

## **Use of Special Aids**

**United States - 1977**

Statistics on the distribution and use of artificial limbs, braces, crutches, canes or walking sticks, special shoes, wheelchairs, walkers, and other special aids for getting around. Based on data collected in the National Health Interview Survey in 1977.

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Under the legislation establishing the National Health Survey, the Public Health Service is authorized to use, insofar as possible, the services or facilities of other Federal, State, or private agencies.

In accordance with specifications established by the Division of Health Interview Statistics, the Bureau of the Census, under a contractual arrangement, participated in planning the survey and collecting the data.

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### SYMBOLS

Data not available-----	---
Category not applicable-----	...
Quantity zero-----	-
Quantity more than 0 but less than 0.05-----	0.0
Figure does not meet standards of reliability or precision (more than 30 percent relative standard error)-----	*

# USE OF SPECIAL AIDS

Ethel R. Black, Division of Health Interview Statistics

## INTRODUCTION

During 1977, an estimated 6,459,000 persons reported using one or more special aids. These persons used about 8,031,000 such aids, or 1.2 aids per person using aids. These and other national statistics on the use of special aids to enhance mobility were collected by means of the 1977 National Health Interview Survey of the civilian noninstitutionalized population of the United States. By using a selected list of special aids, respondents were asked, "Does anyone in the family now use (any of the following special aids)?" For each special aid used, additional information was obtained on the number used at a time, the condition for which the aid was used, the frequency of use, the duration of use, and how the aid was obtained.

## Highlights

Based on responses to these questions, it is estimated that approximately 6.5 million persons, or 3.0 percent of the civilian noninstitutionalized population, used one or more special aids for assistance in getting around in 1977. These persons used a total of 8.0 million aids, representing a rate of 1.2 aids per person using aids.

Canes or walking sticks are the most frequently used special aids, and they were used in 1977 by about 13 out of every 1,000 persons. Artificial arms or hands are the least reported of the special aids that were used in 1977 by

approximately one in every 3,000 persons in the population.

In general, the use of one or more special aids for getting around was relatively rare among persons under 45 years of age, with a rate of 1.5 and 1.1 percent for the age groups under 15 years and 15-44 years, respectively.

Use of a special aid was more common among persons 45-64 years of age. However, for those persons using one or more special aids in 1977, the highest percents were for the age groups 65-74 years and 75 years and over (8.4 and 22.4 percent, respectively).

Males under 65 years were relatively more likely to use one or more special aids for getting around than females in this age group were. Among persons 65 years of age and over, however, the reverse was true.

The vast majority of those reporting the use of special aids used them in connection with a chronic condition, which was manifested by the close association between the degree of chronic activity limitation and the likelihood of using a special aid.

Use of one or more special aids was inversely related to family income. About 7.5 percent of persons in families with incomes of less than \$3,000 used one or more special aids in 1977 as contrasted with 1.7 percent of those in families with incomes of \$25,000 or more.

Persons living alone and those living with nonrelatives were 2½ times as likely to use one or more special aids as those residing with family members.

Significant increases occurred between 1969 and 1977 for canes, leg or foot braces, walkers,

wheelchairs, and crutches. Except for crutches, the rates of use per 1,000 persons were proportionately higher in 1977 than in 1969 among the elderly population.

## SOURCE AND LIMITATIONS OF THE DATA

Information from the National Health Interview Survey (NHIS) presented in this report on the use of selected special aids for getting around is based on data collected in a continuing nationwide survey conducted by household interview. Each week trained personnel from the U.S. Bureau of the Census interview a probability sample of households to obtain information about the health and other characteristics of each member of households in the civilian noninstitutionalized population of the United States.

During the 52 weeks in 1977, the sample comprised approximately 41,000 households that included about 111,000 persons. The total noninterview rate was about 3.3 percent, of which 1.9 percent was due to respondent refusal, and the remainder was primarily due to the failure to find an eligible respondent at home after repeated calls.

Similar data collected in the 1969 NHIS were published in an earlier report, Series 10, No. 78.<sup>1</sup> The data collection procedures used in the two surveys differ in three important respects. In 1977, the term "guide dog" was added to the list of selected aids. Data are not shown separately for this group because this category produced only a few sample cases.

Therefore, use of a guide dog has been included in the category "other aids for getting around." Differences also exist in the instructions to the interviewer regarding the definitions and probing techniques used to resolve response problems about "special shoes." In both surveys, the interviewer was instructed not to include oversized shoes worn for corns, bunions, and so forth. In 1977, however, the interviewer was additionally instructed to ask: "Are these shoes worn because of a disability or health problem?" Those interviewers who received a "yes" response were instructed to count these shoes as special shoes. A final difference occurred in the

way the interviewer determined whether persons actually used special shoes when they mentioned using shoes attached to a brace. It appears that these modifications in the interviewer's instructions have lowered the estimates of the use of special shoes. In all categories of special aids, except for special shoes, the rate of use increased between 1969 and 1977. However, in the special shoes category the opposite occurred, with a substantial decrease from a rate of 12.0 to a rate of 7.0 per 1,000 persons. Comparison of the 1969 and 1977 estimates of the use of special shoes is confounded because of the differences in data collection procedures relating to their use. Therefore, a discussion of trends in the number of persons using special shoes has been omitted from the final section of this report dealing with changes between 1969 and 1977.

A description of the survey design, the methods used in estimation, and the general qualifications of the data obtained from this survey is presented in appendix I. Because the estimates shown in this report are based on a sample of the population, they are subject to sampling error. Therefore, particular attention should be paid to the section in appendix I entitled "Reliability of Estimates." Sampling errors for most of the estimates are of relatively low magnitude. However, where an estimated number or the numerator or denominator of a rate or percent is small, the sampling error may be high. Charts of relative sampling errors and instructions for their use are shown in appendix I.

Certain terms used in this report are defined in appendix II. Some of the terms have specified meanings for the purpose of the survey. The entire questionnaire used in 1977 is illustrated in appendix III of the *Current Estimates* report for 1977 (Series 10, No. 126).<sup>2</sup> Appendix III of this report shows the specific portion of that questionnaire used for obtaining information on special aids. Tables 1-6 present data on the number of persons using selected types of special aids by age, sex, and other characteristics, and the population used in computing rates for these data are shown in table 7.

In this report, terms such as "similar" and "the same" mean that no statistically significant difference exists between the statistics being

compared. Terms relating to difference (e.g., "greater," "less") indicate that differences are statistically significant.

A *t*-test with a critical value of 1.96 (0.05 level of significance) was used to test all comparisons that are discussed. Lack of comment regarding the difference between any two statistics does not mean the difference was tested and found to be not significant.

### Related Data

This report focuses on the use of special aids in 1977 and 1969. Information about selected special aids was also gathered in the National Health Interview Survey during July 1958-June 1959, July 1962-June 1963, July 1965-June 1966, and 1971 and has been reported in other publications. Data collected during the 1959 fiscal year concerning the use of hearing aids, wheelchairs, braces, and artificial limbs were reported in *Health Statistics*, Series B, No. 27.<sup>3</sup> Data on the use of hearing aids from the 1962-63 and 1971 surveys have been published, respectively, in *Vital and Health Statistics*, Series 10, Nos. 35 and 79.<sup>4,5</sup> Hearing aid data were also collected in 1977. Data on the use of corrective lenses were collected in 1965-66 and are presented in Series 10, No. 53.<sup>6</sup> Similar data were collected in 1971 and are presented in Series 10, No. 79.<sup>5</sup>

Information about the use of special aids among residents of nursing homes has been published in *Vital and Health Statistics*, Series 12, Nos. 11 and 24<sup>7,8</sup> and in Series 13, Nos. 29 and 43.<sup>9,10</sup>

## PERSONS USING ONE OR MORE SPECIAL AIDS

During 1977, an estimated 6,459,000 persons (3.0 percent) of the civilian noninstitutionalized population of the United States used one or more special aids. These individuals used a total of 8,031,000 such aids, representing a rate of 1.2 aids per person using aids (table 1). Canes or walking sticks were the most frequently reported special aids; artificial arms or hands were the least frequently reported. About 2.5 percent of the population used one aid, 0.4 percent used two aids, and 0.2 percent used three or more

aids. The distribution of persons by the number of special aids used according to sex and age is shown in table 2. Table 3 shows the number and percent of persons using one or more special aids by age and selected characteristics of the population.

### Age and Sex Variations in the Use of One or More Special Aids

The use of a special aid for getting around was relatively rare among persons under 45 years of age. Only 1.5 percent of persons under 15 years of age used one or more special aids in 1977; among persons 15-44 years of age, usage was about the same (1.1 percent). Use of a special aid was more common among persons 45-64 years of age, with 3.9 percent of this group reporting use of one or more aids in getting around. It is among persons aged 65-74 years and 75 years and over who used one or more special aids in 1977 that the relative frequency of use showed the largest increases (8.4 and 22.4 percent, respectively). Of those under 65 years of age, males were relatively more likely than females were to use special aids. Among persons 65 years and over, however, the reverse is true.

### Chronic Activity Limitation and the Use of One or More Special Aids

Because in many instances the use of a special aid is another indication of long-term disability, it is not surprising that the use of any special aid is highly and positively associated with the degree of chronic activity limitation. Among persons without any chronic activity limitation, only 1.0 percent used any special aids in 1977. Among those with the least severe form of chronic activity limitation (those limited, but not in their major activity), 7.8 percent used one or more special aids. The use of special aids varied directly with the severity of long-term disability. Special aids were used by 13.5 percent of the persons who were limited in the amount or kind of major activity, and by 29.2 percent of those who were unable to perform their usual activity.

## Other Variations in the Use of One or More Special Aids

Other differences in the use of special aids are correlated with family income, usual activity, and living arrangements. The use of these special aids is inversely associated with family income, with about 7.5 percent of persons in families with an income of less than \$3,000 having used one or more aids in 1977, compared with 1.7 percent of persons in families with an income of \$25,000 or more. Regarding usual activity status, use of any special aid was

relatively uncommon among those usually working (1.4 percent) and most common among those who were retired (15.2 percent). Persons living outside the family group, including those living alone or with nonrelatives, were 2½ times as likely to use a special aid to get around as persons living with family members were.

## CANES OR WALKING STICKS

Nearly all persons suffering from physical disabilities of the lower limb(s) may need to use a cane or some other aid to ambulate which

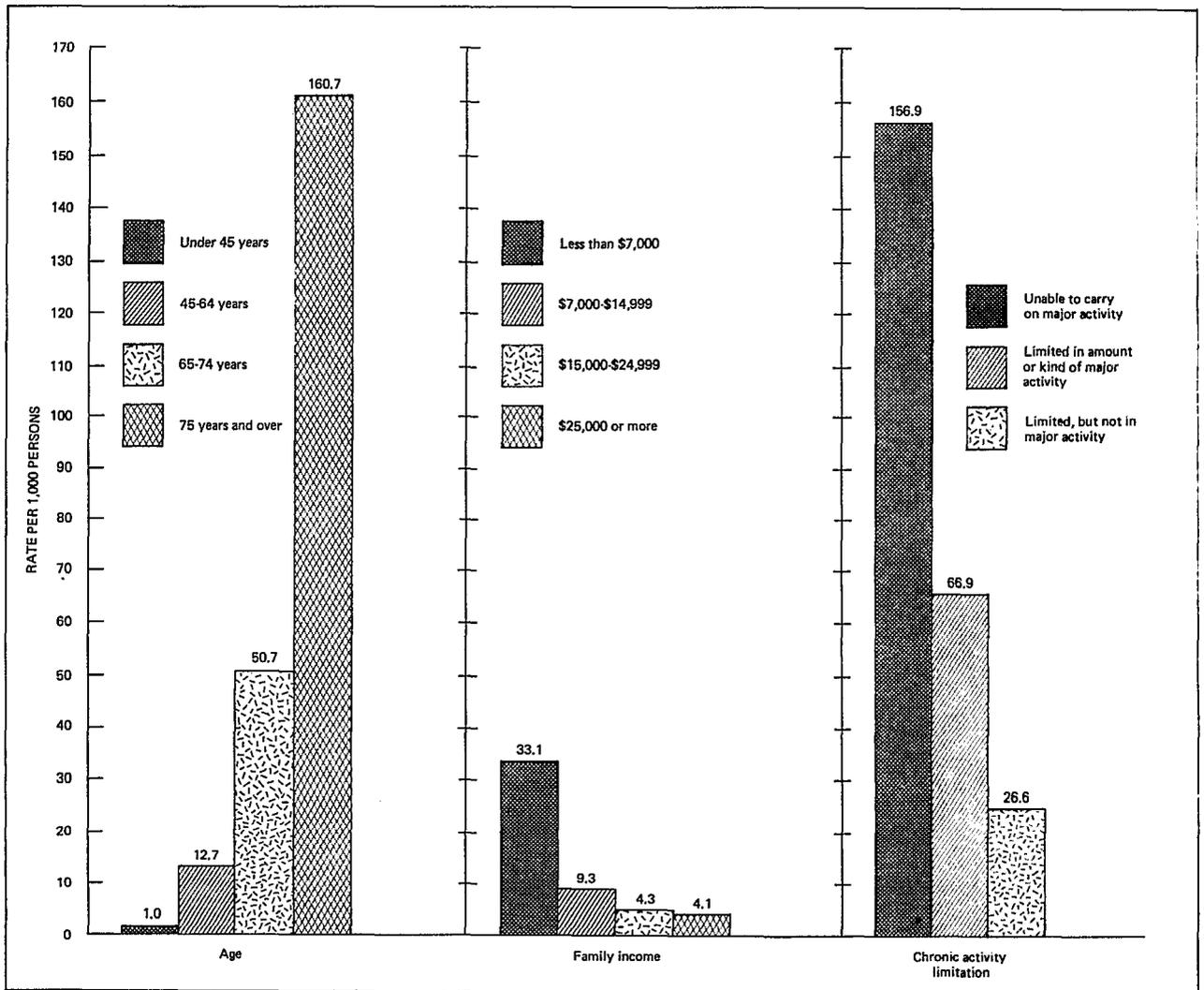


Figure 1. Number of persons using canes per 1,000 population, by selected characteristics: United States, 1977

allows them to shift a portion of their body weight to their upper limb(s). During 1977, an estimated 2,714,000 persons, or 12.8 per 1,000 persons, used a cane or walking stick to assist them in getting around.

### **Variations in the Use of Canes by Age and Sex**

Persons 65-74 years and 75 years and over had the highest rate for use of a cane, with 50.7 per 1,000 persons and 160.7 per 1,000 persons, respectively. The next highest use of canes was among middle-aged persons. About 12.7 of every 1,000 persons 45-64 years of age used one in 1977. Persons under 45 years of age were the least likely to use canes. The use of a cane by children under 15 years of age was extremely rare and only 1.6 out of every 1,000 persons 15-44 years of age used one. The rate of cane usage was similar for males (12.1 per 1,000 persons) and females (13.4 per 1,000 persons) (table 1 and figure 1).

### **Chronic Activity Limitation and the Use of Canes**

Because the vast majority of canes were used as a support by those with chronic conditions, it is not surprising that cane use was positively associated with the degree of chronic activity limitation. Only 2.1 out of every 1,000 persons without any chronic activity limitation needed the aid of a cane in getting around. However, among persons with secondary chronic activity limitation (those limited, but not in their major activity), 26.6 per 1,000 persons used a cane. Among those limited in the amount or kind of their major activity, about 66.9 out of every 1,000 persons used a cane. However, for those persons unable to carry on their major activity, about 156.9 out of every 1,000 persons used a cane. Table 4 presents data on the number of canes per 1,000 population by degree of activity limitation and age.

### **Variations in the Use of Canes by Other Selected Characteristics**

Differences in the use of canes also occur for other selected characteristics of the population

shown in table 5. The rate of cane use was higher, for example, among all other persons (15.4 per 1,000 population) than it was for white persons (12.4 per 1,000 population). The use of canes was also inversely associated with family income, with the rate of cane use per 1,000 persons decreasing from 33.1 for those with a family income of less than \$7,000 to 4.1 per 1,000 persons for those with a family income of \$25,000 or more. Among usual activity categories, those usually working had the lowest rate of cane usage (2.2 per 1,000 persons); retired persons had the highest rate (97.2 per 1,000 persons). Cane usage was also relatively greater for persons who were living alone or living with nonrelatives than it was for those who were married or unmarried and living with relatives (table 5).

### **Variations in the Use and Acquisition of Canes**

Of the 2,714,000 persons who reported using canes, 95.9 percent used only one (table 6). Approximately 44.2 percent of those using canes used them occasionally, about 25.6 percent used them most of the time, and about the same percentage (28.3 percent) used them all of the time. Almost half (48.7 percent) of the persons with canes used them from 1 to 4 years. Canes were obtained by various means. The majority of cane users (54.2 percent) had purchased them; a little over one-third (36.0 percent) had received them as gifts. Very few persons rented or borrowed them. Approximately 88.4 percent of the persons using canes used them because of chronic conditions (table 6).

## **SPECIAL SHOES**

Many persons with foot disabilities or deformities, such as bursitis and arthritis, required the use of special shoes to aid them in getting around. Shoes were classified as a "special aid" if they were of special construction or design and were specifically used to help the person in getting around. Oversized shoes of ordinary or usual construction worn by the person because of corns, bunions, and so forth were not counted as special shoes.

During 1977, an estimated 1,492,000 persons, or 7.0 of every 1,000 persons in the civilian noninstitutionalized population, used special shoes to aid them in getting around.

### Variations in the Use of Special Shoes by Age and Sex

Persons 15-44 years of age were the least likely to use special shoes as an aid for getting around (2.8 per 1,000 persons). This use was relatively more prevalent among persons 45-64 years of age. Approximately 9.2 of every 1,000 persons in this latter age group used special shoes. However, it is among persons under 15 years of age and those 65 years and over where the highest rate of use of special shoes occurred, with 11 out of every 1,000 persons in each of these age categories reporting use in 1977.

Overall, the rate of use for special shoes was about the same for both males and females—7.2 and 6.9 per 1,000 persons, respectively (table 1).

### Chronic Activity Limitation and the Use of Special Shoes

Special shoes, as well as many other special aids, are most frequently used because of a chronic condition, and use varies by the degree of chronic activity limitation. Although only 4.3 of every 1,000 persons without any chronic activity limitation used special shoes in 1977, about 19.3 per 1,000 persons who were limited, but not in their major activity, used these shoes. The rate of use of special shoes was even higher for persons limited in the amount or kind of major activity as well as for those unable to carry on their major activity (25.2 and 27.7 per 1,000 persons, respectively).

### Variations in the Use of Special Shoes by Other Selected Characteristics

Differences in the use of special shoes as an aid in getting around also occurred for other selected characteristics of the population. The use of special shoes was inversely related to family income, with the rate per 1,000 persons decreasing from 8.4 for those with a family income of less than \$7,000 to 4.8 for those with a family income of \$25,000 or more (table 5 and figure 2). In the "usual activity" categories,

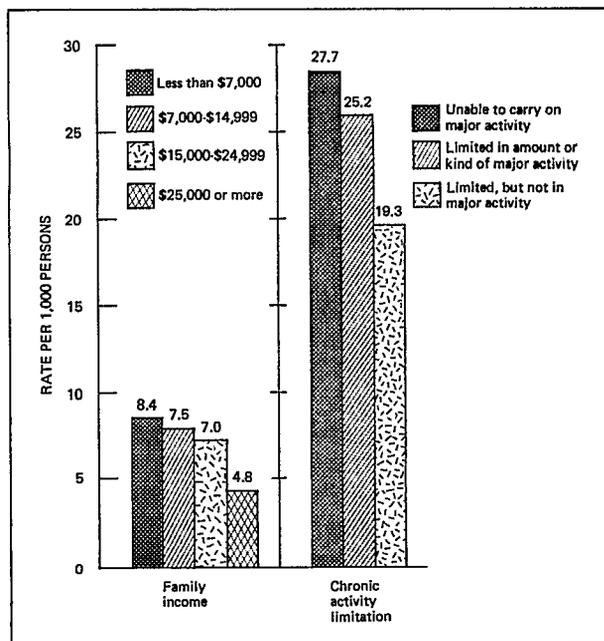


Figure 2. Number of persons using special shoes per 1,000 population, by selected characteristics: United States, 1977

persons usually working used special shoes least, with a rate of 4.1 per 1,000 persons; retired persons had the highest rate (12.9 per 1,000 persons). Persons living alone had a higher rate of use of special shoes than persons with other living arrangements had. The rate of use of special shoes was about the same for white and all other persons—7.1 and 6.3 per 1,000 persons, respectively (table 5).

### Variations in the Use and Acquisition of Special Shoes

Twenty-five percent of the 1,492,000 persons who reported using special shoes used only one special shoe; however, almost three times as many (73.9 percent) reported the use of a pair (table 6). The majority of persons (69.0 percent) used special shoes all of the time; 24.1 percent used them most of the time. Only 5.6 percent of them used special shoes occasionally. Data on duration of use showed that 17.4 percent of the persons who used special shoes had used them for less than 1 year. About the same proportion (38.5 and 42.6 percent) had used special shoes for 1-4 years or for 5 years or more, respectively. An overwhelming majority (91.0 percent) of persons who used special shoes had purchased

them. Very few rented, borrowed, or received them as gifts. Approximately 90 percent of the persons using special shoes reported wearing them because of chronic conditions.

## BRACES

The use of a brace of some kind is often recommended for persons with physical disabilities—to lessen pain and discomfort, maximize functioning, or just to make life more useful and meaningful. During 1977, approximately 1,402,000 persons, or 6.6 per 1,000 persons in the civilian noninstitutionalized population, used a brace of some kind to aid them in getting around. Excluded from this category are braces for teeth, braces or trusses for a hernia, temporary casts, slings, bandages, and belts. Braces have been coded into two groups—leg or foot

and other. Because the other category includes braces for various body sites (spine, shoulder, elbow, finger, wrist, etc.) further discussion will be limited to braces for the leg or foot only.

### Variations in the Use of Leg or Foot Braces by Age and Sex

The use of a leg or foot brace as an aid in getting around increased with age. The rate of use for leg or foot braces was least common among persons under 45 years of age with a rate of only 1.4 out of every 1,000 persons. However, for persons 45-64 years and those 65 years of age and over the rate of use for leg or foot braces almost doubled that of the younger age group (2.7 and 3.1 per 1,000 persons, respectively). Males had a higher proportionate use of leg or foot braces than females had, a pattern that remained constant for each age group (table 1 and figure 3).

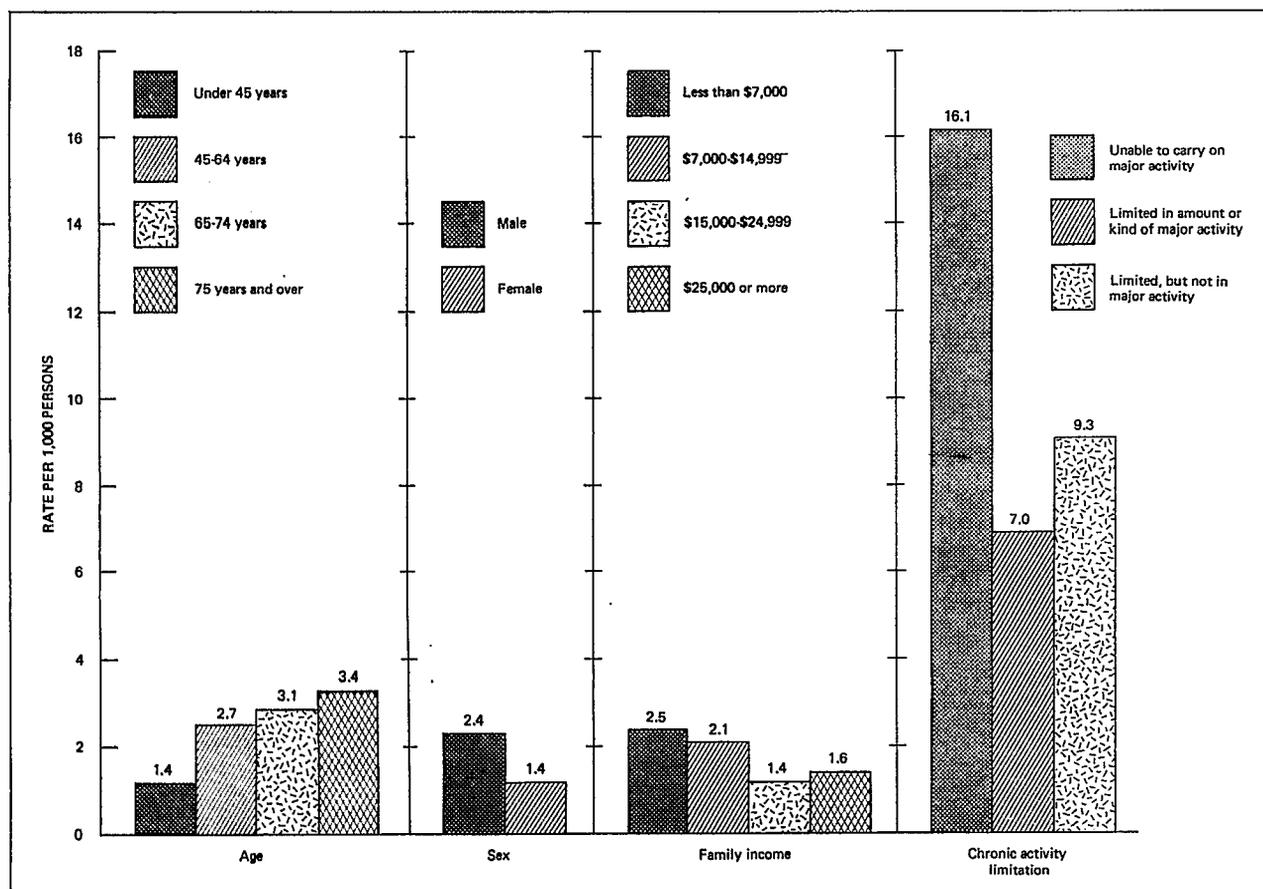


Figure 3. Number of persons using leg or foot braces per 1,000 population, by selected characteristics: United States, 1977

### **Chronic Activity Limitation and Other Variations in the Use of Braces of the Leg or Foot**

The use of braces for the leg or foot is positively associated with the degree of chronic activity limitation. Less than 1 out of every 1,000 persons who reported no limitation in activity used leg or foot braces to aid them in getting around. Those limited, but not in their major activity, and those limited in the amount or kind of major activity, had rates of use of 9.3 and 7.0 per 1,000 persons, respectively. The highest usage rate (16.1 per 1,000 persons) for leg or foot braces was among persons who were unable to carry on their major activity. The data in table 5 also show an inverse relationship between the use of leg or foot braces and family income. The rate of use decreased from 2.5 per 1,000 persons for those with a family income of less than \$7,000 to 1.6 per 1,000 persons for those with a family income of \$25,000 or more (table 5 and figure 3). Persons living alone or living with nonrelatives reported a higher rate of use of leg or foot braces (3.0 and 4.0 per 1,000 persons, respectively) than those living with relatives did (1.7 per 1,000 persons). The rate of use for leg or foot braces for retired persons (7.8 per 1,000 persons) was six times greater than that for persons who usually work or keep house. The rate of use for these aids was about the same for white and all other persons.

### **Variations in the Use and Acquisition of Leg or Foot Braces**

Of the estimated 398,000 persons who reported using leg or foot braces, only 18.6 percent used two at a time; about 80 percent used one at a time. About the same percent of persons wore their braces either most of the time or occasionally (25.4 and 26.6 percent, respectively). Nearly three-fifths of the persons using these braces had them for less than 5 years. Most persons (82.2 percent) had purchased them and about 95 percent used them as the result of a chronic condition (table 6).

## **WALKERS**

An estimated 689,000 persons or 3.2 per 1,000 persons in the civilian noninstitutionalized

population reported using a walker as an aid in getting around. Because ambulatory patterns requiring the use of a walker are almost always irreversible, walkers are mostly used when it is apparent that a person is unable to successfully ambulate with the use of a cane or a crutch.

### **Variations in the Use of Walkers by Age and Sex**

The rate of use for walkers was highest among the elderly, those 65 years of age and over and more specifically among those 75 years and over—24.7 and 47.6 per 1,000 persons, respectively (table 1 and figure 4). However, the usage rate was relatively frequent among people in their middle years, with 2.1 out of every 1,000 persons 45-64 years of age having used a walker in 1977. The use of a walker was rare (0.3 per 1,000 persons) for those under 45 years of age. Twice as many females as males used walkers in 1977 (table 1 and figure 4).

### **Chronic Activity Limitation and Other Variations in the Use of Walkers**

Walkers are used most often in connection with chronic conditions and that use is highly and positively associated with the degree of chronic activity limitation. In 1977, 53.0 per 1,000 persons who were unable to carry on their major activity used a walker, however, the rate was only 0.3 for every 1,000 persons without any chronic activity limitation.

Variations in the use of walkers are apparent for other selected characteristics (table 5). For example, the rate of use decreased as family income increased, with a decrease from 7.5 per 1,000 persons for those with a family income of less than \$7,000 to only 1.1 per 1,000 persons with a family income of \$25,000 or more. Not surprisingly, among "usual activity" categories, those usually working and those usually keeping house had the lowest rate of walker use; the highest rate was reported for retired persons. The use of a walker was also relatively greater for those living alone than it was for those with other living arrangements.

### **Variations in the Use and Acquisition of Walkers**

Of the estimated 689,000 persons using walkers, one-third (34.3 percent) used them

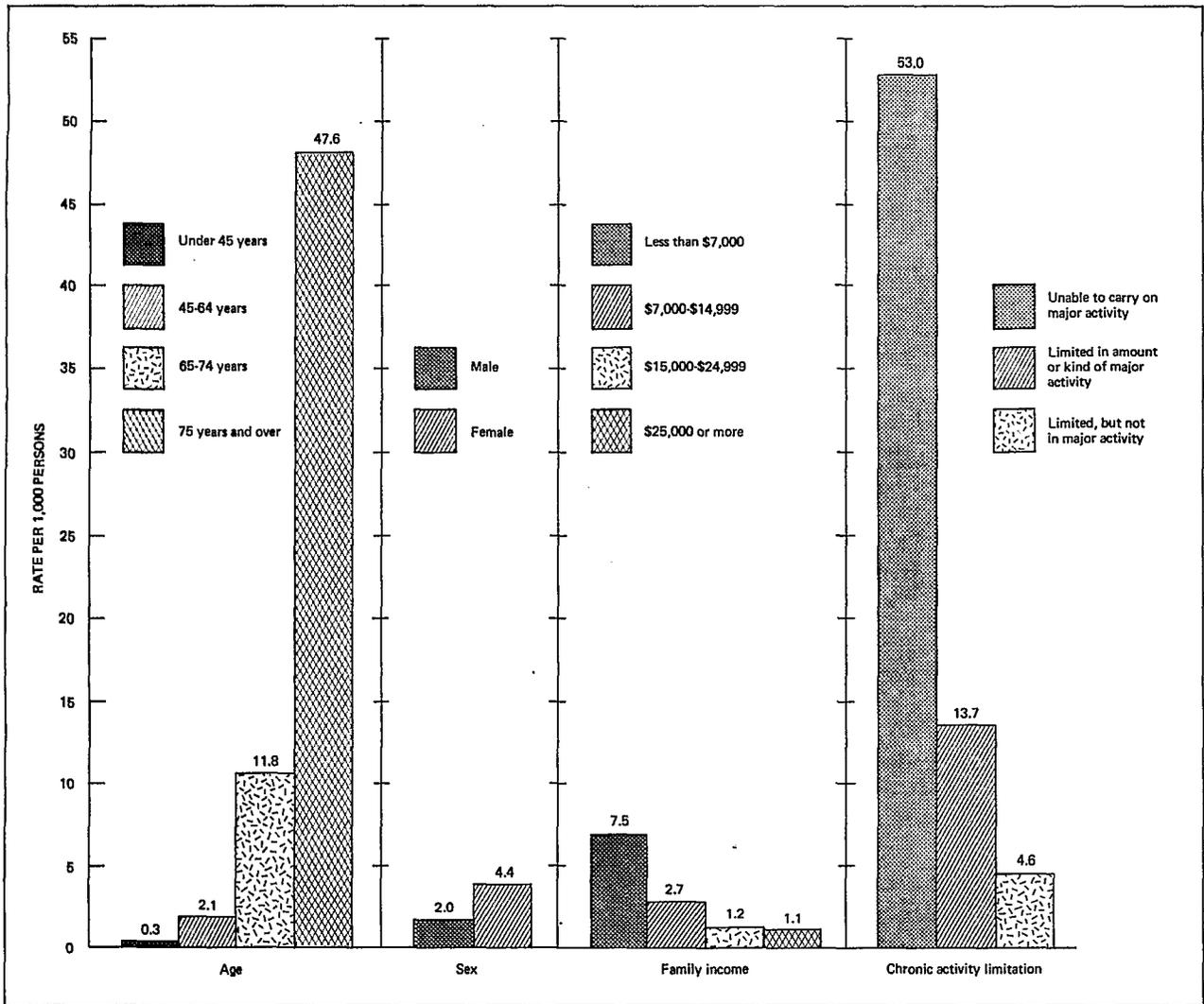


Figure 4. Number of persons using walkers per 1,000 population, by selected characteristics: United States, 1977

occasionally; approximately 18 percent used them most of the time; and 46.3 percent used them all of the time. The majority of these persons (73 percent) had used walkers for less than 5 years. About 59 percent of those using walkers had purchased them and one-fifth had received them as gifts. As expected, most persons (91.7 percent) using walkers reported their use in association with some chronic condition (table 6).

## WHEELCHAIRS

An estimated 645,000 persons, 3.0 per 1,000 population, were reported to have used a

wheelchair as an aid in getting around in 1977. Persons who required wheelchairs were those who could not walk or who had been advised by a physician not to walk.

### Variations in the Use of Wheelchairs by Age and Sex

The use of a wheelchair is highest for the elderly, with a rate of 15.0 per 1,000 persons for those 65 years of age and over and a rate of 22.9 per 1,000 persons for those 75 years of age and over (table 1 and figure 5). Use of a wheelchair was relatively less frequent (3.4 per 1,000 persons) for persons 45-64 years of age. However, in some age categories, the use of a wheelchair

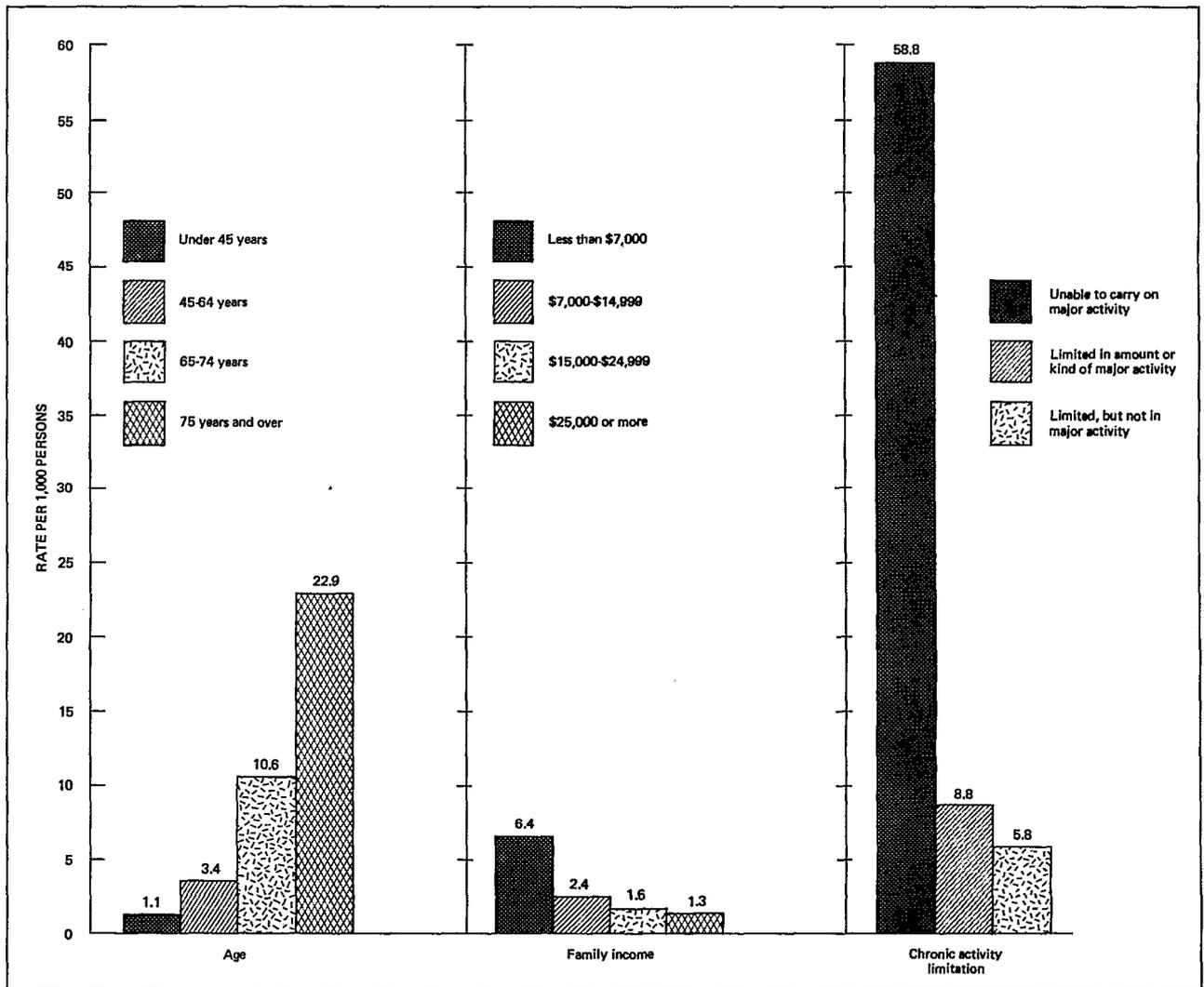


Figure 5. Number of persons using wheelchairs per 1,000 population, by selected characteristics: United States, 1977

as a special aid is quite rare. Among persons under 45 years of age, for example, only 1.1 per 1,000 persons used a wheelchair in 1977. The rate that wheelchairs were used was about the same for males and females (2.9 and 3.2 per 1,000 persons, respectively).

### Chronic Activity Limitation and Other Variations in the Use of Wheelchairs

Almost all persons (92.7 percent) using wheelchairs required them as a result of chronic conditions. This use is reflected in the positive association between wheelchair use and the degree of chronic activity limitation. The use of

a wheelchair as an ambulatory aid in 1977 was rare for persons without any chronic activity limitation. The rate of use of wheelchairs was highest for those unable to carry on their major activity (58.8 per 1,000 persons). However, for those with secondary chronic activity limitation (those limited, but not in their major activity), only 5.8 per 1,000 persons used wheelchairs.

The rate of wheelchair use was inversely related to family income, decreasing from 6.4 per 1,000 persons for those with a family income less than \$7,000 to 1.3 per 1,000 persons for those with a family income of \$25,000 or more. In the "usual activity" category persons usually working had the lowest rate of wheelchair use

(only 0.5 per 1,000 persons); those who were retired were reported to have the highest rate of use (17.6 per 1,000 persons). A higher proportion of persons either living alone or with non-relatives used wheelchairs than those living with relatives did, about 5 and 3 per 1,000 persons, respectively. The rate of wheelchair use was about the same for white and all other persons.

them most of the time. Almost three-fifths of the wheelchair users used them for less than 5 years. Wheelchairs were obtained through various channels. About 50.7 percent had purchased these chairs and 11.6 percent had rented them. More persons rented wheelchairs than any other aid (table 6).

### Variations in the Use and Acquisition of Wheelchairs

Of the estimated 645,000 persons who reported using wheelchairs, the majority (53.5 percent) used them all of the time; 27.0 percent used them occasionally; and 15.8 percent used

### CRUTCHES

Crutches, like canes and walkers, are used by persons with some kind of physical disability of the lower limb(s) who need an aid to ambulate. In 1977, an estimated 613,000 persons, or 2.9 per 1,000 population, used crutches.

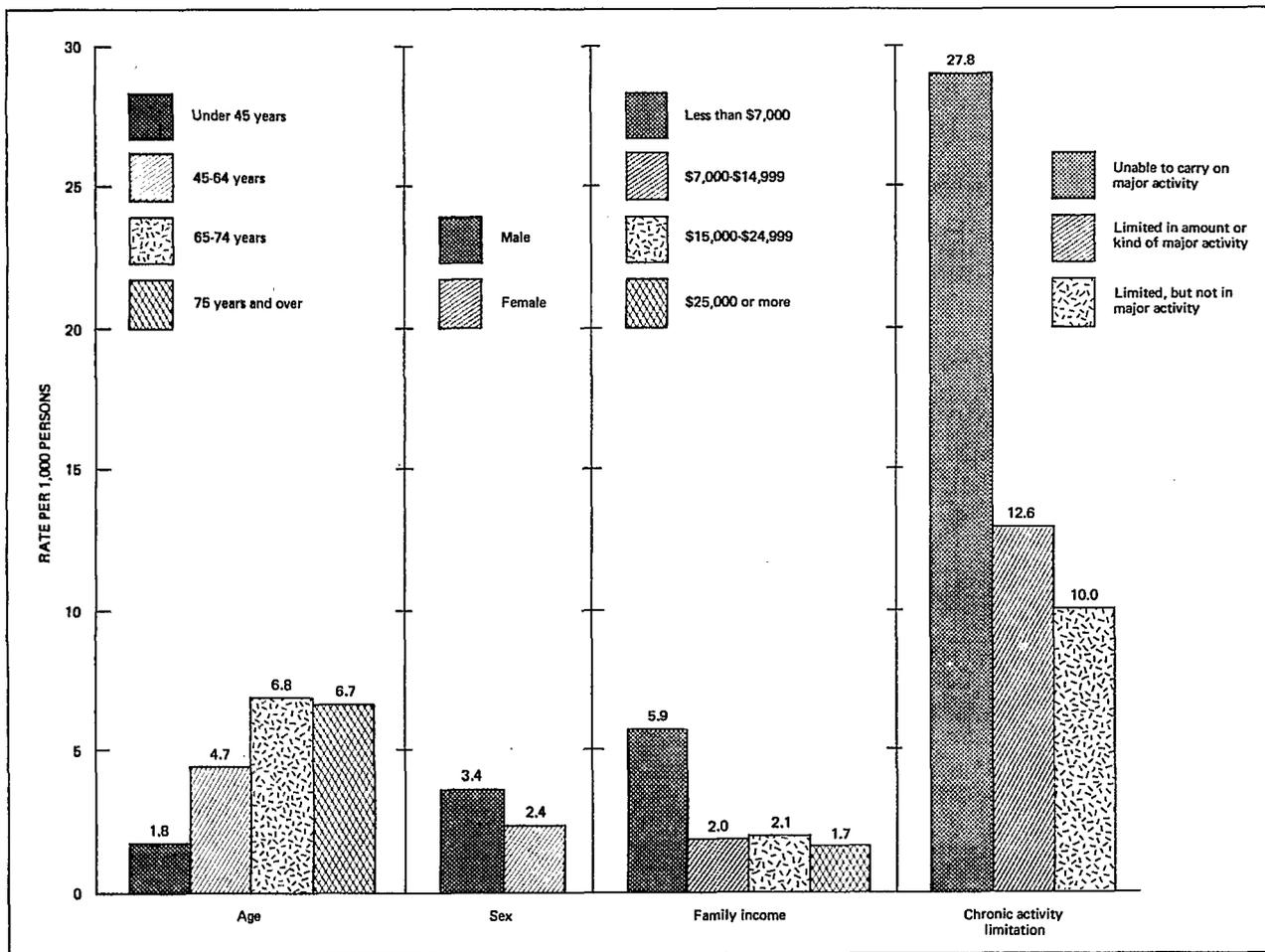


Figure 6. Number of persons using crutches per 1,000 population, by selected characteristics: United States, 1977

## Variations in the Use of Crutches by Age and Sex

The use of crutches as an aid in getting around increased with age. In 1977, the use of crutches was relatively least common among persons under 45 years of age. Only 1 out of every 1,000 persons under 15 years of age used a crutch in 1977. For those persons aged 15-44 years, the rate of use was proportionately slightly higher (2.2 per 1,000 persons). The use of crutches was relatively more common among persons in their middle years, with a rate of 4.7 per 1,000 persons for those 45-64 years of age.

The rate of use was highest (6.8 per 1,000 persons) among those 65 years of age and over (table 1 and figure 6). This rate was also higher for males (3.4 per 1,000 persons) than it was for females (2.4 per 1,000 persons).

## Chronic Activity Limitation and the Use of Crutches

In 1977, a little over three-fourths of those who used crutches as an aid in getting around needed them because of chronic conditions. Persons unable to carry on their major activity had the highest rate of use of crutches (27.8 per

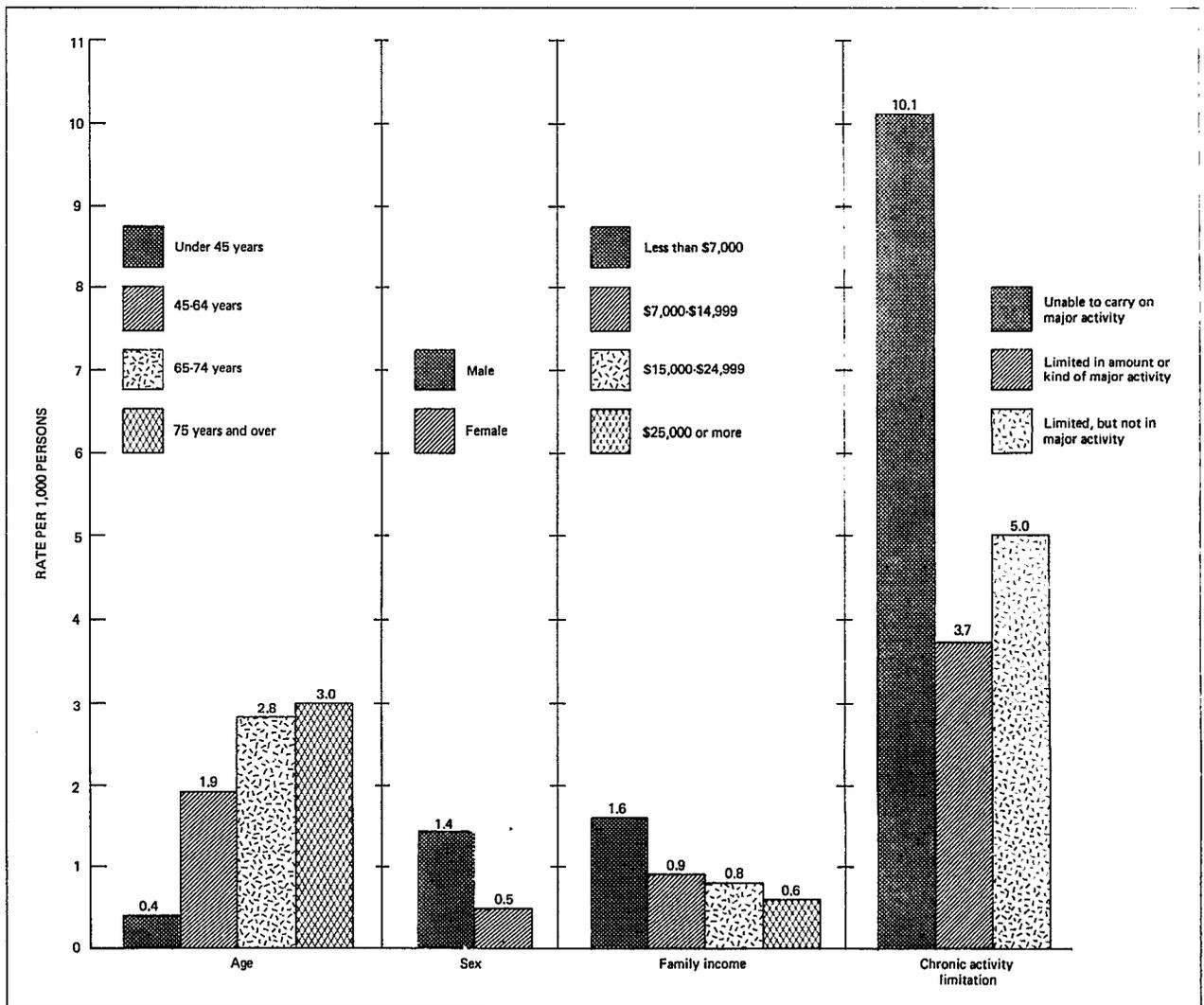


Figure 7. Number of persons using artificial leg or foot per 1,000 population, by selected characteristics: United States, 1977

1,000 persons). Among those limited, but not in their major activity, about 10 out of every 1,000 persons used crutches. Less than 1 out of every 1,000 persons without chronic activity limitation used crutches as an ambulatory aid.

### **Variations in the Use of Crutches by Other Selected Characteristics**

The use of crutches was also inversely associated with family income, with the rate per 1,000 persons decreasing from 5.9 for those with a family income of less than \$7,000 to 1.7 for those with a family income of \$25,000 or more. The "usual activity" categories showed a rate of use of crutches lowest for those usually working (1.7 per 1,000 persons) and highest for those retired (12.1 per 1,000 persons). The use of crutches was relatively higher among persons living alone or with nonrelatives, compared with those living with relatives (see table 5). The rate of use was also found to be the same for both white and all other persons (2.9 per 1,000 population).

### **Variations in the Use and Acquisition of Crutches**

Approximately 80 percent of the estimated 613,000 persons reporting this aid used two crutches simultaneously to get around. About the same percent used crutches all the time (38.7 percent) or occasionally (40.6 percent). According to the duration of use, 36.2 percent used their crutches for less than a year; 22.8 percent used them from 1 to 4 years; and 39.8 percent used them for 5 years or more. The majority (57.7 percent) of persons using crutches had purchased them.

### **ARTIFICIAL LIMBS**

During 1977, an estimated 205,000 persons (1.0 per 1,000 population) used an artificial leg or foot to aid them in getting around. Persons 65 years of age and over and males had a higher rate of use than those under 65 years of age and females had (table 1 and figure 7). The number of persons using an artificial leg or foot per 1,000 population was highest for those who

were unable to carry on their major activity, those with a family income of less than \$7,000, and retired persons. The data in table 6 also show that 84.4 percent of the persons using an artificial leg(s) or foot(feet) had only one artificial leg or foot; 79.5 percent of them used this aid all of the time; and 65.9 percent had purchased these aids. Comparable data for use of an artificial arm or hand are shown in the detailed tables.

### **OTHER AIDS FOR GETTING AROUND**

An estimated 205,000 persons (1 per 1,000 persons) used some other type of special aid than those discussed above for getting around. This category includes aids such as guide dogs and mechanical devices for getting up and down stairs. Aids used by household members that the household survey respondent could not identify are also included in this category.

### **IMPAIRMENTS<sup>a</sup> AND THE USE OF SPECIAL AIDS: SELECTED DATA**

The data presented previously have shown that the use of one or more special aids, as well as the use of specific aids, is associated both with the presence of chronic conditions and with the degree of chronic activity limitation. Tables A and B, which show rates of use of selected special aids by persons with paralysis and with orthopedic impairments of the lower extremity and hip, respectively, highlight additional features of the relationship between chronicity and the use of special aids.

#### **Complete or Partial Paralysis**

Table A shows that there were 1,532,000 persons in the civilian noninstitutionalized population with complete or partial paralysis. These estimates include cases of residual paralysis of all types and degrees that have persisted for at least

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<sup>a</sup>For a discussion of definition and data collection and coding procedures used in measurements of impairment, see Series 10, No. 99.<sup>11</sup>

Table A. Prevalence of paralysis, complete or partial, and percent of persons with this impairment using 1 or more special aids, by type of aid, sex, and age: United States, 1977

Sex and age	Prevalence of paralysis, complete or partial, in thousands	Selected aid				
		Cane	Wheel-chair	Brace, leg or foot	Special shoes	Walker
<b>Both sexes</b>		Percent of persons				
All ages.....	1,532	20.5	17.2	10.5	9.8	8.8
Under 65 years.....	945	12.8	17.6	13.3	12.6	4.1
65 years and over.....	588	32.8	16.5	*5.8	*5.3	16.2
<b>Male</b>						
All ages.....	803	22.9	17.6	11.3	9.3	7.8
Under 65 years.....	525	13.7	20.2	13.9	12.8	*2.5
65 years and over.....	279	40.1	12.9	*6.1	*2.9	17.9
<b>Female</b>						
All ages.....	729	17.8	16.7	9.6	10.2	9.9
Under 65 years.....	420	11.4	14.3	12.6	12.4	*6.2
65 years and over.....	309	26.2	19.7	*5.5	*7.4	14.6

Table B. Prevalence of orthopedic impairments of lower extremity and hip and percent of persons with this impairment using 1 or more special aids, by type of aid, sex, and age: United States, 1977

Sex and age	Prevalence of orthopedic impairment of lower extremity and hip in thousands	Selected aid				
		Special shoes	Cane	Walker	Brace, leg or foot	Crutches
<b>Both sexes</b>		Percent of persons				
All ages.....	7,147	14.1	8.9	2.3	2.1	2.1
Under 65 years.....	5,529	15.3	3.2	*0.4	2.3	2.0
65 years and over.....	1,618	10.1	28.5	8.8	*1.1	2.5
<b>Male</b>						
All ages.....	3,643	13.6	7.4	1.2	2.5	2.1
Under 65 years.....	3,051	14.7	3.6	*0.2	2.8	1.9
65 years and over.....	592	7.9	26.7	6.4	*1.2	*2.7
<b>Female</b>						
All ages.....	3,504	14.7	10.6	3.5	1.6	2.2
Under 65 years.....	2,479	16.0	2.7	*0.6	1.8	2.1
65 years and over.....	1,025	11.3	29.5	10.3	*1.1	*2.3

3 months following the initial attack. Among persons with paralysis, the use of canes (20.5 percent) and wheelchairs (17.2 percent) was relatively more common than the use of leg or foot braces (10.5 percent), special shoes (9.8 percent), or walkers (8.8 percent). The use of canes and walkers was relatively greater for persons 65 years of age and over than it was for those under 65 years. The use of canes, wheelchairs, and leg or foot braces was relatively more frequent among males than among females; the opposite was true for special shoes and walkers (table A).

### Orthopedic Impairments of Lower Extremity and Hip

Orthopedic impairments are defects of the limbs, back, or trunk, exclusive both of paralysis of these parts of the body and of absence of a lower extremity. Ill-defined chronic difficulties described as stiffness, weakness, pain, trouble, spasms, and swelling that involve muscles, joints, limbs, back, or trunk are included in this category. Old strains, sprains, and dislocations of the aforementioned sites still causing distress; flatfoot, clubfoot, and deformities of lower extremity(ies), hip and/or pelvis are also included. Excluded are conditions pertaining to displacement of intervertebral discs and impairment of limbs, back, or trunk associated with arthritis or other active chronic disease.

The prevalence of orthopedic impairments of the lower extremities and hips in 1977 was 7,147,000. The most common aid utilized by 14.1 percent of persons with such impairments

was special shoes. Canes, the second most often used aid, were used by 8.9 percent of individuals with these impairments. By contrast, walkers, braces of the leg or foot, or crutches were used by only 2 percent of persons with this impairment. A much higher percent of persons 65 years of age and over with an orthopedic impairment of the lower extremity and hip used canes, compared with those under 65 years of age. For this impairment, use of special shoes, canes, and walkers was relatively more widespread among females than it was among males (table B).

### Absence of Major Extremities

Although the data are not shown here, in 1977 an estimated 358,000 persons in the civilian noninstitutionalized population reported absence of their major extremities, that is, an absent leg, foot, arm, or hand. Absence of less than the entire finger or toe is excluded from this category. Approximately 50.6 percent of the persons with missing major extremities used an artificial leg(s). Another 21.2 percent of them used wheelchairs, 19.0 percent used canes, 18.4 percent used crutches, and 9.8 percent used a walker.

### CHANGES BETWEEN 1969 AND 1977

Table C shows the rates of use of selected special aids in the civilian noninstitutionalized population by type of aid and age. Significant increases occurred between 1969 and 1977 for five of the seven categories shown: canes, leg or

Table C. Number of persons using selected special aids per 1,000 population, by type of aid and age: United States, 1969 and 1977

Age	Cane or walking stick		Special shoes		Brace				Walker		Wheelchair		Crutches	
					Leg or foot		Other							
	1969	1977	1969	1977	1969	1977	1969	1977	1969	1977	1969	1977	1969	1977
	Number of persons using aids per 1,000 population													
All ages .....	10.9	12.8	12.0	7.0	1.2	1.9	4.4	4.7	2.0	3.2	2.1	3.0	2.2	2.9
Under 45 years.....	0.7	1.0	11.7	5.7	1.1	1.4	2.6	2.4	*0.1	0.3	0.7	1.1	1.1	1.8
Under 15 years.....	*0.1	-	21.3	11.1	1.5	1.5	1.0	1.0	*0.1	*0.4	*0.4	0.9	*0.5	1.0
15-44 years.....	1.1	1.6	4.5	2.8	0.8	1.4	3.9	3.1	*0.2	*0.3	1.0	1.2	1.5	2.2
45-64 years.....	10.9	12.7	10.9	9.2	*1.0	2.7	8.0	10.6	1.4	2.1	2.3	3.4	3.9	4.7
65 years and over.....	86.7	90.3	16.8	11.4	*2.2	3.1	9.6	8.8	17.6	24.7	11.5	15.0	7.3	6.8
65-74 years.....	44.6	50.7	17.1	11.4	*2.0	3.1	8.8	9.4	7.5	11.8	7.6	10.6	6.1	6.8
75 years and over.....	157.2	160.7	16.3	11.5	*2.6	*3.4	11.0	7.7	34.5	47.6	18.0	22.9	9.4	6.7

foot braces, walkers, wheelchairs, and crutches. Regarding each of these special aids (except crutches), the rates of use per 1,000 persons were proportionately higher in 1977 than they were in 1969 among persons 65 years of age and over. Age-specific temporal comparisons for other types of aids, including an artificial leg, foot, arm, or hand and other aids for getting around are not attempted here because of the unreliability of the age-specific rates of use associated with these aids. However, the rates of use, irrespective of age, per 1,000 persons for these three categories of aids are shown in table D. Persons using an artificial leg or foot is the

Table D. Number of selected special aids per 1,000 population: United States, 1969 and 1977

Special aid	1969	1977
	Number of aids per 1,000 population	
Artificial leg or foot .....	0.6	1.0
Artificial arm or hand.....	0.2	0.3
Other aids for getting around .....	0.7	1.0

only category in which a significant increase occurred, overall, between the two periods.



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Table 1. Number of persons using special aids and number using aids per 1,000 population, by type of aid, sex, and age: United States, 1977

[Data are based on household interviews of the civilian noninstitutionalized 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	Cane or walking stick	Special shoes	Brace		Walker	Wheel-chair	Crutches	Artificial limb		Other aid for getting around
			Leg or foot	Other				Leg or foot	Arm or hand	
<b>Both sexes</b>										
Number of persons using aids in thousands										
All ages.....	2,714	1,492	398	1,004	689	645	613	205	66	205
Under 45 years.....	153	838	209	347	47	162	261	59	*18	57
Under 15 years.....	-	572	76	51	*22	47	50	*13	*6	*21
15-44 years.....	153	265	133	296	*26	116	211	46	*11	36
45-64 years.....	550	401	119	460	93	148	202	82	*28	79
65 years and over.....	2,011	253	70	196	549	334	151	64	*22	68
65-74 years.....	723	162	44	134	168	151	97	40	*9	*32
75 years and over.....	1,287	92	*27	62	381	183	54	*24	*13	37
<b>Male</b>										
All ages.....	1,239	732	241	539	203	294	348	146	49	124
Under 45 years.....	88	471	137	188	*25	105	157	38	*11	*34
Under 15 years.....	-	316	42	*26	*13	36	*32	*6	*5	*13
15-44 years.....	88	155	95	162	*13	69	125	*32	*6	*22
45-64 years.....	329	181	70	262	*19	81	118	70	*23	52
65 years and over.....	822	80	*34	89	159	109	73	39	*16	38
65-74 years.....	307	59	*20	66	54	57	49	*24	*9	*20
75 years and over.....	514	*21	*14	*24	105	52	*24	*15	*7	*18
<b>Female</b>										
All ages.....	1,475	760	157	465	486	351	265	60	*16	81
Under 45 years.....	65	367	72	160	*22	58	104	*21	*7	*23
Under 15 years.....	-	256	*34	*25	*9	*11	*18	*7	*2	*8
15-44 years.....	65	111	37	134	*13	47	86	*14	*5	*14
45-64 years.....	221	220	49	198	74	68	83	*13	*4	*28
65 years and over.....	1,189	173	36	107	390	225	78	*26	*6	*30
65-74 years.....	416	102	*24	68	113	94	47	*16	-	*12
75 years and over.....	773	71	*13	39	277	132	*30	*10	*6	*19
<b>Both sexes</b>										
Number of persons using aids per 1,000 population										
All ages.....	12.8	7.0	1.9	4.7	3.2	3.0	2.9	1.0	0.3	1.0
Under 45 years.....	1.0	5.7	1.4	2.4	0.3	1.1	1.8	0.4	*0.1	0.4
Under 15 years.....	-	11.1	1.5	1.0	*0.4	0.9	1.0	*0.3	*0.1	*0.4
15-44 years.....	1.6	2.8	1.4	3.1	*0.3	1.2	2.2	0.5	*0.1	0.4
45-64 years.....	12.7	9.2	2.7	10.6	2.1	3.4	4.7	1.9	*0.6	1.8
65 years and over.....	90.3	11.4	3.1	8.8	24.7	15.0	6.8	2.9	*1.0	3.1
65-74 years.....	50.7	11.4	3.1	9.4	11.8	10.6	6.8	2.8	*0.6	*2.2
75 years and over.....	160.7	11.5	*3.4	7.7	47.6	22.9	6.7	*3.0	*1.6	4.6
<b>Male</b>										
All ages.....	12.1	7.2	2.4	5.3	2.0	2.9	3.4	1.4	0.5	1.2
Under 45 years.....	1.2	6.5	1.9	2.6	*0.3	1.4	2.2	0.5	*0.2	*0.5
Under 15 years.....	-	12.0	1.6	*1.0	*0.5	1.4	*1.2	*0.2	*0.2	*0.5
15-44 years.....	1.9	3.4	2.1	3.5	*0.3	1.5	2.7	*0.7	*0.1	*0.5
45-64 years.....	15.9	8.7	3.4	12.7	*0.9	3.9	5.7	3.4	*1.1	2.5
65 years and over.....	89.4	8.7	*3.7	9.7	17.3	11.9	7.9	4.2	*1.7	4.1
65-74 years.....	49.5	9.5	*3.2	10.7	8.7	9.2	7.9	*3.9	*1.5	*3.2
75 years and over.....	171.3	*7.0	*4.7	*8.0	35.0	17.3	*8.0	*5.0	*2.3	*6.0
<b>Female</b>										
All ages.....	13.4	6.9	1.4	4.2	4.4	3.2	2.4	0.5	*0.1	0.7
Under 45 years.....	0.9	5.0	1.0	2.2	*0.3	0.8	1.4	*0.3	*0.1	*0.3
Under 15 years.....	-	10.1	*1.3	*1.0	*0.4	*0.4	*0.7	*0.3	*0.1	*0.3
15-44 years.....	1.3	2.3	0.8	2.7	*0.3	1.0	1.8	*0.3	*0.1	*0.3
45-64 years.....	9.8	9.7	2.2	8.7	3.3	3.0	3.7	*0.6	*0.2	*1.2
65 years and over.....	91.0	13.2	2.8	8.2	29.8	17.2	6.0	*2.0	*0.5	*2.3
65-74 years.....	51.6	12.7	*3.0	8.4	14.0	11.7	5.8	*2.0	-	*1.5
75 years and over.....	154.4	14.2	*2.6	7.8	55.3	26.4	*6.0	*2.0	*1.2	*3.8

NOTE: When a figure is shown with an asterisk, it is presented only for the purpose of combining with other cells. An estimate will have a relative standard error less than 30 percent when the aggregate is at least 35,000.

Table 2. Total population and number of persons using special aids and percent distribution of persons by number of aids used, according to sex and age: United States, 1977

[Data are based on household interviews of the civilian noninstitutionalized 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 population	Persons not using aids	Persons using special aids		
			1 type of aid	2 types of aids	3 or more types of aids
<b>Both sexes</b>					
Number of persons in thousands					
All ages .....	212,153	205,694	5,292	845	322
Under 15 years.....	51,547	50,815	651	51	*30
15-44 years .....	94,982	93,915	906	115	46
45-64 years .....	43,357	41,683	1,333	224	118
65 years and over .....	22,266	19,281	2,401	456	128
65-74 years .....	14,259	13,065	913	213	68
75 years and over .....	8,007	6,216	1,488	243	60
<b>Male</b>					
All ages.....	102,384	99,278	2,519	416	170
Under 15 years.....	26,294	25,880	371	*24	*19
15-44 years .....	46,193	45,580	507	71	35
45-64 years .....	20,700	19,784	707	147	63
65 years and over .....	9,197	8,034	935	174	54
65-74 years .....	6,196	5,688	390	88	*30
75 years and over .....	3,000	2,346	545	86	*24
<b>Female</b>					
All ages.....	109,769	106,416	2,773	429	151
Under 15 years.....	25,253	24,935	281	*27	*11
15-44 years .....	48,789	48,334	399	44	*12
45-64 years .....	22,657	21,899	626	77	55
65 years and over .....	13,070	11,248	1,467	282	74
65-74 years .....	8,063	7,377	523	124	38
75 years and over .....	5,007	3,870	943	158	35
<b>Both sexes</b>					
Percent distribution					
All ages .....	100.0	97.0	2.5	0.4	0.2
Under 15 years.....	100.0	98.6	1.3	0.1	*0.1
15-44 years .....	100.0	98.9	1.0	0.1	0.0
45-64 years .....	100.0	96.1	3.1	0.5	0.3
65 years and over .....	100.0	86.6	10.8	2.0	0.6
65-74 years .....	100.0	91.6	6.4	1.5	0.5
75 years and over .....	100.0	77.6	18.6	3.0	0.7
<b>Male</b>					
All ages.....	100.0	97.0	2.5	0.4	0.2
Under 15 years.....	100.0	98.4	1.4	*0.1	*0.1
15-44 years .....	100.0	98.7	1.1	0.2	0.1
45-64 years .....	100.0	95.6	3.4	0.7	0.3
65 years and over .....	100.0	87.4	10.2	1.9	0.6
65-74 years .....	100.0	91.8	6.3	1.4	*0.5
75 years and over .....	100.0	78.2	18.2	2.9	*0.8
<b>Female</b>					
All ages.....	100.0	96.9	2.5	0.4	0.1
Under 15 years.....	100.0	98.7	1.1	*0.1	*0.0
15-44 years .....	100.0	99.1	0.8	0.1	*0.0
45-64 years .....	100.0	96.7	2.8	0.3	0.2
65 years and over .....	100.0	86.1	11.2	2.2	0.6
65-74 years .....	100.0	91.5	6.5	1.5	0.5
75 years and over .....	100.0	77.3	18.8	3.2	0.7

NOTE: When a figure is shown with an asterisk, it is presented only for the purpose of combining with other cells. An estimate will have a relative standard error less than 30 percent when the aggregate is at least 35,000.

Table 3. Number and percent of population using 1 or more special aids, by age and selected characteristics: United States, 1977

[Data are based on household interviews of the civilian noninstitutionalized 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	All ages	Under 45 years	45-64 years	65 years and over	65-74 years	75 years and over	All ages	Under 45 years	45-64 years	65 years and over	65-74 years	75 years and over
	Number of persons using aids in thousands						Percent of population					
Total <sup>1</sup> .....	6,459	1,800	1,674	2,985	1,194	1,791	3.0	1.2	3.9	13.4	8.4	22.4
<b>Sex</b>												
Male.....	3,106	1,027	916	1,163	508	655	3.0	1.4	4.4	12.6	8.2	21.8
Female.....	3,353	773	758	1,822	686	1,136	3.1	1.0	3.3	13.9	8.5	22.7
<b>Color</b>												
White.....	5,612	1,566	1,421	2,625	1,020	1,605	3.1	1.3	3.7	13.0	7.9	22.0
All other.....	846	233	253	360	174	186	3.0	1.1	5.5	17.1	12.6	25.9
<b>Family income</b>												
Less than \$3,000.....	815	88	181	545	197	348	7.5	1.4	9.7	20.6	14.2	27.8
\$3,000-\$4,999.....	1,021	131	210	679	250	429	6.6	1.5	8.3	15.7	10.1	23.2
\$5,000-\$6,999.....	662	125	157	379	194	185	4.1	1.3	5.5	11.0	8.8	15.2
\$7,000-\$9,999.....	753	209	242	302	132	170	3.3	1.3	6.0	10.2	6.2	20.3
\$10,000-\$14,999.....	960	410	252	298	140	158	2.4	1.3	3.3	11.5	7.3	23.0
\$15,000-\$24,999.....	1,001	507	255	239	92	148	1.8	1.2	2.3	12.9	6.8	29.4
\$25,000 or more.....	543	226	194	123	*25	98	1.7	1.0	2.3	10.4	*3.2	24.1
<b>Living arrangement</b>												
Living alone.....	1,372	117	296	959	321	638	8.0	1.8	6.6	15.2	9.3	22.1
Living with nonrelatives.....	178	57	*32	90	*28	62	4.4	1.8	*6.5	27.6	*17.7	36.9
Living with relatives—married.....	2,969	567	1,145	1,257	666	591	3.0	1.1	3.4	10.3	7.4	18.5
Living with relatives—other.....	1,939	1,058	201	679	179	501	2.1	1.2	4.6	19.7	10.5	28.6
<b>Usual activity</b>												
Usually working (17 years and over).....	1,150	510	540	100	78	*22	1.4	0.9	2.0	3.7	3.4	*5.1
Usually keeping house (female, 17 years and over).....	1,921	178	456	1,287	489	798	4.9	1.1	3.9	12.0	7.4	19.6
Retired (45 years and over).....	1,638	...	445	1,192	489	704	15.2	...	14.9	15.2	9.9	24.3
Other activity <sup>2</sup> .....	1,750	1,111	233	406	138	267	2.2	1.5	15.8	38.6	31.5	43.5
<b>Chronic activity limitation</b>												
Unable to carry on major activity <sup>3</sup> .....	2,235	237	648	1,350	542	808	29.2	21.4	23.9	35.2	26.3	45.4
Limited in amount or kind of major activity <sup>3</sup> .....	1,935	394	564	976	398	579	13.5	8.7	10.6	21.8	14.9	32.1
Limited, but not in major activity <sup>3</sup> .....	512	198	126	188	86	102	7.8	5.9	6.5	14.9	11.1	20.8
Not limited in activity.....	1,777	970	336	471	169	302	1.0	0.7	1.0	3.7	1.9	7.7

<sup>1</sup>Includes unknown income.

<sup>2</sup>Included with other activity are all persons under 17 years of age.

<sup>3</sup>Major activity refers to ability to work, keep house, or engage in school or preschool activities.

NOTE: When a figure is shown with an asterisk, it is presented only for the purpose of combining with other cells. An estimate will have a relative standard error less than 30 percent when the aggregate is at least 35,000.

Table 4. Total population and number of special aids per 1,000 population, by type of aid, degree of chronic activity limitation, and age: United States, 1977

[Data are based on household interviews of the civilian noninstitutionalized 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]

Degree of chronic activity limitation and age	Total population in thousands	Cane or walking stick	Special shoes	Brace		Walker	Wheel-chair	Crutches	Artificial limb		Other aid for getting around
				Leg or foot	Other				Leg or foot	Arm or hand	
Number of aids per 1,000 population											
Total.....	212,153	12.8	7.0	1.9	4.7	3.2	3.0	2.9	1.0	0.3	1.0
<u>Unable to carry on major activity<sup>1</sup></u>											
All ages.....	7,655	156.9	27.7	16.1	39.3	53.0	58.8	27.8	10.1	*2.6	9.8
Under 45 years.....	1,107	50.6	37.0	*21.7	51.5	*14.5	67.8	32.5	*3.6	*3.6	*4.5
45-64 years.....	2,709	107.1	32.1	21.4	63.9	19.9	43.9	38.0	*11.8	*1.8	*12.6
65 years and over.....	3,840	222.7	21.9	10.9	18.5	87.2	66.4	19.3	10.7	*2.9	9.1
65-74 years.....	2,061	159.6	25.2	*12.6	25.2	49.5	56.3	20.9	*13.6	*1.9	*8.2
75 years and over.....	1,779	295.7	*18.0	*9.0	*11.2	131.0	78.1	*17.4	*7.3	*3.9	*10.1
<u>Limited in amount or kind of major activity<sup>1</sup></u>											
All ages.....	14,336	66.9	25.2	7.0	25.2	13.7	8.8	12.6	3.7	*0.8	3.8
Under 45 years.....	4,521	13.1	30.1	10.6	26.1	*5.3	12.2	17.0	*4.2	*0.4	4.4
45-64 years.....	5,341	36.7	25.1	7.3	31.1	*5.4	*2.8	9.7	*3.7	*1.3	*3.7
65 years and over.....	4,474	157.4	20.1	*2.9	11.0	32.0	12.7	11.6	*3.1	*0.4	*3.1
65-74 years.....	2,669	96.3	22.1	*2.6	18.7	13.5	*10.1	14.2	*2.2	-	*3.4
75 years and over.....	1,805	247.6	*17.2	*3.3	*14.4	59.3	*16.1	*7.8	*4.4	*1.1	*3.3
<u>Limited, but not in major activity<sup>1</sup></u>											
All ages.....	6,585	26.6	19.3	9.3	10.8	*4.6	5.8	10.0	*5.0	*1.1	*2.6
Under 45 years.....	3,369	*6.5	18.1	14.8	12.2	*1.8	*6.2	11.6	*4.7	-	*2.1
45-64 years.....	1,953	*8.2	24.6	*2.0	*12.3	*2.0	*2.6	*10.2	*6.7	*3.1	*4.1
65 years and over.....	1,263	108.5	*14.3	*5.5	*4.0	*16.6	*9.5	*6.3	*3.2	*1.6	*1.6
65-74 years.....	773	75.0	*14.2	*7.8	*6.5	*12.9	*5.2	*5.2	*3.9	*2.6	*2.6
75 years and over.....	490	163.3	*14.3	*4.1	-	*22.4	*14.3	*8.2	*4.1	-	-
<u>Not limited in activity</u>											
All ages.....	183,576	2.1	4.3	0.6	1.5	0.3	*0.2	0.8	0.2	*0.1	0.3
Under 45 years.....	137,532	*0.1	4.4	0.6	1.0	*0.0	*0.1	0.8	*0.1	*0.1	*0.2
45-64 years.....	33,355	1.4	4.0	*0.5	2.9	*0.2	*0.3	*0.8	*0.5	*0.2	*0.5
65 years and over.....	12,689	24.7	4.8	*0.7	3.4	3.9	*0.9	*1.3	*0.4	*0.5	*1.3
65-74 years.....	8,756	9.0	4.5	*0.6	*3.1	*2.3	*0.3	*1.3	*0.3	*0.3	*0.5
75 years and over.....	3,933	59.5	*5.6	*0.8	*4.1	*7.6	*1.8	*1.3	*0.5	*1.0	*3.3

<sup>1</sup>Major activity refers to ability to work, keep house, or engage in school or preschool activities.

Table 5. Number of persons using special aids per 1,000 population, by type of aid and selected characteristics: United States, 1977

[Data are based on household interviews of the civilian noninstitutionalized 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	Cane or walking stick	Special shoes	Brace		Walker	Wheel-chair	Crutches	Artificial limb		Other aid for getting around
			Leg or foot	Other				Leg or foot	Arm or hand	
Number of persons using aids per 1,000 population										
Total <sup>1</sup> .....	12.8	7.0	1.9	4.7	3.2	3.0	2.9	1.0	0.3	1.0
<u>Color</u>										
White.....	12.4	7.1	1.9	4.8	3.4	3.0	2.9	1.0	0.3	1.1
All other.....	15.4	6.3	1.5	4.1	2.4	3.2	2.9	0.8	0.4	0.3
<u>Family income</u>										
Less than \$7,000.....	33.1	8.4	2.5	7.9	7.5	6.4	5.9	1.6	*0.6	1.6
\$7,000-\$14,999.....	9.3	7.5	2.1	5.0	2.7	2.4	2.0	0.9	*0.2	1.0
\$15,000-\$24,999.....	4.3	7.0	1.4	2.9	1.2	1.6	2.1	0.8	*0.2	0.5
\$25,000 or more.....	4.1	4.8	1.6	4.0	1.1	1.3	1.7	*0.6	*0.4	*0.8
<u>Living arrangement</u>										
Living alone.....	49.8	10.4	3.0	9.2	10.5	4.9	6.3	*1.6	*0.4	2.7
Living with nonrelatives.....	20.2	*8.0	*4.0	*6.2	*5.2	*4.5	*6.0	*2.2	*1.0	*1.2
Living with relatives—married.....	12.7	5.4	1.7	6.5	2.7	2.9	3.1	1.3	0.4	1.1
Living with relatives—other.....	5.8	8.0	1.7	1.9	2.4	2.8	1.9	0.5	*0.2	0.5
<u>Usual activity</u>										
Usually working (17 years and over).....	2.2	4.1	1.3	3.8	*0.3	0.5	1.7	0.8	*0.3	0.6
Usually keeping house (female, 17 years and over).....	28.2	7.2	1.3	6.7	6.6	2.7	4.1	*0.7	*0.2	1.2
Retired (45 years and over).....	97.2	12.9	7.8	18.4	19.9	17.6	12.1	5.6	*1.8	4.9
Other activity <sup>2</sup> .....	4.9	9.3	2.0	2.8	2.5	3.9	2.3	0.6	*0.2	0.7
<u>Chronic activity limitation</u>										
Unable to carry on major activity <sup>3</sup> .....	156.9	27.7	16.1	39.3	53.0	58.8	27.8	10.1	*2.6	9.8
Limited in amount or kind of major activity <sup>3</sup> .....	66.9	25.2	7.0	25.2	13.7	8.8	12.6	3.7	*0.8	3.8
Limited, but not in major activity <sup>3</sup> .....	26.6	19.3	9.3	10.8	*4.6	5.8	10.0	*5.0	*1.1	*2.6
Not limited in activity.....	2.1	4.3	0.6	1.5	0.3	*0.2	0.8	0.2	*0.1	0.3

<sup>1</sup>Includes unknown income.

<sup>2</sup>Included with other activity are all persons under 17 years of age.

<sup>3</sup>Major activity refers to ability to work, keep house, or engage in school or preschool activities.

Table 6. Number and percent distribution of persons using special aids by details about use and acquisition of aids, according to type of aid: United States, 1977

[Data are based on household interviews of the civilian noninstitutionalized 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 of aid	Cane or walking stick	Special shoes	Brace		Walker	Wheel-chair	Crutches	Artificial limb		Other aid for getting around
			Leg or foot	Other				Leg or foot	Arm or hand	
Number of persons using aids in thousands										
Total.....	2,714	1,492	398	1,004	689	645	613	205	66	205
Number used at a time										
One.....	2,603	377	318	886	...	...	116	173	38	...
Two.....	76	1,103	74	48	...	...	490	*24	*6	...
Other or not reported.....	*34	*11	*6	69	...	...	*7	*9	*21	...
Frequency of use										
All the time.....	769	1,030	186	304	319	345	237	163	*30	97
Most of the time.....	696	360	101	235	122	102	112	*20	*7	44
Occasionally.....	1,199	83	106	407	236	174	249	*4	*17	57
Other or not reported.....	50	*18	*5	59	*13	*23	*15	*18	*12	*6
Duration of use										
Less than 1 year.....	537	260	89	238	206	149	222	*14	*6	53
1-4 years.....	1,322	574	141	317	297	222	140	38	*12	78
5 years or more.....	807	636	164	395	180	272	244	132	36	62
Not reported.....	48	*21	*3	54	*6	*2	*8	*20	*12	*12
How obtained										
Purchased.....	1,472	1,357	327	801	406	327	354	135	*33	161
Rented.....	*9	-	*5	-	43	75	*23	-	-	*4
Borrowed.....	95	*4	*3	*6	89	81	77	*2	*4	*4
Gift.....	978	107	56	119	141	150	142	43	*15	*21
Other or not reported.....	160	*24	*5	77	*11	*11	*18	*26	*14	*15
Condition for which used										
Chronic.....	2,400	1,337	376	868	632	598	470	205	66	171
Acute.....	43	*18	*11	48	*33	*22	114	...	...	*15
Not reported.....	272	137	*12	88	*24	*25	*29	...	...	*19
Percent distribution										
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number used at a time										
One.....	95.9	25.3	79.9	88.2	...	...	18.9	84.4	57.6	...
Two.....	2.8	73.9	18.6	4.8	...	...	79.9	*11.7	*9.1	...
Other or not reported.....	*1.3	*0.7	*1.5	6.9	...	...	*1.1	*4.4	*31.8	...
Frequency of use										
All the time.....	28.3	69.0	46.7	30.3	46.3	53.5	38.7	79.5	*45.5	47.3
Most of the time.....	25.6	24.1	25.4	23.4	17.7	15.8	18.3	*9.8	*10.6	21.5
Occasionally.....	44.2	5.6	26.6	40.5	34.3	27.0	40.6	*2.0	*25.8	27.8
Other or not reported.....	1.8	*1.2	*1.3	5.9	*1.9	*3.6	*2.4	*8.8	*18.2	*2.9
Duration of use										
Less than 1 year.....	19.8	17.4	22.4	23.7	29.9	23.1	36.2	*6.8	*9.1	25.9
1-4 years.....	48.7	38.5	35.4	31.6	43.1	34.4	22.8	18.5	*18.2	38.0
5 years or more.....	29.7	42.6	41.2	39.3	26.1	42.2	39.8	64.4	54.5	30.2
Not reported.....	1.8	*1.4	*0.8	5.4	*0.9	*0.3	*1.3	*9.8	*18.2	*5.9
How obtained										
Purchased.....	54.2	91.0	82.2	79.8	58.9	50.7	57.7	65.9	50.0	78.5
Rented.....	*0.3	-	*1.3	-	6.2	11.6	*3.8	-	-	*2.0
Borrowed.....	3.5	*0.3	*0.8	*0.6	12.9	12.6	12.6	*1.0	*6.1	*2.0
Gift.....	36.0	7.2	14.1	11.9	20.5	23.3	23.2	21.0	*22.7	*10.2
Other or not reported.....	5.9	*1.6	*1.3	7.7	*1.6	*1.7	*2.9	*12.7	*21.2	*7.3
Condition for which used										
Chronic.....	88.4	89.6	94.5	86.5	91.7	92.7	76.7	100.0	100.0	83.4
Acute.....	1.6	*1.2	*2.8	4.8	*4.8	*3.4	18.6	...	...	*7.3
Not reported.....	10.0	9.2	*3.0	8.8	*3.5	*3.9	*4.7	...	...	*9.3

NOTE: When a figure is shown with an asterisk, it is presented only for the purpose of combining with other cells. An estimate will have a relative standard error less than 30 percent when the aggregate is at least 35,000.

Table 7. Population used in obtaining rates shown in this publication, by age and selected characteristics: United States, 1977

[Data are based on household interviews of the civilian noninstitutionalized 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	All ages	Under 45 years	Under 15 years	15-44 years	45-64 years	65 years and over	65-74 years	75 years and over
	Population in thousands							
Total <sup>1</sup> .....	212,153	146,529	51,547	94,982	43,357	22,266	14,259	8,007
<u>Sex</u>								
Male.....	102,384	72,487	26,294	46,193	20,700	9,197	6,196	3,000
Female.....	109,769	74,042	25,253	48,789	22,657	13,070	8,063	5,007
<u>Color</u>								
White.....	183,910	124,955	42,795	82,160	38,792	20,163	12,875	7,288
All other.....	28,243	21,574	8,752	12,822	4,566	2,103	1,385	718
<u>Family income</u>								
Less than \$7,000.....	42,517	24,840	9,230	15,610	7,280	10,396	6,081	4,315
Less than \$3,000.....	10,830	6,321	2,008	4,313	1,868	2,641	1,390	1,251
\$3,000-\$4,999.....	15,381	8,521	3,421	5,100	2,540	4,320	2,475	1,846
\$5,000-\$6,999.....	16,306	9,998	3,802	6,197	2,872	3,435	2,216	1,219
\$7,000-\$14,999.....	63,309	46,029	16,707	29,322	11,714	5,565	4,042	1,523
\$7,000-\$9,999.....	22,489	15,492	5,743	9,749	4,031	2,966	2,130	836
\$10,000-\$14,999.....	40,819	30,537	10,964	19,573	7,683	2,599	1,912	687
\$15,000 or more.....	86,914	64,406	21,521	42,885	19,464	3,044	2,133	910
\$15,000-\$24,999.....	54,345	41,411	14,488	26,923	11,077	1,857	1,353	504
\$25,000 or more.....	32,570	22,995	7,033	15,962	8,387	1,187	781	407
<u>Living arrangement</u>								
Living alone.....	17,161	6,348	*6	6,342	4,484	6,329	3,437	2,892
Living with nonrelatives.....	4,004	3,185	*13	3,172	494	326	158	168
Living with relatives—married.....	98,205	52,018	-	52,018	34,022	12,164	8,966	3,198
Living with relatives—other.....	92,783	84,978	51,528	33,450	4,357	3,448	1,698	1,749
<u>Usual activity</u>								
Usually working (17 years and over).....	84,414	54,613	*20	54,593	27,110	2,691	2,263	428
Usually keeping house (female, 17 years and over).....	38,991	16,509	*2	16,507	11,783	10,699	6,630	4,069
Retired (45 years and over).....	10,811	-	-	-	2,987	7,824	4,928	2,896
Other activity <sup>2</sup> .....	77,937	75,407	51,525	23,883	1,477	1,053	438	614
<u>Chronic activity limitation</u>								
Unable to carry on major activity <sup>3</sup> .....	7,655	1,107	100	1,007	2,709	3,840	2,061	1,779
Limited in amount or kind of major activity <sup>3</sup> .....	14,336	4,521	886	3,635	5,341	4,474	2,669	1,805
Limited, but not in major activity <sup>3</sup> .....	6,585	3,369	696	2,673	1,953	1,263	773	490
Not limited in activity.....	183,576	137,532	49,865	87,667	33,355	12,689	8,756	3,933

<sup>1</sup>Includes unknown income.

<sup>2</sup>Included with other activity are all persons under 17 years of age.

<sup>3</sup>Major activity refers to ability to work, keep house, or engage in school or preschool activities.

# APPENDIXES

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## 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 National Health Interview Survey (NHIS).

The NHIS utilizes a questionnaire which obtains information on personal and demographic characteristics, illness, 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 population covered by the sample for the NHIS is the civilian noninstitutionalized 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 National Health Interview Survey

*General plan.*—The sampling plan of the survey follows a multistage probability design

that 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 selected places of residence in the United States.

The first stage of the sample design consists of drawing a sample of 376 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 four households. Three general types of segments are used:

Area segments, which are defined geographically.

List segments, using 1970 census registers as the frame.

Permit segments, using updated lists of building permits issued in sample PSU's since 1970.

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 NHIS sample was selected.

The usual NHIS sample consists of approximately 12,000 segments containing about 50,000 assigned households, of which 9,000 were vacant, demolished, or occupied by persons not in the scope of the survey. The 41,000 eligible occupied households yield a probability sample of about 120,000 persons.

Descriptive material on data collection, field procedures, and questionnaire development in the NHIS has been published<sup>12,13</sup> as well as a detailed description of the sample design<sup>13,14</sup> and a report on the estimation procedure and the method used to calculate sampling errors of estimates derived from the survey.<sup>15</sup>

*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 NHIS 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 that 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 1970 populations within 12 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

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NOTE: A list of references follows the text.

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.

### General Qualifications

*Nonresponse.*—Data were adjusted for nonresponse by a procedure that imputes to persons in a household who were not interviewed the characteristics of persons in households in the same segment who were interviewed.

*The interview process.*—The statistics presented in this report are based on replies obtained in interviews with persons in the sample households. Each person 19 years of age and over present at the time of interview was interviewed individually. 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 NHIS. 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.<sup>16</sup> Although it is very difficult to measure the extent of bias in the NHIS, a number of studies have been conducted to study this problem. The

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NOTE: A list of references follows the text.

results have been published in several reports.<sup>17-20</sup>

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 that arises in the measurement process. However, it does not include systematic biases that 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.

*Standard error charts.*—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 that would be applicable to a wide variety of health statistics and 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.

1. *Narrow range.*—This class consists of (1) statistics that estimate a population attribute, e.g., the number of persons in a particular income group, and (2) statistics for which the measure for a single individual during the reference period used in data collection is usually either 0 or 1 on occasion may take on the value 2 or very rarely 3.

2. *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.
3. *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.

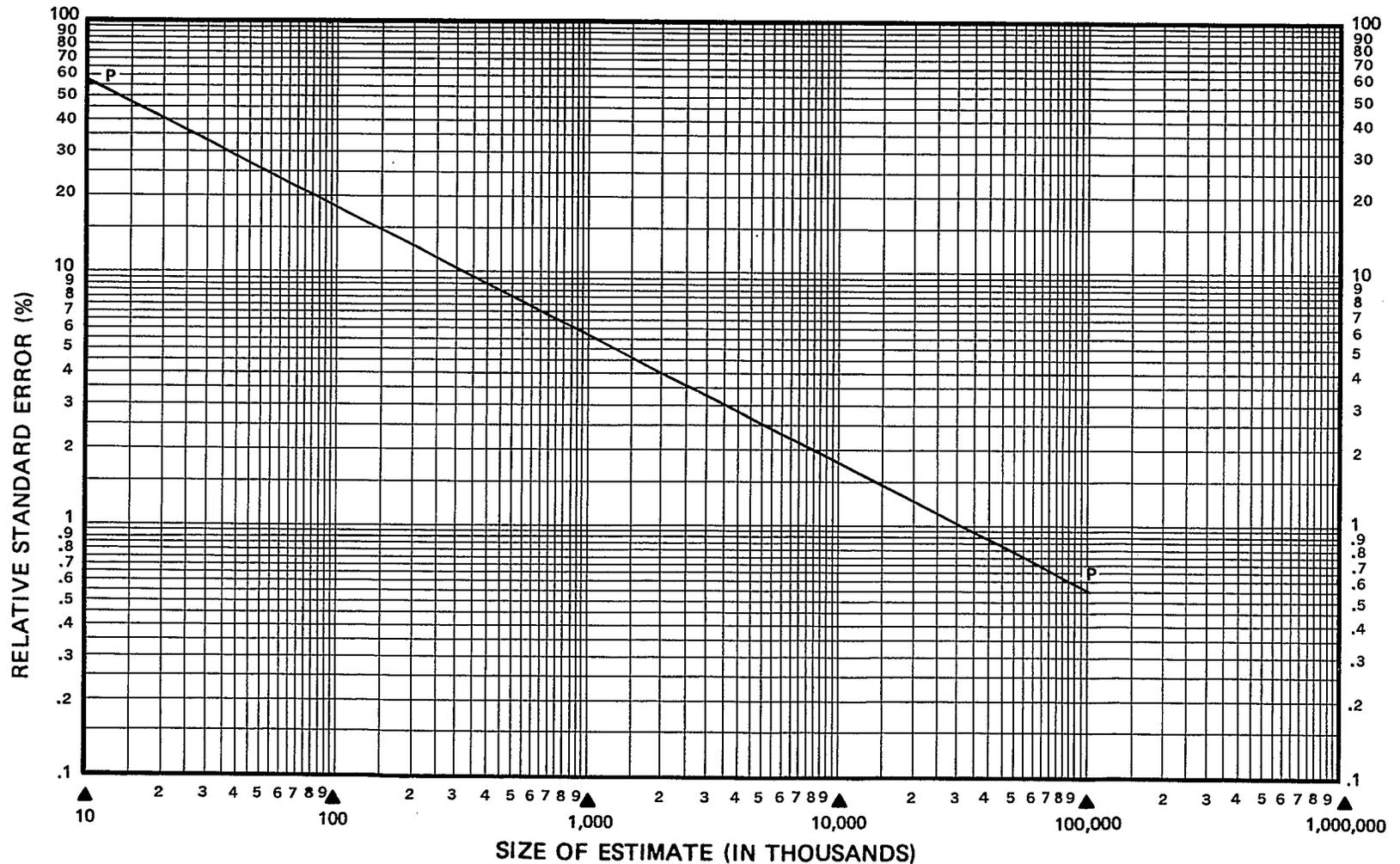
In addition to classifying variables according to whether they are narrow-, medium-, or wide-range, statistics in the survey are further classified as to whether they are based on a reference period of 2 weeks, 6 months, or 12 months.

*General rules for determining relative standard errors.*—The following rules will enable the reader to determine approximate relative standard errors from the charts for estimates presented in this report. These charts represent standard errors of NHIS data.

- 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, figures I and II. 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 Census 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, figure II. For values that 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

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NOTE: A list of references follows the text.

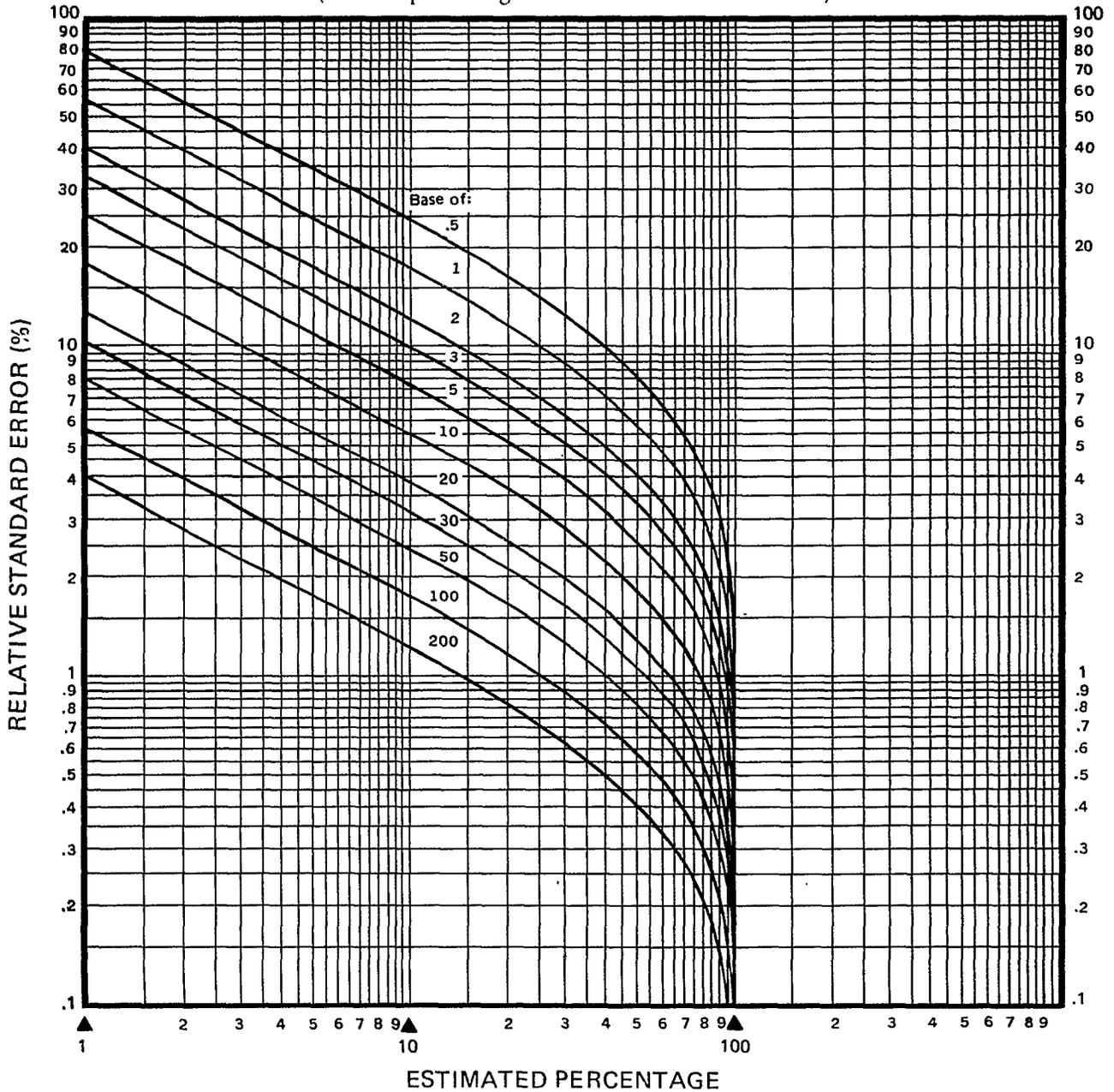
Figure I. RELATIVE STANDARD ERRORS FOR POPULATION CHARACTERISTICS<sup>1</sup>

<sup>1</sup>This curve represents estimates of relative standard errors based on 4 quarters of data collection for narrow range estimates of population characteristics or narrow range estimates of aggregates using a 12-month reference period

*Example of use of chart:* An estimate of 10,000,000 persons with annual family income of \$15,000 or more, or 10,000,000 persons who were hospitalized one or more times in the past year (on scale at bottom of chart) has a relative standard error of 1.7 percent (read from scale at left side of chart), or a standard error of 170,000 (1.7 percent of 10,000,000).

Figure II. RELATIVE STANDARD ERRORS OF PERCENTAGES OF POPULATION CHARACTERISTICS<sup>1</sup>

(Base of percentage shown on curves in millions)



<sup>1</sup>These curves represent estimates of relative standard errors of percentages of population characteristics based on 4 quarters of data collection for narrow range estimates.

*Example of use of chart:* An estimate of 20 percent (on scale at bottom of chart) based on an estimate of 10,000,000 has a relative standard error of 3.6 percent (read from the scale at the left side of chart), the point at which the curve for a base of 10,000,000 intersects the vertical line for 20 percent. The standard error in percentage points is equal to 20 percent  $\times$  3.6 percent or 0.72 percentage points.

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 percentage charts for population estimates. 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 population, 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.



## APPENDIX II

### DEFINITIONS OF CERTAIN TERMS USED IN THIS REPORT

#### Terms Relating to Special Aids

*Special aid.*—A special aid is a device used to compensate for defects resulting from disease, injury, impairment, or congenital malformation. Aids included in this survey are artificial limbs, braces, crutches, canes or walking sticks, special shoes, wheelchairs, walkers, and any other kind of aid for getting around.

1. *Artificial limb* is a device to replace a missing leg, arm, hand, or foot. It does not have to have moving parts. A device employed only for lengthening a leg where the whole leg or foot is present is not counted.
2. *Brace* is defined as any kind of supportive device for the arms, hands, legs, feet, back, neck, or head, exclusive of temporary casts, slings, bandages, trusses, belts, or crutches. Dental braces are excluded.
3. *Crutch* is a staff with a crosspiece at the top to support the person in walking. The point of support may be the axilla, upper arm, or forearm. For each crutch a second support is at hand level.
4. *Cane or walking stick* is a short staff, either straight or curved at upper end, used to provide some support at hand level in walking.
5. *Special shoes* are shoes of special construction or design that are used to help the person in getting around. Oversized shoes of normal or usual construction are excluded.
6. *Wheelchair* is a chair mounted on wheels and usually propelled by the occupant by means of handrims attached to the two large side wheels.

7. *Walker* is a four-legged stand that provides support for the person. It is moved by lifting or by wheeling on casters.

#### 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 Black, 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, for example, wages, salaries, rents from property, pensions, and help from relatives.

*Living arrangement.*—The four categories of living arrangements shown in this report are as follows:

*Living alone.*—Living alone is defined as living in a one-member household.

*Living with nonrelatives.*—Living with nonrelatives is defined as living in a household with

another person or persons none of whom are related to the person by blood, marriage, or adoption.

*Living with relatives—married.*—This category includes married persons who are living in a household with another person or persons, one or more of whom are related to them by blood, marriage, or adoption. Persons with common-law marriages are considered to be married. For purposes of this category “married” excludes widowed, divorced, or separated. Persons whose only marriage was annulled are counted as “never married.”

*Living with relatives—other.*—This category includes children living with parents or relatives; it also includes persons who are widowed, divorced, separated, or never married who are living in a household with another person or persons, one or more of whom are related to them by blood, marriage, or adoption. Persons whose only marriage was annulled are counted as “never married.” “Separated” refers to married persons who have a legal separation or who have parted because of marital discord.

*Usual activity.*—All persons in the population are classified according to their usual activity during the 12-month period prior to the week of interview. The “usual” activity, in case more than one is reported, is the one at which the person spent the most time during the 12-month period. Children under 6 years of age are classified as “preschool.” All persons aged 6-16 years are classified as “school age.”

The categories of usual activity used in this report for persons aged 17 years and over are *usually working*, *usually going to school*, *usually keeping house*, *retired*, and *other activity*. For several reasons these categories are not comparable with somewhat similarly named categories in official Federal labor force statistics. First, the responses concerning usual activity are accepted without detailed questioning because the objective of the question is not to estimate the numbers of persons in labor force categories but to identify crudely certain population groups that may have differing health problems. Second, the figures represent the usual activity status over the period of an entire year, whereas

official labor force statistics relate to a much shorter period, usually 1 week. Third, the minimum age for usually working persons is 17 in the National Health Interview Survey, and the official labor force categories include all persons 14 years of age and over. Finally, in the definitions of specific categories that follow, certain marginal groups are classified differently to simplify procedures.

*Usually working* includes persons 17 years of age and over who are paid employees; self-employed in their own business, profession, or in farming; or unpaid employees in a family business or farm. Work around the house or volunteer or unpaid labor, such as working for a church is not counted as working.

*Usually going to school* includes persons 17 years of age or over whose major activity is going to school.

*Usually keeping house* includes female persons 17 years of age or over whose major activity is described as “keeping house” and who cannot be classified as “working.”

*Retired* includes persons 45 years of age and over who consider themselves to be retired. In case of doubt, a person 45 years of age or over is counted as retired if he or she has either voluntarily or involuntarily stopped working, is not looking for work, and is not described as “keeping house.” A retired person may or may not be able to work.

*Other activity* includes all persons 17 years of age or over not classified as “working,” “retired,” or “going to school,” and females 17 years of age and over not classified as “keeping house.”

### Terms Relating to Disability

*Chronic activity limitation.*—Persons are classified into four categories according to the extent to which their activities are limited at present as a result of chronic conditions. Because the usual activities of preschool children, school-age children, housewives, and workers and other persons differ, a different set of criteria is used for each group. A general similarity

is found between them, however, as will be seen in the following descriptions of the four categories:

1. *Persons unable to carry on major activity for their group* (major activity refers to ability to work, keep house, or engage in school or preschool activities)

Preschool children:

Inability to take part in ordinary play with other children.

School-age children:

Inability to go to school.

Housewives:

Inability to do any housework.

Workers and all other persons:

Inability to work at a job or business.

2. *Persons limited in amount or kind of major activity performed* (major activity refers to ability to work, keep house, or engage in school or preschool activities)

Preschool children:

Limited in amount or kind of play with other children, for example, need special rest periods, cannot play strenuous games, or cannot play for long periods at a time.

School-age children:

Limited to certain types of schools or in school attendance, for example, need special schools or special teaching or cannot go to school full time or for long periods at a time.

Housewives:

Limited in amount or kind of housework, for example, cannot lift children, wash or iron, or do housework for long periods at a time.

Workers and all other persons:

Limited in amount or kind of work, for example, need special working aids or special rest periods at work, cannot work full time or for long periods at a time, or cannot do strenuous work.

3. *Persons not limited in major activity but otherwise limited* (major activity refers to ability to work, keep house, or engage in school or preschool activities)

Preschool children:

Not classified in this category.

School-age children:

Not limited in going to school but limited in participation in athletics or other extracurricular activities.

Housewives:

Not limited in housework but limited in other activities, such as church, clubs, hobbies, civic projects, or shopping.

Workers and all other persons:

Not limited in regular work activities but limited in other activities, such as church, clubs, hobbies, civic projects, sports, or games.

4. *Persons not limited in activities* (includes persons whose activities are not limited in any of the ways described above).

### Terms Relating to Conditions

*Acute condition.*—An acute condition is defined as a condition that has lasted less than 3 months and has involved either medical attention or restricted activity. Because of the procedures used to estimate incidence, the acute conditions included in this report are the conditions that had their onset during the 2 weeks prior to the interview week and involved either medical attention or restricted activity during that 2-week period. However, excluded are the following conditions that are always classified as chronic although the onset occurred within 3 months prior to week of interview:

Allergy, any  
Arthritis or rheumatism  
Asthma  
Cancer  
Cleft palate  
Club foot  
Condition present since birth

Deafness or serious trouble with hearing  
Diabetes  
Epilepsy  
Hardening of the arteries  
Hay fever  
Heart trouble  
Hemorrhoids or piles  
Hernia or rupture  
High blood pressure  
Kidney stones  
Mental illness  
Missing fingers, hand, or arm—toes, foot, or leg  
Palsy  
Paralysis of any kind  
Permanent stiffness or deformity of the foot,  
leg, fingers, arm, or back  
Prostate trouble  
Repeated trouble with back or spine  
Rheumatic fever  
Serious trouble with seeing, even when wearing  
glasses  
Sinus trouble, repeated attacks of  
Speech defect, any  
Stomach ulcer  
Stroke  
Thyroid trouble or goiter  
Tuberculosis  
Tumor, cyst, or growth  
Varicose veins, trouble with

*Chronic condition.*—A condition is considered to be chronic if (1) the condition is described by the respondent as having been first noticed more than 3 months before the week of the interview or (2) it is one of the conditions always classified as chronic regardless of the onset (see list under the definition of acute condition).

*Impairment.*—Impairments are chronic or permanent defects, usually static in nature, resulting from disease, injury, or congenital malformation. They represent decrease or loss of ability to perform various functions, particularly those of the musculoskeletal system and the sense organs. All impairments are classified by means of a special supplementary code for impairments. Hence, code numbers for impairments in the International Classification of Diseases are not used. In the Supplementary Code, impairments are grouped according to type of functional impairment and etiology. The impairment classification is shown in *Vital and Health Statistics*, Series 10, No. 99.<sup>11</sup>

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NOTE: A list of references follows the text.



APPENDIX III

PROBE QUESTIONS AND RECORDING FORMS USED TO OBTAIN INFORMATION ABOUT USE OF SPECIAL AIDS AND SELECTED IMPAIRMENTS

**46a. Does anyone in the family now use (any of the following special aids) -**

	Yes	No
1. An artificial arm? .....		
2. An artificial leg? .....		
3. A brace of any kind? .....		
4. Crutches? .....		
5. A cane or walking stick? .....		
6. Special shoes? .....		
7. A wheel chair? .....		
8. A walker? .....		
9. Guide dog? .....		
10. Any other kind of aid for getting around? .....		

*If "Yes," specify:* \_\_\_\_\_

Enter in Table SA

b. Who is this?  
c. Anyone else?

Table SA			
Person No.	Type of aid	If 1-6 in (b), ASK: Does he use one or two (at a time)?	If 3-10 in (b), ASK: For what condition does he need this? (Item C) If "brace," Ask: On what part of the body is the brace worn? (d)
(a)	(b)	(c)	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> # <input type="checkbox"/> Other	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> # <input type="checkbox"/> Other	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> # <input type="checkbox"/> Other	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> # <input type="checkbox"/> Other	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> # <input type="checkbox"/> Other	

Table SA - Continued

Is the _____ used all of the time, most of the time or only occasionally? (e)	How long has he used _____? (f)	How was the _____ obtained? Was it purchased, rented, borrowed or a gift? (g)
1 <input type="checkbox"/> All    2 <input type="checkbox"/> Most    3 <input type="checkbox"/> Occasionally	<input type="checkbox"/> Less than 1 month 1 _____ Months    2 _____ Years	1 <input type="checkbox"/> Purchased    2 <input type="checkbox"/> Rented    3 <input type="checkbox"/> Borrowed    4 <input type="checkbox"/> Gift
1 <input type="checkbox"/> All    2 <input type="checkbox"/> Most    3 <input type="checkbox"/> Occasionally	<input type="checkbox"/> Less than 1 month 1 _____ Months    2 _____ Years	1 <input type="checkbox"/> Purchased    2 <input type="checkbox"/> Rented    3 <input type="checkbox"/> Borrowed    4 <input type="checkbox"/> Gift
1 <input type="checkbox"/> All    2 <input type="checkbox"/> Most    3 <input type="checkbox"/> Occasionally	<input type="checkbox"/> Less than 1 month 1 _____ Months    2 _____ Years	1 <input type="checkbox"/> Purchased    2 <input type="checkbox"/> Rented    3 <input type="checkbox"/> Borrowed    4 <input type="checkbox"/> Gift
1 <input type="checkbox"/> All    2 <input type="checkbox"/> Most    3 <input type="checkbox"/> Occasionally	<input type="checkbox"/> Less than 1 month 1 _____ Months    2 _____ Years	1 <input type="checkbox"/> Purchased    2 <input type="checkbox"/> Rented    3 <input type="checkbox"/> Borrowed    4 <input type="checkbox"/> Gift
1 <input type="checkbox"/> All    2 <input type="checkbox"/> Most    3 <input type="checkbox"/> Occasionally	<input type="checkbox"/> Less than 1 month 1 _____ Months    2 _____ Years	1 <input type="checkbox"/> Purchased    2 <input type="checkbox"/> Rented    3 <input type="checkbox"/> Borrowed    4 <input type="checkbox"/> Gift

<b>32a. Does anyone in the family (you, your ---, etc.) NOW have -</b> If "Yes," ask 32b and c <b>b. Who is this? -</b> Enter name of condition and letter of line where reported in appropriate person's column in item C. <b>c. Does anyone else have . . . ?</b>	<b>A. Deafness in one or both ears?</b>	<b>H. A detached retina or any other condition of the retina?</b>
	<b>B. Any other trouble hearing with one or both ears?</b>	<b>I. Any other trouble seeing with one or both eyes even when wearing glasses?</b>
	<b>C. Tinnitus or ringing in the ears?</b>	<b>J. A cleft palate or harelip?</b>
	<b>D. Blindness in one or both eyes?</b>	<b>K. Stammering or stuttering?</b>
	<b>E. Cataracts?</b>	<b>L. Any other speech defect?</b>
	<b>F. Glaucoma?</b>	<b>M. A missing finger, hand, or arm, toe, foot, or leg?</b>
	<b>G. Color blindness?</b>	<b>N. A missing (breast), kidney or lung?</b>

<b>33a. Does anyone in the family use -</b> If "Yes," ask 33b and c <b>b. Who is this? Mark box in person's column</b> <b>c. Anyone else?</b>	<b>1. Eyeglasses?</b> <b>2. Contact lenses?</b> <b>3. A hearing aid?</b>	<b>33b.</b> 1 <input type="checkbox"/> Eyeglasses 2 <input type="checkbox"/> Contact lenses 3 <input type="checkbox"/> Hearing aid (Item C)	
	For "hearing aid," with no hearing problem reported, enter "33, (B), hearing trouble," in item C2		

<b>O. Palsy or cerebral palsy?</b>	<b>U. Permanent stiffness or any deformity of the back, foot, or leg?</b>
<b>P. Paralysis of any kind?</b>	<b>V. Permanent stiffness or any deformity of the fingers, hand, or arm?</b>
<b>Q. Curvature of the spine?</b>	<b>W. Mental retardation?</b>
<b>R. REPEATED trouble with back or spine?</b>	<b>X. Any condition caused by an old accident, or injury? If "Yes," ask: What is the condition?</b>
<b>S. Any TROUBLE with fallen arches or flatfeet?</b>	<b>Y. Epilepsy?</b>
<b>T. A clubfoot?</b>	<b>Z. REPEATED convulsions, seizures, or blackouts?</b>

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