

Volume of X-Ray Visits

United States – April-September 1970

Statistics on volume of medical and dental X-ray visits, by area of body X-rayed, place of X-ray visit, type of X-ray, age, sex, race, place of residence, geographic region, family income, and education. Based on data collected in household interviews during the period April-September 1970.

DHEW Publication No. (HSM) 73-1507

**U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service**

**Health Services and Mental Health Administration
National Center for Health Statistics
Rockville, Md. April 1973**



Vital and Health Statistics-Series 10-No. 81

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DHEW Publication No. (HSM) 73-1507
Library of Congress Catalog Card Number 73-600038

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VOLUME OF X-RAY VISITS

Mary H. Wilder, *Division of Health Interview Statistics*

INTRODUCTION

Based on data collected during April-September 1970, annual estimates of 112 million medical X-ray visits and 68 million dental X-ray visits were reported for the United States civilian, noninstitutionalized population. These estimates produced rates per 100 persons per year of 55.9 for medical X-ray visits and 33.8 for dental X-ray visits. An X-ray visit is defined as a visit by a person to a doctor's office, dentist's office, hospital, mobile X-ray unit, public health department, etc., during the course of which X-ray equipment is used for diagnosis or treatment. One visit was counted each time the person went to a medical facility to have one or more areas of the body X-rayed. However, statistics were also collected for each of the separate areas of the body X-rayed.

Data on volume of X-ray visits have been collected twice previously for the Health Interview Survey. Data for 1961 are published in Series B, No. 38, of the *Health Statistics* series.¹ Data for 1964 were jointly presented with the Division of Radiological Health and are published in *Population Exposure to X-Rays, United States, 1964*.²

The following statements summarize the major findings in the 1970 data:

1. The average number of medical X-ray visits per 100 persons increased with age, while persons 15-29 years of age had the highest rate of dental X-ray visits.
2. Although little difference exists between sexes in the average number of medical X-ray visits, females were more likely to have had dental X-ray visits than males.

3. The white population had more visits for both medical and dental X-rays than other population groups.
4. The rate of dental X-ray visits increased as income rose, whereas the population with less family income was more likely to have had medical X-ray visits than persons with more family income.
5. Increases in population density and educational attainment of the head of the family produced higher rates of both medical and dental X-ray visits.
6. The population in the West Region reported more X-ray visits for medical and dental purposes than did persons in the Northeast, North Central, and South Regions.
7. The major area of the body receiving X-ray exposure was the chest.
8. The hospital was the major place in which medical X-rays were made.
9. Generally, the annual rates per person for both medical and dental X-ray visits have increased since this type data was previously collected in the Health Interview Survey.

SOURCE AND LIMITATIONS OF THE DATA

The information presented in this report was obtained from a continuing household interview survey of a probability sample representative of the civilian, noninstitutionalized population residing in the United States. Data about health and social and demographic characteristics of each household member were collected during the period April-September 1970. The

questionnaire that was used is reproduced in appendix III of Series 10, No. 72.³

Information on the volume of X-ray visits and areas of the body X-rayed was obtained in response to the questions shown in appendix III.

A brief description of the statistical design of the survey, the methods of estimation, and general qualifications of the data obtained from surveys is presented in appendix I. Since estimates shown in this report are based on a sample of the population rather than on the entire population, they are subject to sampling error. Therefore particular attention should be directed toward the section "Reliability of Estimates," which contains charts indicating relative sampling errors and instructions for their use. The sampling errors for most of the estimates are of relatively low magnitude. However, when a number or the numerator or denominator of a rate or percentage is small, the sampling error may be high. In these instances the estimates must be interpreted with caution.

Definitions of certain terms, particularly those related to X-ray visits, are explained in appendix II. Some of the terms have specialized meanings for the purpose of the survey. Familiarity with these definitions will assist the reader in interpreting the data. For example, an X-ray visit was included if X-rays had been used for film exposure, fluoroscopy, or treatment. If radioactive materials such as radium or radioactive isotopes were used for treatment or other purposes, an X-ray visit was not counted.

Questions were formulated to elicit information in terms of the X-ray *visit* rather than the X-ray *exposure* since it was assumed that respondents would be likely to know how many times a visit was made during which an area of the body was X-rayed or fluoroscoped but that they would not know the number of exposures (films or fluoroscopic views). For similar reasons the X-ray visits were classified in terms of five general areas of the body rather than such specific parts of the body as individual bones or internal organs. The use of radioisotopes as a source of radiation for medical purposes was not included in these data because relatively few respondents would know sufficient details about this application.

Population frequencies used in computing rates shown in this publication are presented in tables 18-21.

MEDICAL X-RAY VISITS

Volume of Visits

During April-September 1970 a sample of civilian, noninstitutionalized persons representative of the U.S. population were asked how many visits they made to hospitals, doctors' offices, and the like during which an X-ray was made. The reference period for the questions was the 3-month period preceding the interview. One visit was counted each time a person went to a doctor's office, hospital, or other facility to have one or more areas of the body X-rayed. An annual estimate of 111,751,000 medical X-ray visits was reported (table 1). This represents 55.9 medical X-ray visits per 100 persons per year. Since a person may have had more than one visit during the reference period, this does not mean that one out of every two persons had medical X-rays. However, the majority of persons X-rayed had only one visit during the 3-month reference period (table A). Approximately 77.1 percent of persons with medical X-rays had only one visit while 22.9 percent had two or more visits. Persons were more likely to have multiple visits when the X-rays were for treatment. Approximately 42.2 percent of the population with X-ray treatment had four or more visits during the reference period.

When the current data are compared with statistics collected during July 1960-June 1961, the percent of the population with medical X-ray visits in a 3-month period and with single visits increased slightly (77.1 percent in 1970 and 75.9 percent in 1961), whereas the percent of persons with medical treatment and single visits decreased (29.9 percent in 1970 and 38.0 percent in 1961). This indicates that more people are currently having X-ray visits and that if the visit is for treatment, more visits are required.

Persons in the younger age groups were less likely to have had medical X-rays than persons of older ages. Approximately 24.4 visits per 100

Table A. Percent distribution of medical X-ray visits during an average 3-month period by number of medical visits, according to selected characteristics: United States, based on data collected during April-September 1970

Characteristic	Number of medical X-ray visits in 3-month period				
	Total	1	2	3	4 or more
All persons with medical X-ray visits ¹ -----	100.0	77.1	13.7	4.8	4.4
<u>Age</u>					
Under 15 years-----	100.0	77.1	13.1	5.1	4.7
15-29 years-----	100.0	81.2	12.4	3.5	2.8
30-44 years-----	100.0	77.3	14.1	4.9	3.7
45 years and over-----	100.0	74.4	14.6	5.4	5.6
45-64 years-----	100.0	76.3	13.2	5.5	5.0
65 years and over-----	100.0	69.7	17.9	5.4	7.0
<u>Geographic region</u>					
Northeast-----	100.0	79.0	13.4	3.6	3.9
North Central-----	100.0	76.7	13.7	5.6	4.1
South-----	100.0	77.5	13.1	4.5	4.9
West-----	100.0	74.7	15.1	5.4	4.7
<u>Family income</u>					
Less than \$3,000-----	100.0	74.7	14.9	5.7	4.7
\$3,000-\$4,999-----	100.0	75.6	15.3	4.3	4.8
\$5,000-\$6,999-----	100.0	77.9	13.9	4.7	3.5
\$7,000-\$9,999-----	100.0	77.7	12.9	4.5	4.8
\$10,000-\$14,999-----	100.0	77.8	13.3	5.2	3.7
\$15,000 or more-----	100.0	79.2	12.4	4.2	4.1
<u>Type of X-ray</u>					
Treatment-----	100.0	29.9	*	*	42.2
Other-----	100.0	77.6	13.8	4.7	4.0

¹Includes unknown income.

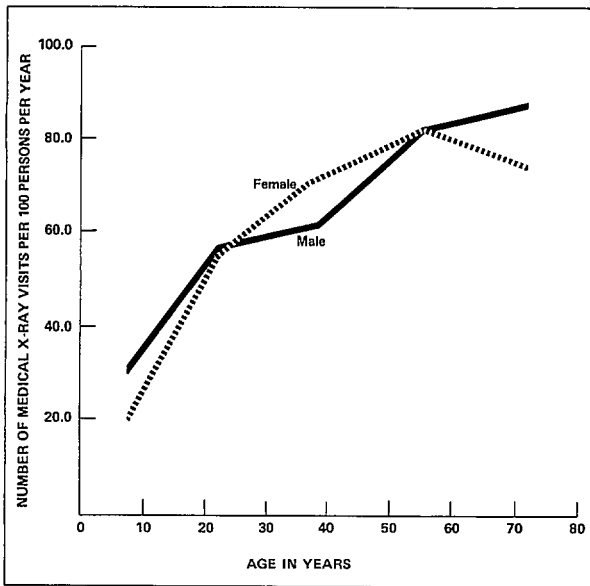


Figure 1. Number of medical X-ray visits per 100 persons per year by sex and age.

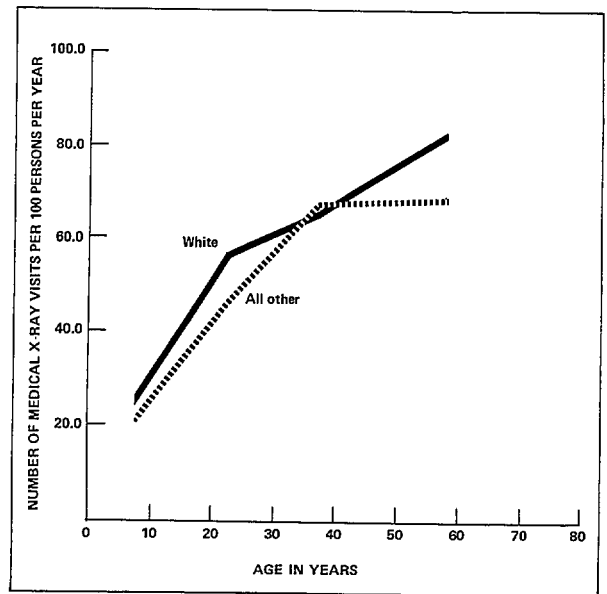


Figure 2. Number of medical X-ray visits per 100 persons per year by color and age.

persons were recorded for children under 15 years of age compared to 81.5 visits per 100 persons for the population 45 years and over.

While there were no striking differences between males and females in the number of X-ray visits, the males tended to have slightly higher rates at the younger and older ages and females reported more visits in the 30-44 age group (figure 1). White persons were more likely to have medical X-ray visits than persons of other color groups. Generally, there is little difference between the two color groups by age in the number of medical X-ray visits per 100 persons except at age 45 years and over, where white persons had about 20 percent more visits than did persons in other color groups. (Figure 2.)

Persons living in SMSA's (standard metropolitan statistical areas) were more likely to have had one or more medical X-ray visits than persons living elsewhere (table 2). This is probably indicative of the ease of access to facilities where X-rays are made for medical purposes in heavily

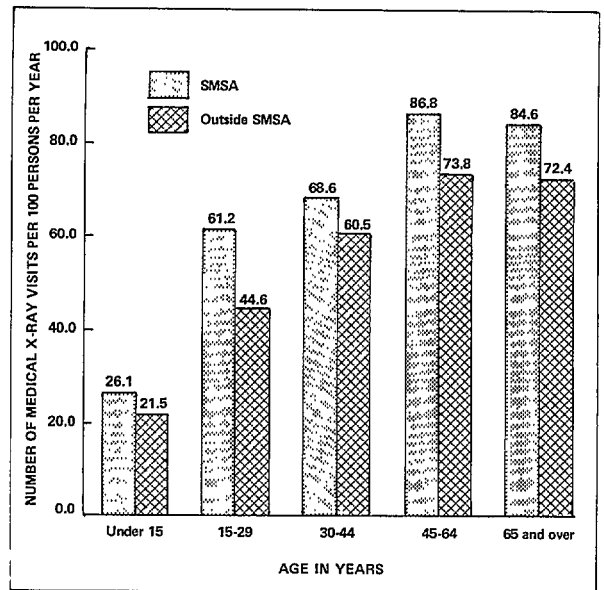


Figure 3. Number of medical X-ray visits per 100 persons per year by place of residence and age.

populated areas. Figure 3 shows that persons in each age group living in metropolitan areas averaged more X-ray visits than did persons in corresponding age groups living elsewhere. Generally, the pattern previously mentioned of increase in visits with aging is evident for all places of residence.

Persons living in the West Region were more likely to have had medical X-ray visits than persons living in the other three geographic regions (table 3). The larger rate recorded for persons in the West Region is largely due to the high number of visits per 100 persons reported in the age group 65 and over (figure 4) and is greatly influenced by the large number of visits reported by males in this age category. Generally, the population in each region had more visits with advancing age with the exception of the population in the North Central Region. This population group had a marked decline in rate of visits for persons 65 years and over; the percent of persons with X-ray visits increased in the other three regions.

Persons in families with an annual income of less than \$7,000 had 58.7 visits per 100 per-

Table B. Number of medical X-ray visits per 100 persons per year, by family income and age: United States, based on data collected during April-September 1970

Age	Family income	
	Less than \$7,000	\$7,000 or more
All ages-----	58.7	54.6
Under 15 years-----	24.0	25.2
15-29 years-----	57.7	54.6
30-44 years-----	65.5	65.9
45 years and over-----	81.2	83.2

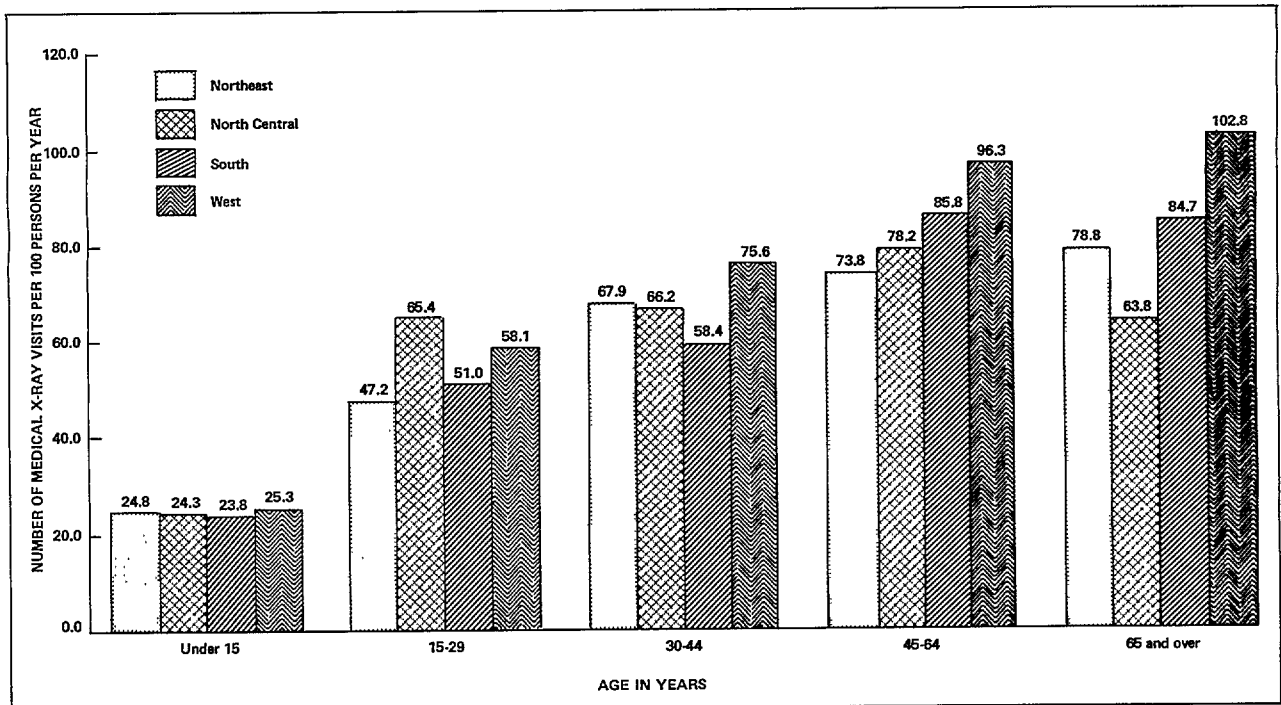


Figure 4. Number of medical X-ray visits per 100 persons per year by geographic region and age.

sons compared to 54.6 for members of families with more income (tables 4 and B). The higher rate for persons in the lower income families is largely affected by the disproportionate number of elderly people in the lower income group. Age adjustment of these rates, using the total civilian, noninstitutionalized population, produces comparable rates for both income groups (56.2 per 100 persons in the lower income group and 56.5 in the higher income group).

Members of family groups in which the family head had 1 year or more of college education were more likely to have medical X-ray visits than persons in families where the head had less education (table 5). Approximately 58.0 X-ray visits per 100 persons were recorded for persons in the higher education group compared with 55.7 visits per 100 persons in the lower education group (table C). The higher rate for members of better educated families is influenced primarily by the age group 15-29. The

Table C. Number of medical X-ray visits per 100 persons per year, by education of head of family and age: United States, based on data collected during April-September 1970

Age	Education of head of family	
	Less than 13 years	13 years or more
All ages-----	55.7	58.0
Under 15 years-----	23.8	26.7
15-29 years-----	52.6	64.4
30-44 years-----	66.9	65.3
45 years and over---	81.2	86.9

Table D. Number of medical X-ray visits per 100 persons per year, by family income, education of head of family, and age: United States, based on data collected during April-September 1970

Age	Total ¹	Family income and education of head of family					
		Less than \$7,000			\$7,000 or more		
		Less than 9 years	9-12 years	College	Less than 9 years	9-12 years	College
All ages-----	55.9	55.7	58.3	75.3	52.2	55.1	55.2
Under 15 years-----	24.4	25.8	22.8	*	19.6	25.0	27.0
15-29 years-----	55.4	41.1	60.1	73.9	35.2	55.7	60.1
30-44 years-----	65.9	47.9	77.1	*	69.8	67.0	64.0
45 years and over---	81.5	74.0	89.5	107.8	75.9	85.6	85.5
45-64 years-----	82.3	85.6	86.7	104.1	73.5	85.4	84.2
65 years and over--	79.9	63.7	93.5	111.1	86.6	86.7	92.0

¹Includes unknown education.

higher rate for this group is probably the result of X-rays taken during physical examination required for college admission and entrance to jobs. Table D shows that education is more directly related to having medical X-ray visits for persons in lower income groups than it is for persons with more income.

Table E shows the comparison of the number of medical X-ray visits per 100 persons per year for the three periods in which data have been collected in the Health Interview Survey by selected demographic characteristics. Data for 1961 were collected July 1960-June 1961 and the data are presented in Series B, No. 38, from the *Health Statistics* series.¹ Data for 1961 were collected during April-June 1964 and were inflated to represent annual estimates. The questionnaires used during each of the three periods of time are generally comparable. There were slight modifications in the wording of the specific questions. Not all questions concerning X-ray visits were asked during the fielding of each questionnaire version. Appendix IV shows which questions were asked during each specific collection period. The questions that were asked in the 1970 survey are shown in appendix III of this report, and the questionnaires used in the earlier surveys are to be found in the earlier reports.^{1,2}

The number of medical X-ray visits per 100 persons has steadily increased during the three collection periods with the greatest increase between 1964 and 1970—the rate for 1964 was 49.8 compared to 55.9 in 1970. Although the increase occurred for almost all age groups, it is most pronounced for the age group 65 years and over. This is probably the result of Medicare legislation which provided medical services at little or no cost to individuals in this age group.

The remaining characteristics in table E also show a general increase between the proportion of the population with medical X-ray visits in 1964 and population with visits in 1970 with the exception of all persons other than white. This group showed a decrease from 48.3 visits per 100 persons to 45.1 during these two time periods.

In the 1964 study² the Division of Radiological Health obtained additional technical information on the extent of X-ray exposure. Respondents who reported X-ray visits in the

Health Interview Survey were asked the name and address of the person or facility taking the X-ray. In addition, these people were also asked if the places could be contacted. The Division of Radiological Health then contacted the facilities for which the respondents granted such action. This followup consisted of an introductory letter stating the purpose of the survey, report forms for each X-ray procedure received by the individual at that facility, and a film pack to be exposed using the same factors employed during the patient examination. Generally, the report form contained questions on patient characteristics and questions on machine and exposure information. The film pack was used for quality control of the information reported on the forms. These data were published in *Population Exposure to X-rays, United States, 1964*.² This part of the study was repeated in 1970, and the technical data on extent of X-ray exposure are to be published in a similar publication.

Areas of the Body X-Rayed and Place of Visit

Approximately 1.3 body areas were X-rayed during each visit. Only one visit was counted each time a person was X-rayed, regardless of the number of body areas X-rayed. Almost half of the X-ray exposures were of the chest area (figure 5 and table 6). Children under 15 years of age had about half as many chest X-rays as they did X-rays of other areas of the body. Persons 65 years and over also had fewer chest X-rays than X-rays of other body areas.

Approximately three-fifths of all body areas were X-rayed in a hospital, one-fourth in doctors' offices, and the remainder in mobile units and other places (tables 7 and 8). About half of the X-rays for the chest area and extremities were in hospitals, while two-thirds of the X-rays of the abdomen and other areas of the body were in a hospital (figure 6). Proportionately more extremities were X-rayed in doctors' offices than were other body areas.

As might be expected, almost all of the visits to mobile units were for chest X-rays and about two-thirds of the visits to other places such as schools, health departments, and industrial clinics were for this same purpose (table F). About two-fifths of the visits to hospitals and

Table E. Number of medical X-ray visits per 100 persons per year, by selected characteristics: United States, July 1960-June 1961, April-June 1964, April-September 1970

Characteristic	July 1960- June 1961	April- June 1964	April- September 1970
	Number of medical X-ray visits per 100 persons per year		
All persons with medical X-ray visits ¹ -----	47.9	49.8	55.9
<u>Age</u>			
Under 15 years-----	16.4	20.9	24.4
15-29 years-----	57.1	55.2	55.4
30-44 years-----	63.0	61.1	65.9
45 years and over-----	66.5	69.8	81.5
45-64 years-----	71.2	73.6	82.3
65 years and over-----	55.4	61.5	79.9
<u>Sex</u>			
Male-----	49.7	50.6	56.6
Female-----	46.2	49.0	55.3
<u>Color</u>			
White-----	48.0	50.0	57.5
All other-----	47.0	48.3	45.1
<u>Place of residence</u>			
SMSA-----	---	54.5	59.8
Outside SMSA nonfarm-----	---	42.9	50.0
Outside SMSA farm-----	---	32.2	40.6
<u>Geographic region</u>			
Northeast-----	44.3	46.7	53.5
North Central-----	47.3	48.3	55.5
South-----	46.4	47.7	54.3
West-----	57.9	61.0	62.9
<u>Family income</u>			
Less than \$7,000-----	46.9	49.5	58.7
\$7,000 or more-----	52.4	52.2	54.6

¹Includes unknown income.

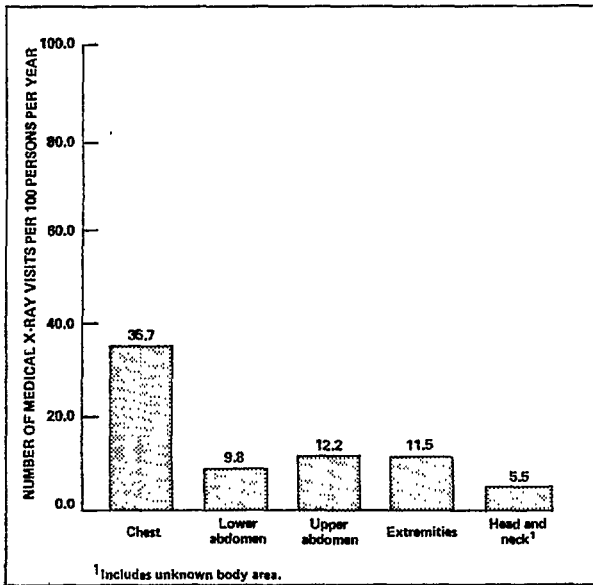


Figure 5. Number of medical X-ray visits per 100 persons per year by area of body X-rayed.

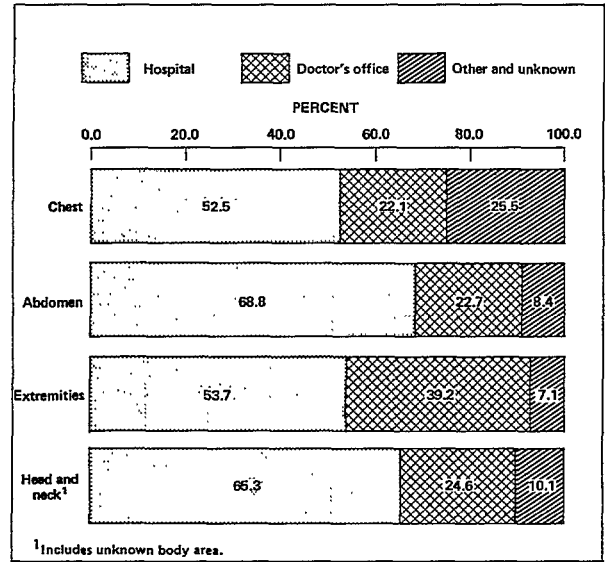


Figure 6. Percent distribution of areas of the body X-rayed by place of X-ray.

Table F. Percent distribution of medical X-ray visits by area of body X-rayed, according to place of visit: United States, based on data collected during April-September 1970

Place of visit	Total ¹	Area of body X-rayed			
		Chest	Abdomen	Extremities	Head and neck ¹
All places-----	100.0	47.8	29.4	15.3	7.5
Hospital-----	100.0	42.9	34.7	14.1	8.4
Doctor's office-----	100.0	42.0	26.7	23.9	7.4
Mobile unit-----	100.0	98.8	*	*	*
Other and unknown-----	100.0	65.3	19.9	8.8	6.0

¹Includes unknown body area.

doctors' offices were for X-rays of the chest. There were proportionately more medical X-ray exposures of the abdomen at a hospital than in a doctor's office.

Tables 9 and 10 show the place of visit for chest X-rays by selected demographic characteristics. Children under 15 were more likely to receive chest X-rays in a hospital, while a sizable proportion of the population 15-44 years of age received chest X-rays in other places such as schools and industrial clinics, where job and school related X-rays are frequently required. Although about half of each color group shown in tables 9 and 10 received chest X-rays in the hospital, white persons were more likely to receive chest X-rays in doctors' offices while other persons were more likely to go elsewhere for the X-ray. As family income increased, persons were less likely to obtain chest X-rays in a hospital and more likely to obtain them in a doctor's office. A similar pattern is noted for increased

educational attainment of the head of the family.

Tables 11 and 12 show the place of visit for X-rays of body areas other than the chest by the same demographic characteristics. The West Region had the highest proportion of the population reporting X-rays of other body areas in doctors' offices, and the Northeast Region had the lowest proportion with visits to doctors' offices for all X-rays except those of the chest. Persons in higher income categories and groups with higher education for the head of the family were more likely to receive X-rays for all body areas other than the chest in doctors' offices than in a hospital.

Table G shows a comparison of the current data for medical X-ray visits by body area and place of visit with data collected in previous years. Data for 1970 show an increase in the proportion of visits which were for the purpose of X-raying extremities. There was an increase in

Table G. Percent distribution of medical X-ray visits by area of body X-rayed and place of X-ray: United States, July 1960-June 1961, April-June 1964, April-September 1970

Area of body and place of X-ray	July 1960- June 1961	April- June 1964	April- September 1970
All medical X-ray visits ¹ -----	100.0	100.0	100.0
<u>Area of body</u>			
Chest-----	59.9	60.1	63.9
Abdomen-----	24.7	34.9	39.3
Extremities-----	16.0	15.3	20.5
Head and neck ² -----	8.2	10.8	10.0
<u>Place of X-ray</u>			
Hospital-----	50.0	54.3	58.4
Doctor's office-----	26.8	25.1	25.1
Other and unknown-----	23.2	20.6	16.5

¹The sum of the visits by body area X-rayed may be greater than the total number of visits, since during one visit more than one body area may have been X-rayed.

²Includes unknown body area in all three years. In 1961 and 1964 skin X-rays included. In 1970 skin X-rays were coded to specific areas of body.

1970 in the proportion of visits to hospitals and a decrease in proportion of visits to other places. Generally, this decrease is due to less frequent utilization of mobile units for X-rays.

DENTAL X-RAY VISITS

The following data on dental X-ray visits may be more meaningful to readers if reference is made to other reports on dental care from the National Health Survey. The most recent one, *Dental Visits, Volume and Interval Since Last Visit, United States, 1969*,⁴ shows data on interval, frequency, and volume of visits by the same variables shown in this report.

There were an estimated 68 million dental X-ray visits, or an average of 34 per 100 persons, during 1970 (table 13). Figure 7 compares the age distribution of persons making dental X-ray visits and the age distribution of those making

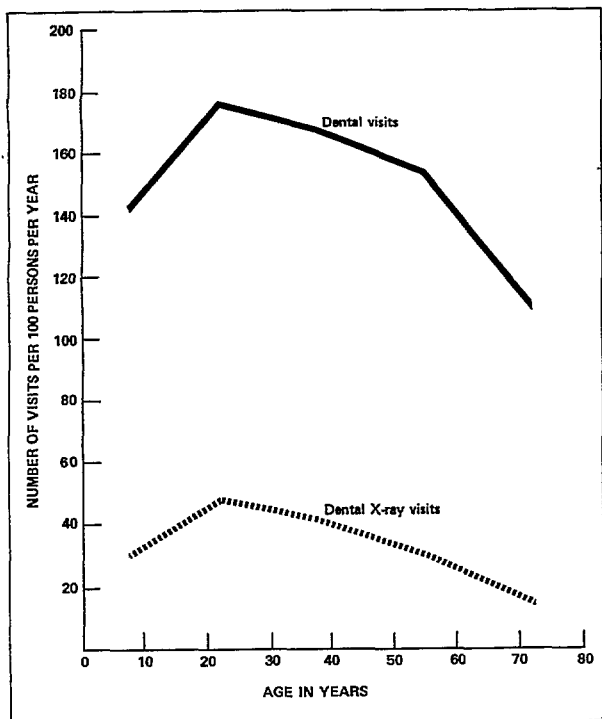


Figure 7. Comparison of rates per 100 persons per year of dental X-ray visits and dental visits by age.

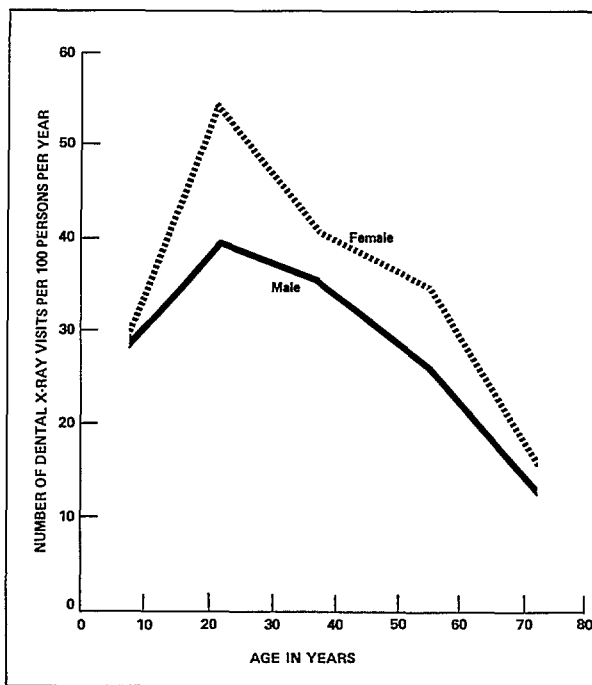


Figure 8. Dental X-ray visits per 100 persons per year by sex and age.

dental visits of all kinds.⁵ The curves are similar and indicate that during one of every four or five dental visits an X-ray procedure is performed. For the group over 65 years, only one in seven dental visits involves dental X-rays. This is probably because more people in this group are concerned with dentures when making dental visits.

At all ages, females had a higher rate of dental X-ray visits than males (figure 8). In the groups under 15 years and over 65 years, however, this difference was not significant. The largest gap came in the age group 15-29 years, in which dental care of all descriptions is increasingly used by females for cosmetic purposes. Another cause for the peak in dental X-ray visits among females in this group may be the belief that dental care is especially important during periods of pregnancy.

The rate of dental X-ray visits was three times as high for white persons as for persons of

all other races (table 13). Income distribution may account for a part of this difference. Only 17.9 percent of white persons have annual family incomes of less than \$5,000, while 41.0 percent of all other persons fall into this category.

Other factors which contribute to this gap may be lesser need for dental X-rays among all other groups or inability or unwillingness to obtain them. Data on dental conditions gathered in the Health Examination Survey reveal significant racial differences. Although Negroes at all ages have more decayed, untreated teeth than white persons, the total number of decayed, missing, and filled teeth per person is less for Negro than for white.^{6,7} In other words, Negroes have healthier teeth but receive less frequent dental attention than white persons. This pattern in total dental care is probably reflected in patterns for dental X-ray visits.

As population density increases, so does the average rate of dental X-ray visits (table 14 and figure 9). Persons living in SMSA's, which are primarily urbanized areas, had the highest rate in every age group.

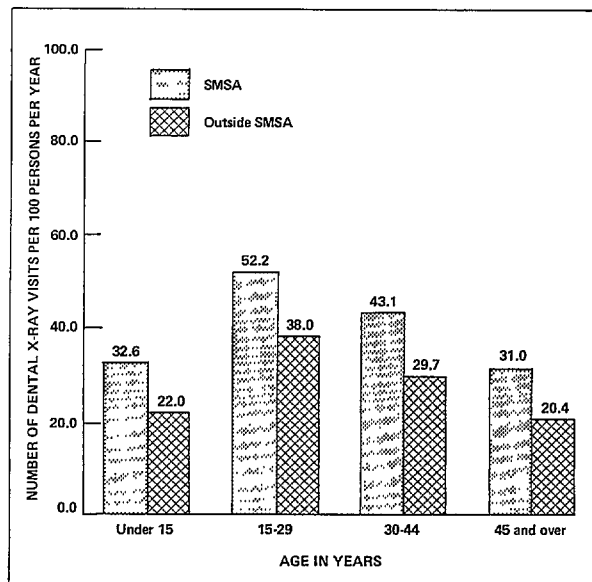


Figure 9. Number of dental X-ray visits per 100 persons per year by place of residence and age.

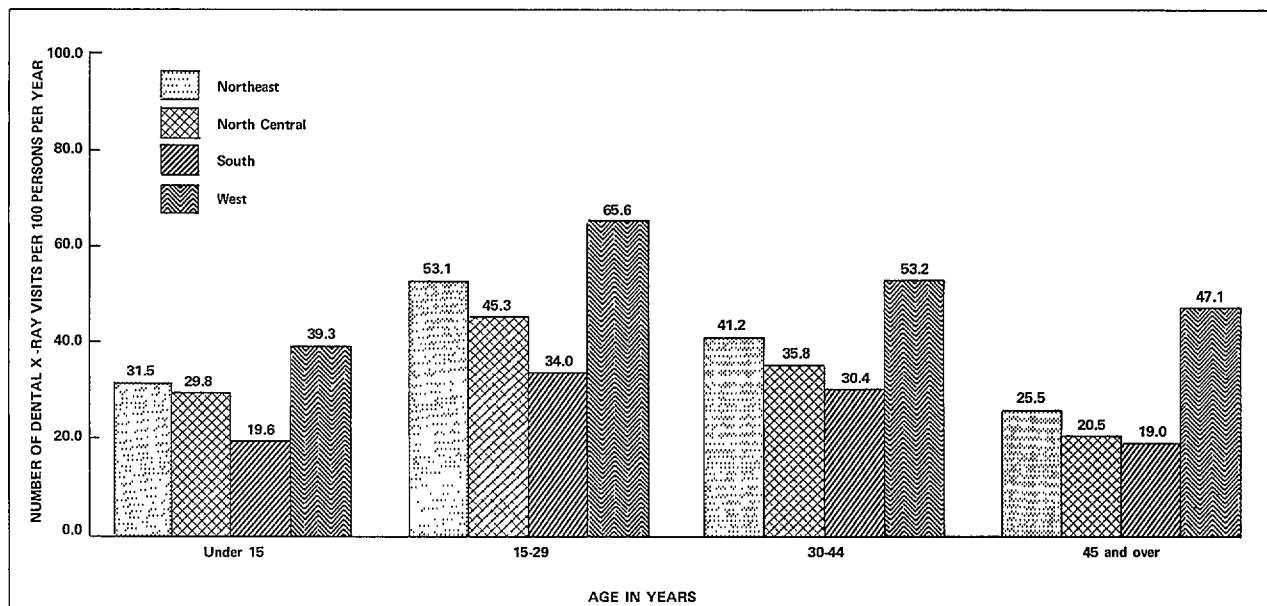


Figure 10. Number of dental X-ray visits per 100 persons per year by geographic region and age.

The rate of dental X-ray visits was highest for persons living in the West and lowest for those living in the South. In all regions, the age group 15-29 years had the highest rate (table 15 and figure 10). In the West, persons 45 years and over had a rate of dental X-ray visits almost twice as high as in the rest of the country. The rates for this older age group were not significantly different in the other three regions. The West was also the only region in which there was no significant drop in visits for the group 30-44 years.

The rate of dental X-ray visits was directly related to the rise in family income (table 16). As income rises persons are likely to make more use of orthodontics and preventive dentistry. Persons in the lower income groups probably incur expenses for dental X-rays only on the basis of immediate need.

The pattern for education resembles that for income, viz., the higher the educational level

of the head of family the higher the rate of dental X-ray visits (table 17). This seems reasonable since, in general, higher income is associated with higher educational levels. However, when income is held constant, the relative number of persons with dental X-ray visits increases with education, although the increase is greater at the higher income level shown in table H.

Table J presents the rate of dental X-ray visits by selected characteristics for 1961, 1964, and 1970. In most categories the rates showed either stability or a slight decline from 1961 to 1964. By 1970, however, all but three of the rates has surpassed their 1961 value. A brief summary of the changes in the past decade includes the following points:

1. The overall rate of dental X-ray visits was up 23 percent from the 1961 figure.

Table H. Number of dental X-ray visits per 100 persons per year, by family income, education of head of family, and age: United States, based on data collected during April-September 1970

Age	Total ¹	Family income and education of head of family					
		Less than \$7,000			\$7,000 or more		
		Less than 9 years	9-12 years	College	Less than 9 years	9-12 years	College
Number of dental X-ray visits per 100 persons per year							
All ages-----	33.8	9.1	23.4	44.2	19.3	38.5	62.4
Under 15 years-----	28.7	*	17.2	*	*	31.8	52.6
15-29 years-----	47.2	*	33.8	62.3	29.7	49.4	76.5
30-44 years-----	38.5	*	24.0	*	*	35.3	64.7
45 years and over----	25.7	7.4	20.9	*	13.9	38.9	58.5
45-64 years-----	30.7	*	22.3	*	*	41.1	61.7
65 years and over--	14.6	*	*	*	*	*	*

¹Includes unknown education.

Table J. Number of dental X-ray visits per 100 persons per year, by selected characteristics: United States, July 1960-June 1961, April-June 1964, April-September 1970

Characteristic	July 1960- June 1961	April- June 1964	April- September 1970
	Number of dental X-ray visits per 100 persons per year		
All persons with dental X-ray visits ¹ -----	27.4	26.8	33.8
<u>Age</u>			
Under 15 years-----	21.4	20.6	28.7
15-29 years-----	40.8	37.6	47.2
30-44 years-----	35.3	36.0	38.5
45 years and over-----	19.9	20.2	25.7
45-64 years-----	23.9	25.1	30.7
65 years and over-----	10.4	9.5	14.6
<u>Sex</u>			
Male-----	23.9	23.7	30.4
Female-----	30.7	29.8	36.9
<u>Color</u>			
White-----	29.0	29.2	36.9
All other-----	15.5	8.8	12.1
<u>Place of residence</u>			
SMSA-----	---	30.8	38.6
Outside SMSA nonfarm-----	---	20.9	26.2
Outside SMSA farm-----	---	12.4	16.9
<u>Geographic Region</u>			
Northeast-----	32.7	32.2	36.1
North Central-----	24.0	24.7	31.7
South-----	18.9	17.2	24.7
West-----	41.3	39.5	50.4
<u>Family income</u>			
Less than \$7,000-----	20.8	18.5	19.5
\$7,000 or more-----	45.3	39.9	43.6

¹Includes unknown income.

2. The largest increases by age came in the under 15 and the over 65 groups.
3. The rate for males increased more than the rate for females.
4. During the period 1961-1970, the rate of dental X-ray visits for white persons went up 27 percent, while the rate for all others decreased 22 percent. However, during this period the rate of dental visits has remained relatively constant for both population groups.
5. From 1964 to 1970 the largest increase by place of residence was among the farm population.
6. Rates went up most in the North Central and the South and least in the Northeast.
7. There was no significant change in the rate of dental X-ray visits by income categories.

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Table 1. Number of medical X-ray visits and number of medical X-ray visits per 100 persons per year, by color, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	Total	White	All other	Total	White	All other
<u>Both sexes</u>	Number of medical X-ray visits in thousands			Number of medical X-ray visits per 100 persons per year		
All ages-----	111,751	100,589	11,162	55.9	57.5	45.1
Under 15 years-----	14,369	12,425	1,944	24.4	25.1	20.9
15-29 years-----	26,084	23,242	2,842	55.4	56.7	46.7
30-44 years-----	22,137	19,544	2,593	65.9	65.7	67.1
45 years and over-----	49,160	45,378	3,782	81.5	82.8	68.8
45-64 years-----	33,978	30,885	3,094	82.3	82.7	78.2
65 years and over-----	15,182	14,494	*	79.9	83.1	*
<u>Male</u>						
All ages-----	54,457	49,178	5,279	56.6	58.2	45.0
Under 15 years-----	8,809	7,484	1,324	29.4	29.6	28.3
15-29 years-----	12,614	11,371	1,243	56.3	58.1	43.8
30-44 years-----	9,830	8,851	980	60.9	61.3	57.3
45 years and over-----	23,205	21,472	1,733	83.7	85.1	69.1
45-64 years-----	16,136	14,735	1,401	82.1	82.7	76.9
65 years and over-----	7,069	6,737	*	87.4	91.0	*
<u>Female</u>						
All ages-----	57,293	51,411	5,882	55.3	56.8	45.1
Under 15 years-----	5,560	4,941	*	19.3	20.4	*
15-29 years-----	13,470	11,871	1,599	54.6	55.4	49.2
30-44 years-----	12,307	10,693	1,614	70.5	69.9	75.0
45 years and over-----	25,956	23,906	2,050	79.7	80.8	68.6
45-64 years-----	17,842	16,149	1,693	82.4	82.7	79.3
65 years and over-----	8,114	7,757	*	74.4	77.2	*

Table 2. Number of medical X-ray visits and number of medical X-ray visits per 100 persons per year, by place of residence, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	All residences	SMSA	Outside SMSA	
			Nonfarm	Farm
<u>Both sexes</u>				
Number of medical X-ray visits in thousands				
All ages-----	111,751	76,933	31,425	3,392
Under 15 years-----	14,369	9,726	4,318	*
15-29 years-----	26,084	18,733	6,848	*
30-44 years-----	22,137	15,186	6,365	*
45 years and over-----	49,160	33,287	13,894	1,979
45-64 years-----	33,978	23,345	9,322	1,311
65 years and over-----	15,182	9,942	4,573	*
<u>Male</u>				
All ages-----	54,457	36,640	16,291	1,527
Under 15 years-----	8,809	5,715	2,917	*
15-29 years-----	12,614	8,789	3,606	*
30-44 years-----	9,830	6,595	2,938	*
45 years and over-----	23,205	15,540	6,829	835
45-64 years-----	16,136	10,844	4,868	*
65 years and over-----	7,069	4,697	1,962	*
<u>Female</u>				
All ages-----	57,293	40,293	15,135	1,865
Under 15 years-----	5,560	4,011	1,401	*
15-29 years-----	13,470	9,944	3,242	*
30-44 years-----	12,307	8,592	3,427	*
45 years and over-----	25,956	17,747	7,065	1,144
45-64 years-----	17,842	12,502	4,454	886
65 years and over-----	8,114	5,245	2,611	*
<u>Both sexes</u>				
Number of medical X-ray visits per 100 persons per year				
All ages-----	55.9	59.8	50.0	40.6
Under 15 years-----	24.4	26.1	22.5	*
15-29 years-----	55.4	61.2	46.4	*
30-44 years-----	65.9	68.6	62.1	*
45 years and over-----	81.5	86.1	74.6	65.7
45-64 years-----	82.3	86.8	75.8	62.2
65 years and over-----	79.9	84.6	72.2	*
<u>Male</u>				
All ages-----	56.6	60.0	53.4	35.4
Under 15 years-----	29.4	30.3	29.7	*
15-29 years-----	56.3	61.0	51.0	*
30-44 years-----	60.9	62.3	58.9	*
45 years and over-----	83.7	88.5	79.1	54.4
45-64 years-----	82.1	85.4	82.6	*
65 years and over-----	87.4	96.5	71.6	*
<u>Female</u>				
All ages-----	55.3	59.9	46.9	46.2
Under 15 years-----	19.3	21.8	15.0	*
15-29 years-----	54.6	61.4	42.1	*
30-44 years-----	70.5	74.5	65.2	*
45 years and over-----	79.7	84.1	70.7	77.6
45-64 years-----	82.4	88.0	69.6	84.2
65 years and over-----	74.4	76.2	72.6	*

Table 3. Number of medical X-ray visits and number of medical X-ray visits per 100 persons per year, by geographic region, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	All regions	North-east	North Central	South	West
<u>Both sexes</u>					
Number of medical X-ray visits in thousands					
All ages-----	111,751	25,913	31,422	33,029	21,387
Under 15 years-----	14,369	3,371	4,166	4,296	2,537
15-29 years-----	26,084	5,162	8,679	7,414	4,829
30-44 years-----	22,137	5,527	6,131	5,999	4,480
45 years and over-----	49,160	11,853	12,447	15,320	9,541
45-64 years-----	33,978	7,980	8,998	10,433	6,569
65 years and over-----	15,182	3,874	3,449	4,887	2,972
<u>Male</u>					
All ages-----	54,457	13,050	14,756	16,017	10,634
Under 15 years-----	8,809	2,042	2,316	3,018	1,432
15-29 years-----	12,614	2,681	3,683	3,862	2,389
30-44 years-----	9,830	2,798	2,515	2,549	1,968
45 years and over-----	23,205	5,530	6,241	6,589	4,845
45-64 years-----	16,136	3,680	4,644	4,584	3,228
65 years and over-----	7,069	1,849	1,597	2,005	1,618
<u>Female</u>					
All ages-----	57,293	12,862	16,667	17,011	10,753
Under 15 years-----	5,560	1,328	1,849	1,278	1,105
15-29 years-----	13,470	2,481	4,996	3,552	2,441
30-44 years-----	12,307	2,730	3,615	3,450	2,512
45 years and over-----	25,956	6,323	6,206	8,731	4,695
45-64 years-----	17,842	4,299	4,353	5,849	3,341
65 years and over-----	8,114	2,024	1,853	2,882	1,354
Number of medical X-ray visits per 100 persons per year					
All ages-----	55.9	53.5	55.5	54.3	62.9
Under 15 years-----	24.4	24.8	24.3	23.8	25.3
15-29 years-----	55.4	47.2	65.4	51.0	58.1
30-44 years-----	65.9	67.9	66.2	58.4	75.6
45 years and over-----	81.5	75.3	73.6	85.4	98.2
45-64 years-----	82.3	73.8	78.2	85.8	96.3
65 years and over-----	79.9	78.8	63.8	84.7	102.8
<u>Male</u>					
All ages-----	56.6	56.6	53.6	54.4	65.6
Under 15 years-----	29.4	30.1	26.4	32.1	28.5
15-29 years-----	56.3	51.4	57.7	55.2	62.9
30-44 years-----	60.9	71.2	54.9	52.4	70.9
45 years and over-----	83.7	77.4	80.3	80.3	105.1
45-64 years-----	82.1	72.7	85.5	79.3	95.7
65 years and over-----	87.4	88.7	68.4	82.5	130.9
<u>Female</u>					
All ages-----	55.3	50.7	57.3	54.3	60.5
Under 15 years-----	19.3	19.5	22.1	14.7	22.0
15-29 years-----	54.6	43.3	72.5	47.1	54.2
30-44 years-----	70.5	64.8	77.1	63.8	79.7
45 years and over-----	79.7	73.6	67.8	89.8	92.0
45-64 years-----	82.4	74.7	71.7	91.7	96.9
65 years and over-----	74.4	71.4	60.3	86.2	81.8

Table 4. Number of medical X-ray visits and number of medical X-ray visits per 100 persons per year, by family income, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	All incomes ¹	Family income					
		Less than \$3,000	\$3,000-\$4,999	\$5,000-\$6,999	\$7,000-\$9,999	\$10,000-\$14,999	\$15,000 or more
<u>Both sexes</u>		Number of medical X-ray visits in thousands					
All ages-----	111,751	12,466	13,537	14,260	21,801	24,412	17,917
Under 15 years-----	14,369	1,430	927	2,033	3,056	3,739	2,481
15-29 years-----	26,084	2,627	2,647	3,960	5,504	5,266	4,696
30-44 years-----	22,137	892	1,927	2,389	5,142	6,399	4,002
45 years and over-----	49,160	7,516	8,036	5,878	8,099	9,009	6,739
45-64 years-----	33,978	2,890	4,934	3,879	7,125	7,079	5,886
65 years and over-----	15,182	4,627	3,102	2,000	974	1,930	853
<u>Male</u>							
All ages-----	54,457	5,074	6,494	7,138	10,444	12,919	8,604
Under 15 years-----	8,809	1,077	*	1,161	1,680	2,433	1,512
15-29 years-----	12,614	1,259	1,412	1,970	2,717	2,571	1,935
30-44 years-----	9,830	*	810	1,115	2,195	2,878	1,927
45 years and over-----	23,205	2,559	3,719	2,893	3,852	5,037	3,230
45-64 years-----	16,136	988	2,128	1,739	3,404	3,812	2,820
65 years and over-----	7,069	1,571	1,591	1,154	*	1,225	*
<u>Female</u>							
All ages-----	57,293	7,392	7,043	7,122	11,357	11,493	9,313
Under 15 years-----	5,560	*	*	872	1,376	1,306	969
15-29 years-----	13,470	1,368	1,236	1,990	2,787	2,695	2,761
30-44 years-----	12,307	*	1,117	1,275	2,947	3,521	2,075
45 years and over-----	25,956	4,957	4,317	2,985	4,247	3,971	3,509
45-64 years-----	17,842	1,902	2,806	2,140	3,721	3,267	3,066
65 years and over-----	8,114	3,055	1,511	845	*	*	*
<u>Both sexes</u>		Number of medical X-ray visits per 100 persons per year					
All ages-----	55.9	61.9	63.4	52.6	54.5	52.6	57.8
Under 15 years-----	24.4	35.8	16.0	23.9	22.9	25.1	29.0
15-29 years-----	55.4	63.6	54.3	56.5	55.6	47.6	63.8
30-44 years-----	65.9	58.3	81.3	59.0	71.4	63.8	63.1
45 years and over-----	81.5	71.6	96.7	77.6	85.1	86.7	77.1
45-64 years-----	82.3	73.1	117.1	72.6	91.4	78.5	77.9
65 years and over-----	79.9	70.7	75.6	89.6	56.4	140.4	71.8
<u>Male</u>							
All ages-----	56.6	61.5	67.4	54.7	52.5	55.5	55.5
Under 15 years-----	29.4	53.4	*	26.4	24.6	32.1	34.4
15-29 years-----	56.3	63.0	62.5	60.7	57.2	49.2	55.1
30-44 years-----	60.9	*	82.2	59.6	61.1	56.8	62.9
45 years and over-----	83.7	69.6	104.8	82.2	81.7	93.7	71.2
45-64 years-----	82.1	73.7	130.7	71.8	86.1	81.0	71.0
65 years and over-----	87.4	67.2	82.9	104.9	*	182.3	*
<u>Female</u>							
All ages-----	55.3	62.2	60.1	50.5	56.5	49.7	60.1
Under 15 years-----	19.3	*	*	21.3	21.1	17.8	23.3
15-29 years-----	54.6	64.3	47.4	52.9	54.1	46.1	71.7
30-44 years-----	70.5	*	80.6	58.5	81.6	71.0	63.2
45 years and over-----	79.7	72.7	90.6	73.6	88.5	79.1	83.5
45-64 years-----	82.4	72.8	108.6	73.3	96.9	75.7	85.7
65 years and over-----	74.4	72.7	69.2	74.6	*	*	*

¹Includes unknown income.

Table 5. Number of medical X-ray visits and number of medical X-ray visits per 100 persons per year, by education of head of family, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	Total ¹	Education of head of family				
		Less than 9 years	9-11 years	12 years	13-15 years	16 years or more
<u>Both sexes</u>		Number of medical X-ray visits in thousands				
All ages-----	111,751	26,831	21,570	33,864	13,490	15,173
Under 15 years-----	14,369	2,605	2,793	4,859	1,563	2,451
15-29 years-----	26,084	3,217	4,660	9,191	4,375	4,457
30-44 years-----	22,137	3,437	4,576	7,640	3,259	3,178
45 years and over-----	49,160	17,572	9,541	12,174	4,293	5,086
45-64 years-----	33,978	10,597	6,593	9,660	2,933	3,902
65 years and over-----	15,182	6,975	2,949	2,514	1,359	1,185
<u>Male</u>						
All ages-----	54,457	13,379	9,932	16,485	6,660	7,642
Under 15 years-----	8,809	1,697	1,683	2,950	983	1,460
15-29 years-----	12,614	1,754	2,023	4,364	2,295	2,109
30-44 years-----	9,830	1,291	2,037	3,308	1,585	1,599
45 years and over-----	23,205	8,637	4,189	5,864	1,797	2,473
45-64 years-----	16,136	5,244	2,812	5,055	1,094	1,787
65 years and over-----	7,069	3,393	1,377	809	*	*
<u>Female</u>						
All ages-----	57,293	13,452	11,639	17,379	6,830	7,531
Under 15 years-----	5,560	908	1,110	1,909	*	991
15-29 years-----	13,470	1,463	2,637	4,826	2,080	2,348
30-44 years-----	12,307	2,146	2,539	4,333	1,674	1,579
45 years and over-----	25,956	8,935	5,352	6,311	2,495	2,613
45-64 years-----	17,842	5,353	3,781	4,605	1,839	2,115
65 years and over-----	8,114	3,582	1,572	1,705	*	*
<u>Both sexes</u>		Number of medical X-ray visits per 100 persons per year				
All ages-----	55.9	54.1	59.6	54.7	58.4	57.7
Under 15 years-----	24.4	22.6	24.6	24.0	23.5	29.3
15-29 years-----	55.4	39.0	55.5	58.1	61.2	67.9
30-44 years-----	65.9	57.5	76.1	67.1	79.0	55.5
45 years and over-----	81.5	74.7	91.8	84.0	83.2	90.3
45-64 years-----	82.3	78.7	86.3	84.4	75.6	91.7
65 years and over-----	79.9	69.5	107.2	82.2	106.2	*
<u>Male</u>						
All ages-----	56.6	56.2	57.2	55.9	59.0	59.4
Under 15 years-----	29.4	28.8	29.0	28.7	29.1	34.3
15-29 years-----	56.3	40.3	50.6	60.4	66.0	70.1
30-44 years-----	60.9	46.1	71.6	61.6	76.6	55.2
45 years and over-----	83.7	80.2	88.6	88.6	76.1	91.9
45-64 years-----	82.1	84.8	76.8	92.0	57.4	85.7
65 years and over-----	87.4	74.0	129.1	72.2	*	113.4
<u>Female</u>						
All ages-----	55.3	52.2	61.9	53.6	57.8	56.1
Under 15 years-----	19.3	16.0	20.0	19.2	*	24.1
15-29 years-----	54.6	35.1	59.9	56.2	56.6	66.0
30-44 years-----	70.5	67.5	80.1	72.1	81.3	55.9
45 years and over-----	79.7	70.1	94.5	80.1	89.1	88.8
45-64 years-----	82.4	73.4	95.1	77.5	93.2	97.5
65 years and over-----	74.4	65.6	93.4	87.9	*	*

¹Includes unknown education.

Table 6. Number of medical X-ray visits and number of medical X-ray visits per 100 persons per year, by area of body X-rayed, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	All medical X-ray visits	Area of body X-rayed ²				
		Chest	Lower abdomen	Upper abdomen	Extremities	Head and neck
<u>Both sexes</u>		Number of medical X-ray visits in thousands				
All ages-----	111,751	71,387	19,669	24,298	22,883	10,892
Under 15 years-----	14,369	6,012	1,693	1,393	6,433	1,887
15-29 years-----	26,084	15,778	4,213	4,440	6,247	2,433
30-44 years-----	22,137	15,751	3,730	5,376	3,107	1,750
45 years and over-----	49,160	33,846	10,033	13,089	7,095	4,822
45-64 years-----	33,978	23,068	5,849	8,629	5,266	3,114
65 years and over-----	15,182	10,778	4,183	4,459	1,830	1,708
<u>Male</u>						
All ages-----	54,457	34,881	8,342	10,774	11,803	5,913
Under 15 years-----	8,809	3,753	814	832	3,523	1,282
15-29 years-----	12,614	7,687	1,765	1,747	3,966	1,440
30-44 years-----	9,830	7,591	1,659	2,413	1,475	*
45 years and over-----	23,205	15,850	4,104	5,783	2,840	2,393
45-64 years-----	16,136	10,875	2,595	4,120	2,267	1,574
65 years and over-----	7,069	4,975	1,509	1,664	*	820
<u>Female</u>						
All ages-----	57,293	36,506	11,328	13,524	11,081	4,979
Under 15 years-----	5,560	2,259	879	*	2,911	*
15-29 years-----	13,470	8,091	2,448	2,693	2,282	992
30-44 years-----	12,307	8,160	2,071	2,964	1,633	953
45 years and over-----	25,956	17,996	5,929	7,306	4,256	2,429
45-64 years-----	17,842	12,193	3,254	4,510	2,999	1,541
65 years and over-----	8,114	5,803	2,675	2,796	1,257	888
<u>Both sexes</u>		Number of medical X-ray visits per 100 persons per year				
All ages-----	55.9	35.7	9.8	12.2	11.5	5.5
Under 15 years-----	24.4	10.2	2.9	2.4	10.9	3.2
15-29 years-----	55.4	33.5	8.9	9.4	13.3	5.2
30-44 years-----	65.9	46.9	11.1	16.0	9.2	5.2
45 years and over-----	81.5	56.1	16.6	21.7	11.8	8.0
45-64 years-----	82.3	55.8	14.2	20.9	12.7	7.5
65 years and over-----	79.9	56.8	22.0	23.5	9.6	9.0
<u>Male</u>						
All ages-----	56.6	36.2	8.7	11.2	12.3	6.1
Under 15 years-----	29.4	12.5	2.7	2.8	11.8	4.3
15-29 years-----	56.3	34.3	7.9	7.8	17.7	6.4
30-44 years-----	60.9	47.0	10.3	14.9	9.1	*
45 years and over-----	83.7	57.2	14.8	20.9	10.2	8.6
45-64 years-----	82.1	55.4	13.2	21.0	11.5	8.0
65 years and over-----	87.4	61.5	18.7	20.6	*	10.1
<u>Female</u>						
All ages-----	55.3	35.2	10.9	13.1	10.7	4.8
Under 15 years-----	19.3	7.8	3.0	*	10.1	*
15-29 years-----	54.6	32.8	9.9	10.9	9.2	4.0
30-44 years-----	70.5	46.7	11.9	17.0	9.4	5.5
45 years and over-----	79.7	55.3	18.2	22.4	13.1	7.5
45-64 years-----	82.4	56.3	15.0	20.8	13.8	7.1
65 years and over-----	74.4	53.2	24.5	25.6	11.5	8.1

¹The sum of visits by area of body X-rayed may be greater than the total number of visits, since during one visit more than one body area may be X-rayed.

²There were an estimated 323,000 thousand X-ray visits for which body area was unknown.

Table 7. Number of body areas X-rayed, by place of X-ray and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Area of body and age	Total	Place of X-ray			
		Hospital	Doctor's office	Mobile unit	Other and un-known
<u>All areas of body</u>		Number of areas of body in thousands			
All ages-----	149,453	87,332	37,466	6,288	18,366
Under 15 years-----	17,470	11,793	4,294	*	1,266
15-29 years-----	33,185	17,375	8,724	1,669	5,416
30-44 years-----	29,797	15,965	7,539	1,908	4,384
45 years and over-----	69,002	42,198	16,909	2,595	7,299
45-64 years-----	45,989	27,290	11,091	2,112	5,496
65 years and over-----	23,012	14,908	5,818	*	1,803
<u>Chest</u>					
All ages-----	71,387	37,445	15,744	6,213	11,985
Under 15 years-----	6,012	4,213	986	*	*
15-29 years-----	15,778	7,062	3,331	1,658	3,727
30-44 years-----	15,751	7,589	3,347	1,908	2,908
45 years and over-----	33,846	18,580	8,081	2,541	4,643
45-64 years-----	23,068	12,203	5,242	2,101	3,522
65 years and over-----	10,778	6,378	2,840	*	1,121
<u>Abdomen</u>					
All ages-----	43,967	30,270	9,993	*	3,661
Under 15 years-----	3,086	2,126	*	*	*
15-29 years-----	8,653	5,186	2,522	*	945
30-44 years-----	9,107	5,736	2,325	*	1,046
45 years and over-----	23,122	17,222	4,473	*	1,384
45-64 years-----	14,479	10,520	3,036	*	923
65 years and over-----	8,643	6,702	1,437	*	*
<u>Extremities</u>					
All ages-----	22,883	12,296	8,968	*	1,609
Under 15 years-----	6,433	3,868	2,340	*	*
15-29 years-----	6,247	3,481	2,163	*	*
30-44 years-----	3,107	1,343	1,487	*	*
45 years and over-----	7,095	3,604	2,979	*	*
45-64 years-----	5,266	2,839	2,000	*	*
65 years and over-----	1,830	*	980	*	*
<u>Head and neck¹</u>					
All ages-----	11,215	7,322	2,760	*	1,111
Under 15 years-----	1,938	1,587	*	*	*
15-29 years-----	2,507	1,646	*	*	*
30-44 years-----	1,831	1,298	*	*	*
45 years and over-----	4,939	2,792	1,376	*	*
45-64 years-----	3,177	1,727	814	*	*
65 years and over-----	1,762	1,064	*	*	*

¹Includes unknown body area.

Table 8. Percent distribution of areas of body X-rayed by place of X-ray, according to age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Area of body and age	Total	Place of X-ray			
		Hospital	Doctor's office	Mobile unit	Other and un-known
<u>All areas of body</u>		Percent distribution			
All ages-----	100.0	58.4	25.1	4.2	12.3
Under 15 years-----	100.0	67.5	24.6	*	7.2
15-29 years-----	100.0	52.4	26.3	5.0	16.3
30-44 years-----	100.0	53.6	25.3	6.4	14.7
45 years and over-----	100.0	61.2	24.5	3.8	10.6
45-64 years-----	100.0	59.3	24.1	4.6	12.0
65 years and over-----	100.0	64.8	25.3	*	7.8
<u>Chest</u>					
All ages-----	100.0	52.5	22.1	8.7	16.8
Under 15 years-----	100.0	70.1	16.4	*	*
15-29 years-----	100.0	44.8	21.1	10.5	23.6
30-44 years-----	100.0	48.2	21.2	12.1	18.5
45 years and over-----	100.0	54.9	23.9	7.5	13.7
45-64 years-----	100.0	52.9	22.7	9.1	15.3
65 years and over-----	100.0	59.2	26.3	*	10.4
<u>Abdomen</u>					
All ages-----	100.0	68.8	22.7	*	8.3
Under 15 years-----	100.0	68.9	*	*	*
15-29 years-----	100.0	59.9	29.1	*	10.9
30-44 years-----	100.0	63.0	25.5	*	11.5
45 years and over-----	100.0	74.5	19.3	*	6.0
45-64 years-----	100.0	72.7	21.0	*	6.4
65 years and over-----	100.0	77.5	16.6	*	*
<u>Extremities</u>					
All ages-----	100.0	53.7	39.2	*	7.0
Under 15 years-----	100.0	60.1	36.4	*	*
15-29 years-----	100.0	55.7	34.6	*	*
30-44 years-----	100.0	43.2	47.9	*	*
45 years and over-----	100.0	50.8	42.0	*	*
45-64 years-----	100.0	53.9	38.0	*	*
65 years and over-----	100.0	*	53.6	*	*
<u>Head and neck¹</u>					
All ages-----	100.0	65.3	24.6	*	9.9
Under 15 years-----	100.0	81.9	*	*	*
15-29 years-----	100.0	65.7	*	*	*
30-44 years-----	100.0	70.9	*	*	*
45 years and over-----	100.0	56.5	27.9	*	*
45-64 years-----	100.0	54.4	25.6	*	*
65 years and over-----	100.0	60.4	*	*	*

¹Includes unknown body area.

Table 9. Number of chest X-ray visits, by place of X-ray visit and selected characteristics: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Characteristic	Total	Place of X-ray			
		Hospital	Doctor's office	Mobile unit	Other and unknown
Number of chest X-ray visits in thousands					
Total chest X-ray visits ¹ -----	71,387	37,445	15,744	6,213	11,985
<u>Age</u>					
Under 15 years-----	6,012	4,213	986	*	*
15-29 years-----	15,778	7,062	3,331	1,658	3,727
30-44 years-----	15,751	7,589	3,347	1,908	2,908
45 years and over-----	33,846	18,580	8,081	2,541	4,643
45-64 years-----	23,068	12,203	5,242	2,101	3,522
65 years and over-----	10,778	6,378	2,840	*	1,121
<u>Sex</u>					
Male-----	34,881	17,706	7,993	2,915	6,267
Female-----	36,506	19,739	7,751	3,299	5,717
<u>Color</u>					
White-----	62,883	33,020	14,636	5,213	10,015
All other-----	8,504	4,425	1,109	1,001	1,969
<u>Place of residence</u>					
SMSA-----	48,989	24,706	10,934	4,428	8,921
Outside SMSA nonfarm-----	20,302	11,562	4,276	1,699	2,765
Outside SMSA farm-----	2,096	1,177	*	*	*
<u>Geographic region</u>					
Northeast-----	16,161	8,962	3,009	1,382	2,808
North Central-----	19,620	10,645	3,943	2,007	3,025
South-----	21,790	10,845	5,028	2,059	3,858
West-----	13,816	6,993	3,764	*	2,294
<u>Family income</u>					
Less than \$3,000-----	8,444	4,956	1,489	*	1,467
\$3,000-\$4,999-----	8,819	5,120	1,617	*	1,462
\$5,000-\$6,999-----	9,507	4,941	2,069	975	1,522
\$7,000-\$9,999-----	13,455	7,193	2,921	1,115	2,226
\$10,000-\$14,999-----	15,272	7,395	3,521	1,794	2,563
\$15,000 or more-----	11,004	5,150	3,190	*	1,876
<u>Education of head of family</u>					
Less than 9 years-----	18,521	10,606	3,689	1,173	3,053
9-11 years-----	12,532	6,681	2,566	1,263	2,022
12 years-----	21,066	11,275	4,379	2,102	3,308
13-15 years-----	9,163	4,650	2,026	*	1,824
16 years or more-----	9,604	4,010	2,971	940	1,683

¹Includes unknown income and education.

Table 10. Percent distribution of chest X-ray visits by place of X-ray visit, according to selected characteristics: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Characteristic	Total	Place of X-ray			
		Hospital	Doctor's office	Mobile unit	Other and unknown
Percent distribution					
Total chest X-ray visits ¹ -----	100.0	52.5	22.1	8.7	16.8
<u>Age</u>					
Under 15 years-----	100.0	70.1	16.4	*	*
15-29 years-----	100.0	44.8	21.1	10.5	23.6
30-44 years-----	100.0	48.2	21.2	12.1	18.5
45 years and over-----	100.0	54.9	23.9	7.5	13.7
45-64 years-----	100.0	52.9	22.7	9.1	15.3
65 years and over-----	100.0	59.2	26.3	*	10.4
<u>Sex</u>					
Male-----	100.0	50.8	22.9	8.4	18.0
Female-----	100.0	54.1	21.2	9.0	15.7
<u>Color</u>					
White-----	100.0	52.5	23.3	8.3	15.9
All other-----	100.0	52.0	13.0	11.8	23.2
<u>Place of residence</u>					
SMSA-----	100.0	50.4	22.3	9.0	18.2
Outside SMSA nonfarm-----	100.0	57.0	21.1	8.4	13.6
Outside SMSA farm-----	100.0	56.2	*	*	*
<u>Geographic region</u>					
Northeast-----	100.0	55.5	18.6	8.6	17.4
North Central-----	100.0	54.3	20.1	10.2	15.4
South-----	100.0	49.8	23.1	9.4	17.7
West-----	100.0	50.6	27.2	*	16.6
<u>Family income</u>					
Less than \$3,000-----	100.0	58.7	17.6	*	17.4
\$3,000-\$4,999-----	100.0	58.1	18.3	*	16.6
\$5,000-\$6,999-----	100.0	52.0	21.8	10.3	16.0
\$7,000-\$9,999-----	100.0	53.5	21.7	8.3	16.5
\$10,000-\$14,999-----	100.0	48.4	23.1	11.7	16.8
\$15,000 or more-----	100.0	46.8	29.0	*	17.0
<u>Education of head of family</u>					
Less than 9 years-----	100.0	57.3	19.9	6.3	16.5
9-11 years-----	100.0	53.3	20.5	10.1	16.1
12 years-----	100.0	53.5	20.8	10.0	15.7
13-15 years-----	100.0	50.7	22.1	*	19.9
16 years or more-----	100.0	41.8	30.9	9.8	17.5

¹Includes unknown income and education.

Table 11. Number of areas of body (except chest) X-rayed, by place of X-ray, according to selected characteristics: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Characteristic	Total	Place of X-ray			
		Hospital	Doctor's office	Mobile unit	Other and un-known
Number of areas of body in thousands					
All areas of body (except chest) ^{1,2} -----	78,066	49,888	21,721	*	6,382
<u>Age</u>					
Under 15 years-----	11,458	7,580	3,308	*	*
15-29 years-----	17,407	10,313	5,393	*	1,689
30-44 years-----	14,046	8,377	4,192	*	1,477
45 years and over-----	35,156	23,618	8,828	*	2,656
45-64 years-----	22,921	15,087	5,849	*	1,974
65 years and over-----	12,234	8,531	2,978	*	*
<u>Sex</u>					
Male-----	37,040	22,767	10,682	*	3,559
Female-----	41,025	27,120	11,040	*	2,822
<u>Color</u>					
White-----	71,347	45,415	19,768	*	6,099
All other-----	6,718	4,472	1,953	*	*
<u>Place of residence</u>					
SMSA-----	53,761	34,104	15,373	*	4,242
Outside SMSA nonfarm-----	21,597	13,991	5,667	*	1,907
Outside SMSA farm-----	2,707	1,793	*	*	*
<u>Geographic region</u>					
Northeast-----	18,505	13,226	4,057	*	1,223
North Central-----	22,089	14,759	5,445	*	1,831
South-----	22,502	13,547	7,051	*	1,882
West-----	14,969	8,355	5,168	*	1,446
<u>Family income</u>					
Less than \$3,000-----	8,905	6,288	2,155	*	*
\$3,000-\$4,999-----	8,356	5,194	1,988	*	1,175
\$5,000-\$6,999-----	10,161	6,658	2,865	*	*
\$7,000-\$9,999-----	15,899	10,568	4,366	*	954
\$10,000-\$14,999-----	17,422	10,426	5,548	*	1,449
\$15,000 or more-----	12,414	7,559	3,785	*	1,048
<u>Education of head of family</u>					
Less than 9 years-----	17,995	11,884	4,557	*	1,521
9-11 years-----	15,751	10,931	3,899	*	911
12 years-----	23,904	15,051	6,974	*	1,868
13-15 years-----	9,798	6,101	2,731	*	954
16 years or more-----	10,011	5,457	3,416	*	1,127

¹Includes unknown income and education.

²Includes unknown body area.

Table 12. Percent distribution of areas of body (except chest) X-rayed by place of X-ray, according to selected characteristics: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Characteristic	Total	Place of X-ray			
		Hospital	Doctor's office	Mobile unit	Other and unknown
All areas of body (except chest) ^{1,2} -----	100.0	63.9	27.8	*	8.2
<u>Age</u>					
Under 15 years-----	100.0	66.2	28.9	*	*
15-29 years-----	100.0	59.2	31.0	*	9.7
30-44 years-----	100.0	59.6	29.8	*	10.5
45 years and over-----	100.0	67.2	25.1	*	7.6
45-64 years-----	100.0	65.8	25.5	*	8.6
65 years and over-----	100.0	69.7	24.3	*	*
<u>Sex</u>					
Male-----	100.0	61.5	28.8	*	9.6
Female-----	100.0	66.1	26.9	*	6.9
<u>Color</u>					
White-----	100.0	63.7	27.7	*	8.5
All other-----	100.0	66.6	29.1	*	*
<u>Place of residence</u>					
SMSA-----	100.0	63.4	28.6	*	7.9
Outside SMSA nonfarm-----	100.0	64.8	26.2	*	8.8
Outside SMSA farm-----	100.0	66.2	*	*	*
<u>Geographic region</u>					
Northeast-----	100.0	71.5	21.9	*	6.6
North Central-----	100.0	66.8	24.7	*	8.3
South-----	100.0	60.2	31.3	*	8.4
West-----	100.0	55.8	34.5	*	9.7
<u>Family income</u>					
Less than \$3,000-----	100.0	70.6	24.2	*	*
\$3,000-\$4,999-----	100.0	62.2	23.8	*	14.1
\$5,000-\$6,999-----	100.0	65.5	28.2	*	*
\$7,000-\$9,999-----	100.0	66.5	27.5	*	6.0
\$10,000-\$14,999-----	100.0	59.8	31.8	*	8.3
\$15,000 or more-----	100.0	60.9	30.5	*	8.4
<u>Education of head of family</u>					
Less than 9 years-----	100.0	66.0	25.3	*	8.5
9-11 years-----	100.0	69.4	24.8	*	5.8
12 years-----	100.0	63.0	29.2	*	7.8
13-15 years-----	100.0	62.3	27.9	*	9.7
16 years or more-----	100.0	54.5	34.1	*	11.3

¹Includes unknown income and education.

²Includes unknown body area.

Table 13. Number of dental X-ray visits and number of dental X-ray visits per 100 persons per year, by color, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	Total	White	All other	Total	White	All other
<u>Both sexes</u>	Number of dental X-ray visits in thousands			Number of dental X-ray visits per 100 persons per year		
All ages-----	67,533	64,534	3,000	33.8	36.9	12.1
Under 15 years-----	16,883	16,199	*	28.7	32.7	*
15-29 years-----	22,230	21,069	1,161	47.2	51.4	19.1
30-44 years-----	12,948	12,228	*	38.5	41.1	*
45 years and over-----	15,473	15,037	*	25.7	27.4	*
45-64 years-----	12,691	12,281	*	30.7	32.9	*
65 years and over-----	2,782	2,756	*	14.6	15.8	*
<u>Male</u>						
All ages-----	29,290	27,982	1,308	30.4	33.1	11.2
Under 15 years-----	8,497	8,128	*	28.4	32.1	*
15-29 years-----	8,825	8,338	*	39.4	42.6	*
30-44 years-----	5,783	5,526	*	35.8	38.3	*
45 years and over-----	6,185	5,989	*	22.3	23.7	*
45-64 years-----	5,124	4,948	*	26.1	27.8	*
65 years and over-----	1,060	1,042	*	13.1	14.1	*
<u>Female</u>						
All ages-----	38,244	36,552	1,692	36.9	40.4	13.0
Under 15 years-----	8,386	8,071	*	29.0	33.3	*
15-29 years-----	13,405	12,731	*	54.3	59.4	*
30-44 years-----	7,165	6,702	*	41.0	43.8	*
45 years and over-----	9,288	9,048	*	28.5	30.6	*
45-64 years-----	7,567	7,334	*	34.9	37.6	*
65 years and over-----	1,722	1,714	*	15.8	17.1	*

Table 14. Number of dental X-ray visits and number of dental X-ray visits per 100 persons per year, by place of residence, sex, and age. United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	All residences	SMSA	Outside SMSA	
			Nonfarm	Farm
<u>Both sexes</u>				
Number of dental X-ray visits in thousands				
All ages-----	67,533	49,632	16,489	1,413
Under 15 years-----	16,883	12,143	4,197	*
15-29 years-----	22,230	15,963	5,943	*
30-44 years-----	12,948	9,537	3,172	*
45 years and over-----	15,473	11,989	3,178	*
45-64 years-----	12,691	9,791	2,619	*
65 years and over-----	2,782	2,198	*	*
<u>Male</u>				
All ages-----	29,290	21,790	6,891	*
Under 15 years-----	8,497	6,104	2,134	*
15-29 years-----	8,825	6,434	2,298	*
30-44 years-----	5,783	4,461	1,220	*
45 years and over-----	6,185	4,791	1,239	*
45-64 years-----	5,124	3,932	1,048	*
65 years and over-----	1,060	859	*	*
<u>Female</u>				
All ages-----	38,244	27,841	9,598	804
Under 15 years-----	8,386	6,038	2,064	*
15-29 years-----	13,405	9,529	3,644	*
30-44 years-----	7,165	5,076	1,951	*
45 years and over-----	9,288	7,198	1,939	*
45-64 years-----	7,567	5,860	1,570	*
65 years and over-----	1,722	1,338	*	*
<u>Both sexes</u>				
Number of dental X-ray visits per 100 persons per year				
All ages-----	33.8	38.6	26.2	16.9
Under 15 years-----	28.7	32.6	21.9	*
15-29 years-----	47.2	52.2	40.3	*
30-44 years-----	38.5	43.1	31.0	*
45 years and over-----	25.7	31.0	17.1	*
45-64 years-----	30.7	36.4	21.3	*
65 years and over-----	14.6	18.7	*	*
<u>Male</u>				
All ages-----	30.4	35.5	22.6	*
Under 15 years-----	28.4	32.4	21.7	*
15-29 years-----	39.4	44.7	32.5	*
30-44 years-----	35.8	42.1	24.5	*
45 years and over-----	22.3	27.3	14.3	*
45-64 years-----	26.1	31.0	17.8	*
65 years and over-----	13.1	17.7	*	*
<u>Female</u>				
All ages-----	36.9	41.4	29.7	19.9
Under 15 years-----	29.0	32.8	22.1	*
15-29 years-----	54.3	58.8	47.3	*
30-44 years-----	41.0	44.0	37.1	*
45 years and over-----	28.5	34.1	19.4	*
45-64 years-----	34.9	41.2	24.5	*
65 years and over-----	15.8	19.4	*	*

Table 15. Number of dental X-ray visits and number of dental X-ray visits per 100 persons per year, by geographic region, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	All regions	Northeast	North Central	South	West
<u>Both sexes</u>					
Number of dental X-ray visits in thousands					
All ages-----	67,533	17,477	17,915	15,011	17,131
Under 15 years-----	16,883	4,284	5,107	3,543	3,948
15-29 years-----	22,230	5,818	6,022	4,939	5,451
30-44 years-----	12,948	3,354	3,315	3,122	3,156
45 years and over-----	15,473	4,020	3,471	3,407	4,575
45-64 years-----	12,691	3,399	2,808	2,660	3,825
65 years and over-----	2,782	*	*	*	*
<u>Male</u>					
All ages-----	29,290	7,244	8,248	6,624	7,173
Under 15 years-----	8,497	1,920	2,746	1,841	1,989
15-29 years-----	8,825	2,137	2,465	2,040	2,183
30-44 years-----	5,783	1,526	1,562	1,499	1,197
45 years and over-----	6,185	1,660	1,476	1,243	1,805
45-64 years-----	5,124	1,440	1,175	1,019	1,491
65 years and over-----	1,060	*	*	*	*
<u>Female</u>					
All ages-----	38,244	10,233	9,667	8,387	9,957
Under 15 years-----	8,386	2,364	2,361	1,702	1,959
15-29 years-----	13,405	3,681	3,558	2,898	3,268
30-44 years-----	7,165	1,828	1,754	1,623	1,960
45 years and over-----	9,288	2,360	1,994	2,164	2,771
45-64 years-----	7,567	1,959	1,632	1,641	2,334
65 years and over-----	1,722	*	*	*	*
Number of dental X-ray visits per 100 persons per year					
All ages-----	33.8	36.1	31.7	24.7	50.4
Under 15 years-----	28.7	31.5	29.8	19.6	39.3
15-29 years-----	47.2	53.1	45.3	34.0	65.6
30-44 years-----	38.5	41.2	35.8	30.4	53.2
45 years and over-----	25.7	25.5	20.5	19.0	47.1
45-64 years-----	30.7	31.4	24.4	21.9	56.1
65 years and over-----	14.6	*	*	*	*
<u>Male</u>					
All ages-----	30.4	31.4	30.0	22.5	44.3
Under 15 years-----	28.4	28.3	31.3	19.6	39.6
15-29 years-----	39.4	41.0	38.6	29.2	57.5
30-44 years-----	35.8	38.8	34.1	30.8	43.1
45 years and over-----	22.3	23.2	19.0	15.1	39.2
45-64 years-----	26.1	28.5	21.6	17.6	44.2
65 years and over-----	13.1	*	*	*	*
<u>Female</u>					
All ages-----	36.9	40.4	33.2	26.8	56.0
Under 15 years-----	29.0	34.7	28.3	19.6	39.0
15-29 years-----	54.3	64.2	51.6	38.4	72.5
30-44 years-----	41.0	43.4	37.4	30.0	62.2
45 years and over-----	28.5	27.5	21.8	22.3	54.3
45-64 years-----	34.9	34.0	26.9	25.7	67.7
65 years and over-----	15.8	*	*	*	*

Table 16. Number of dental X-ray visits and number of dental X-ray visits per 100 persons per year, by family income, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	All incomes ¹	Family income					
		Less than \$3,000	\$3,000-\$4,999	\$5,000-\$6,999	\$7,000-\$9,999	\$10,000-\$14,999	\$15,000 or more
<u>Both sexes</u>		Number of dental X-ray visits in thousands					
All ages-----	67,533	2,694	3,962	6,733	12,025	19,700	19,426
Under 15 years-----	16,883	*	*	1,642	3,277	5,535	4,828
15-29 years-----	22,230	1,511	1,518	2,575	4,273	6,184	5,425
30-44 years-----	12,948	*	*	969	2,167	4,159	4,212
45 years and over-----	15,473	*	1,233	1,547	2,308	3,821	4,961
45-64 years-----	12,691	*	*	1,141	2,114	3,499	4,421
65 years and over-----	2,782	*	*	*	*	*	*
<u>Male</u>							
All ages-----	29,290	1,072	1,361	2,417	5,111	9,354	8,992
Under 15 years-----	8,497	*	*	*	1,666	3,011	2,600
15-29 years-----	8,825	*	*	935	1,529	2,563	2,188
30-44 years-----	5,783	*	*	*	1,088	2,017	1,874
45 years and over-----	6,185	*	*	*	827	1,763	2,330
45-64 years-----	5,124	*	*	*	*	1,576	2,029
65 years and over-----	1,060	*	*	*	*	*	*
<u>Female</u>							
All ages-----	38,244	1,622	2,601	4,315	6,914	10,346	10,434
Under 15 years-----	8,386	*	*	1,020	1,611	2,525	2,229
15-29 years-----	13,405	822	889	1,639	2,744	3,621	3,237
30-44 years-----	7,165	*	*	*	1,079	2,143	2,337
45 years and over-----	9,288	*	942	1,027	1,481	2,058	2,631
45-64 years-----	7,567	*	*	*	1,376	1,922	2,392
65 years and over-----	1,722	*	*	*	*	*	*
<u>Both sexes</u>		Number of dental X-ray visits per 100 persons per year					
All ages-----	33.8	13.4	18.5	24.8	30.1	42.5	62.7
Under 15 years-----	28.7	*	*	19.3	24.5	37.1	56.4
15-29 years-----	47.2	36.6	31.2	36.7	43.1	55.9	73.7
30-44 years-----	38.5	*	*	23.9	30.1	41.5	66.4
45 years and over-----	25.7	*	14.8	20.4	24.2	36.8	56.8
45-64 years-----	30.7	*	*	21.4	27.1	38.8	58.5
65 years and over-----	14.6	*	*	*	*	*	*
<u>Male</u>							
All ages-----	30.4	13.0	14.1	18.5	25.7	40.2	58.0
Under 15 years-----	28.4	*	*	*	24.4	39.7	59.1
15-29 years-----	39.4	*	*	28.8	32.2	49.1	62.3
30-44 years-----	35.8	*	*	*	30.3	39.8	61.1
45 years and over-----	22.3	*	*	*	17.5	32.8	51.4
45-64 years-----	26.1	*	*	*	*	33.5	51.1
65 years and over-----	13.1	*	*	*	*	*	*
<u>Female</u>							
All ages-----	36.9	13.6	22.2	30.6	34.4	44.7	67.4
Under 15 years-----	29.0	*	*	24.9	24.6	34.5	53.6
15-29 years-----	54.3	38.6	34.1	43.5	53.2	61.9	84.1
30-44 years-----	41.0	*	*	*	29.9	43.2	71.2
45 years and over-----	28.5	*	19.8	25.3	30.8	41.0	62.6
45-64 years-----	34.9	*	*	*	35.8	44.5	66.9
65 years and over-----	15.8	*	*	*	*	*	*

¹Includes unknown income.

Table 17. Number of dental X-ray visits and number of dental X-ray visits per 100 persons per year, by education of head of family, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	Total ¹	Education of head of family				
		Less than 9 years	9-11 years	12 years	13-15 years	16 years or more
Both sexes		Number of dental X-ray visits in thousands				
All ages-----	67,533	6,030	7,891	24,415	11,929	16,942
Under 15 years-----	16,883	1,121	1,866	6,561	3,070	4,246
15-29 years-----	22,230	1,768	2,589	7,941	4,271	5,508
30-44 years-----	12,948	1,078	1,278	4,255	2,261	4,042
45 years and over-----	15,473	2,063	2,159	5,658	2,327	3,145
45-64 years-----	12,691	1,502	1,750	4,840	1,892	2,621
65 years and over-----	2,782	*	*	818	*	*
Male						
All ages-----	29,290	2,497	3,224	10,120	5,411	7,910
Under 15 years-----	8,497	*	822	3,172	1,639	2,229
15-29 years-----	8,825	*	935	3,078	1,760	2,297
30-44 years-----	5,783	*	*	1,763	1,061	1,996
45 years and over-----	6,185	*	1,020	2,107	952	1,388
45-64 years-----	5,124	*	804	1,894	*	1,118
65 years and over-----	1,060	*	*	*	*	*
Female						
All ages-----	38,244	3,534	4,667	14,295	6,518	9,032
Under 15 years-----	8,386	*	1,044	3,389	1,431	2,017
15-29 years-----	13,405	1,083	1,654	4,864	2,512	3,212
30-44 years-----	7,165	*	830	2,492	1,199	2,046
45 years and over-----	9,288	1,382	1,139	3,551	1,375	1,757
45-64 years-----	7,567	967	946	2,946	1,143	1,503
65 years and over-----	1,722	*	*	*	*	*
Both sexes		Number of dental X-ray visits per 100 persons per year				
All ages-----	33.8	12.2	21.8	39.4	51.7	64.4
Under 15 years-----	28.7	9.7	16.4	32.4	46.2	50.8
15-29 years-----	47.2	21.4	30.8	50.2	59.7	83.9
30-44 years-----	38.5	18.0	21.3	37.4	54.8	70.6
45 years and over-----	25.7	8.8	20.8	39.0	45.1	55.8
45-64 years-----	30.7	11.2	22.9	42.3	48.8	61.6
65 years and over-----	14.6	*	*	26.7	*	*
Male						
All ages-----	30.4	10.5	18.6	34.3	48.0	61.5
Under 15 years-----	28.4	*	14.2	30.8	48.5	52.3
15-29 years-----	39.4	*	23.4	42.6	50.6	76.4
30-44 years-----	35.8	*	*	32.8	51.3	68.9
45 years and over-----	22.3	*	21.6	31.8	40.3	51.6
45-64 years-----	26.1	*	22.0	34.5	*	53.6
65 years and over-----	13.1	*	*	*	*	*
Female						
All ages-----	36.9	13.7	24.8	44.1	55.2	67.2
Under 15 years-----	29.0	*	18.8	34.0	43.7	49.1
15-29 years-----	54.3	26.0	37.6	56.7	68.3	90.3
30-44 years-----	41.0	*	26.2	41.4	58.3	72.4
45 years and over-----	28.5	10.8	20.1	45.0	49.1	59.7
45-64 years-----	34.9	13.3	23.8	49.6	57.9	69.3
65 years and over-----	15.8	*	*	*	*	*

¹Includes unknown education.

Table 18. Population used in obtaining rates shown in this publication, by color, place of residence, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	Total	Color		Place of residence		
		White	All others	SMSA	Outside SMSA	
					Non-farm	Farm
<u>Both sexes</u>		Population in thousands				
All ages-----	199,816	175,055	24,761	128,647	62,819	8,350
Under 15 years-----	58,840	49,527	9,313	37,267	19,175	2,399
15-29 years-----	47,074	40,987	6,087	30,601	14,764	1,709
30-44 years-----	33,607	29,743	3,863	22,127	10,247	1,233
45 years and over-----	60,295	54,797	5,498	38,653	18,632	3,010
45-64 years-----	41,304	37,346	3,958	26,901	12,294	2,109
65 years and over-----	18,991	17,452	1,540	11,752	6,338	901
<u>Male</u>						
All ages-----	96,245	84,515	11,730	61,405	30,528	4,313
Under 15 years-----	29,965	25,292	4,673	18,856	9,835	1,273
15-29 years-----	22,400	19,560	2,840	14,404	7,069	927
30-44 years-----	16,150	14,440	1,710	10,587	4,987	576
45 years and over-----	27,731	25,224	2,507	17,559	8,636	1,536
45-64 years-----	19,645	17,822	1,823	12,693	5,895	1,056
65 years and over-----	8,086	7,402	685	4,866	2,741	479
<u>Female</u>						
All ages-----	103,570	90,539	13,031	67,242	32,291	4,037
Under 15 years-----	28,876	24,235	4,641	18,411	9,340	1,125
15-29 years-----	24,674	21,427	3,247	16,197	7,696	781
30-44 years-----	17,457	15,304	2,153	11,540	5,260	656
45 years and over-----	32,564	29,574	2,990	21,094	9,995	1,474
45-64 years-----	21,659	19,524	2,135	14,207	6,399	1,052
65 years and over-----	10,905	10,050	855	6,887	3,596	422

NOTE: For official population estimates for more general use, see U.S. Bureau of the Census reports on the civilian population of the United States in Current Population Reports, Series P-20, P-25, and P-60.

Table 19. Population used in obtaining rates shown in this publication, by geographic region, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	All regions	North-east	North Central	South	West
<u>Both sexes</u>		Population in thousands			
All ages-----	199,816	48,417	56,596	60,820	33,983
Under 15 years-----	58,840	13,595	17,133	18,076	10,037
15-29 years-----	47,074	10,947	13,280	14,542	8,305
30-44 years-----	33,607	8,140	9,267	10,271	5,928
45 years and over-----	60,295	15,735	16,916	17,930	9,714
45-64 years-----	41,304	10,818	11,506	12,157	6,823
65 years and over-----	18,991	4,917	5,410	5,773	2,891
<u>Male</u>					
All ages-----	96,245	23,066	27,511	29,467	16,202
Under 15 years-----	29,965	6,775	8,777	9,396	5,017
15-29 years-----	22,400	5,217	6,388	6,997	3,798
30-44 years-----	16,150	3,930	4,578	4,865	2,777
45 years and over-----	27,731	7,145	7,768	8,208	4,610
45-64 years-----	19,645	5,061	5,432	5,778	3,374
65 years and over-----	8,086	2,084	2,336	2,431	1,236
<u>Female</u>					
All ages-----	103,570	25,351	29,085	31,353	17,782
Under 15 years-----	28,876	6,820	8,356	8,680	5,020
15-29 years-----	24,674	5,730	6,892	7,545	4,507
30-44 years-----	17,457	4,210	4,689	5,406	3,151
45 years and over-----	32,564	8,591	9,147	9,722	5,104
45-64 years-----	21,659	5,757	6,074	6,379	3,449
65 years and over-----	10,905	2,833	3,074	3,343	1,655

NOTE: For official population estimates for more general use, see U.S. Bureau of the Census reports on the civilian population of the United States in Current Population Reports, Series P-20, P-25, and P-60.

Table 20. Population used in obtaining rates shown in this publication, by family income, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	All incomes ¹	Family income					
		Less than \$3,000	\$3,000-\$4,999	\$5,000-\$6,999	\$7,000-\$9,999	\$10,000-\$14,999	\$15,000 or more
<u>Both sexes</u>		Population in thousands					
All ages-----	199,816	20,141	21,364	27,133	39,984	46,402	31,003
Under 15 years-----	58,840	3,992	5,809	8,500	13,352	14,910	8,556
15-29 years-----	47,074	4,128	4,871	7,010	9,907	11,071	7,359
30-44 years-----	33,607	1,530	2,371	4,049	7,205	10,027	6,347
45 years and over-----	60,295	10,492	8,314	7,574	9,519	10,395	8,740
45-64 years-----	41,304	3,951	4,212	5,342	7,793	9,020	7,552
65 years and over-----	18,991	6,540	4,101	2,232	1,726	1,375	1,188
<u>Male</u>							
All ages-----	96,245	8,257	9,642	13,038	19,880	23,257	15,513
Under 15 years-----	29,965	2,017	2,849	4,401	6,816	7,590	4,399
15-29 years-----	22,400	1,999	2,260	3,246	4,751	5,223	3,510
30-44 years-----	16,150	564	986	1,870	3,595	5,069	3,066
45 years and over-----	27,731	3,677	3,548	3,521	4,717	5,376	4,537
45-64 years-----	19,645	1,340	1,628	2,421	3,955	4,704	3,973
65 years and over-----	8,086	2,338	1,919	1,100	763	672	564
<u>Female</u>							
All ages-----	103,570	11,883	11,721	14,095	20,104	23,145	15,490
Under 15 years-----	28,876	1,974	2,960	4,099	6,536	7,319	4,157
15-29 years-----	24,674	2,129	2,610	3,764	5,156	5,849	3,849
30-44 years-----	17,457	966	1,385	2,179	3,610	4,958	3,282
45 years and over-----	32,564	6,814	4,766	4,053	4,801	5,019	4,202
45-64 years-----	21,659	2,611	2,584	2,921	3,839	4,316	3,578
65 years and over-----	10,905	4,203	2,182	1,132	963	703	624

¹ Includes unknown income.

NOTE: For official population estimates for more general use, see U.S. Bureau of the Census reports on the civilian population of the United States in Current Population Reports, Series P-20, P-25, and P-60.

Table 21. Population used in obtaining rates shown in this publication, by education of head of family, sex, and age: United States, based on data collected during April-September 1970

[Data are based on household interviews of the civilian, noninstitutional population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II]

Sex and age	Total ¹	Education of head of family				
		Less than 9 years	9-11 years	12 years	13-15 years	16 years or more
<u>Both sexes</u>		Population in thousands				
All ages-----	199,816	49,564	36,170	61,936	23,090	26,289
Under 15 years-----	58,840	11,551	11,370	20,240	6,651	8,363
15-29 years-----	47,074	8,250	8,398	15,810	7,152	6,566
30-44 years-----	33,607	5,981	6,014	11,386	4,126	5,726
45 years and over-----	60,295	23,512	10,389	14,500	5,160	5,634
45-64 years-----	41,304	13,470	7,638	11,440	3,880	4,255
65 years and over-----	18,991	10,042	2,751	3,059	1,280	1,378
<u>Male</u>						
All ages-----	96,245	23,809	17,376	29,506	11,284	12,858
Under 15 years-----	29,965	5,889	5,807	10,286	3,380	4,260
15-29 years-----	22,400	4,354	3,995	7,231	3,475	3,008
30-44 years-----	16,150	2,801	2,845	5,373	2,068	2,899
45 years and over-----	27,731	10,765	4,728	6,617	2,360	2,691
45-64 years-----	19,645	6,182	3,661	5,497	1,906	2,086
65 years and over-----	8,086	4,583	1,067	1,120	454	605
<u>Female</u>						
All ages-----	103,570	25,754	18,795	32,430	11,807	13,431
Under 15 years-----	28,876	5,662	5,562	9,954	3,271	4,104
15-29 years-----	24,674	4,166	4,403	8,580	3,677	3,558
30-44 years-----	17,457	3,180	3,169	6,013	2,058	2,827
45 years and over-----	32,564	12,746	5,661	7,883	2,800	2,943
45-64 years-----	21,659	7,288	3,977	5,944	1,974	2,170
65 years and over-----	10,905	5,459	1,683	1,939	826	773

¹Includes unknown education.

NOTE: For official population estimates for more general use, see U.S. Bureau of the Census reports on the civilian population of the United States in Current Population Reports, Series P-20, P-25, and P-60.

APPENDIX I

TECHNICAL NOTES ON METHODS

Background of This Report

This report is one of a series of statistical reports prepared by the National Center for Health Statistics (NCHS). It is based on information collected in a continuing nationwide sample of households in the Health Interview Survey (HIS).

The Health Interview Survey utilizes a questionnaire which obtains information on personal and demographic characteristics, illnesses, injuries, impairments, chronic conditions, and other health topics. As data relating to each of these various broad topics are tabulated and analyzed, separate reports are issued which cover one or more of the specific topics. The present report is based on data collected in household interviews during April-September 1970.

The population covered by the sample for the Health Interview Survey is the civilian, non-institutionalized population of the United States living at the time of the interview. The sample does not include members of the Armed Forces or U.S. nationals living in foreign countries. It should also be noted that the estimates shown do not represent a complete measure of any given topic during the specified calendar period since data are not collected in the interview for persons who died during the reference period. For many types of statistics collected in the survey, the reference period covers the 2 weeks prior to the interview week. For such a short period, the contribution by decedents to a total inventory of conditions or services should be very small. However, the contribution by decedents during a long reference period (e.g., 1 year) might be sizable, especially for older persons.

Statistical Design of the Health Interview Survey

General plan.—The sampling plan of the survey follows a multistage probability design which permits a continuous sampling of the civilian, noninstitutionalized population of the United States. The sample is designed in such a way that the sample of households interviewed each week is representative of the target population and that weekly samples are additive over time. This feature of the design permits both continuous measurement of characteristics of samples and more detailed analysis of less common characteristics and smaller categories of health-related items. The continuous collection has administrative and operational advantages as well as technical assets since it permits fieldwork to be handled with an experienced, stable staff.

The overall sample was designed so that tabulations can be provided for each of the four major geographic regions and for urban and rural sectors of the United States.

The first stage of the sample design consists of drawing a sample of 357 primary sampling units (PSU's) from approximately 1,900 geographically defined PSU's. A PSU consists of a county, a small group of contiguous counties, or a standard metropolitan statistical area. The PSU's collectively cover the 50 States and the District of Columbia.

With no loss in general understanding, the remaining stages can be combined and treated in this discussion as an ultimate stage. Within PSU's, then, ultimate stage units called segments are defined in such a manner that each segment contains an expected six households. Three general types of segments are used.

Area segments which are defined geographically.

List segments, using 1960 census registers as the frame.

Permit segments, using updated lists of building permits issued in sample PSU's since 1960.

Census address listings were used for all areas of the country where addresses were well defined and could be used to locate housing units. In general the list frame included the larger urban areas of the United States from which about two-thirds of the HIS sample was selected.

The usual HIS sample consists of approximately 8,000 segments which yield a probability sample of about 134,000 persons in 42,000 interviewed households in a year. However, the first quarter of 1970 contained a sample reduction of 7 full weeks of interviewing due to budgetary restrictions, whereas the remaining quarters each contained the full 13 weeks. During the 45 weeks in 1970 the sample was composed of approximately 37,000 households containing about 116,000 persons living at the time of the interview. However, since this report is based on data collected only in the 2d and 3d quarters of the year, the sample reduction has no impact on the X-ray data.

Descriptive material on data collection, field procedures, and questionnaire development in the HIS has been published⁸ as well as a detailed description of the sample design⁹ and a report on the estimation procedure and the method used to calculate sampling errors of estimates derived from the survey.¹⁰

⁸National Center for Health Statistics: Health survey procedure: concepts, questionnaire development, and definitions in the Health Interview Survey. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 1-No. 2. Public Health Service. Washington. U.S. Government Printing Office, May 1964.

⁹U.S. National Health Survey: The statistical design of the health household interview survey. *Health Statistics*. PHS Pub. No. 584-A2. Public Health Service. Washington, D.C., July 1958.

¹⁰National Center for Health Statistics: Estimation and sampling variance in the Health Interview Survey. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 38. Public Health Service. Washington. U.S. Government Printing Office, June 1970.

Collection of data.—Field operations for the survey are performed by the U.S. Bureau of the Census under specifications established by the National Center for Health Statistics. In accordance with these specifications the Bureau of the Census participates in survey planning, selects the sample, and conducts the field interviewing as an agent of NCHS. The data are coded, edited, and tabulated by NCHS.

Estimating procedures.—Since the design of the HIS is a complex multistage probability sample, it is necessary to use complex procedures in the derivation of estimates. Four basic operations are involved:

1. *Inflation by the reciprocal of the probability of selection.*—The probability of selection is the product of the probabilities of selection from each step of selection in the design (PSU, segment, and household).
2. *Nonresponse adjustment.*—The estimates are inflated by a multiplication factor which has as its numerator the number of sample households in a given segment and as its denominator the number of households interviewed in that segment.
3. *First-stage ratio adjustment.*—Sampling theory indicates that the use of auxiliary information which is highly correlated with the variables being estimated improves the reliability of the estimates. To reduce the variability between PSU's within a region, the estimates are ratio adjusted to the 1960 populations within six color-residence classes.
4. *Poststratification by age-sex-color.*—The estimates are ratio adjusted within each of 60 age-sex-color cells to an independent estimate of the population of each cell for the survey period. These independent estimates are prepared by the Bureau of the Census. Both the first-stage and poststratified ratio adjustments take the form of multiplication factors applied to the weight of each elementary unit (person, household, condition, and hospitalization).

The effect of the ratio-estimating process is to make the sample more closely representative

of the civilian, noninstitutionalized population by age, sex, color, and residence, which thereby reduces sampling variance.

As noted, each week's sample represents the population living during that week and characteristics of the population. Consolidation of samples over a time period, e.g., a calendar quarter, produces estimates of average characteristics of the U.S. population for the calendar quarter. Similarly, population data for a year are averages of the four quarterly figures.

For prevalence statistics, such as number of persons with speech impairments or number of persons classified by time interval since last physician visit, figures are first calculated for each calendar quarter by averaging estimates for all weeks of interviewing in the quarter. Prevalence data for a year are then obtained by averaging the four quarterly figures.

For other types of statistics—namely those measuring the number of occurrences during a specified time period—such as incidence of acute conditions, number of disability days, or number of visits to a doctor or dentist, a similar computational procedure is used, but the statistics are interpreted differently. For these items, the questionnaire asks for the respondent's experience over the 2 calendar weeks prior to the week of interview. In such instances the estimated quarterly total for the statistic is 6.5 times the average 2-week estimate produced by the 13 successive samples taken during the period. The annual total is the sum of the four quarters. Thus the experience of persons *interviewed during a year*—experience which actually occurred for each person in a 2-calendar-week interval prior to week of interview—is treated as though it measured the total of such experience *during the year*. Such interpretation leads to no significant bias.

For the X-ray visit items, the questionnaire asks for the respondent's experience over the 3 months prior to the week of interview. In such instances the estimated quarterly total for the statistic is obtained by averaging estimates for all weeks of interviewing in the quarter. The semi-annual total is the sum of the two quarterly estimates. Thus the experience of persons interviewed during 6 months—experience which actually occurred for each person in a

13-calendar-week period prior to the week of interview—is treated in analysis as though it measured the total of such experience occurring in the 6 months. Such interpretation leads to no significant bias.

General Qualifications

Nonresponse.—Data were adjusted for nonresponse by a procedure which imputes to persons in a household which was not interviewed the characteristics of persons in households in the same segment which were interviewed. The total noninterview rate was about 5 percent—1 percent was refusal, and the remainder was primarily due to the failure to find an eligible respondent at home after repeated calls.

The interview process.—The statistics presented in this report are based on replies obtained in interviews with persons in the sample households. For children and for adults not present in the home at the time of the interview, the information was obtained from a related household member such as a spouse or the mother of a child.

There are limitations to the accuracy of diagnostic and other information collected in household interviews. For diagnostic information, the household respondent can usually pass on to the interviewer only the information the physician has given to the family. For conditions not medically attended, diagnostic information is often no more than a description of symptoms. However, other facts, such as the number of disability days caused by the condition, can be obtained more accurately from household members than from any other source since only the persons concerned are in a position to report this information.

Rounding of numbers.—The original tabulations on which the data in this report are based show all estimates to the nearest whole unit. All consolidations were made from the original tabulations using the estimates to the nearest unit. In the final published tables, the figures are rounded to the nearest thousand, although these are not necessarily accurate to that detail. Devised statistics such as rates and percent distributions are computed after the estimates on which these are based have been rounded to the nearest thousand.

Population figures.—Some of the published tables include population figures for specified categories. Except for certain overall totals by age, sex, and color, which are adjusted to independent estimates, these figures are based on the sample of households in the HIS. These are given primarily to provide denominators for rate computation, and for this purpose are more appropriate for use with the accompanying measures of health characteristics than other population data that may be available. With the exception of the overall totals by age, sex, and color mentioned above, the population figures differ from figures (which are derived from different sources) published in reports of the Bureau of the Census. Official population estimates are presented in Bureau of the Census reports in Series P-20, P-25, and P-60.

Reliability of Estimates

Since the statistics presented in this report are based on a sample, they will differ somewhat from the figures that would have been obtained if a complete census had been taken using the same schedules, instructions, and interviewing personnel and procedures.

As in any survey, the results are also subject to reporting and processing errors and errors due to nonresponse. To the extent possible, these types of errors were kept to a minimum by methods built into survey procedures. Although it is very difficult to measure the extent of bias in the Health Interview Survey, a number of studies have been conducted to study this problem. The results have been published in several reports.¹¹⁻¹⁵

¹¹National Center for Health Statistics: Reporting of hospitalization in the Health Interview Survey. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No.6. Public Health Service. Washington. U.S. Government Printing Office, July 1965.

¹²National Center for Health Statistics: Health interview responses compared with medical records. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 7. Public Health Service. Washington. U.S. Government Printing Office, July 1965.

¹³National Center for Health Statistics: Comparison of hospitalization reporting in three survey procedures. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 8. Public Health Service. Washington. U.S. Government Printing Office, July 1965.

The standard error is primarily a measure of sampling variability, that is, the variations that might occur by chance because only a sample of the population is surveyed. As calculated for this report, the standard error also reflects part of the variation which arises in the measurement process. It does not include estimates of any biases which might be in the data. The chances are about 68 out of 100 that an estimate from the sample would differ from a complete census by less than the standard error. The chances are about 95 out of 100 that the difference would be less than twice the standard error and about 99 out of 100 that it would be less than 2½ times as large.

The relative standard error of an estimate is obtained by dividing the standard error of the estimate by the estimate itself and is expressed as a percentage of the estimate. For this report, asterisks are shown for any cell with more than a 30-percent relative standard error. Included in this appendix are charts from which the relative standard errors can be determined for estimates shown in the report. In order to derive relative errors which would be applicable to a wide variety of health statistics and which could be prepared at a moderate cost, a number of approximations were required. As a result, the charts provide an estimate of the approximate relative standard error rather than the precise error for any specific aggregate or percentage.

Three classes of statistics for the health survey are identified for purposes of estimating variances.

Narrow range.—This class consists of (1) statistics which estimate a population attribute, e.g., the number of persons in a particular income group, and (2) statistics for which the measure

¹⁴National Center for Health Statistics: Interview data on chronic conditions compared with information derived from medical records. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 23. Public Health Service. Washington. U.S. Government Printing Office, May 1967.

¹⁵National Center for Health Statistics: The influence of interviewer and respondent psychological and behavioral variables on the reporting in household interviews. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 26. Public Health Service. Washington. U.S. Government Printing Office, Mar. 1968.

for a single individual during the reference period used in data collection is usually either 0 or 1 or on occasion may take on the value 2 or very rarely 3.

Medium range.—This class consists of other statistics for which the measure for a single individual during the reference period used in data collection will rarely lie outside the range 0 to 5.

Wide range.—This class consists of statistics for which the measure for a single individual during the reference period used in data collection can range from 0 to a number in excess of 5, e.g., the number of days of bed disability.

In addition to classifying variables according to whether they are narrow-, medium-, or wide-range, statistics in the survey are further defined as:

Type A. Statistics on prevalence and incidence for which the period of reference in the questionnaire is 12 months.

Type B. Incidence-type statistics for which the period of reference in the questionnaire is 2 weeks.

Type C. Statistics for which the reference period is 6 months.

Type D. Statistics for which the reference period is 3 months.

Only the charts on sampling error applicable to data contained in this report are presented.

General rules for determining relative sampling errors.—The “guide” on page 44, together with the following rules, will enable the reader to determine approximate relative standard errors from the charts for estimates presented in this report.

Rule 1. *Estimates of aggregates:* Approximate relative standard errors for estimates of aggregates such as the number of persons with a given characteristic are obtained from appropriate curves on page 46. The number of persons in the total U.S. population or in an age-sex-color class of the total population is adjusted to official Bureau of the Cen-

sus figures and is not subject to sampling error.

Rule 2. *Estimates of percentages in a percent distribution:* Relative standard errors for percentages in a percent distribution of a total are obtained from appropriate curves on page 47. For values which do not fall on one of the curves presented in the chart, visual interpolation will provide a satisfactory approximation.

Rule 3. *Estimates of rates where the numerator is a subclass of the denominator:* This rule applies for prevalence rates or where a unit of the numerator occurs, with few exceptions, only once in the year for any one unit in the denominator. For example, in computing the rate of visual impairments per 1,000 population, the numerator consisting of persons with the impairment is a subclass of the denominator, which includes all persons in the population. Such rates if converted to rates per 100 may be treated as though they were percentages and the relative standard errors obtained from the chart P4AN-M. Rates per 1,000, or on any other base, must first be converted to rates per 100; then the percentage chart will provide the relative standard error per 100.

Rule 4. *Estimates of rates where the numerator is not a subclass of the denominator:* This rule applies where a unit of the numerator often occurs more than once for any one unit in the denominator. For example, in the computation of the number of persons injured per 100 currently employed persons per year, it is possible that a person in the denominator could have sustained more than one of the injuries included in the numerator. Approximate relative standard errors for rates of this kind may be computed as follows:

(a) Where the denominator is the total U.S. population or includes all persons in one or more of the age-sex-color groups of the total popula-

tion, the relative error of the rate is equivalent to the relative error of the numerator, which can be obtained directly from the appropriate chart.

- (b) In other cases the relative standard error of the numerator and of the denominator can be obtained from the appropriate curve. Square each of these relative errors, add the resulting values, and extract the square root of the sum. This procedure will result in an upper bound on the standard error and often will overstate the error.

Rule 5. *Estimates of difference between two statistics (mean, rate, total, etc.):* The standard error of a difference is approximately the square root of the sum of the squares of each standard error considered separately. A formula for the standard error of a difference,

$$d = X_1 - X_2$$

is

$$\sigma_d = \sqrt{(X_1 V_{x1})^2 + (X_2 V_{x2})^2}$$

where X_1 is the estimate for class 1, X_2 is the estimate for class 2, and V_{x1} and V_{x2} are the relative errors of X_1 and X_2 respectively. This formula will represent the actual standard error quite accurately for the difference between separate and uncorrelated characteristics although it is only a rough approximation in most other cases. The relative standard error of each estimate involved in such a difference can be determined by one of the four rules above, whichever is appropriate.

Guide to Use of Relative Standard Error Charts

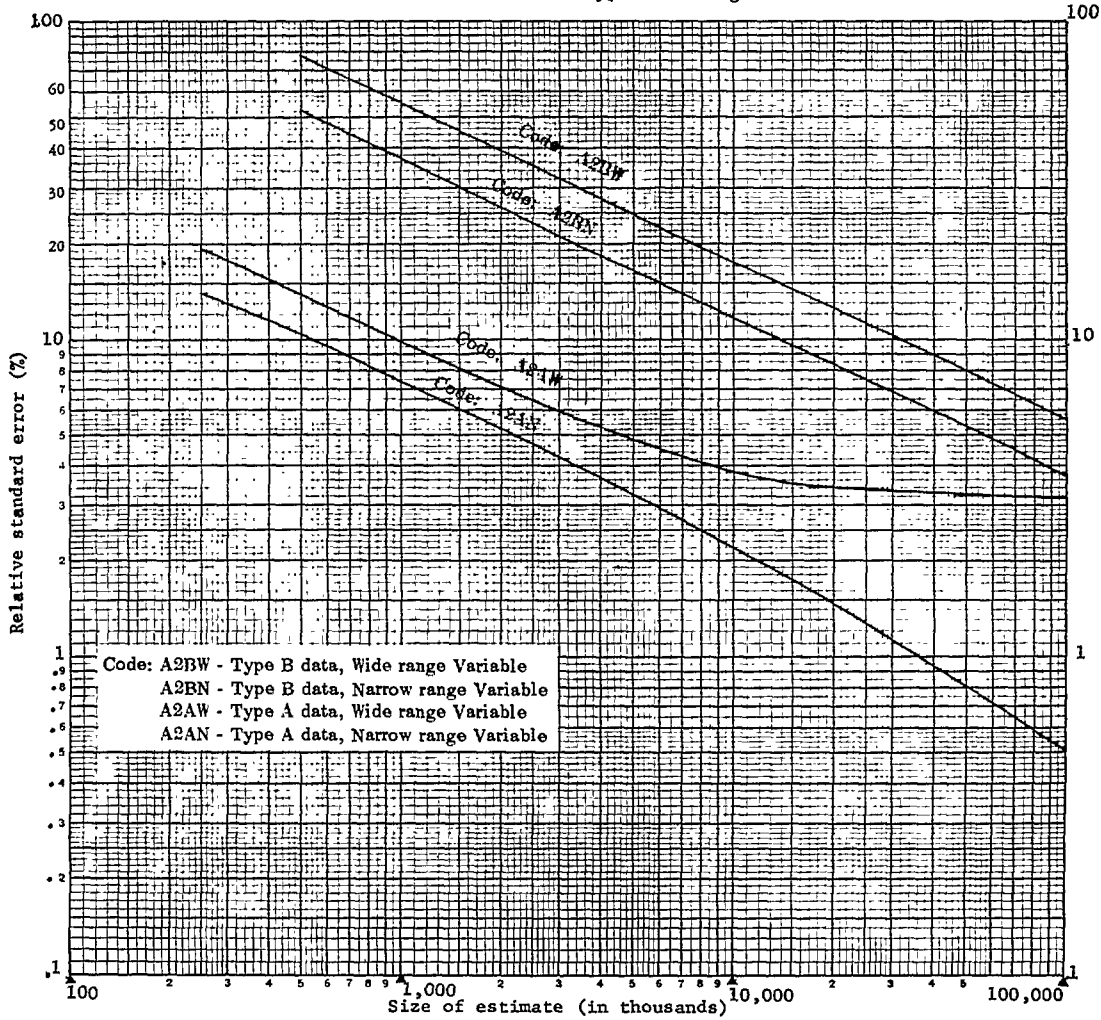
The code shown below identifies the appropriate curve to be used in estimating the relative standard error of the statistic described. The four components of each code describe the statistic as follows:

(1) A = aggregate, P = percentage; (2) the number of calendar quarters of data collection; (3) the type of statistic as described on page 41 and (4) the range of the statistic as described on page 41.

Statistic	Use:		
	Rule	Code	On page
Number of:			
Persons in the U.S. population or total number of persons in any age-sex-color category		Not subject to sampling error	
Persons in any other population group	1	A2AN	45
X-ray visits	1	A2DM	46
Percentage distribution of:			
X-ray visits	2	P2DN-M	47
X-ray visits per 100 persons:			
In the total U.S. population or in any age-sex-color group of the total U.S. population	4(a)	A2DM	46
In any other population group	4(b)	{ Numer. : A2DM Denom. : A2AN	45

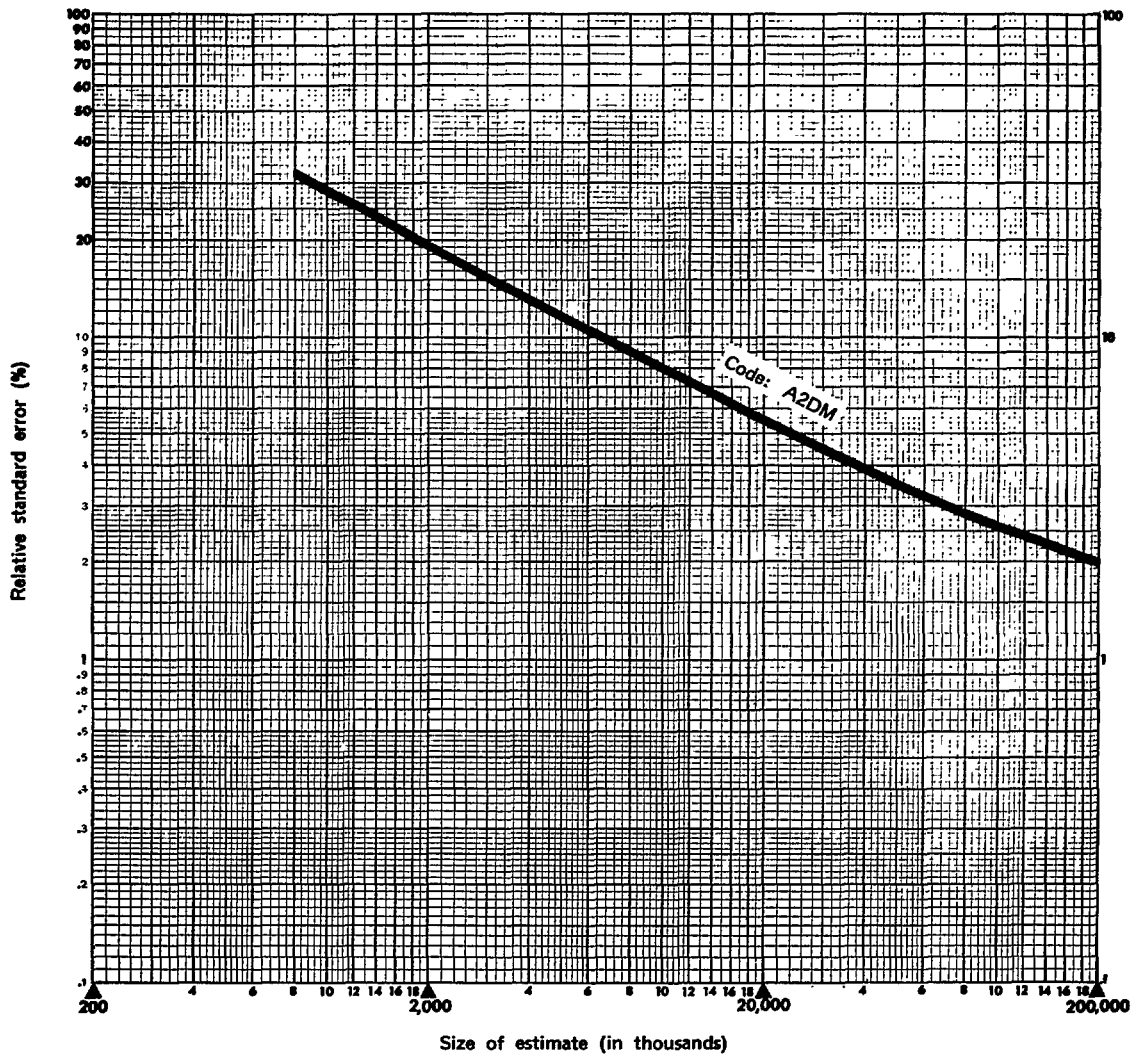


Relative standard errors for aggregates based on two quarters of data collection for data of various types and ranges



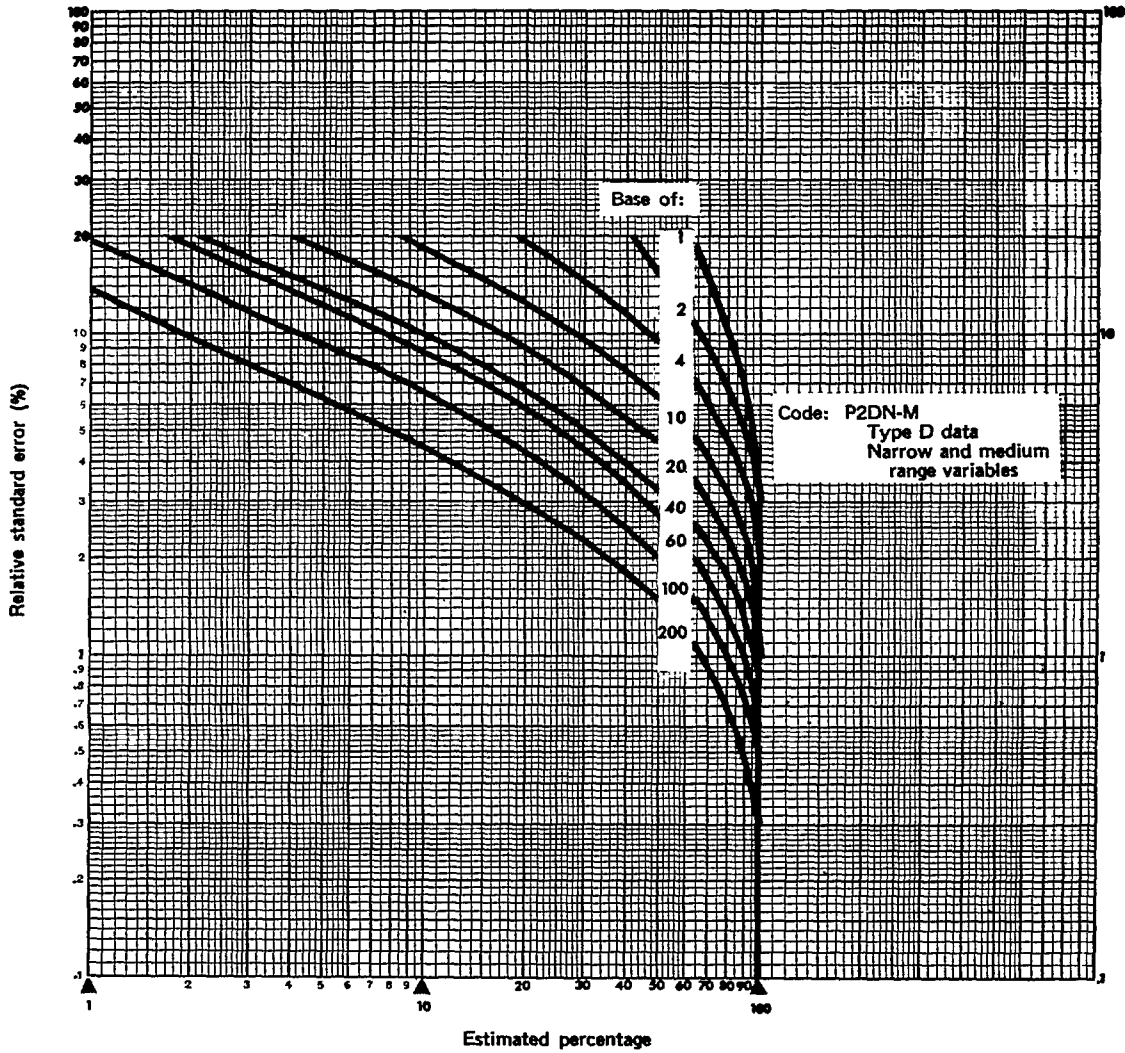
Example of use of chart: An aggregate of 2,000,000 (on scale at bottom of chart) for a Narrow range Type A statistic (code: A2AN) has a relative standard error of 5.2 percent, read from scale at left side of chart, or a standard error of 104,000 (5.2 percent of 2,000,000). For a Wide range Type B statistic (code: A2BW), an aggregate of 6,000,000 has a relative error of 22.2 percent or a standard error of 1,332,000 (22.2 percent of 6,000,000).

Relative standard errors for aggregates based on two quarters of data collection for type D,
Medium range data



Example of use of chart: An aggregate of 2,000,000 (on scale at bottom of chart) for a Medium range type D statistic (code: A2DM) has a relative standard error of 19.2 percent, read from scale at left side of chart, or a standard error of 384,000 (19.2 percent of 2,000,000).

Relative standard errors for percentages based on two quarters of data collection for type D data,
 Narrow and Medium range
 (Base of percentage shown on curves in millions)



Example of use of chart: An estimate of 20 percent (on scale at bottom of chart) based on an estimate of 20,000,000 has a relative standard error of 9.0 percent (read from scale at the left side of the chart), the point at which the curve for a base of 20,000,000 intersects the vertical line for 20 percent. The standard error in percentage points is equal to 20 percent X 9.0 percent or 1.8 percentage points.



APPENDIX II

DEFINITIONS OF CERTAIN TERMS USED IN THIS REPORT

Terms Relating to X-Ray

X-ray visit.—An X-ray visit is defined as a visit by a person to a doctor's office, dentist's office, hospital, mobile X-ray unit, public health department, etc., during the course of which X-ray equipment is used for diagnosis or treatment. X-ray includes X-ray film photography and X-ray emission for treatment and fluoroscopy but excludes the use of radioisotopes. Only one visit is counted each time the person is X-rayed regardless of the number of X-ray films exposed or the number of ports used. However, statistics are collected for each of the separate areas of the body toward which X-rays are emitted (see below).

An X-ray visit is counted each time the person is X-rayed during the reference period. Hence one person may be included in the statistics more than once. However, if several areas of the body are X-rayed during a single visit, only one X-ray visit is recorded. The term X-ray visit is used synonymously with "person-" event in other Health Interview Survey statistics, e.g., person-day.

Statistics are prepared separately for dental X-ray visits and medical X-ray visits, i.e., other than dental. A dental X-ray visit is defined as an X-ray usually taken in a dentist's office for the primary purpose of studying the condition or formation of the teeth. If an X-ray of the teeth or jaw is taken in a hospital or clinic primarily for dental purposes, it is counted as a dental X-ray.

Place of X-ray.—The place of X-ray is a classification of the types of places at which an X-ray visit (other than dental) took place. Place of X-ray is not recorded for dental X-ray visits. Definitions of the four categories are as follows:

Hospital is the place at which X-rays are received while an inpatient is in a hospital and at which X-rays are received while an outpatient is at a hospital clinic.

Doctor's office is defined as the office of any doctor who has his own X-ray equipment or the office of a radiologist. "Doctor's office" also includes clinics run by a group of doctors if the clinic provides X-ray services.

Mobile unit refers to a bus or truck in which X-ray equipment has been installed. As recorded in the study, these are usually photofluorographic units generally used for chest-screening programs.

Other is defined as places other than hospitals or doctor's offices at which X-ray services are provided. For example, such places include schools, public health departments, etc.

Type of X-ray.—X-ray service is classified as diagnosis or treatment. Diagnosis is defined as X-rays for checkup or examination using X-ray or fluoroscopic procedures to determine the presence, absence, or state of a disease or condition. X-rays for treatment are X-rays used in treating a condition which has already been diagnosed.

Body area.—The area of the body of which each medical X-ray is taken is classified in one of the categories shown in figure I.

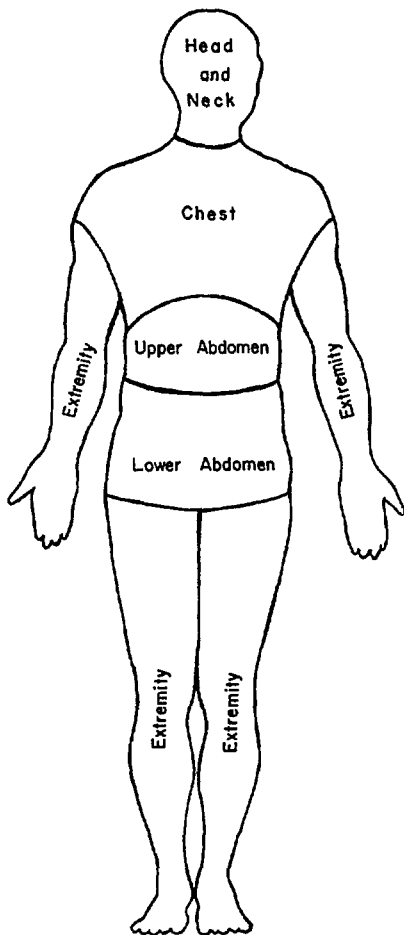


Figure I

The five categories are defined as follows:

Head and neck is the portion of the body above the trunk.

Chest is the portion of the trunk above the diaphragm including the shoulder.

Upper abdomen is the portion of the body between the diaphragm and the transverse colon.

Lower abdomen is the remainder of the trunk including the hip.

Extremities are the arms exclusive of the shoulders and the legs exclusive of the hip.

Demographic Terms

Age.—The age recorded for each person is the age at last birthday. Age is recorded in single years and grouped in a variety of distributions depending on the purpose of the table.

Color.—The population is divided into two color groups, "white" and "all other." "All other" includes Negro, American Indian, Chinese, Japanese, and any other race. Mexican persons are included with "white" unless definitely known to be Indian or of another race.

Income of family or of unrelated individuals.—Each member of a family is classified according to the total income of the family of which he is a member. Within the household all persons related to each other by blood, marriage, or adoption constitute a family. Unrelated individuals are classified according to their own income.

The income recorded is the total of all income received by members of the family (or by an unrelated individual) in the 12-month period preceding the week of interview. Income from all sources is included, e.g., wages, salaries, rents from property, pensions, and help from relatives.

Education.—The categories of education status show the years of school completed. Only years completed in regular schools, where persons are given a formal education, are included. A "regular" school is one which advances a person toward an elementary or high school diploma or a college, university, or professional school degree. Thus education in vocational, trade, or business schools outside the regular school system is not counted in determining the highest grade of school completed.

Education of head of family or of unrelated individuals.—Each member of a family is classified according to the education of the head of the family of which he is a member. Within the household all persons related to each other by blood, marriage, or adoption constitute a family. Unrelated individuals are classified according to their own education.

Geographic region.—For the purpose of classifying the population by geographic area, the States are grouped into four regions. These

regions, which correspond to those used by the U.S. Bureau of the Census, are shown in figure II.

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

Figure II

Place of residence.—The place of residence of a member of the civilian, noninstitutionalized population is classified as inside a standard metropolitan statistical area (SMSA) or outside an SMSA and either farm or nonfarm.

Standard metropolitan statistical areas.—The definitions and titles of SMSA's are established by the U.S. Office of Management and Budget with the advice of the Federal Committee on Standard Metropolitan Statistical Areas. There were 212 SMSA's defined for the 1960 decennial census.

The definition of an individual SMSA involves two considerations: first, a city or cities of specified population which constitute the central city and identify the county in which it is located as the central county; second, economic and social relationships with contiguous counties (except in New England) which are metropolitan in character so that the periphery of the specific metropolitan area may be determined. SMSA's are not limited by State boundaries. In New England SMSA's consist of towns and cities, rather than counties. The metropolitan population in this report is based on SMSA's as defined in the 1960 census and does not include any subsequent additions or changes.

Central cities.—Each SMSA must include at least one central city. The complete title of an SMSA identifies the central city or cities. If only one central city is designated, then it must have 50,000 inhabitants or more. The area title may include, in addition to the largest city, up to two city names on the basis and in the order of the following criteria: (1) the additional city has at least 250,000 inhabitants or (2) the additional city has a population of one-third or more of that of the largest city and a minimum population of 25,000. An exception occurs where two cities have contiguous boundaries and constitute, for economic and social purposes, a single community of at least 50,000, the smaller of which must have a population of at least 15,000.

Farm and nonfarm residence.—The population residing outside SMSA's is subdivided into the farm population, which comprises all non-SMSA residents living on farms, and the nonfarm population, which comprises the remaining outside SMSA population. The farm population includes persons living on places of 10 acres or more from which sales of farm products amounted to \$50 or more during the previous 12 months or on places of less than 10 acres from which sales of farm products amounted to \$250 or more during the preceding 12 months. Other persons living outside an SMSA were classified as nonfarm if their household paid rent for the house but their rent did not include any land used for farming.

Sales of farm products refer to the gross receipts from the sale of field crops, vegetables, fruits, nuts, livestock and livestock products (milk, wool, etc.), poultry and poultry products, and

nursery and forest products produced on the place and sold at any time during the preceding 12 months.



APPENDIX III

X-RAY QUESTIONS USED APRIL-SEPTEMBER 1970

Exposure to all kinds of X-rays is a matter of particular interest to the Public Health Service, and I have some questions about X-rays and fluoroscopes.

39a. Did anyone in the family have his teeth X-rayed during the past 3 months, that is from (date) through last Sunday? Y N (40)

b. Who was this? Mark "Dental" in person's column c. Anyone else? Part of body

40a. During the past 3 months did anyone in the family have a chest X-ray? Y N (41)

b. Who was this? Mark "Chest" in person's column c. Anyone else? Part of body

41a. Did -- have any (other) kind of X-ray at all during the past 3 months? If "Yes," ask: Y N (NP)

b. What part of the body was X-rayed? Enter part of body in person's column Part of body

c. Did -- have any other X-ray during the past 3 months?

42a. Did -- have a fluoroscope during the past 3 months? If "Yes," ask: Y N (NP)

b. What part of the body was it for? Enter part of body in person's column Part of body

c. Did -- have any other fluoroscope during the past 3 months?

43a. During those 3 months, did anyone in the family have any X-rays for the TREATMENT of a condition? Y N (43d, 44)

b. Who was this? Mark "Treatment" in person's column c. Anyone else? Part of body

d. What part of the body was treated? Enter part of body in person's column

44. For each person with X-rays, fluoroscopes, or treatment in 39-43, ask: What is --'s height and weight? Feet Height Inches Weight (Lbs.)

Table R - FILL ONE LINE FOR EACH "PART OF BODY" ENTRY FROM QUESTIONS 39-43

Line number	Col. No. of person	Question No.	Part of body	How many different times did -- have his... X-rayed during the past 3 months?	For dental X-rays, ask: Where did he have the X-rays taken - at a dentist's office or some other place? For X-rays other than dental, ask: Where did he have the X-rays taken - at a doctor's office, a hospital, or some other place? (If "Some other place," determine place.) If more than one place given, ask for each place: How many X-rays were taken at the (hospital, doctor's office, etc.)?	If more than one time at any one place, ask: Were all these X-rays taken at the same (dentist's office, doctor's office, etc.)?	What is the name and address of the (dentist, doctor, hospital, etc.) where the X-rays were taken? For X-rays taken at hospitals, clinics, or similar places, ALSO enter the name of the doctor who took the X-rays. For X-rays taken at mobile units, enter: "Mobile unit" on name line; location of unit at time of X-ray on address line; and name and address of sponsoring organization and date of X-ray in footnote. Verify name and address in telephone directory. Check "Verified" box. If unable to verify, give reason in a footnote. Enter the telephone number if available.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	
1				<input type="checkbox"/> Dentist's office Times <input type="checkbox"/> Doctor's office Times <input type="checkbox"/> Hospital Times <input type="checkbox"/> Other (Specify) Times	Y	Name and title Address City State ZIP code <input type="checkbox"/> Verified Telephone No.	
2				<input type="checkbox"/> Dentist's office Times <input type="checkbox"/> Doctor's office Times <input type="checkbox"/> Hospital Times <input type="checkbox"/> Other (Specify) Times	Y	Name and title Address City State ZIP code <input type="checkbox"/> Verified Telephone No.	
3				<input type="checkbox"/> Dentist's office Times <input type="checkbox"/> Doctor's office Times <input type="checkbox"/> Hospital Times <input type="checkbox"/> Other (Specify) Times	Y	Name and title Address City State ZIP code <input type="checkbox"/> Verified Telephone No.	

45. Ask after completing Table R for all related persons with X-rays. May we contact the (doctor, dentist, hospital, etc.) you have mentioned to obtain additional information about the X-rays? (Present form for signature) Will you please sign this form? Signed Not signed (Enter reason)

<input type="checkbox"/> Dental <input type="checkbox"/> Other (Specify) _____ Part of body _____	39b.	<input type="checkbox"/> Dental <input type="checkbox"/> Other (Specify) _____ Part of body _____	<input type="checkbox"/> Dental <input type="checkbox"/> Other (Specify) _____ Part of body _____	39c.	<input type="checkbox"/> Dental <input type="checkbox"/> Other (Specify) _____ Part of body _____	<input type="checkbox"/> Dental <input type="checkbox"/> Other (Specify) _____ Part of body _____
<input type="checkbox"/> Chest <input type="checkbox"/> Other (Specify) _____ Part of body _____	40b.	<input type="checkbox"/> Chest <input type="checkbox"/> Other (Specify) _____ Part of body _____	<input type="checkbox"/> Chest <input type="checkbox"/> Other (Specify) _____ Part of body _____	40c.	<input type="checkbox"/> Chest <input type="checkbox"/> Other (Specify) _____ Part of body _____	<input type="checkbox"/> Chest <input type="checkbox"/> Other (Specify) _____ Part of body _____
Y _____ N (NP) _____ Part of body _____	41a, c.	Y _____ N (NP) _____ Part of body _____	Y _____ N (NP) _____ Part of body _____	41a, c.	Y _____ N (NP) _____ Part of body _____	Y _____ N (NP) _____ Part of body _____
Y _____ N (NP) _____ Part of body _____	42a, c.	Y _____ N (NP) _____ Part of body _____	Y _____ N (NP) _____ Part of body _____	42a, c.	Y _____ N (NP) _____ Part of body _____	Y _____ N (NP) _____ Part of body _____
<input type="checkbox"/> Treatment _____ Part of body _____	43b.	<input type="checkbox"/> Treatment _____ Part of body _____	<input type="checkbox"/> Treatment _____ Part of body _____	43c.	<input type="checkbox"/> Treatment _____ Part of body _____	<input type="checkbox"/> Treatment _____ Part of body _____
Height _____ Feet _____ Inches _____ Weight (Lbs.) _____	44.	Height _____ Feet _____ Inches _____ Weight (Lbs.) _____	Height _____ Feet _____ Inches _____ Weight (Lbs.) _____	44.	Height _____ Feet _____ Inches _____ Weight (Lbs.) _____	Height _____ Feet _____ Inches _____ Weight (Lbs.) _____

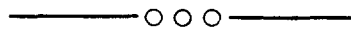
Table R - Continued

Use for additional name and address				DO NOT ASK FOR DENTAL X-RAYS			Line number
				What was this X-ray for - a checkup, an examination, or for a treatment?	How many of these - X-rays were for treatment?	Ask for each person with 2 or more lines in Table R after all X-rays have been recorded for a person. DO NOT include dental X-rays in number of visits. (Not counting his dental X-rays) Altogether he had - X-rays during the past 3 months. How many separate visits did he make to have these - X-rays?	
(g)				(h)	(i)	(k)	
Name and title _____				<input type="checkbox"/> Checkup/Examination (k) <input type="checkbox"/> Treatment (k) <input type="checkbox"/> Both (i)	Number _____	Number of visits _____	1
Address _____							
City _____		State _____	ZIP code _____				
<input type="checkbox"/> Verified _____		Telephone No. _____					
Name and title _____				<input type="checkbox"/> Checkup/Examination (k) <input type="checkbox"/> Treatment (k) <input type="checkbox"/> Both (i)	Number _____	Number of visits _____	2
Address _____							
City _____		State _____	ZIP code _____				
<input type="checkbox"/> Verified _____		Telephone No. _____					
Name and title _____				<input type="checkbox"/> Checkup/Examination (k) <input type="checkbox"/> Treatment (k) <input type="checkbox"/> Both (i)	Number _____	Number of visits _____	3
Address _____							
City _____		State _____	ZIP code _____				
<input type="checkbox"/> Verified _____		Telephone No. _____					

APPENDIX IV

COMPARISON OF X-RAY QUESTIONS USED IN THREE SURVEYS

Questions	Period Asked		
	July 1960- June 1961	April- June 1964	April- September 1970
<i>I. Probe questions</i>			
Did anyone in the family have his teeth X-rayed during the past 3 months?	X	X	X
During the past 3 months did anyone in the family have a chest X-ray?	X	X	X
Did --- have any (other) kind of X-ray at all during the past 3 months?	X	X	X
Did --- have a fluoroscope during the past 3 months?	X	X	X
During the past 3 months, did anyone in the family have any X-rays for the treatment of a condition?	X	X	X
What is ---'s height and weight?			X
<i>II. X-ray questions for both dental and medical</i>			
Part of body?	X	X	X
How many different times did --- have his --- X-rayed during the past 3 months?	X	X	X
Where did he have the X-rays taken?	X	X	X
How many X-rays were taken at the (hospital, doctor's office, etc.)?		X	X
In what month was the X-ray taken?	X		
What is the name and address of the (dentist, doctor, etc.) where the X-rays were taken?		X	X
<i>III. X-ray questions for medical only</i>			
What was this X-ray for—a checkup, an examination, or for a treatment?	X	X	X
How many of these X-rays were for treatment?	X	X	X
For what condition were you being treated?	X	X	



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