaii

APPENDIX III

STATISTICAL NOTES

The Survey Design

The Health Examination Survey is designed as a highly stratified multistage sampling of the noninstitutional population aged 6-11 years of the United States including Alaska and Hawaii. Children living on lands reserved for the use of American Indians were not included in the sample. The first stage of the plan is a sample of 40 primary sampling units from nearly 2,000 PSU's into which the United States has been divided. A PSU is a county, two or three contiguous counties, or a standard metropolitan statistical area. Later stages result in the random selection of clusters of about 10 children from a small neighborhood within the PSU. The total sample was composed of 7,417 children in the 40 PSU's in 25 States. The structure of the design and conduct of the survey have been described in detail in a previous report.[1]

Reliability

The methodological strength of the survey derives especially from its use of scientific probability sampling techniques and highly standardized and closely controlled measurement processes. This does not imply that statistics from the survey are exact or without error. Data from the survey are imperfect for three major reasons: (1) results are subject to sampling error, (2) the actual conduct of a survey never agrees perfectly with the design, and (3) the measurement processes themselves are inexact even though standardized and controlled.

Of the total of 7,417 sample children, 7,119, or 96.0 percent, were examined. Analysis indicates that the examined persons are a highly representative sample of the noninstitutional U.S. population 6-11 years of age. Imputation for the nonrespondents was accomplished by attributing to nonexamined persons the characteristics of comparable examined persons. The specific procedure used consisted of inflating the sampling weight for each examined person to compensate for nonexamined sample persons at the same stand and of the same age-sex group.[1] It is impossible, of course, to be certain that the mean number of, for instance, DMF teeth per person is the same for the examined and the nonexamined groups.

Table II. Number of sample children who received a dental examination, by age and sex: Health Examination Survey, 1963-65

Age	Boys	Girls
6-11 years	3,626	3,483
6 years	574	535
7 years	631	607
8 years	617	613
9 years	601	581
10 years	575	583
11 years	628	564

Only 10 examined sample children did not receive a dental examination. Thus dental findings were recorded for the 7,109 children classified in table II by age and sex; the estimated U.S. population aged 6-11 years is shown in table III by age, race, and sex.

Sampling and Measurement Error

Several references have been made in this report to efforts to evaluate both bias and variability of the measurement techniques. The probability design of the survey makes possible the calculation of sampling errors. Traditionally the role of the sampling error has been the determination of how imprecise the survey results may be because they come from a sample rather than from measurement of all elements in the universe.

The task of presenting sampling errors for a study of the type of the Health Examination Survey is complicated by at least three factors: (1) measurement error and "pure" sampling error are confounded in the data—it is not easy to find a procedure which will either completely include both or treat one or the other separately, (2) the survey design and estimation procedure are complex and accordingly require computationally involved techniques for calculation of vari-

Table III. Estimated number of noninstitutional children aged 6-11 years, by age, race, and sex: United States, 1963-65

Age	Total[1]	White		Negro	
		Boys	Girls	Boys	Girls
	Number in thousands				
6-11 years	23,784	10,391	10,012	1,642	1,629
6 years	4,098	1,787	1,722	289	281
7 years	4,084	1,781	1,716	286	284
8 years	3,986	1,739	1,674	279	281
9 years	3,957	1,730	1,663	269	265
10 years	3,867	1,692	1,632	264	266
11 years	3,792	1,662	1,605	255	253

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

SOURCE: Adapted from data provided by the U.S. Bureau of the Census.

ances, and (3) thousands of statistics come from the survey, many for subclasses of the population for which there are small numbers of sample cases. Estimates of sampling error are obtained from the sample data and are themselves subject to sampling error, which may be large when the number of cases in a cell is small or even occasionally when the number of cases is substantial.

In the present report, estimates of approximate sampling variability for selected statistics are presented in tables IV-VIII. These estimates have been prepared by a replication technique which yields overall variability through observation of variability among random subsamples of the total sample. The method reflects both "pure" sampling variance and a part of the measurement variance.

In accordance with usual practice the interval estimate for any statistic may be considered the range within one standard error of the tabulated statistic with 68-percent confidence or the range within two standard errors of the tabulated statistic with 95-percent confidence.

Expected Values

In tables 8-13, the actual mean number of DMF and def teeth per person for each of various demographic variables is compared with the expected. The computation of expected rates was done as follows:

Suppose it is estimated that in a subgroup there are N_i persons in the i^{th} age group ($i=1, 2 \ldots, 7$; sum of $N_i=N$). Suppose it is estimated that the mean number of DMF teeth per person for the United States in the i^{th} age-sex group is X_i. Then the expected mean number of DMF teeth for the subgroup is

$$\frac{1}{N} \sum_i N_i \bar{X}_i$$

Comparison of an actual value for, say, a region with the expected value for that region is undertaken on the assumption that a meaningful statement can be made which holds, in some average way, for all persons who are in the region. This may or may not be true. The specified region may have higher values for younger children and lower values for older children than those found in other regions. In that case, an average comparison will obliterate one or both of these differentials. In arriving at the general conclusions expressed in the text, an effort was made to consider all the specific data, including data not presented in this report, but it must be recognized that balancing such evidence is a qualitative exercise rather than a quantitative one. The standard error of the difference between an actual and expected value may be approximated by the standard error of the actual value (tables VII and VIII).

Table IV. Standard errors of mean number of decayed (D), missing (M), and filled (F) permanent teeth per child, by age, sex, and race: United States, 1963-65

Age and sex	All DMF teeth			D teeth		
	Total[1]	White	Negro	Total[1]	White	Negro
Both sexes 6-11 years	0.06	0.06	0.12	0.03	0.03	0.10
Boys						
6-11 years	0.06	0.06	0.13	0.03	0.03	0.11
6 years	0.02	0.03	0.03	0.01	0.02	0.03
7 years	0.05	0.06	0.19	0.03	0.04	0.19
8 years	0.06	0.07	0.17	0.03	0.04	0.16
9 years	0.12	0.11	0.34	0.07	0.06	0.27
10 years	0.12	0.13	0.26	0.07	0.08	0.19
11 years	0.16	0.18	0.35	0.08	0.07	0.24
Girls						
6-11 years	0.06	0.07	0.13	0.04	0.04	0.09
6 years	0.04	0.05	0.04	0.02	0.02	0.04
7 years	0.05	0.05	0.13	0.03	0.03	0.12
8 years	0.08	0.09	0.12	0.04	0.05	0.11
9 years	0.11	0.10	0.34	0.07	0.06	0.25
10 years	0.14	0.16	0.22	0.06	0.06	0.12
11 years	0.13	0.15	0.29	0.07	0.08	0.22

Age and sex	M teeth			F teeth		
	Total[1]	White	Negro	Total[1]	White	Negro
Both sexes 6-11 years	0.00	0.00	0.02	0.04	0.05	0.05
Boys						
6-11 years	00.0	0.01	0.03	0.05	0.05	0.05
6 years	0.00	0.00	-	0.01	0.01	-
7 years	0.01	0.01	0.02	0.03	0.03	0.04
8 years	0.01	0.01	0.02	0.04	0.05	0.06
9 years	0.01	0.01	0.07	0.07	0.08	0.10
10 years	0.02	0.03	0.06	0.11	0.12	0.21
11 years	0.04	0.04	0.14	0.13	0.14	0.11
Girls						
6-11 years	0.00	0.00	0.01	0.04	0.05	0.06
6 years	-	-	-	0.04	0.04	-
7 years	0.01	0.01	0.01	0.04	0.04	0.05
8 years	0.01	0.01	0.01	0.07	0.08	0.05
9 years	0.01	0.01	0.10	0.06	0.07	0.10
10 years	0.02	0.03	0.08	0.11	0.12	0.24
11 years	0.02	0.02	0.07	0.09	0.11	0.16

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

NOTES: 0.00 indicates standard error greater than zero but less than 0.005.

Filled teeth include only teeth 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 three categories.

Table V. Standard errors of number of decayed, missing, and filled teeth per 100 erupted permanent teeth among children, by age, sex, and race: United States, 1963-65

Age and sex	Total[1]	White	Negro
Both sexes 6-11 years	0.55	0.45	0.89
Boys			
6-11 years	0.55	0.55	1.00
6 years	0.55	0.71	0.71
7 years	0.63	0.78	2.00
8 years	0.55	0.63	1.45
9 years	0.10	0.84	2.41
10 years	0.78	0.78	1.41
11 years	0.78	0.84	1.52
Girls			
6-11 years	0.45	0.55	0.89
6 years	0.89	1.10	0.63
7 years	0.55	0.55	1.30
8 years	0.71	1.00	1.00
9 years	0.71	0.63	2.02
10 years	0.78	0.84	1.05
11 years	0.55	0.63	1.18

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

NOTE: Filled teeth include only teeth 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.

Small Numbers

In some tables magnitudes are shown for cells for which sample size is so small that the sampling error may be several times as great as the statistic itself. Obviously in such instances the statistic has no meaning in itself except to indicate that the true quantity is small. Such numbers have sometimes been included to convey an impression of the overall story of the table.

Tests of Significance

Tests of significance for mean DMF scores per person by selected demographic characteristics are performed in two ways. The first is to determine if the difference between the actual and expected value is greater than two times its standard error. For example, for boys in families with less than $3,000 income per year (table 7), the difference between the actual and expected mean F score is 0.4 and the standard error is 0.07. Since the difference is more than twice its standard error, it may be deemed statistically significant.

The second method is to examine the age-specific differences (not published) between the prevalence for the specified group and the prevalence for all persons. Thus in table 10 among boys whose parents had less than 5 years' education, the mean d score for all age groups is more than the overall mean for these age groups. The probability of such an occurrence is less than 0.01, and the difference is considered statistically significant. In general where a difference is not statistically significant on the first test, the age-sex specific mean will fail the second test.

Table VI. Standard errors of mean number of decayed (d), nonfunctional-carious (e), and filled (f) primary teeth per child, by age, sex, and race: United States, 1963-65

Age and sex	All def teeth			d teeth		
	Total[1]	White	Negro	Total[1]	White	Negro
Both sexes 6-11 years	0.08	0.08	0.16	0.05	0.05	0.16
Boys						
6-11 years	0.07	0.08	0.19	0.05	0.06	0.18
6 years	0.17	0.18	0.60	0.12	0.14	0.53
7 years	0.14	0.13	0.42	0.13	0.14	0.32
8 years	0.14	0.15	0.44	0.10	0.11	0.38
9 years	0.16	0.18	0.33	0.09	0.10	0.35
10 years	0.12	0.13	0.24	0.07	0.07	0.22
11 years	0.07	0.07	0.19	0.04	0.04	0.12
Girls						
6-11 years	0.09	0.10	0.18	0.06	0.06	0.18
6 years	0.20	0.23	0.45	0.15	0.16	0.51
7 years	0.20	0.21	0.46	0.11	0.08	0.34
8 years	0.16	0.18	0.26	0.15	0.18	0.28
9 years	0.12	0.14	0.12	0.08	0.09	0.12
10 years	0.07	0.08	0.20	0.06	0.07	0.09
11 years	0.07	0.08	0.15	0.03	0.03	0.10

Age and sex	e teeth			f teeth		
	Total[1]	White	Negro	Total[1]	White	Negro
Both sexes 6-11 years	0.02	0.02	0.05	0.08	0.09	0.04
Boys						
6-11 years	0.02	0.02	0.06	0.08	0.10	0.03
6 years	0.04	0.04	0.12	0.10	0.12	0.08
7 years	0.06	0.06	0.15	0.11	0.13	0.07
8 years	0.04	0.05	0.05	0.12	0.13	0.08
9 years	0.06	0.05	0.16	0.16	0.18	0.06
10 years	0.04	0.04	0.09	0.14	0.17	0.06
11 years	0.02	0.03	0.05	0.05	0.06	0.09
Girls						
6-11 years	0.02	0.03	0.07	0.08	0.09	0.05
6 years	0.05	0.06	0.14	0.15	0.17	0.04
7 years	0.06	0.07	0.06	0.15	0.18	0.17
8 years	0.05	0.05	0.14	0.16	0.19	0.08
9 years	0.03	0.03	0.06	0.09	0.11	0.07
10 years	0.03	0.04	0.12	0.09	0.10	0.18
11 years	0.01	0.02	0.05	0.06	0.06	0.06

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

NOTE: 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 three categories is def.

Table VII. Standard errors of mean number of decayed (D), missing (M), and filled (F) teeth among children, by selected demographic characteristics, sex, and race: United States, 1963-65

Characteristics	All DMF teeth			
	Boys		Girls	
	White	Negro	White	Negro
Family income				
Less than $3,000	0.22	0.21	0.22	0.14
$3,000-$4,999	0.12	0.19	0.16	0.23
$5,000-$6,999	0.06	0.31	0.10	0.26
$7,000-$9,999	0.07	0.13	0.08	0.20
$10,000-$14,999	0.13	0.40	0.12	0.40
$15,000 or more	0.14	-	0.19	-
Unknown	0.16	0.35	0.26	0.34
Education of head of household				
None or less than 5 years	0.34	0.29	0.38	0.19
5-7 years	0.19	0.15	0.15	0.17
8 years	0.17	0.26	0.18	0.20
9-11 years	0.10	0.26	0.11	0.24
12 years	0.05	0.23	0.07	0.31
13-15 years	0.11	0.22	0.11	0.15
16 years	0.13	0.48	0.15	0.52
17 years or more	0.17	0.31	0.18	0.86
Unknown	0.15	0.92	0.40	0.36
Region				
Northeast	0.11	0.19	0.08	0.29
Midwest	0.08	0.11	0.13	0.30
South	0.14	0.26	0.14	0.20
West	0.20	0.19	0.24	0.24

Table VII. Standard errors of mean number of decayed (D), missing (M), and filled (F) teeth among children, by selected demographic characteristics, sex, and race: United States, 1963-65—Con.

D teeth				M teeth				F teeth			
Boys		Girls		Boys		Girls		Boys		Girls	
White	Negro	White	Negro	White	Negro	White	Negro	White	Negro	White	Negro
0.14	0.19	0.13	0.12	0.04	0.02	0.05	0.03	0.09	0.10	0.08	0.09
0.05	0.15	0.09	0.15	0.02	0.06	0.02	0.03	0.08	0.06	0.09	0.14
0.04	0.23	0.04	0.21	0.02	0.10	0.01	0.03	0.05	0.10	0.09	0.09
0.04	0.13	0.04	0.12	0.01	0.01	0.02	0.06	0.07	0.04	0.06	0.09
0.05	0.22	0.04	0.33	0.01	-	0.01	-	0.10	0.40	0.12	0.17
0.06	-	0.04	-	-	-	-	-	0.15	-	0.20	-
0.07	0.09	0.11	0.18	0.03	0.06	0.02	-	0.15	0.30	0.22	0.36
0.22	0.25	0.29	0.18	0.12	0.04	0.07	0.02	0.08	0.24	0.03	0.03
0.14	0.13	0.10	0.09	0.03	0.06	0.02	0.04	0.09	0.09	0.10	0.11
0.10	0.22	0.11	0.17	0.04	0.09	0.03	0.06	0.13	0.20	0.13	0.06
0.05	0.15	0.07	0.13	0.02	0.05	0.02	0.06	0.06	0.11	0.07	0.17
0.03	0.19	0.03	0.20	0.01	0.05	0.01	0.06	0.05	0.06	0.05	0.13
0.02	0.22	0.06	0.13	-	-	0.02	-	0.10	-	0.11	0.09
0.05	0.55	0.06	0.52	-	-	-	-	0.12	0.26	0.16	-
0.05	0.31	0.05	0.59	-	-	-	0.03	0.17	-	0.20	0.39
0.09	0.98	0.23	0.33	-	-	0.04	-	0.17	0.19	0.45	0.18
0.09	0.24	0.08	0.17	0.03	0.07	0.01	0.04	0.06	0.22	0.08	0.29
0.02	0.08	0.05	0.21	0.01	0.04	0.01	0.03	0.09	0.11	0.12	0.09
0.10	0.25	0.13	0.16	0.03	0.04	0.03	0.02	0.11	0.02	0.10	0.08
0.04	0.20	0.07	0.06	0.00	0.03	0.01	0.03	0.18	0.21	0.18	0.25

NOTES: 0.00 indicates standard error greater than zero but less than 0.005.

Filled teeth include only teeth 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 three categories.

Table VIII. Standard errors of mean number of decayed (d), nonfunctional-carious (e), and filled (f) teeth among children, by selected characteristics, sex, and race: United States, 1963-65

Characteristic	All def teeth			
	Boys		Girls	
	White	Negro	White	Negro
Family income				
Less than $3,000	0.26	0.16	0.21	0.28
$3,000-$4,999	0.13	0.42	0.22	0.27
$5,000-$6,999	0.12	0.33	0.14	0.35
$7,000-$9,999	0.19	0.34	0.12	0.42
$10,000-$14,999	0.19	1.96	0.17	2.76
$15,000 or more	0.19	-	0.33	-
Unknown	0.27	0.39	0.35	0.34
Education of head of household				
None or less than 5 years	0.48	0.41	0.61	0.23
5-7 years	0.22	0.30	0.26	0.28
8 years	0.22	0.65	0.21	0.35
9-11 years	0.15	0.50	0.14	0.30
12 years	0.11	0.26	0.14	0.42
13-15 years	0.16	1.05	0.19	0.62
16 years	0.21	1.21	0.14	2.23
17 years or more	0.24	1.01	0.33	1.69
Unknown	0.94	1.47	0.48	0.74
Region				
Northeast	0.09	0.31	0.07	0.45
Midwest	0.30	0.09	0.24	0.47
South	0.13	0.35	0.26	0.31
West	0.10	0.58	0.26	0.35

Table VIII. Standard errors of mean number of decayed (d), nonfunctional-carious (e), and filled (f) teeth among children, by selected characteristics, sex, and race: United States, 1963-65—Con.

d teeth				e teeth				f teeth			
Boys		Girls		Boys		Girls		Boys		Girls	
White	Negro	White	Negro	White	Negro	White	Negro	White	Negro	White	Negro
0.20	0.11	0.16	0.29	0.06	0.07	0.05	0.06	0.13	0.06	0.09	0.07
0.13	0.47	0.15	0.19	0.05	0.15	0.06	0.17	0.07	0.06	0.10	0.09
0.10	0.22	0.10	0.20	0.04	0.08	0.04	0.11	0.09	0.16	0.13	0.12
0.06	0.32	0.07	0.42	0.02	0.03	0.02	0.14	0.16	0.01	0.12	0.09
0.08	0.17	0.12	1.77	0.03	-	0.04	0.33	0.16	1.79	0.18	1.31
0.14	-	0.12	-	0.02	-	0.02	-	0.15	-	0.27	-
0.13	0.36	0.22	0.36	0.14	0.14	0.08	0.07	0.32	0.17	0.27	0.35
0.38	0.40	0.52	0.22	0.10	0.07	0.13	0.05	0.02	0.02	0.11	0.02
0.20	0.28	0.21	0.34	0.10	0.09	0.10	0.23	0.11	0.04	0.08	0.16
0.17	0.55	0.14	0.31	0.04	0.21	0.05	0.09	0.13	0.20	0.13	0.03
0.06	0.39	0.10	0.20	0.04	0.15	0.05	0.09	0.10	0.10	0.12	0.10
0.08	0.19	0.07	0.32	0.03	0.09	0.03	0.06	0.10	0.10	0.12	0.09
0.12	1.01	0.11	0.50	0.04	0.05	0.03	0.16	0.15	-	0.15	0.12
0.11	0.61	0.07	2.06	0.03	0.16	0.02	-	0.18	1.24	0.18	0.32
0.10	1.01	0.20	1.06	0.02	-	0.06	0.36	0.21	-	0.19	0.95
0.92	0.65	0.35	0.49	0.37	0.84	0.27	0.08	0.18	-	0.21	0.39
0.10	0.38	0.11	0.40	0.02	0.06	0.07	0.13	0.14	0.11	0.13	0.20
0.15	0.04	0.13	0.38	0.04	0.05	0.06	0.07	0.25	0.05	0.26	0.07
0.20	0.38	0.21	0.37	0.06	0.10	0.06	0.13	0.19	0.02	0.13	0.02
0.14	0.44	0.13	0.31	0.06	0.15	0.03	0.05	0.24	0.80	0.29	0.18

NOTE: 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 three categories is def.

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