Vital and Health Statistics

Prevalence and Characteristics of Persons with Hearing Trouble: United States, 1990–91

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Data From the National Health Survey
No. 188

Numbers and proportions of persons are estimated according to hearing ability and speech comprehension groups by age, sex, race, years of completed education, family income, usual activity, geographic region, place of residence, limitation of activity due to chronic conditions, annual bed days, number of physician contacts, and respondent-assessed health status. Estimates are based on data collected in household interviews during 1990–91.

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Prevalence and characteristics of persons with hearing trouble

by Peter W. Ries, Division of Health Interview Statistics

Introduction

Hearing trouble is one of the most prevalent of chronic conditions. Although it affects mainly older persons its effect on children can have major developmental and educational implications. Most of the persons responsible for the development of a deaf subculture in this country—with its own language, social organizations, and cultural institutions—experienced their hearing loss before they had acquired spoken language or during their primary or secondary schooling.

Periodically, the National Health Interview Survey (NHIS) includes special questions on the hearing ability of persons in the civilian noninstitutionalized population of the United States. The same hearing questions, with only minor modifications, were included in the surveys of 1971 (sponsored by the National Association of the Deaf), 1977, 1990 (sponsored by the National Institute on Deafness and Other Communication Disorders), and 1991. This report updates the published reports from the earlier surveys (1,2).

It consists of four main sections. In the first section, prevalence rates for various levels and types of hearing trouble from the 1990–91 surveys are presented and compared with the results from the two earlier surveys. In the second, persons classified in terms of their levels of hearing ability and capacity to hear and understand speech are considered as subgroups and compared in terms of sociodemographic and other characteristics. In the third, adults are cross-classified in terms of early or later age at onset of their hearing loss and whether they can or cannot hear and understand normal speech, and the resulting four subgroups are compared in terms of sociodemographic and other characteristics. In the fourth section, results related to the use of hearing aids, the reported causes of hearing loss, and the frequency and degree of botheration of ringing in the ears are considered.

The estimates for hearing trouble shown in this report should be distinguished from those shown as "hearing impairments" in the 1990 and 1991 editions of Current estimates (3,4). The latter includes persons who reported chronic tinnitus whether or not they also reported hearing trouble. "Hearing trouble" as used in this report is defined solely in terms of reported deafness, hearing trouble, or use of a hearing aid. Whether or not a person reports tinnitus is not taken into account in classifying his or her ability to hear.

Since some of the hearing questions—specifically those related to the comprehension of spoken language—do not make sense for very young children, the results are available and presented here only for persons 3 years of age and over.

Other surveys of the National Center for Health Statistics (NCHS) collect data related to hearing ability or ear problems. These include the National Health and Nutrition Examination Survey with data based on audiological examinations (5); the National Hospital Discharge Survey, which includes data from hospital records on operations or treatment related to hearing or ear problems (6); the National Ambulatory Medical Care Survey, which is based on the responses of office-based physicians (7); and the National Nursing Home Survey, which includes questions on the number of persons in nursing homes with hearing trouble (8).

Those wishing to obtain public-use data tapes of the results from the hearing questions from 1990 and 1991 used to produce the estimates included in this report should contact the National Center for Health Statistics, Division of Health Interview Statistics, Systems and Programming Branch, 6525 Belcrest Road, Hyattsville, MD 20782.

Highlights

During 1990–91 hearing trouble was reported in household interviews for 20.3 million persons 3 years of age and over. This corresponds to a prevalence rate of 86.1 per 1,000 persons, which represents a 24.8 percent increase since 1971. Age adjusting the prevalence rates to account for the aging of the American population since 1971 reduces the increase to 14.0 percent.

Many of these persons with hearing trouble had only a slight hearing loss. About 11.5 million of them were reported to have a bilateral hearing loss, and of these persons, about 4.8 million could not hear and understand normal speech because of the severity of their hearing problem.

A large proportion of persons with hearing trouble (43.0 percent) are 65 years of age or over, and most persons who could not hear and understand normal speech (60.9 percent) are in this age range. The proportion of persons with normal hearing who are 65 years of age or over is only 9.7 percent.

About 968,000 youth 3–17 years of age were reported to have hearing trouble and of these, about 143,000 could not hear and understand normal speech.

Males are proportionately overrepresented among persons with hearing trouble (59.1 percent compared with only 47.3 percent of persons with normal hearing).

In relation to age, sex, and degree of hearing loss, the largest increase in prevalence rates between 1971 and 1990–91 was for males in the 18–44- and 45–64-year age ranges who could not hear and understand normal speech (106.1 and 97.3 percent, respectively). The largest increase among females was for those who could not hear and understand normal speech who were 45–64 years of age (66.3 percent).

There are other significant sociodemographic differences among persons who can and those who cannot hear and understand normal speech. Because their age distribution differs to such a great extent from that of persons with normal hearing, the following estimates for persons who cannot hear and understand normal speech include in parentheses an age-adjusted estimate, adjusted to the age distribution of persons with normal hearing.

Persons with the following characteristics are proportionately overrepresented among those who cannot hear and understand normal speech:

- White—92.6 (89.9) percent compared with 83.4 percent of persons with normal hearing
- Family income under $10,000 per year—21.5 (18.6) percent compared with 11.1 percent of persons with normal hearing
- Not in the labor force—70.8 (38.2) percent compared with 29.4 percent of persons with normal hearing
- Service and blue-collar occupations—40.2 (41.4) percent compared with 27.1 percent of persons with normal hearing
- Under 12 years of education—44.1 (29.7) percent compared with 19.7 percent of persons with normal hearing

Compared with persons with normal hearing, persons who cannot hear and understand normal speech are far more likely to be limited in activity due to chronic conditions (12.3 and 54.2 percent, respectively). Age adjusting only slightly reduces the proportion of persons who cannot hear and understand normal speech and who are limited in activity (49.7 percent).

The age at which persons experienced their hearing loss can be as important as the degree of their hearing loss. Among persons with hearing trouble, 5.6 percent experienced the problem before 3 years of age, 14.7 percent between 3–18 years of age, and 79.1 percent at 19 years of age or older. The corresponding estimates for persons who could not hear and understand normal speech are 6.6 percent before 3 years of age, 9.4 percent between 3–18 years of age, and 83.4 percent at 19 years of age or older.

Comparing differences associated with age at onset and differences associated with degree of hearing loss in terms of sociodemographic and other characteristics, more variation is associated with differences in age at onset for sex and marital status, while more variation is associated with differences in the degree of the hearing loss for years of education and limitation of activity. The distributional differences are relatively similar for age at onset and degree of hearing loss for most of the other characteristics considered in this report.

The use of a hearing aid was reported for 3.6 million persons (18.0 percent of persons with hearing trouble) and for 43.1 percent of persons who could not hear and understand normal speech.

The most frequently reported cause of hearing trouble was "getting older" (28.0 percent), followed by ". . . noise from machinery, aircraft, power tools, loud music, appliances, Walkman personal stereos, hair dryers, etc." (23.4 percent).

Ringing or other noises in the ears or head during the year preceding the interview was reported for 18.5 million persons 3 years of age and over.

Sources and limitations of data

The information from the National Health Interview Survey (NHIS) presented in this report is based on data collected in a continuing nationwide survey by household interview. Each week a probability sample of the civilian noninstitutionalized population of the United States is interviewed by personnel of the U.S. Bureau of the Census. Information is obtained about the health and other characteristics of each member of the household.

The interviewed sample for 1990–91 was composed of 93,237 households containing 239,663 persons. The total noninterview rate was 4.4 percent: 2.7 percent was the result of respondent refusal, and the remainder was primarily the result of failure to locate an eligible respondent at home after repeated calls.

A description of the survey design, the methods used in estimation, and general qualifications of the data obtained from the survey are presented in appendix I. Because the estimates presented in this report are based on a sample of the population, they are subject to sampling errors. Therefore, readers should pay particular attention to the section of appendix I entitled "Reliability of the estimates," which presents formulas for calculating standard errors of the estimates shown in this report.

All information collected in the survey results from reports by responsible family members residing in the household. When possible, all adult family members participate in the interview. However, proxy responses are accepted for family members who are not at home and are required for all children and for family members who are physically or mentally incapable of responding for themselves. Research conducted during the development of the questions in the Hearing Supplement indicated no significant differences in the association between the responses to the questions and audiometric scores for proxy and self-respondents (9). This source may also be used to judge the correspondence in general between the questionnaire responses and audiometric scores. A brief more recent comparison of this kind involving the audiometric result from the National Health and Nutrition Examination Survey (NHANES) is also available (10).

Although a considerable effort is made to ensure accurate reporting, the information from both proxy respondents and self-respondents may be inaccurate because the respondent is unaware of relevant information, has forgotten it, does not wish to reveal it to an interviewer, or because the respondent does not understand the intended meaning of a question.

Several facts regarding the administration of the hearing questions and the estimates included in this report should be considered. First, persons were defined as having a hearing problem in terms of the screening questions shown in appendix III. They are included in the total number of persons with hearing trouble even if they later reported that their hearing was "good" in both ears. Second, the questions were asked in terms of the person's ability to hear without the use of a hearing aid. Third, unknown hearing ability is treated in two different ways in this report. In general, when prevalence estimates are used in comparing the 1990–91 results with the 1971 and 1977 results, unknown hearing ability is classified as no hearing trouble. This is done to maintain compatibility with the two earlier surveys, which classified all persons for whom there was no evidence of a hearing loss as not having one. However, in all of the detailed tables shown in this report, persons with unknown hearing are included in the totals but they are not included among the persons classified as not having hearing trouble.

Finally, in making comparisons between the 1990–91 results and the earlier results from the 1971 and 1977 NHIS Hearing Supplements and in age adjusting the 1971 results, the earlier published results were used. In 1985 NHIS changed its conventional age categories from under 17 and 17–44 years of age to under 18 and 18–44 years of age. Rather than retabulating all of the earlier estimates, the 3–16 and 17–44 age-group estimates from the earlier published sources were used as though they are the estimates for the 3–17 and 18–44 age groups. While technically not exact, this has no substantive effect on comparisons of the age-adjusted estimates for the different time periods.

The Division of Health Interview Statistics should be contacted for information about the coding and editing procedures used to produce the data for the estimates shown in this report. The major concepts discussed in the report are defined in the text or appendix II. Appendix III shows the questions used in the 1990 interviews that are relevant to this report. The 1991 questions were identical except that they included items on the cause of hearing loss in place of those on ringing in the ears included in the 1990 questionnaire.

Prevalence of types of hearing trouble

During 1990–91, hearing trouble was reported for 20.3 million persons 3 years of age and over in the civilian noninstitutionalized population of the United States. This is an increase of 53.4 percent over the 13.2 million persons reported to have a hearing loss in the 1971 NHIS. A significant proportion of this increase is due to the increase in and the aging of the American population during that 20-year period. Table A shows that when the prevalence rates (which discount the effects of changes in population size) are considered, the increase during this period is reduced by more than one-half. There were 69.0 and 86.1 persons with trouble hearing per 1,000 population in 1971 and 1990–91, respectively, an increase of 24.8 percent.

Hearing trouble is highly associated with growing old. To take into account the aging of the American population between 1971 and 1990–91, table A also shows the prevalence rates from the earlier NHIS surveys of hearing ability age adjusted to the 1990–91 population. When age is held constant, the increase in the prevalence rate of hearing trouble between 1971 and 1990–91 was 14.0 percent, a reduced but still substantial increase.

Table A also shows the corresponding estimates of hearing trouble from the 1977 administration of the NHIS Hearing Supplement. As may be noted, the prevalence rate of hearing trouble for 1977 was about the same as it was in 1971 (70.2 and 69.0 per 1,000 persons, respectively), and the age-adjusted prevalence rate may have even declined during that 6-year period (from 75.5 to 73.6 per 1,000 persons from 1971 to 1977). Thus, the increases in prevalence rates between 1971 and 1990–91 reported in the previous paragraph appear to have occurred entirely since 1977.

These estimates of persons with hearing trouble are derived from a positive response to one or more of the following three screening questions:

1. Does anyone in the family NOW have deafness in one or both ears?
2. Does anyone in the family NOW have any other trouble hearing with one or both ears?
3. Does anyone in the family NOW use a hearing aid?

A limitation of the estimates derived from these questions is the extreme diversity of the types of hearing trouble they produce. The levels of hearing loss range from a slight problem hearing in one ear to complete deafness in both ears.

In order to make meaningful distinctions in terms of the degree and type of hearing loss, a positive response to any one of the above questions was followed in the interview by asking the questions from the two hearing scales shown in figure 1. Questions 1a and 1b of the self-rating scale (SRS) are used to classify a person's hearing in each ear (without the use of a hearing aid) into one of the four categories shown in the figure. Responses for persons 3 years of age and over are then sought for the items on the Gallaudet Hearing Scale (GHS), questions 2a–2d, for how well a person can usually hear and understand speech.

The SRS involves classifying a person's hearing in each ear into one of four categories. If the rating of 1 equals "hearing is good," 2 "little trouble hearing," 3 "lot of trouble hearing," and 4 "deaf," there are 10 possible combinations for the scores when the distinction between right and left ear is ignored. In table B, persons with a

Table A. Population, prevalence, crude and age-adjusted prevalence rates, and change since 1971 for persons 3 years of age and over with reported hearing trouble: United States,1971, 1977, and 1990–91 average annual

Item	*1971*	*1977*	*1990–91*
All persons 3 years of age and over (in thousands)	191,602	202,936	235,688
Prevalence of hearing trouble (in thousands)	13,228	14,240	20,295
Percent increase in prevalence since 1971	–	7.7	53.4
Number with hearing trouble per 1,000 persons	69.0	70.2	86.1
Percent increase in prevalence rate since 1971	–	1.7	24.8
Age-adjusted number with hearing trouble per 1,000 persons[1]	75.5	73.6	86.1
Percent change in age-adjusted prevalence rate since 1971	–	-2.5	14.0

[1]The 1971 and 1977 prevalence rates are age-adjusted to the average 1990–91 population.

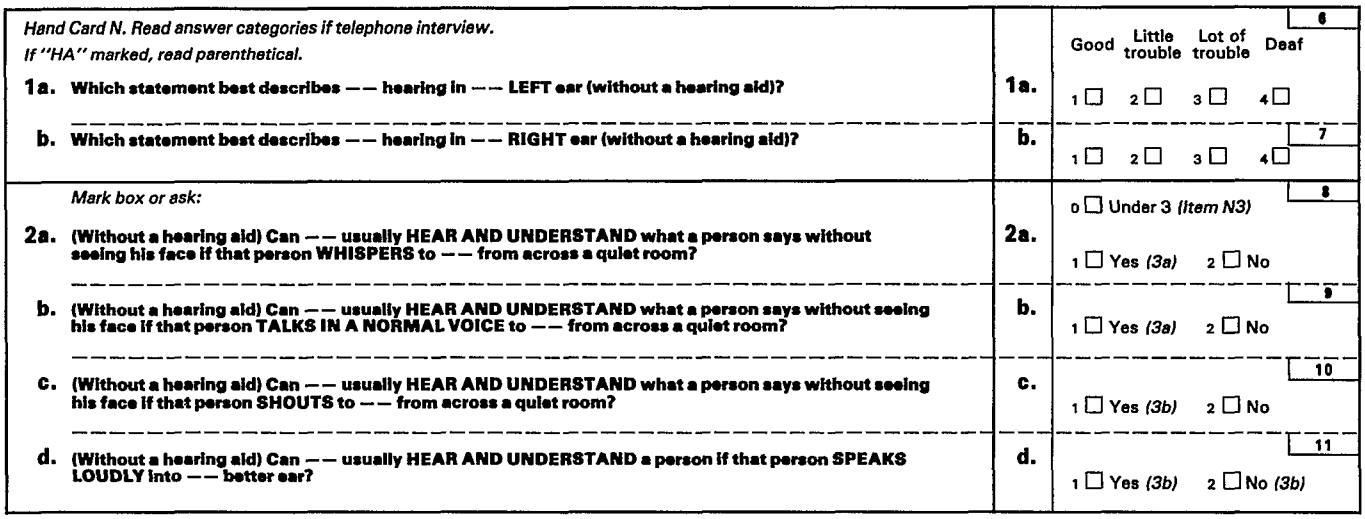

Figure 1. Questions of the self-rating scale and the Gallaudet Hearing Scale used in the 1990 and 1991 Hearing Supplements

score of 1–1 are classified as "hearing good in both ears"; persons with scores of 1 for either ear and 2, 3, or 4 for the other ear are classified as "unilateral hearing loss." All other persons with known responses are classified as having a bilateral hearing loss. Those with scores of 4–4 are classified as "deaf, both ears"; those with scores of 3–3 or 3–4 as "at best, a lot of trouble hearing in both ears"; and those with scores of 2–2, 2–3, or 2–4 as "at least some trouble hearing in both ears."

Table B shows that most persons with hearing trouble in 1990–91 had a bilateral hearing loss (58.9 percent), and about 421,000 persons (2.2 percent of those with hearing trouble) were reported as deaf. At the other extreme, about 7.2 million persons (36.8 percent) had only a unilateral hearing loss and 828,000 (4.3 percent) were reported as having good hearing in both ears, although it had earlier been reported that they had some type of hearing trouble. Because of the marginal nature of the hearing loss of the persons in this latter group, they will receive little attention in the remainder of this report.

Table B also shows the corresponding results for the 1971 and 1977 surveys. As may be noted, the major distributional difference over the three time periods has been the increase for 1990–91 in the proportion of persons with a bilateral hearing loss. The proportion increased from 49.4 percent in 1971 to 58.9 percent in 1990–91 of those with hearing trouble, and the corresponding decrease in the proportion of persons with a unilateral hearing loss was from 48.0 to 36.8 percent for the respective years. Most of the relative increase among persons with a bilateral hearing loss occurred among those with more moderate losses. There was no substantial increase in the proportion of persons with hearing trouble reported to be deaf (2.1, 2.1, and 2.2 percent for 1971, 1977, and 1990–91, respectively).

While use of the SRS facilitates important distinctions among persons in terms of their degree and type of hearing loss, it has the serious disadvantage of shedding little light on the critical question of how a hearing loss affects a person's ability to hear and understand speech.

Table B. Percent distribution and number of persons 3 years of age and over with reported hearing trouble, by classification of responses to the self-rating scale: United States, 1971, 1977, and 1990–91 average annual

Self-rating scale	*1971*	*1977*	*1990–91*	*1971*	*1977*	*1990–91*
	Percent distribution			Number in thousands		
All persons with hearing trouble[1]	100.0	100.0	100.0	13,228	14,240	20,295
Bilateral hearing loss	49.4	52.3	58.9	6,414	7,208	11,474
Deaf, both ears	2.1	2.1	2.2	273	292	421
At best, a lot of trouble hearing in both ears	9.8	12.0	13.1	1,270	1,649	2,549
At least some trouble hearing in both ears	37.5	38.2	43.7	4,871	5,267	8,504
Unilateral hearing loss	48.0	43.3	36.8	6,225	5,969	7,168
Hearing good in both ears	2.6	4.5	4.3	336	614	828

[1]Percent distribution excludes and frequency includes unknowns on self-rating scale.

Table C. Percent distribution and number of persons 3 years of age and over with reported hearing trouble, by responses to the Gallaudet Hearing Scale: United States: 1971, 1977, and 1990–91 average annual

Gallaudet Hearing Scale	*1971*	*1977*	*1990–91*	*1971*	*1977*	*1990–91*
	Percent distribution			Number in thousands		
All levels of hearing trouble[1]	100.0	100.0	100.0	13,228	14,240	20,295
Cannot hear and understand any speech	2.6	2.8	2.8	336	386	552
Can hear and understand words shouted in ear	3.0	3.8	3.6	395	534	726
Can hear and understand words shouted across a room	18.4	22.9	24.7	2,385	3,200	4,920
Can hear and understand spoken or whispered words	76.0	70.5	68.9	9,869	9,864	13,716

[1]Percent distribution excludes and frequency includes unknowns on Gallaudet Hearing Scale.

For this reason, the GHS is administered for all persons 3 years of age and over who received a positive response to one of the screening questions. Youth under 3 years of age are excluded because the questions make little sense for those without a developed capacity to understand speech.

Table C shows that in 1990–91 about 552,000 persons (2.8 percent of those with hearing trouble) were unable to hear and understand any speech, while about 13.7 million persons (68.9 percent of those with hearing trouble) were able to hear and understand normal speech, for example, spoken or whispered words. The major distributional difference related to speech comprehension among persons with hearing trouble between 1971 and 1990–91 was the relative increase of persons who can at best hear and understand words shouted across a quiet room (from 18.4 to 24.7 percent between 1971 and 1990–91) and the relative decline of those who could hear and understand normal speech (from 76.0 to 68.9 percent during the same period).

It should be noted that for convenience the labels used in table C (and hereafter) do not include the actual wording (and therefore true meaning) of the questions shown in figure 1. Also, as in the case of the SRS, the responses are in terms of a person's ability to hear and understand speech without the use of a hearing aid.

The results from the 1971 National Census of the Deaf and from the 1971 and 1977 NHIS Hearing Supplements were reported in terms of a cross-classification of the SRS and GHS scores. The cross-classification used for the earlier NHIS reports is shown for the 1990–91 results in table D. A scale score of 1 for the GHS indicates the person can hear and understand whispered speech; 2, at best normal speech; 3, at best shouted speech; 4, at best speech shouted in the better ear; and 5, no speech.

A problem with classifying persons on the basis of two scales with overlapping meaning is the possibility of inconsistent classification. The estimates for categories that are clearly inconsistent are shown within parentheses in the table. For instance, whether resulting from errors in the interview or in the processing of the data, the 2,000 persons classified as "deaf, both ears" and "... can hear and understand whispered speech ..." (GHS score of 1) clearly have an inconsistent response pattern. The 241 clearly inconsistent cases shown in parentheses represent 1.3 percent of all of the cross-classified cases included in table D.

The blocks shown in the table specify the composition of the categories of hearing trouble used in all of the detailed tables included in this report. The left block within the cross-classified cells represents the 6.5 million persons labeled "Bilateral hearing trouble: can hear words spoken or whispered"; the center block represents the 3.7 million persons labeled "Bilateral hearing trouble: can hear words shouted across a room"; and the right block represents the 1.2 million persons labeled "Bilateral hearing trouble: none or at best words shouted in ear."

The results in terms of all of the categories of hearing trouble to be used in this report and the corresponding

Table D. Average annual number of persons 3 years of age and over with reported hearing trouble, by Gallaudet Hearing Scale score and self-rating scale status: United States, 1990–91

Self-rating scale status	*All*	*Gallaudet Hearing Scale Score* 1	2	3	4	5	*Unknown*
	Number in thousands						
All scale statuses	20,295	4,491	9,226	4,920	726	552	380
Bilateral hearing trouble	11,474	1,457	5,041	3,659	624	528	165
Deaf, both ears	421	*(2)	*(10)	60	69	266	*15
At best, a lot of trouble hearing in both ears	2,549	(46)	446	1,403	382	223	48
At least some trouble hearing in both ears	8,504	1,409	4,584	2,197	173	(39)	102
Unilateral hearing loss	7,168	2,389	3,573	1,055	(87)	(18)	46
Hearing good in both ears	828	483	279	(30)	*(6)	*(3)	28
Unknown	825	161	333	176	*10	*4	140

Note: Blocks indicate composition of categories used in detailed tables. Parentheses indicate inconsistant classification.

Table E. Crude and age-adjusted prevalence rate, percent change from 1971 to 1990–91, and number of persons 3 years of age and over with reported hearing trouble, according to type of hearing trouble: United States, 1971 and 1990–91 average annual

Year	Trouble hearing							
		Bilateral hearing trouble						
			At best can hear shouted words					
	All Levels of hearing trouble[1]	All speech comprehension statuses[2]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Number per 1,000 persons							
1990–91	86.1	48.7	20.4	4.9	15.5	27.6	30.4	3.5
1971	69.0	33.5	12.8	3.7	9.1	20.2	32.5	1.8
	Age-adjusted number per 1,000 persons[3]							
1971	75.5	37.4	14.6	4.3	10.3	22.3	34.9	1.8
	Percent change in age-adjusted prevalence rate							
1971–1990–91	14.0	30.2	39.7	14.0	50.5	23.8	–12.9	94.4
	Number in thousands							
1990–91	20,295	11,474	4,811	1,152	3,659	6,498	7,168	828
1971	13,228	6,414	2,447	707	1,740	3,878	6,225	336

[1]Includes persons who did not respond to either hearing scale.
[2]Includes persons who did not respond to the Gallaudet scale.
[3]Age-adjusted to the 1990–91 population.

age-adjusted results from the 1971 survey are shown in table E. Consideration of the changes in the age-adjusted prevalence rates may serve to summarize the changes in types of hearing trouble during the 20-year period. There was a 30.2-percent increase in the age-adjusted prevalence rate of bilateral hearing loss and a 12.9-percent decrease in unilateral hearing trouble. Among those with a bilateral hearing loss, there was a 14.0-percent increase in the age-adjusted prevalence rate of those who could not hear and understand any speech or, at best, only words shouted in their better ear; a 50.5-percent increase in the age-adjusted prevalence rate of those who at best could hear and understand shouted speech across a quiet room; and a 23.8-percent increase in the corresponding estimate of persons who, although they had trouble hearing, could hear and understand normal or whispered speech.

The 1971 National Census of the Deaf, which contrary to its name was composed of three separate but integrated sample surveys (11), used a slightly different manner of combining the results for the SRS and the GHS. Its focus was on persons in the "deaf community," for example, persons who had experienced deafness or a profound hearing loss in their youth. It defined persons as "deaf" who "At best, had a lot of trouble hearing in both ears" or were "deaf in both ears" (as defined in table B) or who "Had at least some trouble hearing in both ears" and "who could not hear and understand any speech" (a score of 5 on the GHS). However, it excluded any persons who met these criteria but experienced their hearing loss at 19 years of age or after. Tabulated in terms of these criteria, the 1971 NHIS produced an estimate of 430,000 persons 3 years of age and over. Tabulated in the same way, the 1990–91 NHIS produces an estimate of 587,000 persons 3 years of age and over. The corresponding prevalence rates are 2.2 for 1971 and 2.5 for 1990–91 per 1,000 persons 3 years of age and over.

None of the estimates discussed in this section include the hearing ability of institutionalized persons. Periodically, NCHS conducts the National Nursing Home Survey. The most recent results available (8) indicate that of the 1.5 million persons in nursing homes in 1985, 9,000 were reported to have no hearing, 51,000 to be severely hearing impaired, and 249,000 to be partially hearing impaired. The source cited above shows estimates by selected characteristics for these 309,000 persons with hearing trouble.

Characteristics of persons with different types of hearing trouble

The previous section focused on the prevalence of hearing trouble and the distribution of types of hearing loss. The emphasis in this section is on the characteristics of persons with different types of hearing trouble. While the detailed tables upon which this section is based distinguish eight levels of hearing ability, the following discussion will emphasize a comparison of persons with three levels of hearing ability:

- The 209.2 million persons with normal hearing,
- the 20.3 million persons with trouble hearing, and
- the 4.8 million persons who cannot hear and understand normal speech.

The third group is a subgroup of the second group and is defined as those persons who had a score of 2 (a little trouble hearing) or greater for each ear on the SRS and a score of 3 (can hear and understand shouted speech) or greater on the GHS. Its corresponding label in the detailed tables is "At best can hear shouted words."

All results will be considered in terms of age. The detailed tables show the age-specific distributions for each characteristic, while the following discussion uses the age-adjusted estimates. The second and third groups noted above were age adjusted to the age distribution of the first group, using the age ranges 3–17, 18–44, 45–64, and 65 years of age and over.

Age and sex

Table 1 shows the massive influence of advanced age on the ability to hear. While only 9.7 percent of persons with normal hearing are 65 years of age and over, the corresponding estimates for persons with trouble hearing is 43.0 percent, and for persons who cannot hear and understand normal speech it is 60.9 percent. At the other end of the age continuum, 24.5 percent of persons with normal hearing are 3–17 years of age while only 4.8 percent of those with trouble hearing and 3.0 percent of those who cannot hear and understand normal speech are 3–17 years of age.

Figure 2 shows that the relationship between increasing age and hearing trouble is exponential rather than linear. The age-specific number of persons who cannot hear and understand normal speech per 1,000 persons rises slowly at first from a rate of 2.7 for youth 3–17 years of age and then starts rising sharply at about 55 years of age until it reaches a rate of 150.1 for persons 75 years of age and over.

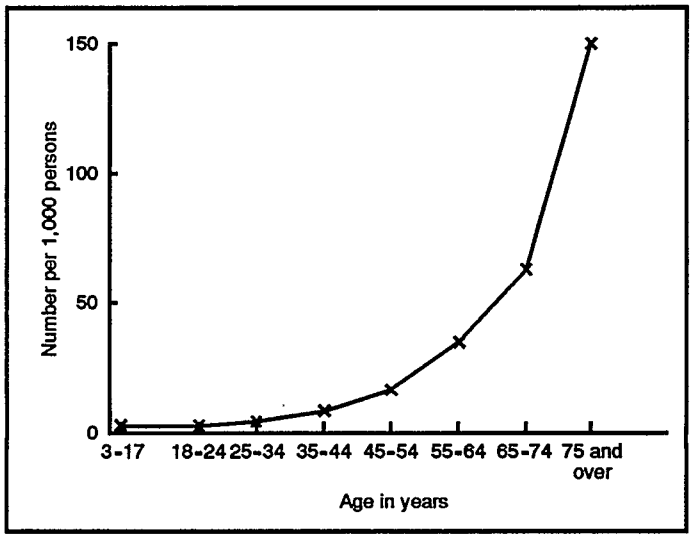

Figure 2. Average annual age-specific number of persons 3 years of age and over who cannot hear and understand normal speech per 1,000 persons: United States, 1990–91

Table 1 also shows the estimates of hearing ability by sex. Although the female population is larger and older than the male population, there were far more males with hearing trouble (12.0 million) than females (8.3 million) in 1990–91. Figure 3 shows that while 47.3 percent of persons with normal hearing are male, 59.1 percent of persons with hearing trouble and 58.1 percent of those who cannot hear and understand normal speech are male. As may be noted, the differences are even greater when the estimates are age adjusted, the corresponding percents of males rising to 61.4 and 60.1 percent for the respective levels of hearing loss.

Table F shows the age- and sex-specific prevalence rates for three levels of hearing trouble for 1971 and 1990–91. In relation to age, the greatest increase in prevalence rates for persons with all types of hearing trouble (26.0 percent) occurred for persons 45–64 years of age. For persons with bilateral hearing trouble the increase was greatest (71.2 percent) for those 18–44 years of age, and for persons who could not hear and understand normal speech the greatest increase was for those 18–64 years of age (86.2 and 87.2 percent for persons 18–44 and 45–64 years of age, respectively).

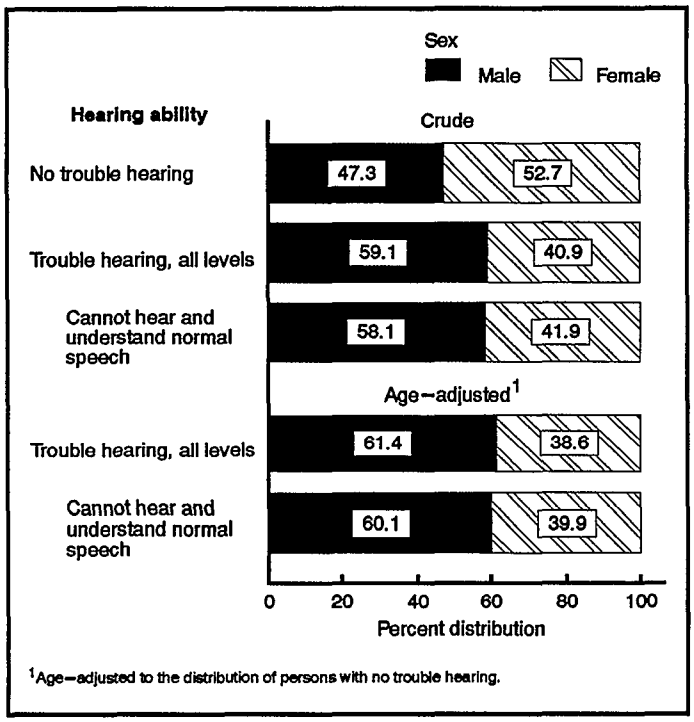

Figure 3. Average annual crude and age-adjusted percent distribution of persons 3 years of age and over by sex, according to hearing ability: United States, 1990–91

The increase in the prevalence rates of hearing trouble for males (30.0 percent) was almost double that for females (17.4 percent). However, the difference in the increase between the sexes was much smaller for persons who cannot hear and understand normal speech (66.7 and 52.3 percent for males and females, respectively).

When compared in terms of type of hearing trouble and both age and sex, the greatest increase in prevalence rates was for males 18–44 and 45–64 years of age who could not hear and understand normal speech. The rate for each of these groups approximately doubled between 1971 and 1990–91 (an increase of 106.1 and 97.3 percent, respectively). The largest increase among females was for those 45–64 years of age who could not hear and understand normal speech (66.3 percent).

Race and ethnic origin

Figure 4 indicates that white persons are more likely to have hearing trouble than are black persons. About 83.4 percent of persons with no trouble hearing are white, while the corresponding estimates for those with hearing trouble is 92.0 percent and for those who cannot hear and understand normal speech it is 92.6 percent. The relationship is of a similar nature when the estimates for white persons are compared with those of persons of other races

Table F. Number of persons with hearing trouble per 1,000 persons 3 years of age and over and percent change in prevalence rates from 1971 to 1990–91, by type of hearing loss, age, and sex: United States, 1971 and 1990–91 average annual

				Bilateral hearing trouble					
	All levels of hearing trouble[1]			*All levels*[2]			*Cannot hear and understand normal speech*		
Age and sex	*1971*	*1990–91*	*Change*	*1971*	*1990–91*	*Change*	*1971*	*1990–91*	*Change*
Both sexes	Number per 1,000 persons		Percent	Number per 1,000 persons		Percent	Number per 1,000 persons		Percent
All ages 3 years and over . . .	69.0	86.1	24.8	33.5	48.7	45.4	12.8	20.4	59.4
3–17 years[3]	16.2	18.2	12.3	7.1	8.6	21.1	2.7	2.7	0.0
18–44 years[4]	38.0	44.5	17.1	11.1	19.0	71.2	2.9	5.4	86.2
45–64 years	100.0	126.0	26.0	44.2	68.9	55.9	13.3	24.9	87.2
65 years and over.	274.1	290.6	6.0	173.0	192.5	11.3	78.7	97.5	23.9
Male									
All ages 3 years and over . . .	80.9	105.2	30.0	41.0	62.3	52.0	14.7	24.5	66.7
3–17 years[3]	17.8	19.8	11.2	8.2	9.1	11.0	3.1	2.8	-9.7
18–44 years[4]	48.2	58.3	21.0	15.0	26.5	76.7	3.3	6.8	106.1
45–64 years	128.6	175.5	36.5	62.7	104.1	66.0	18.2	35.9	97.3
65 years and over.	326.2	358.7	10.0	215.0	251.3	16.9	96.8	124.6	28.7
Female									
All ages 3 years and over . . .	58.1	68.2	17.4	26.5	35.9	35.5	10.9	16.6	52.3
3–17 years[3]	14.5	16.4	13.1	5.8	8.0	37.9	2.3	2.6	13.0
18–44 years[4]	28.7	31.1	8.4	7.5	11.7	56.0	2.6	4.1	57.7
45–64 years	74.1	80.4	8.5	27.4	36.5	33.2	9.0	14.8	66.3
65 years and over.	235.9	241.7	2.5	142.1	150.4	5.8	65.4	78.1	19.4

[1]Includes persons who did not respond to either scale.
[2]Includes persons who did not respond to the Gallaudet scale.
[3]For 1971, 3–16 years of age.
[4]For 1971, 17–44 years.

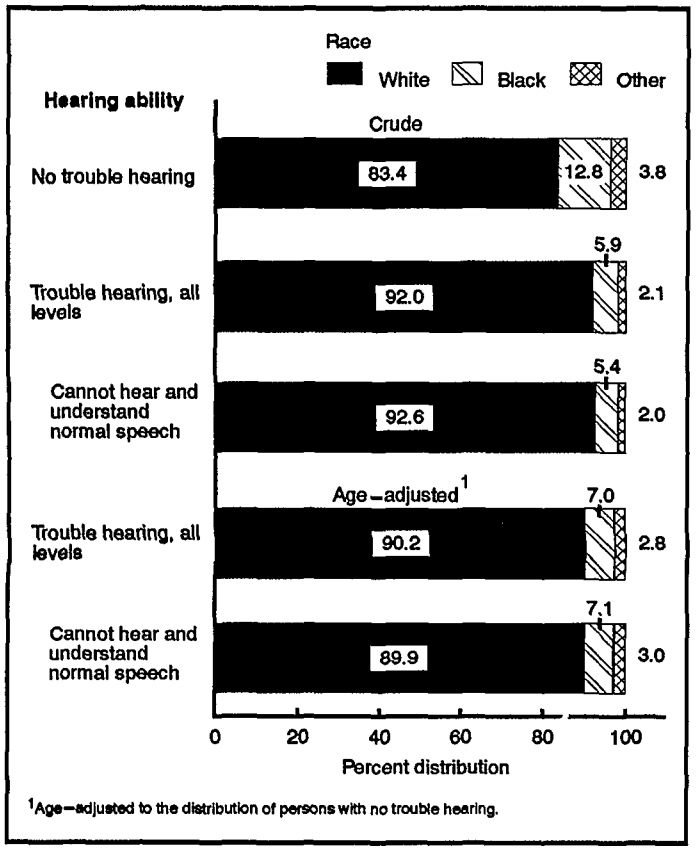

Figure 4. Average annual crude and age-adjusted percent distribution of persons 3 years of age and over by race, according to hearing ability: United States, 1990–91

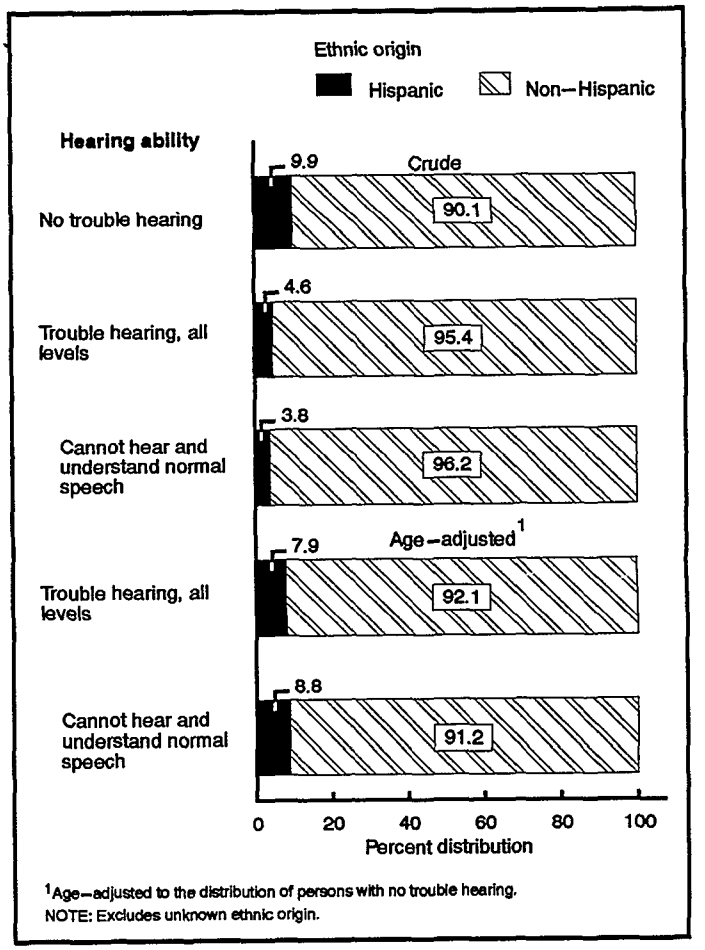

Figure 5. Average annual crude and age-adjusted percent distribution of persons 3 years of age and over by ethnic origin, according to hearing ability: United States, 1990–91

(for example, neither white nor black). Since the white population tends to be older than the other two racial groups, age adjusting the estimates somewhat reduces the differences.

Table 2 shows that the proportional overrepresentation of white persons among those with hearing trouble is less for those with a unilateral hearing loss (90.3 percent are white) and greater for those with a bilateral hearing loss (93.2 percent being white).

Hispanic persons account for 9.9 percent of those with no trouble hearing, but they constitute only 4.6 percent of persons with hearing trouble and 3.8 percent of those who cannot hear and understand normal speech. However, this proportional underrepresentation of Hispanics does not hold for youth 3–17 years of age (table 3).

The age-adjusted estimates shown in figure 5 indicate that most if not all of the differences noted may be attributed to the greater youth of the Hispanic population (32.6 percent of whom are 3–17 years of age compared with only 21.5 percent of the non-Hispanic population, table 3). For instance, age adjusting increases the percent of Hispanics among persons who cannot hear and understand normal speech from 3.8 to 8.8 percent, an estimate similar to that for persons with no trouble hearing.

Family income

Persons with hearing trouble are proportionately overrepresented in families with an annual income of under $10,000 and underrepresented in families with incomes of $50,000 and over (table 4). Because of the associations among aging, hearing loss, and income, the differences are reduced when the estimates are age adjusted. Figure 6 shows that while 11.1 percent of persons with no trouble hearing were members of families earning $10,000 or less, the corresponding age-adjusted estimates are 14.4 percent for persons with hearing trouble and 18.6 percent for those who cannot hear and understand normal speech. At the other end of the income range, 24.9 percent of persons with no hearing trouble were members of families earning $50,000 or more a year while, even when age adjusted, only 16.0 percent of persons who cannot hear and understand normal speech were in this income group.

Employment status and type of occupation

Table 5 shows that the major distributional variation among persons 18 years of age and over with different levels of hearing ability is primarily related to rates of participation in the labor force and not to unemployment rates. The estimates of persons not in the labor force decline monotonically for each successive lesser degree of hearing loss, ranging from 77.6 percent of people who can at best hear and understand words shouted in their ear to

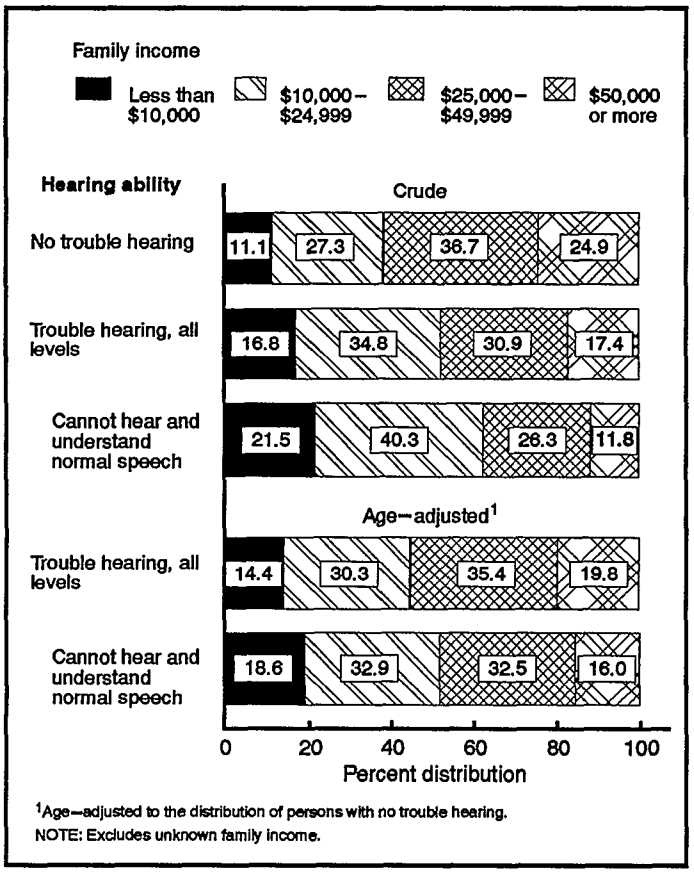

Figure 6. Average annual crude and age-adjusted percent distribution of persons 3 years of age and over by family income, according to hearing ability: United States, 1990–91

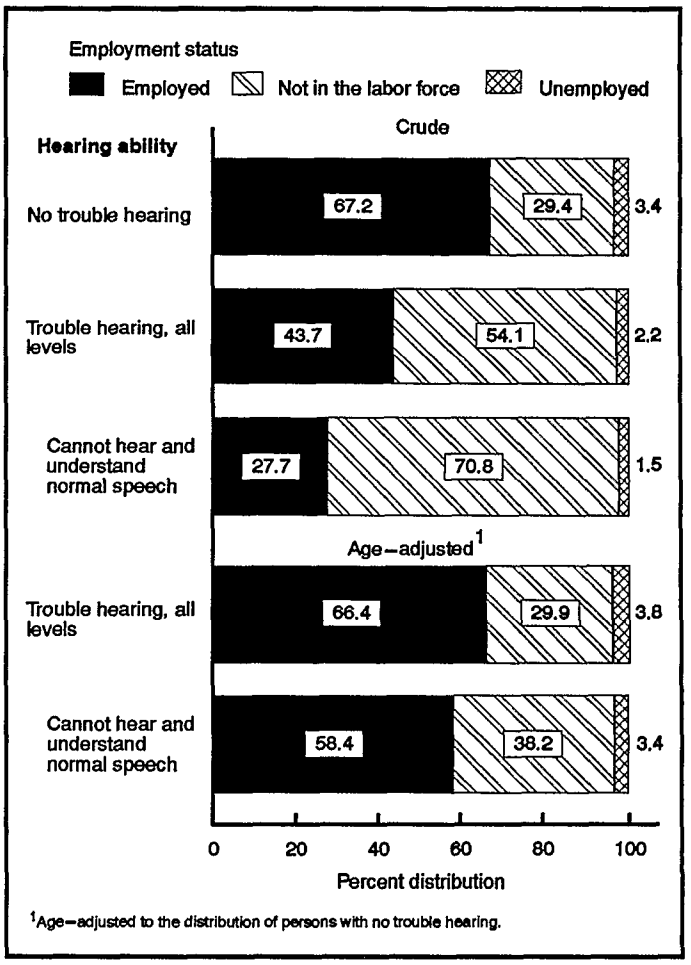

Figure 7. Average annual crude and age-adjusted percent distribution of persons 18 years of age and over by employment status, according to hearing ability: United States, 1990–91

29.4 percent of those with no trouble hearing. Variation in the relatively reliable estimates of the percent of unemployed persons ranges from 1.7 to 3.4 percent among the hearing ability groups, but because of large sampling errors the differences are not conclusive.

Figure 7 shows that age adjusting eliminates the difference when persons not in the labor force who have no hearing trouble (29.4 percent) are compared with persons with hearing trouble (29.9 percent). However, age adjusting does not eliminate the difference between those with normal hearing and persons who cannot hear and understand normal speech (38.2 percent of the latter group not being in the labor force).

Because of the relatively small number of cases for persons with hearing trouble, the types of occupations of persons in the labor force 18 years of age and over (table 6 and figure 8) are shown in terms of only three broad categories of occupations. The category "Other" includes the following Bureau of the Census occupational types: service (including private household, protective, and other); farming (except farm managers, who were included in the category of "managers"), forestry, and fishing; and, precision production, craft, and repair occupations. Broadly conceived, these are mostly service and blue-collar workers.

There is little difference in the proportions of persons 18 years of age and over in each of the hearing ability groups (table 6) employed in professional and managerial occupations, except for those who can at best hear and understand words shouted in their better ear. Only about 20.7 percent of this latter group were in these types of occupations compared with 29.0 percent or more for the other groups with hearing trouble.

Figure 8 shows that the main distributional difference between those with normal hearing and the two hearing loss groups relates to sales, service, and administrative support occupations and "other" occupations. About 27.1 percent of persons with normal hearing were in "other" occupations while 37.0 percent of those with trouble hearing and 40.2 percent of persons who could not hear and understand normal speech were in these types of occupations. Compared with persons with normal hearing, the two hearing loss groups were proportionately underrepresented among those working in sales, service, and administrative support occupations. As the figure indicates, the pattern of these relationships is little affected by age adjustment.

Education

Table 7 shows that the proportion of persons 18 years of age and over with under 12 years of education increases

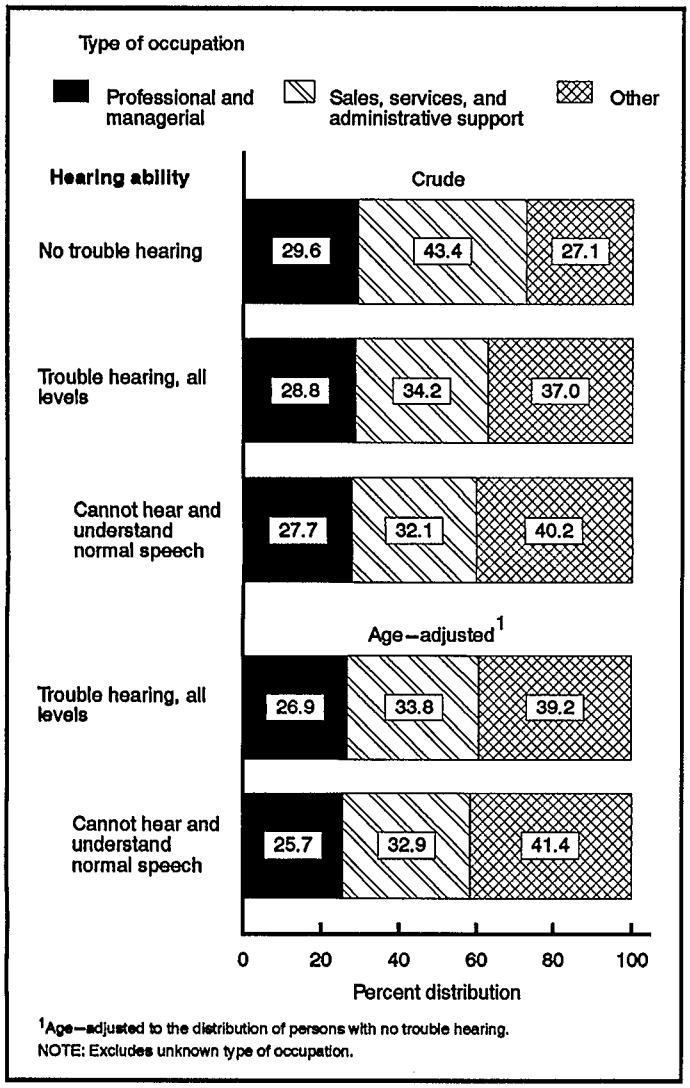

Figure 8. Average annual crude and age-adjusted percent distribution of persons 18 years of age and over in the labor force by type of occupation, according to hearing ability: United States, 1990–91

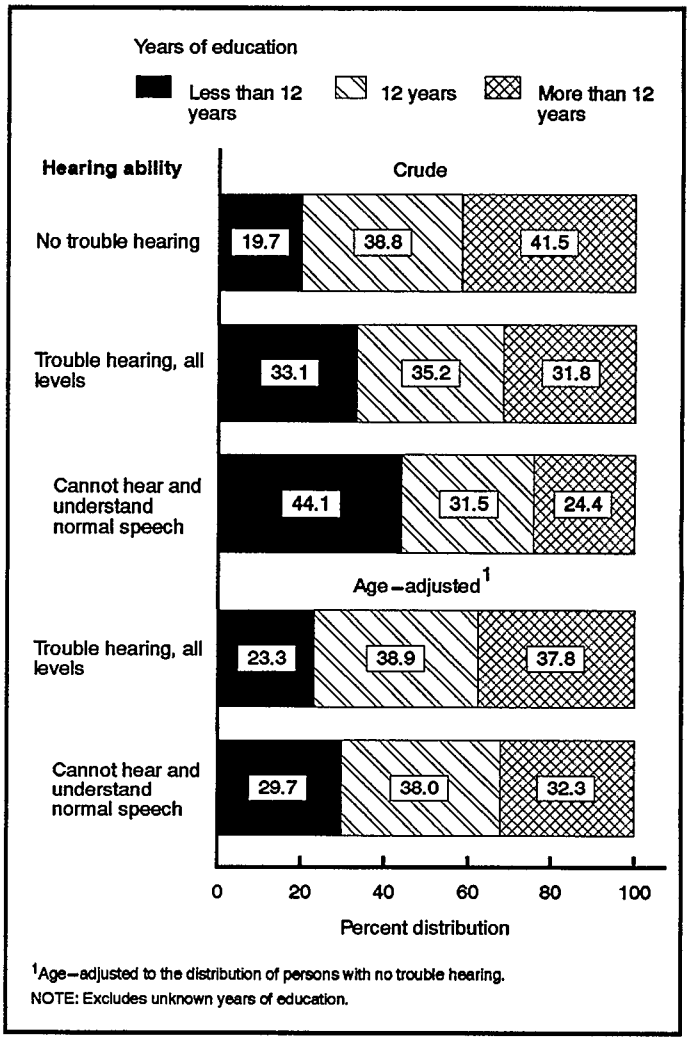

Figure 9. Average annual crude and age-adjusted percent distribution of persons 18 years of age and over by years of education, according to hearing ability: United States, 1990–91

monotonically as the level of their hearing ability decreases, ranging from 19.7 percent for persons with normal hearing to 48.2 percent for those who can at best hear and understand words shouted in their better ear. The pattern is similar but in the opposite direction for persons with 13 or more years of education, for example, increasing degrees of hearing loss being associated with smaller proportions of persons attending college.

Figure 9 indicates that age adjusting the results greatly reduces but does not eliminate the differences, there being about 3 out of 10 persons (29.7 percent) who cannot hear and understand normal speech and only about 2 out of 10 persons (19.7 percent of the standard population) with normal hearing with under 12 years of education.

Geographic region and place of residence

Table 8 and figure 10 show only one salient difference in the distribution of hearing ability in the four geographic regions. Persons with hearing trouble are proportionately underrepresented in the Northeast region. Age adjusting the results increases the difference so that while only 15.6 percent of persons in the two hearing loss groups live in the Northeast, 20.6 percent of persons with normal hearing live there.

Table 9 and figure 11 indicate that persons with hearing trouble and those who cannot hear and understand normal speech are proportionately underrepresented in central cities of metropolitan statistical areas (MSA) and overrepresented in areas outside of MSA's. This relationship is particularly strong in the latter area, where 21.5 percent of persons with normal hearing live compared with 31.0 percent of persons who cannot hear and understand normal speech. While age adjusting reduces the difference (27.9 percent for the latter group), it does not eliminate it.

Marital status and living arrangement

Distributions by marital status according to hearing ability for persons 18 years of age and over are shown in

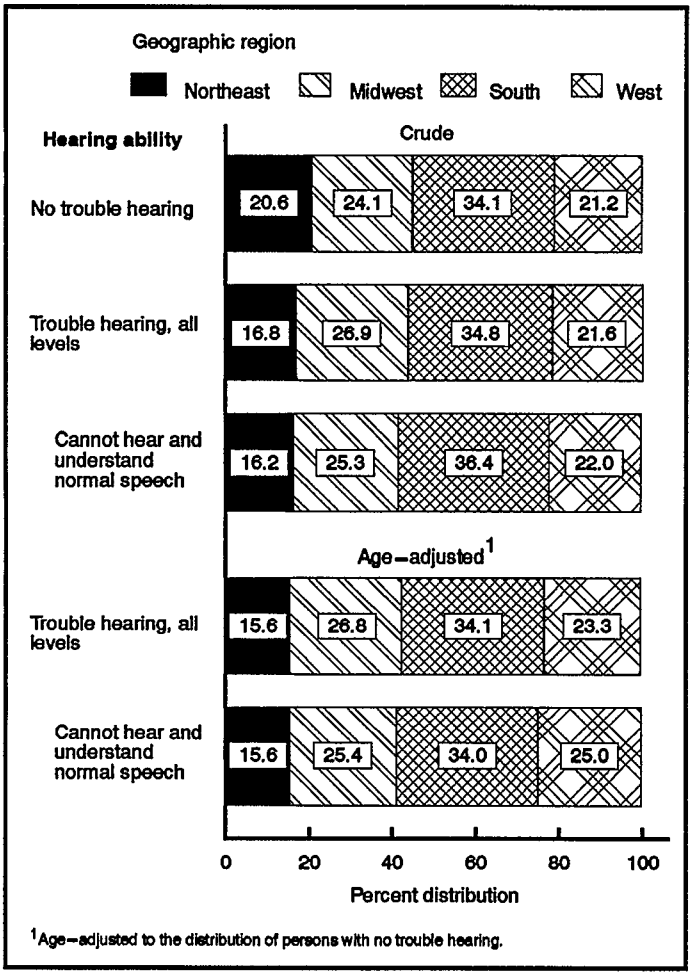

Figure 10. Average annual crude and age-adjusted percent distribution of persons 3 years of age and over by geographic region, according to hearing ability: United States, 1990–91

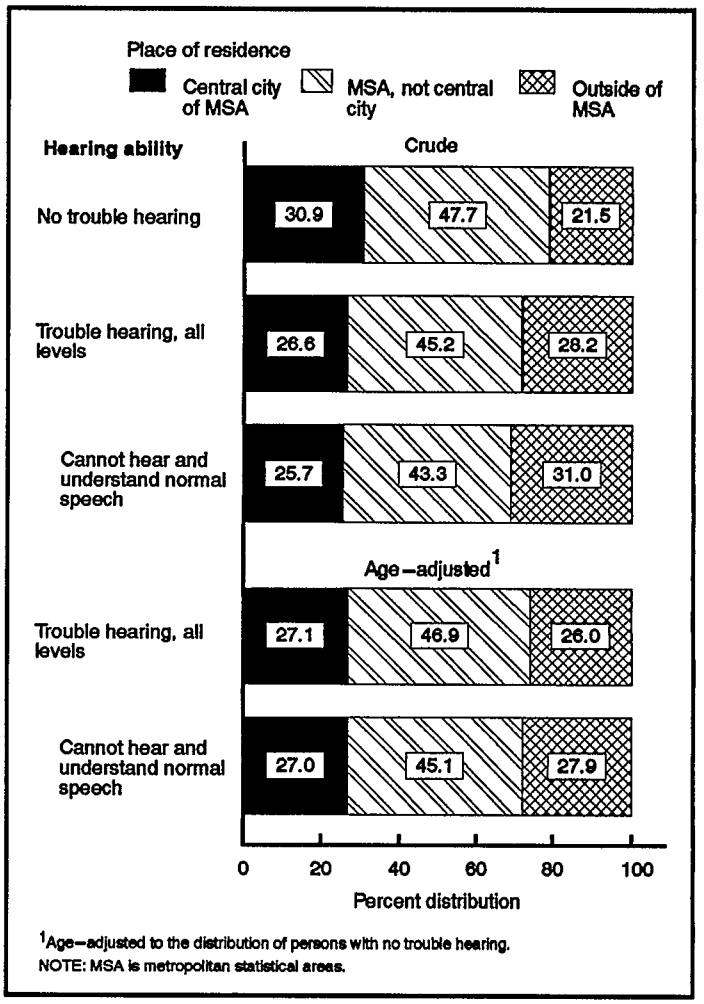

Figure 11. Average annual crude and age-adjusted percent distribution of persons 3 years of age and over by place of residence, according to hearing ability: United States, 1990–91

table 10 and figure 12. Because of limitations associated with sampling variation, only three categories of marital status are shown: never married, married-living with spouse, and other. "Other" includes persons who are widowed, divorced, separated, or married but not living with spouse.

Figure 12 shows that the main distributional differences among marital statuses according to hearing ability are for persons who never married and for those classified as "other." Among persons with trouble hearing, proportionately fewer have never married (8.2 percent) and more are in the category "other" (27.8 percent) than among persons with normal hearing (20.3 and 15.9 percent for corresponding marital statuses). The pattern of the relationship is similar when persons who cannot hear and understand normal speech are compared with those with normal hearing. Age adjustment reduces but does not eliminate the differences.

In relation to living arrangement, a larger proportion of persons 18 years of age and over with hearing trouble (22.6 percent) and of those who cannot hear and understand normal speech (23.4 percent) than of persons with normal hearing (12.4 percent) live alone (table 11). However, age adjustment greatly reduces the differences (figure 13).

Limitation of activity due to chronic conditions

Limitation of activity refers to any long-term reduction in activity resulting from chronic disease or impairment. Persons classified as limited are divided into three groups:

- unable to carry on the major activity of their age group— play, going to school, working, keeping house, or independent living for successively older age groups
- limited in the kind or amount of these major activities
- limited in other activities

It should be noted that in the following discussion the relationship between hearing ability and limitation status is one of association and not necessarily of cause. Results from earlier surveys indicate that only about one out of

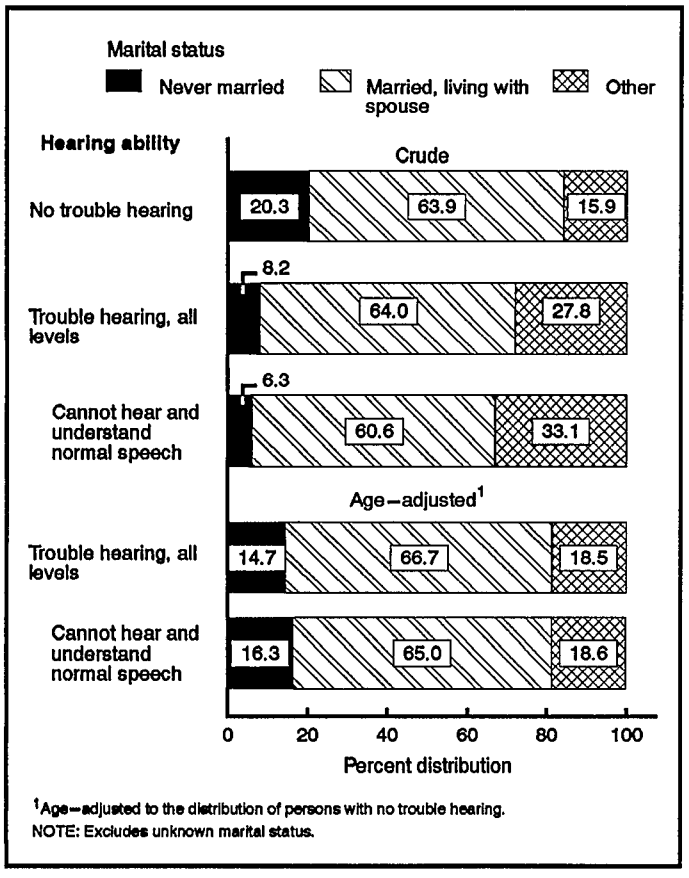

Figure 12. Average annual crude and age-adjusted percent distribution of persons 18 years of age and over by marital status, according to hearing ability: United States, 1990–91

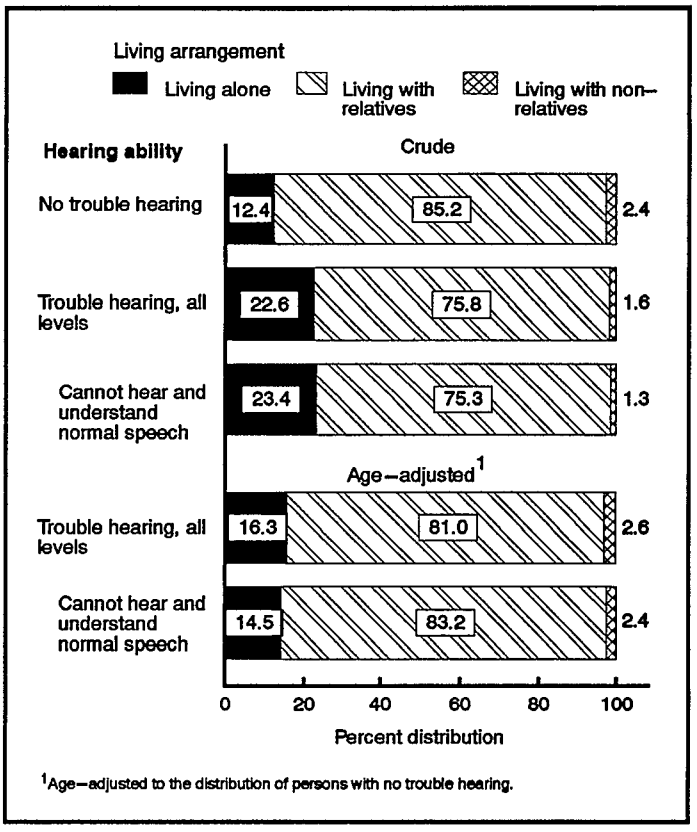

Figure 13. Average annual crude and age-adjusted percent distribution of persons 18 years of age and over by living arrangement, according to hearing ability: United States, 1990–91

five persons who can at best hear shouted speech and who are limited in activity give their hearing trouble as a cause of their limitation (2). This, of course, implies that most persons with hearing trouble have multiple chronic conditions or impairments.

Table 12 shows that the proportion of persons limited in activity increases monotonically as the severity of hearing trouble increases, ranging from 12.3 percent for persons with normal hearing to 65.2 percent for those who can at best hear and understand words shouted into their better ear. In general, this pattern holds for each of the types of limitation distinguished in the previous paragraph.

Within the age groups and hearing ability categories included in table 12, the highest proportion of limited persons (82.7 percent) is for youth 3–17 years of age who can at best hear and understand words shouted into their better ear and the lowest proportion (5.7 percent) is for youth of the same age with normal hearing. However, the most consistently high proportions of limitation of activity across all levels of hearing ability are for persons 65 years of age and over, the estimates ranging from 33.4 percent for persons with no hearing trouble to a high of 62.5 percent for those who can at best hear and understand words shouted into their better ear.

Figure 14 shows that age adjusting the results reduces the differences in the proportions of persons limited in activity for the two hearing loss groups compared with persons with normal hearing. However, large differences remain even after age adjustment, with 49.7 percent of persons who cannot hear and understand normal speech being limited compared with only 12.3 percent of persons with normal hearing.

Hearing loss may have serious educational implications for young persons, including in extreme cases leaving home to be educated in a residential school. The NHIS questions concerning limitation of major activity for youth 5–17 years of age relate to schooling and these results are shown in table G. The category "school limitation" included in the table is based on a positive response to at least one question involving the following criteria: the inability to attend school; limited attendance of classes, being enrolled in special schools or classes; and if not, whether such special education is needed.

Table G indicates that of the 876,000 youth 5–17 years of age reported to have hearing trouble, only 187,000 were reported to be limited in school activity. Among the estimated 127,000 youth who could not hear and understand normal speech, 48,000 were reported to be attending special schools or classes. Since the NHIS does not include children in residential programs in its sample, this

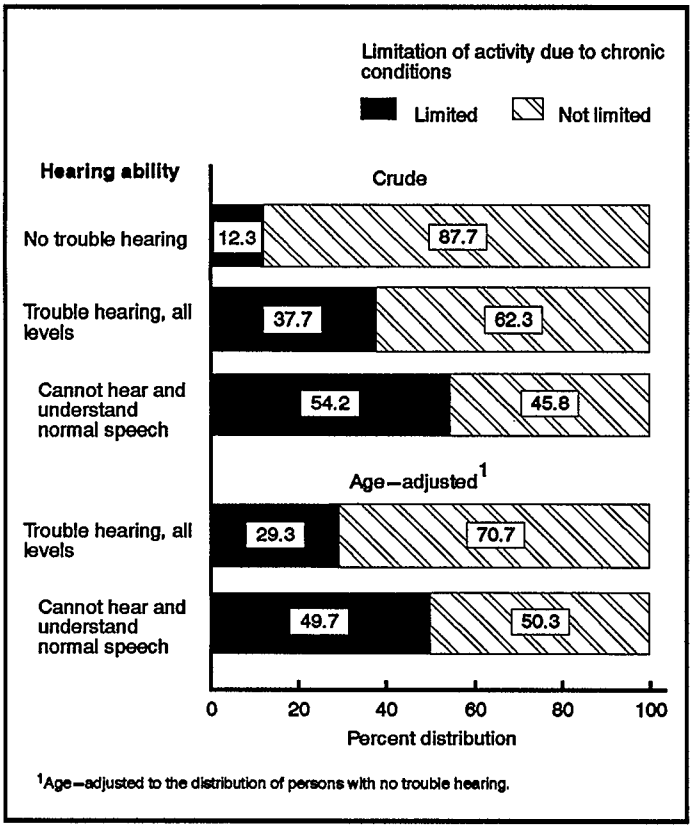

Figure 14. Average annual crude and age-adjusted percent distribution of persons 3 years of age and over by limitation of activity due to chronic conditions, according to hearing ability: United States, 1990–91

estimate does not include the approximately 10,000 students in this age group in residential schools for the deaf (12). Combining these two groups results in an estimate of about 58,000 students who cannot hear and understand normal speech receiving special educational services.

This estimate is similar to the 54,639 hearing impaired youth 6–17 years of age reported by the U.S. Department of Education for 1989–90 to be receiving special educational services supported by the Individuals with Disabilities Education Act (13). However, this similarity may be somewhat fortuitous since, as described in relation to earlier results from these same sources (14), the definitions used as a basis for the estimates from the two sources differ to some degree.

Table G. Average annual percent distribution and number of youth 5–17 years of age by limitation of activity status, according to reported hearing ability: United States, 1990–91

Limitation of activity status	*No hearing trouble*	*Has hearing trouble*[1]	*Hear and understand normal speech?*		*No hearing trouble*	*Has hearing trouble*[1]	*Hear and understand normal speech?*	
			No	*Yes*			*No*	*Yes*
	Percent distribution				Number in thousands			
All youth 5–17 years of age	100.0	100.0	100.0	100.0	44,001	876	127	685
Has school-related limitation	4.5	21.3	44.1	17.7	1,988	187	56	121
Attends special school or class	2.6	14.6	37.8	10.9	1,152	128	48	75
Other	1.9	6.7	*6.3	6.7	836	59	*8	46
Limited in other activity	1.7	6.2	*9.4	6.1	754	54	*12	42
Not limited	93.8	72.5	46.5	76.5	41,259	635	59	524

[1]Includes persons with unknown type of hearing loss or speech comprehension.

Characteristics of persons with early and later age at onset of hearing trouble

The previous discussion took into account only the degree and type of hearing trouble and the ability to hear and understand normal speech. However, the age when the hearing loss occurred may have as much impact on a person's life as the nature of the hearing loss itself. Consider two 60-year-old persons with no functional ability to hear, the first who was born with the hearing loss and the second who had normal hearing until recently. The first may belong to the deaf subculture, recently described by Schein (15), with its own language (sign language), schools (residential primary and secondary, Gallaudet University, and the National Technical Institute for the Deaf), and other cultural institutions (deaf churches, sports clubs, periodicals, etc.). It is highly improbable that the second person had any contact with this subculture, and he or she must come to terms with the recent hearing loss with far fewer, if any, social supports.

Age at onset

The age at onset was determined in the NHIS interview by two different questions. For persons who could hear and understand normal speech the question was: "How old was ___ when ___ began to have trouble hearing?" For persons who could not hear and understand normal speech the question was: "How old was ___ when ___ began to have serious trouble hearing or became deaf?" The purpose of the latter question was to avoid classifying the age at onset of a person with serious hearing trouble in terms of what might have been an earlier and relatively inconsequential hearing loss.

While it may be important to consider the precise age when a hearing loss occurred, it is customary to use two critical age criteria to define four broad subgroups of persons with hearing trouble based on age at onset: prelingual and postlingual (usually defined as before or after around the age of 3 years) and prevocational and postvocational (usually defined as before or after somewhere between 18 and 21 years of age). It is for this reason that respondents who could not report the actual age at onset of hearing trouble were asked if they could at least indicate whether it occurred before or after 19 years of age, and if before, whether before or after 3 years of age. This procedure also greatly increased the number of usable responses, since many respondents who did not know the precise age at onset could at least classify it in terms of these age ranges.

Figure 15 shows the distribution by these broad categories of age at onset for five levels of hearing trouble. Most persons with hearing trouble (79.1 percent) experienced their hearing loss at or after 19 years of age. Persons with a bilateral hearing loss who could at best hear and understand words shouted in their ear had the largest proportion of persons with onset before 3 years of age (14.9 percent compared with between 4.0 and 6.1 percent for the other groups). Persons with a unilateral hearing loss had the largest proportion who experienced their hearing trouble between 3–18 years of age (21.6 percent compared with between 8.8 and 11.4 percent for the other groups). Persons in the remaining two groups shown in the figure of intermediate levels of hearing trouble had the relatively largest proportions of persons with age at onset at or after 19 years of age.

Table 13 shows the results for age at onset by age for all of the levels of hearing trouble included in the other detailed tables. Among persons 65 years of age and over with hearing trouble, almost one-half (46.8 percent) experienced their hearing loss at or after 65 years of age. Among youth 3–17 years of age, 43.6 percent experienced their hearing loss before 3 years of age. The proportion with prelingual hearing loss was greatest (84.3 percent) among youth who could at best hear and understand words shouted in their better ear and least (38.3 percent) for youth with a unilateral hearing loss.

Characteristics of adults with hearing trouble by age at onset and speech comprehension

Given the importance of age at onset, it may be of interest to re-examine the earlier results in terms of this variable. However, because of the relatively small number of persons with onset before 3 years of age, this is feasible only when using the distinction before 19 years of age and 19 years of age and after. Even when using this criteria it is necessary to restrict the number of types of hearing trouble, lest the sampling errors of the estimates become prohibitively large when distributed by other characteristics. Table H shows that even when using only two categories of hearing trouble (can and cannot hear and understand

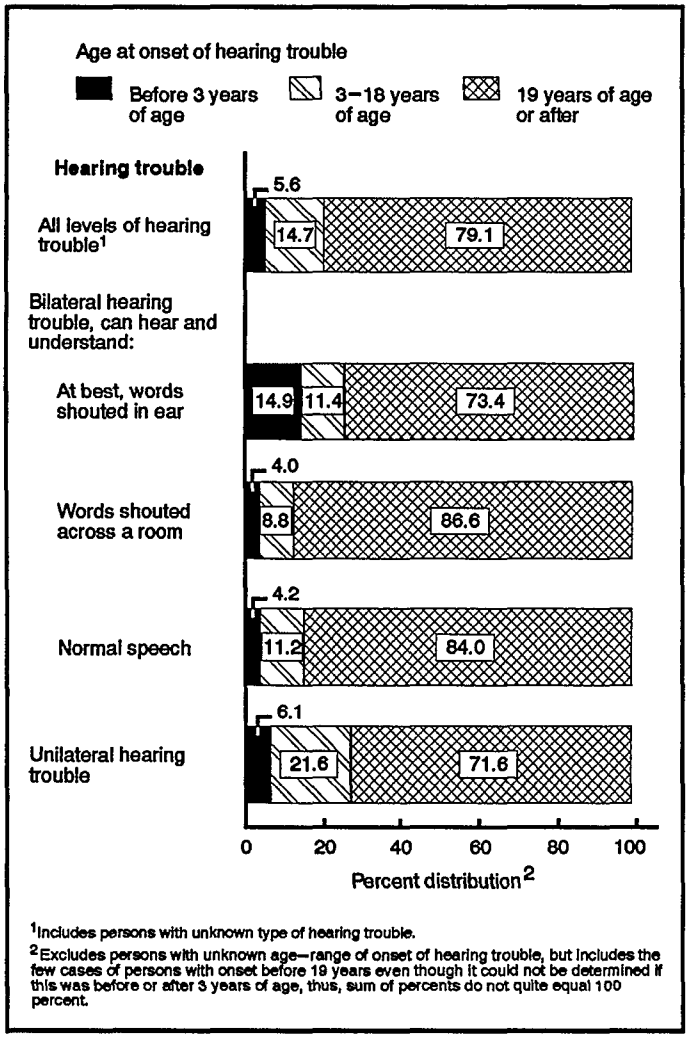

Figure 15. Average annual percent distribution of persons 3 years of age and over by age at onset of hearing trouble, according to type of hearing trouble: United States, 1990–91

normal speech) the fourfold cross-classification produces in one category only 649,000 persons.

An additional problem emerges with this cross-classification because the unknowns for age at onset are relatively independent of those for hearing trouble. Of the 1.5 million persons with at least one unknown for the two characteristics, only 166,000 are classified with both unknown age at onset and unknown type of hearing loss. Given this relatively large number of unknowns, the following estimates for the four subgroups include in parentheses the imputed estimates for when the unknown cases are excluded and the resulting proportions are multiplied by the number of persons 18 years of age and over with hearing trouble (19.3 million persons).

The estimates for the four subgroups of adults with hearing trouble distinguished in terms of age at onset and speech comprehension are as follows:

- 3.6 percent or 649,000 (696,000) could not hear and understand normal speech, and they experienced their hearing loss before 19 years of age
- 22.0 percent or 4.0 million (4.3 million) could not hear and understand normal speech, and they experienced their hearing loss at or after 19 years of age
- 13.7 percent or 2.5 million (2.6 million) could hear and understand normal speech, and they experienced their hearing loss before 19 years of age
- 60.7 percent or 10.9 million (11.7 million) could hear and understand normal speech, and they experienced their hearing loss at or after 19 years of age

If the youth 3–17 years of age with hearing trouble are included (all of whom fall into the first and third groups since they experienced their hearing loss before 19 years of age) and the adjusted frequencies are used, then the corresponding prevalence rates for the four groups are 3.6, 18.0, 14.4, and 49.8, respectively, per 1,000 persons 3 years of age and over in the civilian noninstitutionalized population (data not shown).

Table 14 shows the estimates for persons 18 years of age and over in these four groups distributed in terms of three age groups and all of the characteristics included in tables 2–12. It might be expected that the group with the most severe and the earlier onset of hearing loss (the first group identified above) would differ more from the other three groups than any one of them differs from the others.

This pattern does emerge for persons 18–44 years of age. They are proportionately overrepresented in comparison to the other three groups for the following characteristics:

- being members of families with an annual income of under $10,000, 21.0 percent compared with between 10.1 and 15.6 percent for the other three groups

Table H. Average annual number and percent distribution of persons 18 years of age and over, by age at onset and type of reported hearing trouble: United States, 1990–91

Type of hearing trouble	Age at onset				Age at onset			
	All ages	Before 19 years	19 years or after	Unknown	All ages	Before 19 years	19 years or after	Unknown
	Number in thousands				Percent distribution[1]			
All hearing trouble	19,327	3,196	15,482	649	100.0	17.3	82.7	–
Cannot hear and understand normal speech	4,668	649	3,951	68	25.6	3.6	22.0	–
Can hear and understand normal speech	13,778	2,467	10,896	415	74.4	13.7	60.7	–
Unknown	881	80	635	166	–	–	–	–

[1]Excludes unknown age at onset and unknown type of hearing trouble.

- having less than 12 years of education, 28.2 percent compared with between 14.1 and 19.4 percent for the other three groups
- not being in the labor force, 33.2 percent compared with between 12.6 and 18.9 percent for the other three groups
- living in the Northeast region of the country, 18.8 percent compared with between 9.7 and 14.9 percent for the other three groups
- being limited in activity, 54.9 percent compared with between 19.4 and 36.0 percent for the other three groups

However, for persons 45–64 years of age this same pattern is found only for family income and limitation of activity. For persons 65 years of age and over the same pattern is not found for any of the characteristics identified above for persons 18–44 years of age.

Relatively consistent patterns across the three age groups do emerge if the results are examined in terms of differences associated with age at onset alone compared with differences associated with the ability to comprehend speech alone. In terms of this distinction, three patterns may be noted: those characteristics for which age at onset make a relatively large difference and degree of hearing loss does not; those for which degree of hearing loss makes a relatively large difference and age at onset does not; and those characteristics for which the magnitude of the differences are of about the same order for age at onset and degree of hearing loss.

Sex and marital status follow the first pattern. The age-specific sex ratios of males to females are small for those with early ages at onset and large for those who had a hearing loss after 18 years of age, while the sex ratios are similar for the groups distinguished solely on the basis of type of hearing loss. In relation to marital status, persons with early onset are more likely to have never been married than are those with later onset, while the corresponding age-specific differences are small when the comparisons are made solely in relation to the two levels of speech comprehension.

Years of education and limitation of activity due to chronic conditions follow the second pattern. The age-specific differences in the proportion of persons with less than 12 years of education are similar for those with early and later age at onset, while the corresponding differences between the speech comprehension groups are relatively large. Persons with later onset are only slightly more likely than are those with earlier onset to be unable to perform the major activity of their age group, while persons who cannot hear and understand normal speech are much more likely not to be able to perform the major activity than are those who can hear and understand normal speech.

The third pattern involves those characteristics for which the distributional differences are relatively the same for the two age at onset and the two hearing ability groups in each of the three age groups. These characteristics range from those where both are associated with relatively large age-specific differences (family income, employment status, and ethnic origin) to those where neither are associated with large age-specific differences (place of residence, race, type of occupation, living arrangement, and geographic region).

Other topics related to hearing

In addition to questions on hearing ability and age at onset of hearing loss, the 1990 and 1991 NHIS included questions on hearing aid use (both years), the cause of hearing trouble (1991 only), and ringing in ears or other noises (1990 only). The questions related to these topics are shown in appendix III.

Hearing aid use

Table 15 shows that in 1990–91 a reported 3.6 million persons 3 years of age and over (18.0 percent of persons with hearing trouble) used a hearing aid. In relation to the degree of hearing loss, 43.1 percent of those who cannot hear and understand normal speech use a hearing aid compared with only 10.2 percent of those who can hear and understand normal speech. Hearing aid use is proportionately greater for persons who experienced their hearing loss at or after 19 years of age (19.9 percent) than it was for those with earlier age at onset of hearing loss (12.3 percent). Persons with the following characteristics were most likely to use hearing aids: aged 65 years and over (59.6 percent), having 13 or more years of education (54.3 percent), being members of families with an annual income of $10,000–$24,999 (52.0 percent), and never married persons (52.0 percent). All of these most frequent users of hearing aids are among those persons classified as unable to hear and understand normal speech who experienced their hearing loss before 19 years of age.

The 1990 NHIS also included questions about the use of other assistive devices for persons with hearing trouble. The number of persons using these devices was 173,000 for TTD/TTY's (a typewriter-like device that permits the communication of text over the telephone), 76,000 for special alarms, and 564,000 for other hearing technology. (Data are not shown.) Most of this "other" category is composed of special devices attached to a telephone, such as lights, amplifiers, etc.

A recently published report from NCHS includes more detailed estimates of the characteristics of persons using these other assistive devices, as well as for many other assistive devices associated with other chronic diseases and impairments (16).

Reported cause of hearing trouble

As part of the 1991 supplement, respondents were asked to indicate for each of a list of causes (appendix III) whether they considered it to be a cause of a reported hearing loss. Many persons chose more than one cause resulting in a total of 24.6 million causes (including 4.2 million reported as other, table 16). The respondents were not asked to indicate whether their choices were based on medical consultation or merely on their own opinion.

The table also shows the results with some of the responses regrouped to reduce the effect of sampling variation. "At birth" includes "Mother had Rubella in pregnancy," "At birth for a genetic reason," and "At birth, other reason." "Ear infection" includes "Infectious disease, such as measles and meningitis" and "Ear infection." "Ear injury" includes "Ear injury" and "Ear surgery." The percent distributions shown in the table indicate that within the four subgroups defined in terms of severity of hearing loss and early or later age at onset, "At birth" (28.8 percent) was most often reported for persons who cannot hear and understand normal speech and experienced their hearing loss before 19 years of age. "Getting older" (37.4 percent) was the leading reported cause for persons with this same type of hearing problem but who lost their hearing at or after 19 years of age. Among persons with hearing trouble who can hear and understand normal speech, "ear infection" (35.4 percent) was most often reported for those with onset before 19 years of age, and "getting older" (32.0 percent) for those who experienced their hearing loss at or after 19 years of age.

Viewed in terms of age, the cause most frequently reported for persons 3–44 and 45–64 years of age with all types of hearing trouble was "other noise," for example, noise from machinery, aircraft, power tools, loud music, appliances, Walkman personal stereos, hair dryers, etc. (1.6 and 2.2 million persons, for the respective age groups). For persons 65 years of age and over with all types of hearing trouble the most frequently reported cause was "getting older" (5.2 million persons). All of these most frequently reported causes within age groups are for persons with hearing trouble who can hear and understand normal speech and who experienced their hearing loss at or after 19 years of age.

Ringing in ears or other noises

The 1990 Hearing Supplement included the question: "At any time over the past 12 months, has _____ ever noticed ringing in the ears or has _____ been bothered

Table J. Prevalence rate by age; percent distribution and number of persons 3 years of age and over, by frequency and degree of botheration of ringing in ears or other noises in head, according to age: United States, 1990

Frequency and degree of botheration of ringing in ears	Age					Age				
	All	3–17 years	18–44 years	45–64 years	65 and over	All	3–17 years	18–44 years	45–64 years	65 and over
	Number per 1,000 persons					Number in thousands				
All ages 3 years and over with ringing in ears	78.7	17.4	62.1	117.6	184.9	18,546	927	6,551	5,514	5,555
	Percent distribution					Number in thousands				
All ages 3 years and over with ringing in ears[1]	100.0	100.0	100.0	100.0	100.0	18,546	927	6,551	5,514	5,555
Rings all the time[2]	26.8	6.7	17.4	33.9	34.1	4,857	60	1,119	1,822	1,856
Bothers quite a bit	8.0	*3.0	5.3	11.2	9.0	1,459	*27	340	604	488
Bothers a little	10.7	*2.9	7.8	13.1	12.9	1,935	*26	499	705	705
Does not bother	7.7	*0.7	4.1	9.2	11.8	1,404	*6	263	492	643
Rings every few days[2]	17.2	17.5	14.3	18.9	19.0	3,124	157	919	1,015	1,033
Bothers quite a bit	4.9	4.4	3.8	6.3	5.0	895	40	245	340	270
Bothers a little	9.1	10.9	7.4	9.9	10.0	1,648	98	473	530	547
Does not bother	2.9	*1.6	2.8	2.4	3.8	526	*14	179	127	205
Rings less often[2]	56.0	75.9	68.2	47.2	47.0	10,155	682	4,377	2,537	2,559
Bothers quite a bit	8.5	20.2	9.7	7.5	6.3	1,548	181	624	401	343
Bothers a little	28.3	39.3	36.0	23.7	21.8	5,124	353	2,311	1,271	1,189
Does not bother	18.8	15.6	22.2	15.8	18.4	3,414	140	1,424	847	1,003

[1]Percent distribution excludes and frequency includes unknown frequency and degree of botheration.
[2]Percent and frequency include unknown degree of botheration.

by other funny noises in _____ ears or head?" This was followed by questions concerning the frequency, degree of botheration, and age at onset of the ringing or other noises. (See appendix III for the wording of the questions.)

Of the 234.5 million persons 3 years of age and over in the civilian noninstitutionalized population in 1990, ringing was reported for 18.5 million persons, no ringing for 206.5 million persons, and no usable responses were obtained for 9.5 million persons (data are not shown). Table J shows that the prevalence of ringing in the ears is highly associated with age, the number per 1,000 persons increasing from 17.4 for youth 3–17 years of age to 184.9 for persons 65 years of age and over.

The table also shows that 26.8 percent of persons for whom the symptom was reported experienced it all of the time, 17.2 percent every few days, and 56.0 percent less often. When the frequency and degree of botheration are cross-classified, the most frequent response (28.3 percent) was that the noise occurred less than every few days and bothered the person "a little." This was also the most frequent response for each of the age groups included in the table.

The main distributional difference among the age groups was the greater proportion of persons 45 years of age and over who experienced the ringing all of the time (33.9 and 34.1 percent for those 45–64 and 65 years of age and over, respectively) compared with 6.7 and 17.4 percent of persons in the two younger age groups (3–17 and 18–44 years of age) who experienced the symptom all of the time.

For an in-depth multivariate analysis of an earlier data set on ringing in the ears similar to that used in this discussion, see Brown (17).

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List of detailed tables

Table 1. Average annual percent distribution and number of persons 3 years of age and over by age and sex, according to reported hearing ability: United States, 1990–91

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

Age and sex	Hearing ability									
	All hearing levels[1]	Trouble hearing								
		No hearing trouble	Bilateral hearing trouble						Unilateral hearing trouble	Borderline hearing trouble
			All levels of hearing trouble[2]	All speech comprehension statuses[3]	At best can hear shouted words					
					Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered		
	Percent distribution									
Both sexes										
All ages 3 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
3–17 years	22.6	24.5	4.8	4.0	3.0	4.5	2.5	4.7	5.2	9.1
18–44 years	44.7	46.9	23.1	17.4	11.9	11.1	12.1	21.5	31.2	31.6
18–24 years	10.5	11.3	3.2	2.3	1.5	*1.6	1.4	2.9	4.5	5.2
25–34 years	18.1	19.1	8.2	5.5	3.9	3.3	4.0	6.7	12.0	12.7
35–44 years	16.1	16.5	11.7	9.6	6.6	6.2	6.7	11.9	14.8	13.8
45–64 years	19.9	18.9	29.1	28.2	24.3	19.8	25.7	31.2	30.2	28.9
45–54 years	10.9	10.6	13.0	11.7	8.9	7.0	9.5	13.8	14.6	13.3
55–64 years	9.0	8.2	16.1	16.5	15.4	12.7	16.3	17.4	15.6	15.6
65 years and over	12.7	9.7	43.0	50.4	60.9	64.6	59.7	42.6	33.5	30.4
65–74 years	7.7	6.4	21.0	23.1	23.9	19.0	25.5	22.5	18.2	18.6
75 years and over	5.0	3.3	22.0	27.3	36.9	45.6	34.2	20.0	15.3	11.8
Male										
All ages 3 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
3–17 years	24.0	26.5	4.5	3.5	2.7	4.6	2.2	4.0	5.5	10.7
18–44 years	45.3	47.9	25.1	19.3	12.5	10.6	13.1	23.8	34.4	34.1
18–24 years	10.7	11.7	2.9	2.0	1.0	*1.5	*0.9	2.6	4.2	5.3
25–34 years	18.4	19.6	8.8	6.0	4.2	3.4	4.4	7.2	13.1	14.4
35–44 years	16.3	16.6	13.5	11.3	7.4	5.7	7.8	14.0	17.1	14.4
45–64 years	19.7	18.0	32.9	32.9	28.9	24.0	30.2	35.8	32.8	29.4
45–54 years	10.9	10.3	15.0	14.2	10.5	8.3	11.1	16.6	16.4	14.4
55–64 years	8.8	7.6	17.8	18.7	18.4	15.7	19.1	19.1	16.4	14.8
65 years and over	11.0	7.7	37.5	44.3	55.8	60.8	54.5	36.5	27.3	26.1
65–74 years	7.1	5.3	21.4	24.0	27.1	23.8	28.0	22.1	17.2	18.1
75 years and over	3.9	2.3	16.0	20.3	28.8	37.2	26.5	14.4	10.1	8.0
Female										
All ages 3 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
3–17 years	21.4	22.7	5.1	4.8	3.3	4.5	2.9	5.9	4.7	6.7
18–44 years	44.2	46.1	20.2	14.4	10.9	11.8	10.7	17.5	27.4	28.2
18–24 years	10.4	11.0	3.7	2.8	2.1	*2.0	2.1	3.6	4.8	*5.0
25–34 years	17.8	18.6	7.3	4.7	3.4	*3.2	3.5	5.8	10.6	10.3
35–44 years	15.9	16.5	9.2	6.9	5.5	6.6	5.0	8.1	12.0	12.9
45–64 years	20.1	19.7	23.7	20.4	17.9	15.4	18.9	22.9	27.1	28.4
45–54 years	10.9	10.9	10.0	7.7	6.6	5.7	6.9	8.7	12.5	11.7
55–64 years	9.2	8.8	13.7	12.8	11.3	9.6	12.0	14.2	14.6	16.4

65 years and over	14.4	11.5	51.0	60.4	67.9	68.4	67.6	53.7	40.8	36.7
65–74 years	8.3	7.3	20.4	21.6	19.6	13.9	21.7	23.5	19.3	19.4
75 years and over	6.1	4.2	30.6	38.8	48.3	54.5	45.9	30.2	21.5	17.3
Both sexes					**Number in thousands**					
All ages 3 years and over	235,688	209,180	20,295	11,474	4,811	1,152	3,659	6,498	7,168	828
3–17 years	53,327	51,230	968	456	143	52	91	303	370	75
18–44 years	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
18–24 years	24,838	23,643	650	265	70	*19	51	190	320	43
25–34 years	42,577	39,918	1,659	630	186	38	148	434	858	105
35–44 years	38,019	34,619	2,380	1,106	316	71	245	776	1,059	114
45–64 years	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
45–54 years	25,668	22,266	2,634	1,342	427	81	346	898	1,046	110
55–64 years	21,217	17,230	3,275	1,890	741	146	595	1,131	1,116	129
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
65–74 years	18,203	13,356	4,267	2,653	1,152	219	933	1,465	1,303	154
75 years and over	11,841	6,917	4,462	3,132	1,777	525	1,252	1,300	1,097	98
Male										
All ages 3 years and over	114,084	99,011	12,002	7,112	2,797	592	2,205	4,206	3,876	487
3–17 years	27,331	26,225	541	249	76	27	49	167	215	52
18–44 years	51,737	47,401	3,018	1,373	351	63	288	1,000	1,334	166
18–24 years	12,159	11,539	344	141	28	*9	*19	108	162	26
25–34 years	20,953	19,392	1,054	425	117	20	97	302	509	70
35–44 years	18,626	16,470	1,619	807	206	34	172	590	664	70
45–64 years	22,480	17,776	3,946	2,340	808	142	666	1,504	1,270	143
45–54 years	12,446	10,242	1,804	1,007	294	49	245	699	635	70
55–64 years	10,034	7,534	2,141	1,333	514	93	421	805	635	72
65 years and over	12,536	7,609	4,497	3,150	1,562	360	1,201	1,535	1,057	127
65–74 years	8,132	5,290	2,572	1,710	757	141	617	928	667	88
75 years and over	4,404	2,318	1,925	1,441	805	220	585	607	390	39
Female										
All ages 3 years and over	121,604	110,169	8,293	4,362	2,014	560	1,454	2,292	3,292	341
3–17 years	25,996	25,005	427	208	67	25	42	136	156	23
18–44 years	53,696	50,779	1,672	628	220	66	155	400	903	96
18–24 years	12,679	12,104	306	124	42	*11	31	82	159	*17
25–34 years	21,624	20,526	605	205	68	*18	51	132	349	35
35–44 years	19,393	18,149	761	299	110	37	73	186	395	44
45–64 years	24,405	21,720	1,963	891	360	86	275	525	892	97
45–54 years	13,222	12,024	829	335	133	32	101	199	410	40
55–64 years	11,183	9,696	1,134	557	227	54	174	326	481	56
65 years and over	17,508	12,664	4,232	2,634	1,367	383	983	1,231	1,342	125
65–74 years	10,071	8,065	1,695	943	394	78	316	538	635	66
75 years and over	7,437	4,599	2,537	1,691	972	305	667	693	707	59

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet scale.

Table 2. Average annual percent distribution and number of persons 3 years of age and over by age and race, according to reported hearing ability: United States, 1990–91

[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]

Age and race	Hearing ability									
			Trouble hearing							
				Bilateral hearing trouble						
					At best can hear shouted words					
	All hearing levels[1]	No hearing trouble	All levels of hearing trouble[2]	All speech comprehension statuses[3]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution									
All ages 3 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	84.1	83.4	92.0	93.2	92.6	92.0	92.8	93.7	90.3	91.5
Black	12.2	12.8	5.9	5.1	5.4	6.3	5.2	4.9	7.0	5.9
Other	3.7	3.8	2.1	1.7	2.0	1.7	2.1	1.4	2.7	2.5
3–17 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	80.5	80.4	86.2	87.9	85.3	82.7	86.8	89.8	86.5	85.3
Black	15.6	15.7	10.5	8.8	*11.9	*11.5	*12.1	7.3	10.3	*14.7
Other	3.9	3.9	3.3	*3.5	*2.8	*5.8	*1.1	*3.3	*3.2	–
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	83.3	83.0	91.1	93.0	90.9	88.3	91.6	93.9	89.6	90.1
Black	12.4	12.7	6.0	4.6	5.4	*10.9	*4.1	4.3	7.0	*6.9
Other	4.3	4.3	2.9	2.3	3.7	*1.6	4.5	1.9	3.4	*3.1
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	86.4	85.7	91.7	93.0	91.1	89.0	91.6	94.1	90.1	91.6
Black	10.3	10.9	5.9	5.1	6.5	9.6	5.9	4.4	6.8	*5.9
Other	3.3	3.4	2.4	1.9	2.4	*1.3	2.7	1.5	3.1	*2.5
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	89.9	88.4	93.2	93.8	93.9	94.2	93.7	93.7	91.7	94.8
Black	8.4	9.7	5.4	5.0	4.7	4.2	4.9	5.4	6.8	*2.8
Other	1.7	1.8	1.3	1.2	1.5	*1.6	1.4	0.9	1.6	*2.4
	Number in thousands									
All ages 3 years and over	235,688	209,180	20,295	11,474	4,811	1,152	3,659	6,498	7,168	828
White	198,277	174,473	18,663	10,693	4,454	1,060	3,394	6,086	6,472	758
Black	28,753	26,763	1,204	589	261	72	189	319	503	49
Other	8,658	7,943	428	191	96	20	76	92	193	21
3–17 years of age	53,327	51,230	968	456	143	52	91	303	370	75
White	42,906	41,203	834	401	122	43	79	272	320	64
Black	8,336	8,036	102	40	*17	*6	*11	22	38	*11
Other	2,086	1,991	32	*16	*4	*3	*1	*10	*12	–
18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
White	87,878	81,511	4,272	1,861	519	113	406	1,314	2,004	236
Black	13,057	12,454	280	92	31	*14	*18	60	157	*18
Other	4,498	4,216	138	47	21	*2	20	26	76	*8

45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
White	40,492	33,834	5,418	3,006	1,064	203	861	1,909	1,948	219
Black	4,825	4,302	347	166	76	22	55	89	146	*14
Other	1,567	1,361	143	60	28	*3	25	31	68	*6
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
White	27,000	17,927	8,139	5,426	2,749	701	2,048	2,591	2,200	239
Black	2,535	1,971	475	291	137	31	106	149	162	*7
Other	508	375	115	68	43	*12	31	26	38	*6

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

Table 3. Average annual percent distribution and number of persons 3 years of age and over by age and ethnic origin, according to reported hearing ability: United States, 1990–91

[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]

Age and ethnic origin	Hearing ability									
			Trouble hearing							
				Bilateral hearing trouble						
					At best can hear shouted words					
	All hearing levels[1]	No hearing trouble	All levels of hearing trouble[2]	All speech comprehension statuses[3]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution									
All ages 3 years and over[4]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hispanic	9.4	9.9	4.6	3.7	3.8	4.4	3.6	3.6	5.9	5.7
Non-Hispanic	90.6	90.1	95.4	96.3	96.2	95.6	96.4	96.4	94.1	94.3
3–17 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hispanic	13.6	13.5	15.1	14.8	17.1	*12.2	*19.8	13.9	15.2	*13.7
Non-Hispanic	86.4	86.5	85.0	85.0	83.6	87.8	80.2	86.1	84.8	86.3
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hispanic	10.4	10.6	6.8	6.1	7.9	*11.7	6.8	5.3	7.5	*6.9
Non-Hispanic	89.6	89.4	93.2	93.9	92.1	88.3	93.2	94.7	92.6	92.7
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hispanic	6.2	6.5	4.1	3.1	3.3	*3.9	3.1	3.0	5.5	*5.5
Non-Hispanic	93.8	93.5	95.9	96.9	96.7	95.6	96.9	97.0	94.5	95.0
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hispanic	3.4	3.8	2.6	2.3	2.6	2.7	2.5	2.0	3.3	*2.0
Non-Hispanic	96.6	96.2	97.4	97.7	97.4	97.3	97.4	98.0	96.7	98.0
	Number in thousands									
All ages 3 years and over[4]	235,688	209,180	20,295	11,474	4,811	1,152	3,659	6,498	7,168	828
Hispanic	21,982	20,507	929	422	182	50	132	232	419	47
Non-Hispanic	211,711	187,607	19,305	11,021	4,617	1,096	3,521	6,248	6,729	775
3–17 years of age	53,327	51,230	968	456	143	52	91	303	370	75
Hispanic	7,157	6,843	145	67	24	*6	*18	42	56	*10
Non-Hispanic	45,495	43,889	816	385	117	43	73	260	313	63
18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
Hispanic	10,921	10,329	318	121	45	*15	30	74	166	*18
Non-Hispanic	93,786	87,474	4,353	1,875	526	113	413	1,322	2,062	241
45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
Hispanic	2,878	2,559	241	99	38	*9	29	60	119	*13
Non-Hispanic	43,631	36,795	5,653	3,125	1,128	218	910	1,963	2,038	226
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Hispanic	1,025	776	225	135	75	20	55	56	79	*5
Non-Hispanic	28,800	19,449	8,484	5,635	2,847	721	2,125	2,703	2,316	246

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

[4]Percent distribution excludes and number in thousands includes unknown ethnic origin.

Table 4. Average annual percent distribution and number of persons 3 years of age and over by age and family income, according to reported hearing ability: United States, 1990–91

[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]

Age and family income	Hearing ability									
			Trouble hearing							
				Bilateral hearing trouble						
					At best can hear shouted words					
	All hearing levels[1]	No hearing trouble	All levels of hearing trouble[2]	All speech comprehension statuses[3]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution									
All ages 3 years and over[4]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under $10,000	11.6	11.1	16.8	17.3	21.5	22.8	21.1	14.2	17.0	12.6
$10,000–$24,999	28.0	27.3	34.8	36.5	40.3	41.4	40.0	33.7	32.9	34.1
$25,000–$49,999	36.1	36.7	30.9	29.8	26.3	26.4	26.3	32.4	31.9	34.1
$50,000 and over	24.3	24.9	17.4	16.4	11.8	9.2	12.7	19.6	18.2	19.1
3–17 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under $10,000	11.7	11.6	16.3	16.8	23.1	*17.4	26.2	13.7	15.2	*14.9
$10,000–$24,999	26.9	26.7	31.6	32.3	31.5	*41.3	26.2	32.4	30.7	31.3
$25,000–$49,999	37.9	38.0	33.2	30.3	23.8	*21.7	25.0	33.6	35.9	40.3
$50,000 and over	23.6	23.7	18.9	20.8	22.3	*19.6	23.8	20.2	18.4	*14.9
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under $10,000	10.5	10.3	12.6	12.5	16.0	18.2	15.4	11.1	13.4	10.2
$10,000–$24,999	25.8	25.7	28.0	27.1	31.2	29.1	31.8	25.5	29.4	26.7
$25,000–$49,999	38.9	38.9	39.4	40.5	39.3	49.1	36.6	41.0	37.9	44.1
$50,000 and over	24.8	25.1	19.9	20.0	13.6	*3.6	16.4	22.4	19.4	19.1
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under $10,000	8.2	7.6	11.8	12.1	15.9	12.9	16.7	9.8	11.9	*7.3
$10,000–$24,999	24.1	23.7	26.4	27.4	32.7	34.0	32.3	24.6	25.7	29.3
$25,000–$49,999	35.1	35.2	35.0	34.8	33.7	36.6	33.1	35.2	34.8	33.7
$50,000 and over	32.6	33.4	26.7	25.8	17.7	17.0	17.8	30.5	27.6	29.8
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under $10,000	21.8	21.0	23.3	22.5	25.1	27.7	24.3	19.7	26.2	20.1
$10,000–$24,999	45.3	45.1	45.7	46.2	46.3	46.5	46.2	46.0	43.9	49.0
$25,000–$49,999	23.1	23.6	22.3	22.5	20.3	18.8	20.8	25.0	22.1	21.1
$50,000 and over	9.8	10.3	8.6	8.8	8.3	6.8	8.8	9.3	7.7	9.8
	Number in thousands									
All ages 3 years and over[4]	235,688	209,180	20,295	11,474	4,811	1,152	3,659	6,498	7,168	828
Under $10,000	22,630	19,437	2,812	1,600	817	205	612	759	1,041	90
$10,000–$24,999	54,501	47,836	5,819	3,376	1,532	372	1,159	1,800	2,011	243
$25,000–$49,999	70,354	64,318	5,169	2,762	999	237	762	1,727	1,950	243
$50,000 and over	47,328	43,725	2,903	1,520	450	83	367	1,048	1,111	136
3–17 years of age	53,327	51,230	968	456	143	52	91	303	370	75
Under $10,000	5,320	5,114	142	67	30	*8	22	36	53	*10
$10,000–$24,999	12,263	11,804	276	129	41	*19	22	85	107	21
$25,000–$49,999	17,297	16,828	290	121	31	*10	21	88	125	27
$50,000 and over	10,773	10,484	165	83	29	*9	20	53	64	*10

Table 4. Average annual percent distribution and number of persons 3 years of age and over by age and family income, according to reported hearing ability: United States, 1990–91—Con.

[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]

Age and family income	All hearing levels[1]	Hearing ability								
		No hearing trouble	Trouble hearing							
			All levels of hearing trouble[2]	Bilateral hearing trouble					Unilateral hearing trouble	Borderline hearing trouble
				All speech comprehension statuses[3]	At best can hear shouted words			Can hear words spoken or whispered		
					Total	None or at best words shouted in ear	Can hear words shouted across a room			
18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
Under $10,000	9,353	8,680	526	219	81	20	61	136	268	24
$10,000–$24,999	23,068	21,575	1,167	476	158	32	126	313	588	63
$25,000–$49,999	34,737	32,676	1,641	712	199	54	145	503	759	104
$50,000 and over	22,171	21,035	830	351	69	*4	65	275	388	45
45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
Under $10,000	3,057	2,417	585	326	153	25	128	168	220	*15
$10,000–$24,999	8,997	7,542	1,315	741	314	66	248	421	477	60
$25,000–$49,999	13,130	11,201	1,742	940	324	71	254	602	645	69
$50,000 and over	12,181	10,626	1,330	698	170	33	137	522	512	61
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Under $10,000	4,900	3,226	1,559	988	553	152	401	420	501	41
$10,000–$24,999	10,174	6,915	3,061	2,030	1,019	255	764	981	839	100
$25,000–$49,999	5,190	3,612	1,496	990	446	103	343	534	421	43
$50,000 and over	2,203	1,580	578	388	183	37	145	199	147	20

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

[4]Percent distribution excludes and number in thousands includes unknown family income.

Table 5. Average annual percent distribution and number of persons 18 years of age and over by age and employment status, according to reported hearing ability: United States, 1990–91

[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]

Age and employment status	Hearing ability									
			Trouble hearing							
				Bilateral hearing trouble						
					At best can hear shouted words					
	All hearing levels[1]	No hearing trouble	All levels of hearing trouble[2]	All speech comprehension statuses[3]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution									
All ages 18 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Currently employed	64.5	67.2	43.7	38.4	27.7	21.5	29.6	46.4	50.3	55.4
Unemployed	3.2	3.4	2.2	1.7	1.5	*0.8	1.7	1.9	3.1	*2.5
Not in the labor force	32.3	29.4	54.1	59.9	70.8	77.6	68.7	51.7	46.7	42.1
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Currently employed	77.5	77.5	78.7	77.8	70.1	60.9	72.7	80.9	78.6	85.1
Unemployed	4.3	4.3	4.8	4.2	4.0	*1.6	4.7	4.4	5.5	*3.8
Not in the labor force	18.2	18.2	16.5	17.9	26.1	38.3	22.6	14.7	15.9	11.1
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Currently employed	68.3	69.0	63.8	64.0	55.2	47.8	57.1	68.9	62.4	66.9
Unemployed	2.5	2.4	2.9	2.7	3.5	*2.2	3.8	2.2	3.3	*3.3
Not in the labor force	29.3	28.6	33.3	33.4	41.2	50.0	39.1	28.9	34.3	30.1
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Currently employed	13.1	14.0	11.4	10.4	8.5	6.7	9.1	12.5	12.9	13.5
Unemployed	0.5	0.5	0.4	*0.3	*0.2	*0.3	*0.1	*0.4	*0.5	*0.4
Not in the labor force	86.4	85.5	88.2	89.3	91.4	93.0	90.8	87.1	86.6	86.1
	Number in thousands									
All ages 18 years and over	182,361	157,950	19,327	11,017	4,668	1,100	3,568	6,194	6,798	753
Currently employed	117,676	106,174	8,453	4,228	1,293	236	1,056	2,875	3,417	417
Unemployed	5,848	5,298	427	188	70	*9	61	118	209	*19
Not in the labor force	58,838	46,478	10,447	6,601	3,305	854	2,451	3,202	3,172	317
18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
Currently employed	81,743	76,089	3,689	1,557	400	78	322	1,132	1,758	223
Unemployed	4,548	4,251	225	85	23	*2	21	62	124	*10
Not in the labor force	19,143	17,841	775	358	149	49	100	206	355	29
45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
Currently employed	32,000	27,246	3,769	2,068	645	109	537	1,397	1,350	160
Unemployed	1,160	946	170	86	41	*5	36	45	71	*8
Not in the labor force	13,725	11,304	1,970	1,078	481	114	368	587	741	72
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Currently employed	3,933	2,838	995	603	248	50	198	346	310	34
Unemployed	141	101	32	*17	*5	*2	*3	*11	*13	*1
Not in the labor force	25,970	17,333	7,702	5,165	2,676	692	1,984	2,409	2,077	217

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

Table 6. Average annual percent distribution and number of persons in the labor force 18 years of age and over by age and type of occupation, according to reported hearing ability: United States, 1990–91

[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]

Age and type of occupation	Hearing ability									
			Trouble hearing							
				Bilateral hearing trouble						
					At best can hear shouted words					
	All hearing levels[1]	No hearing trouble	All levels of hearing trouble[2]	All speech comprehension statuses[3]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution									
All ages 18 years and over[4]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional and managerial	29.5	29.6	28.8	28.6	27.7	20.7	29.3	29.0	29.0	29.4
Sales, service, and administrative support	42.7	43.4	34.2	31.1	32.1	41.4	30.1	30.8	38.0	38.5
Other	27.8	27.1	37.0	40.4	40.2	38.0	40.6	40.2	33.0	31.9
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional and managerial	27.5	27.5	25.3	24.3	25.2	*13.9	27.9	23.7	26.1	27.3
Sales, service, and administrative support	43.6	44.0	34.0	31.9	33.7	48.1	30.0	31.6	36.4	35.1
Other	29.0	28.4	40.7	43.9	41.1	38.0	42.1	44.6	37.4	37.7
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional and managerial	34.2	34.8	30.7	29.5	25.9	23.6	26.4	31.5	31.8	34.1
Sales, service, and administrative support	40.1	41.1	32.5	29.1	30.4	33.6	29.7	28.6	37.2	39.5
Other	25.7	24.1	36.8	41.4	43.7	42.7	43.9	40.0	30.9	26.3
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional and managerial	35.0	34.7	35.8	37.1	37.2	*25.0	40.3	37.1	33.0	*20.0
Sales, service, and administrative support	45.9	47.1	41.9	35.9	34.6	45.8	31.2	36.8	52.2	*63.3
Other	19.1	18.3	22.4	26.8	28.2	*29.2	28.5	25.9	14.8	*16.7
	Number in thousands									
All ages 18 years and over[4]	123,500	111,450	8,879	4,415	1,361	245	1,116	2,992	3,625	436
Professional and managerial	35,441	32,226	2,507	1,232	367	49	319	852	1,030	126
Sales, service, and administrative support	51,282	47,281	2,976	1,340	425	98	327	902	1,353	165
Other	33,325	29,514	3,215	1,742	532	90	442	1,180	1,174	137
18–44 years of age	86,268	80,318	3,913	1,641	422	80	342	1,194	1,882	233
Professional and managerial	23,053	21,648	978	392	105	*11	94	279	487	63
Sales, service, and administrative support	36,596	34,613	1,315	515	140	38	101	371	679	81
Other	24,308	22,339	1,576	709	171	30	142	524	698	87
45–64 years of age	33,158	28,193	3,938	2,154	687	114	573	1,442	1,420	167
Professional and managerial	11,039	9,607	1,187	625	175	26	149	446	444	57
Sales, service, and administrative support	12,920	11,348	1,260	617	205	37	168	405	520	66
Other	8,283	6,663	1,425	877	295	47	248	567	432	44
65 years and over	4,073	2,939	1,028	620	253	52	201	357	323	35
Professional and managerial	1,349	972	342	215	87	*12	75	126	98	*6
Sales, service, and administrative support	1,766	1,320	401	208	81	22	58	125	155	*19
Other	734	512	214	155	66	*14	53	88	44	*5

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

[4]Percent distribution excludes and number in thousands includes unknown type of occupation.

Table 7. Average annual percent distribution and number of persons 18 years of age and over by age and years of education, according to reported hearing ability: United States, 1990–91

[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]

Age and years of education	Hearing ability									
			Trouble hearing							
				Bilateral hearing trouble						
					At best can hear shouted words					
	All hearing levels[1]	No hearing trouble	All levels of hearing trouble[2]	All speech comprehension statuses[3]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution									
All ages 18 years and over[4]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 12 years	21.2	19.7	33.1	35.9	44.1	48.2	42.8	29.7	29.7	22.4
12 years	38.4	38.8	35.2	33.9	31.5	29.7	32.0	35.7	36.9	37.3
13 or more years	40.4	41.5	31.8	30.2	24.4	22.1	25.1	34.5	33.4	40.4
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 12 years	14.8	14.7	17.1	17.3	22.6	20.5	23.3	15.1	17.6	10.3
12 years	39.2	39.1	40.8	39.9	40.3	44.9	39.0	40.1	41.7	37.8
13 or more years	46.0	46.2	42.2	42.9	37.1	35.4	37.7	44.8	40.8	51.5
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 12 years	22.5	21.8	27.3	28.6	36.2	37.3	35.9	24.4	25.6	18.5
12 years	39.8	39.9	38.9	39.6	37.6	37.3	37.6	40.6	38.5	36.1
13 or more years	37.7	38.3	33.8	31.8	26.2	25.4	26.5	35.0	35.8	45.8
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 12 years	41.5	39.7	45.7	46.4	51.5	56.4	49.8	41.0	44.7	38.8
12 years	33.6	35.4	29.6	28.6	27.3	24.7	28.2	30.0	31.0	38.0
13 or more years	24.8	24.9	24.7	24.9	21.2	18.8	21.9	29.0	24.3	23.6
	Number in thousands									
All ages 18 years and over[4]	182,361	157,950	19,327	11,017	4,668	1,100	3,568	6,194	6,798	753
Under 12 years	38,185	30,897	6,351	3,920	2,035	522	1,513	1,831	2,015	168
12 years	69,272	60,955	6,747	3,703	1,454	322	1,132	2,202	2,501	280
13 or more years	72,889	65,173	6,096	3,301	1,126	240	886	2,128	2,263	303
18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
Under 12 years	15,517	14,393	796	343	128	26	102	211	392	27
12 years	40,954	38,220	1,903	793	228	57	171	559	929	99
13 or more years	48,104	45,163	1,969	852	210	45	165	625	909	135
45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
Under 12 years	10,413	8,549	1,605	921	420	85	335	494	553	44
12 years	18,397	15,651	2,287	1,272	436	85	351	820	831	86
13 or more years	17,458	15,011	1,990	1,023	304	58	247	708	774	109
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Under 12 years	12,254	7,955	3,950	2,656	1,487	411	1,076	1,125	1,069	97
12 years	9,922	7,085	2,557	1,638	790	180	610	824	741	95
13 or more years	7,326	4,999	2,138	1,426	612	137	474	795	580	59

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

[4]Percent distribution excludes and number in thousands includes unknown years of education.

Table 8. Average annual percent distribution and number of persons 3 years of age and over by age and geographic region, according to reported hearing ability: United States, 1990–91

[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]

Age and geographic region	Hearing ability: All hearing levels[1]	Hearing ability: No hearing trouble	Trouble hearing: All levels of hearing trouble[2]	Bilateral hearing trouble: All speech comprehension statuses[3]	Bilateral hearing trouble: At best can hear shouted words: Total	At best can hear shouted words: None or at best words shouted in ear	At best can hear shouted words: Can hear words shouted across a room	Bilateral hearing trouble: Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
					Percent distribution					
All ages 3 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Northeast	20.3	20.6	16.8	15.7	16.2	19.4	15.3	15.2	18.2	20.3
Midwest	24.2	24.1	26.9	26.3	25.3	26.3	25.0	26.8	27.5	30.4
South	34.0	34.1	34.8	35.8	36.4	34.4	37.1	35.7	33.5	29.0
West	21.5	21.2	21.6	22.2	22.0	20.0	22.7	22.2	20.8	20.3
3–17 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Northeast	18.4	18.4	16.1	16.4	18.9	*21.2	*16.5	14.9	14.6	*22.7
Midwest	24.4	24.4	28.0	27.4	24.5	*23.1	26.4	29.4	29.2	29.3
South	34.9	35.0	33.2	32.2	30.8	*26.9	33.0	33.7	35.1	28.0
West	22.3	22.1	22.7	24.1	25.9	*28.8	24.2	22.4	21.4	*21.3
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Northeast	20.2	20.5	14.5	13.0	13.8	18.0	12.6	12.6	14.8	21.0
Midwest	23.8	23.9	26.6	26.1	26.4	28.9	25.7	25.9	26.6	28.2
South	33.5	33.6	34.1	36.0	33.8	32.8	34.1	37.1	33.7	27.1
West	22.4	22.0	24.8	24.9	26.1	20.3	27.8	24.4	24.9	23.7
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Northeast	21.3	22.1	16.1	14.9	14.8	21.1	13.3	14.7	17.9	17.2
Midwest	24.4	24.2	26.9	25.7	24.3	24.6	24.1	26.2	28.0	34.7
South	33.9	33.9	34.8	35.4	37.1	31.1	38.5	34.7	33.6	31.4
West	20.3	19.8	22.2	24.1	23.8	22.8	24.0	24.3	20.4	16.3
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Northeast	22.2	23.7	18.6	17.1	17.1	19.0	16.6	17.0	22.1	21.4
Midwest	25.0	24.2	26.9	26.6	25.5	26.5	25.2	27.4	27.7	29.4
South	34.4	34.2	35.3	36.3	37.0	36.2	37.2	36.0	33.0	29.0
West	18.4	17.9	19.2	20.1	20.4	18.4	21.0	19.6	17.2	20.2
					Number in thousands					
All ages 3 years and over	235,688	209,180	20,295	11,474	4,811	1,152	3,659	6,498	7,168	828
Northeast	47,831	43,069	3,410	1,801	781	223	558	989	1,301	168
Midwest	57,102	50,393	5,455	3,014	1,218	303	915	1,742	1,974	252
South	80,171	71,268	7,054	4,109	1,752	396	1,356	2,322	2,402	240
West	50,584	44,450	4,375	2,549	1,059	230	830	1,444	1,492	168
3–17 years of age	53,327	51,230	968	456	143	52	91	303	370	75
Northeast	9,835	9,450	156	75	27	*11	*15	45	54	*17
Midwest	12,995	12,507	271	125	35	*12	24	89	108	22
South	18,616	17,947	321	147	44	*14	30	102	130	21
West	11,882	11,326	220	110	37	*15	22	68	79	*16

18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
Northeast	21,326	20,101	682	260	79	23	56	177	330	55
Midwest	25,141	23,430	1,247	522	151	37	114	363	595	74
South	35,324	33,002	1,599	720	193	42	151	519	753	71
West	23,643	21,648	1,162	499	149	26	123	341	558	62
45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
Northeast	9,992	8,721	949	480	173	48	125	299	387	41
Midwest	11,462	9,558	1,590	830	284	56	227	532	606	83
South	15,891	13,380	2,057	1,145	433	71	362	705	727	75
West	9,539	7,837	1,314	778	278	52	226	493	442	39
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Northeast	6,678	4,798	1,624	987	502	141	362	469	531	54
Midwest	7,505	4,897	2,348	1,537	748	197	551	758	664	74
South	10,340	6,939	3,077	2,098	1,082	269	813	996	792	73
West	5,520	3,639	1,680	1,163	596	137	459	543	413	51

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

Table 9. Average annual percent distribution and number of persons 3 years of age and over by age and place of residence, according to reported hearing ability: United States, 1990–91

[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]

Age and place of residence	Hearing ability									
			Trouble hearing							
				Bilateral hearing trouble						
					At best can hear shouted words					
	All hearing levels[1]	No hearing trouble	All levels of hearing trouble[2]	All speech comprehension statuses[3]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution									
All ages 3 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Central city of MSA	30.6	30.9	26.6	24.9	25.7	29.0	24.7	24.2	29.0	29.6
MSA, not central city	47.5	47.7	45.2	43.9	43.3	42.4	43.5	44.4	46.8	47.6
Not in MSA	21.9	21.5	28.2	31.1	31.0	28.5	31.8	31.4	24.2	22.8
3-17 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Central city of MSA	29.4	29.3	28.2	27.6	29.4	*23.1	33.0	26.7	28.4	29.3
MSA, not central city	48.0	47.8	46.5	43.2	44.1	46.2	42.9	43.6	49.2	52.0
Not in MSA	22.6	22.8	25.3	29.2	26.6	*30.8	24.2	30.0	22.4	*20.0
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Central city of MSA	32.1	32.2	27.7	24.8	27.8	25.0	28.7	23.5	30.0	31.7
MSA, not central city	48.0	48.0	47.6	47.6	45.7	53.1	43.6	48.6	47.4	46.6
Not in MSA	19.9	19.8	24.8	27.5	26.6	22.7	27.8	27.9	22.6	21.8
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Central city of MSA	28.5	29.0	24.0	22.1	22.0	31.6	19.6	22.3	26.6	26.8
MSA, not central city	48.9	48.9	48.4	47.0	47.2	46.5	47.3	46.7	49.9	52.3
Not in MSA	22.5	22.0	27.6	30.8	30.9	21.5	33.1	31.0	23.5	21.3
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Central city of MSA	30.8	31.8	27.5	26.3	26.6	29.3	25.7	25.7	30.3	30.6
MSA, not central city	42.6	43.1	41.6	41.0	41.2	39.2	41.9	40.7	42.9	43.3
Not in MSA	26.6	25.1	30.9	32.7	32.1	31.5	32.4	33.6	26.8	26.2
	Number in thousands									
All ages 3 years and over	235,688	209,180	20,295	11,474	4,811	1,152	3,659	6,498	7,168	828
Central city of MSA	72,161	64,589	5,392	2,860	1,237	334	903	1,572	2,078	245
MSA, not central city	111,951	99,687	9,171	5,040	2,082	489	1,592	2,885	3,352	394
Not in MSA	51,576	44,904	5,732	3,573	1,492	328	1,164	2,041	1,738	189
3–17 years of age	53,327	51,230	968	456	143	52	91	303	370	75
Central city of MSA	15,681	15,030	273	126	42	*12	30	81	105	22
MSA, not central city	25,574	24,509	450	197	63	24	39	132	182	39
Not in MSA	12,072	11,691	245	133	38	*16	22	91	83	*15
18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
Central city of MSA	33,862	31,651	1,297	497	159	32	127	329	671	83
MSA, not central city	50,643	47,103	2,232	953	261	68	193	680	1,061	122
Not in MSA	20,929	19,427	1,161	551	152	29	123	391	505	57

45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
Central city of MSA	13,379	11,465	1,418	715	257	72	184	452	575	64
MSA, not central city	22,934	19,329	2,860	1,520	551	106	445	948	1,079	125
Not in MSA	10,571	8,703	1,630	997	361	49	311	629	508	51
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Central city of MSA	9,239	6,444	2,404	1,522	780	218	562	711	727	77
MSA, not central city	12,800	8,745	3,629	2,370	1,207	292	915	1,125	1,030	109
Not in MSA	8,004	5,084	2,696	1,892	941	234	708	930	642	66

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

Table 10. Average annual percent distribution and number of persons 18 years of age and over by age and marital status, according to reported hearing ability: United States, 1990–91

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

Age and marital status	Hearing ability									
			Trouble hearing							
				Bilateral hearing trouble						
					At best can hear shouted words					
	All hearing levels[1]	No hearing trouble	All levels of hearing trouble[2]	All speech comprehension statuses[3]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution									
All ages 18 years and over[4]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Never married	18.9	20.3	8.2	7.0	6.3	9.5	5.4	7.5	9.8	13.4
Married, living with spouse	63.8	63.9	64.0	64.4	60.6	53.1	62.9	67.4	62.7	59.1
Other	17.3	15.9	27.8	28.6	33.1	37.4	31.7	25.1	27.5	27.6
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Never married	29.5	29.8	21.3	21.3	24.0	37.5	20.3	20.1	20.8	29.4
Married, living with spouse	60.5	60.3	65.4	66.1	62.9	50.0	66.6	67.5	64.7	56.9
Other	10.0	9.9	13.3	12.6	13.1	*12.5	13.3	12.4	14.5	13.7
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Never married	4.6	4.6	3.8	3.6	3.5	*7.5	2.6	3.7	4.0	*5.9
Married, living with spouse	76.2	76.3	76.0	77.7	75.9	71.9	76.9	78.7	73.7	67.4
Other	19.3	19.1	20.2	18.7	20.5	20.6	20.5	17.6	22.2	26.8
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Never married	4.4	4.5	4.1	3.9	4.0	5.2	3.6	3.9	4.8	*4.0
Married, living with spouse	56.2	56.8	55.1	56.4	54.0	47.9	56.1	59.0	51.0	53.2
Other	39.4	38.7	40.8	39.6	42.0	46.8	40.3	37.1	44.3	42.5
	Number in thousands									
All ages 18 years and over[4]	182,361	157,950	19,327	11,017	4,668	1,100	3,568	6,194	6,798	753
Never married	34,318	31,939	1,584	771	296	104	193	463	666	101
Married, living with spouse	115,744	100,732	12,351	7,092	2,826	584	2,242	4,168	4,259	445
Other	31,288	25,020	5,371	3,143	1,543	411	1,132	1,555	1,865	208
18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
Never married	30,894	29,211	998	426	137	48	90	281	465	77
Married, living with spouse	63,462	59,138	3,064	1,320	359	64	295	943	1,446	149
Other	10,541	9,656	621	251	75	*16	59	173	323	36
45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
Never married	2,120	1,825	225	116	41	*17	24	74	87	*14
Married, living with spouse	35,498	30,082	4,486	2,509	887	164	723	1,595	1,592	161
Other	8,973	7,527	1,192	604	240	47	193	357	480	64
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Never married	1,304	903	360	228	118	39	79	108	114	*10
Married, living with spouse	16,785	11,511	4,801	3,262	1,580	356	1,224	1,630	1,221	134
Other	11,773	7,837	3,558	2,288	1,228	348	880	1,024	1,061	107

[1] Includes unknown if person has hearing trouble.

[2] Includes persons who did not respond to either scale.

[3] Includes persons who did not respond to Gallaudet Hearing Scale.

[4] Percent distribution excludes and number in thousands includes unknown marital status. "Other" includes widowed, divorced, separated, and married—not living with spouse.

Table 11. Average annual percent distribution and number of persons 18 years of age and over by age and living arrangement, according to reported hearing ability: United States, 1990–91

[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]

Age and living arrangement	All hearing levels[1]	Hearing ability								
		No hearing trouble	Trouble hearing							
			All levels of hearing trouble[2]	Bilateral hearing trouble					Unilateral hearing trouble	Borderline hearing trouble
				All speech comprehension statuses[3]	At best can hear shouted words					
					Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered		
	Percent distribution									
All ages 18 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Living alone	13.7	12.4	22.6	22.4	23.4	25.4	22.7	21.7	23.3	27.0
With nonrelatives	2.3	2.4	1.6	1.3	1.3	*1.4	1.3	1.3	2.2	*2.3
With relatives	84.0	85.2	75.8	76.3	75.3	73.3	75.9	76.9	74.5	70.8
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Living alone	9.4	9.1	13.5	12.7	11.2	15.6	9.9	13.4	13.9	22.1
With nonrelatives	3.3	3.3	3.6	3.2	*3.2	*2.3	*3.4	3.3	4.0	*5.0
With relatives	87.3	87.6	82.8	84.1	85.6	82.0	86.7	83.4	82.1	72.9
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Living alone	12.2	11.7	14.9	13.9	15.2	15.4	15.2	13.2	16.2	21.8
With nonrelatives	0.9	0.9	1.3	0.9	*0.9	*1.3	*0.9	*0.9	1.9	*1.7
With relatives	86.8	87.4	83.8	85.2	83.7	82.9	83.9	86.0	81.9	76.6
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Living alone	31.0	30.0	32.6	30.5	29.0	30.0	28.6	32.3	38.3	37.3
With nonrelatives	0.8	0.8	0.8	0.9	1.2	*1.2	1.1	*0.7	*0.8	*–
With relatives	68.2	69.2	66.6	68.6	69.9	68.8	70.3	67.1	60.9	62.7
	Number in thousands									
All ages 18 years and over	182,361	157,950	19,327	11,017	4,668	1,100	3,568	6,194	6,798	753
Living alone	24,989	19,614	4,362	2,466	1,090	279	811	1,347	1,583	203
With nonrelatives	4,188	3,741	318	146	63	*15	48	83	149	*17
With relatives	153,184	134,594	14,647	8,405	3,515	806	2,709	4,765	5,067	533
18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
Living alone	9,947	8,926	635	254	64	20	44	187	312	58
With nonrelatives	3,492	3,224	171	64	*18	*3	*15	46	90	*13
With relatives	91,994	86,031	3,884	1,683	489	105	384	1,167	1,836	191
45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
Living alone	5,726	4,613	881	450	178	35	143	267	351	52
With nonrelatives	445	347	76	30	*11	*3	*8	*18	41	*4
With relatives	40,712	34,537	4,952	2,753	978	189	789	1,744	1,770	183
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Living alone	9,315	6,076	2,847	1,763	848	223	625	893	920	94
With nonrelatives	250	170	72	52	34	*9	25	*19	*19	*–
With relatives	20,478	14,026	5,811	3,970	2,047	512	1,535	1,854	1,460	158

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

Table 12. Average annual percent distribution and number of persons 3 years of age and over by age and limitation of activity due to chronic conditions, according to reported hearing ability: United States, 1990–91

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

Age and limitation of activity	Hearing ability									
			Trouble hearing							
				Bilateral hearing trouble						
					At best can hear shouted words					
	All hearing levels[1]	No hearing trouble	All levels of hearing trouble[2]	All speech comprehension statuses[3]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution									
All ages 3 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Limited in activity	14.6	12.3	37.7	43.1	54.2	65.2	50.7	34.9	30.5	29.1
No major activity	4.4	3.6	11.7	13.6	18.4	22.6	17.0	10.0	9.2	8.7
Limited kind or amount of major activity	5.5	4.7	13.4	15.1	19.6	25.8	17.7	11.8	11.2	8.8
Other limitation	4.7	4.0	12.6	14.4	16.2	16.8	16.0	13.1	10.1	11.6
Not limited	85.4	87.7	62.3	56.9	45.8	34.7	49.3	65.1	69.5	70.9
3–17 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Limited in activity	6.1	5.7	27.4	35.7	53.8	82.7	38.5	27.7	20.0	*16.0
No major activity	0.5	0.5	*1.7	*2.4	*4.9	*13.5	*–	*1.3	*–	*2.7
Limited kind or amount of major activity	4.0	3.7	19.5	26.5	39.2	59.6	27.5	20.8	13.8	*8.0
Other limitation	1.7	1.6	6.2	6.8	*9.8	*7.7	*11.0	*5.6	6.2	*6.7
Not limited	93.9	94.3	72.6	64.3	46.2	*17.3	61.5	72.3	80.3	84.0
18–44 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Limited in activity	9.0	8.3	23.6	28.6	45.7	71.9	38.1	21.6	20.0	18.3
No major activity	2.7	2.5	7.5	9.8	16.3	20.3	14.9	7.1	5.8	*5.7
Limited kind or amount of major activity	3.5	3.3	9.4	11.2	20.1	34.4	15.8	7.8	8.4	*3.4
Other limitation	2.7	2.6	6.6	7.4	9.5	16.4	7.4	6.7	5.8	9.2
Not limited	91.0	91.7	76.4	71.4	54.5	28.9	61.9	78.4	80.0	81.7
45–64 years of age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Limited in activity	22.0	20.0	36.4	39.3	51.1	67.1	47.3	32.5	32.8	32.6
No major activity	8.6	7.5	16.1	17.5	24.3	32.9	22.3	13.7	14.6	10.9
Limited kind or amount of major activity	7.6	6.9	12.5	13.2	15.9	18.0	15.4	11.6	11.5	14.6
Other limitation	5.8	5.5	7.8	8.6	10.9	15.8	9.6	7.3	6.7	*7.1
Not limited	78.0	80.0	63.6	60.7	48.9	32.9	52.8	67.5	67.2	67.4
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Limited in activity	37.7	33.4	47.4	50.8	57.1	62.5	55.2	44.1	39.9	40.5
No major activity	10.4	9.4	12.1	13.5	17.0	20.4	15.9	9.7	8.9	11.5
Limited kind or amount of major activity	11.8	10.2	15.5	16.7	20.0	24.2	18.6	13.1	13.3	9.1
Other limitation	15.5	13.7	19.7	20.6	20.0	17.9	20.7	21.3	17.8	20.2
Not limited	62.3	66.6	52.6	49.2	43.0	37.5	44.8	55.9	60.1	59.5

Number in thousands

All ages 3 years and over	235,688	209,180	20,295	11,474	4,811	1,152	3,659	6,498	7,168	828
Limited in activity	34,412	25,746	7,655	4,947	2,606	751	1,855	2,267	2,189	241
No major activity	10,307	7,544	2,378	1,558	883	260	623	649	659	72
Limited kind or amount of major activity.	12,940	9,886	2,724	1,738	943	297	647	770	806	73
Other limitation	11,165	8,316	2,552	1,651	780	194	586	848	724	96
Not limited	201,276	183,434	12,640	6,526	2,205	400	1,805	4,230	4,980	587
3–17 years of age	53,327	51,230	968	456	143	52	91	303	370	75
Limited in activity	3,277	2,944	265	163	77	43	35	84	74	*12
No major activity	256	232	*16	*11	*7	*7	*-	*4	*-	*2
Limited kind or amount of major activity.	2,120	1,891	189	121	56	31	25	63	51	*6
Other limitation	901	822	60	31	*14	*4	*10	*17	23	*5
Not limited	50,050	48,286	703	293	66	*9	56	219	297	63
18–44 years of age	105,433	98,181	4,690	2,001	571	128	443	1,400	2,237	262
Limited in activity	9,491	8,156	1,105	572	261	92	169	303	448	48
No major activity	2,870	2,432	354	197	93	26	66	100	129	*15
Limited kind or amount of major activity.	3,724	3,198	441	225	115	44	70	109	189	*9
Other limitation	2,897	2,526	310	149	54	21	33	94	130	24
Not limited	95,942	90,025	3,585	1,429	311	37	274	1,098	1,789	214
45–64 years of age	46,884	39,496	5,909	3,232	1,168	228	940	2,029	2,162	239
Limited in activity	10,321	7,880	2,149	1,271	597	153	445	660	710	78
No major activity	4,052	2,975	950	567	284	75	210	277	316	26
Limited kind or amount of major activity.	3,556	2,724	737	427	186	41	145	235	248	35
Other limitation	2,714	2,182	461	277	127	36	90	148	145	*17
Not limited	36,563	31,616	3,760	1,961	571	75	496	1,369	1,452	161
65 years and over	30,043	20,273	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Limited in activity	11,323	6,765	4,136	2,941	1,671	465	1,206	1,220	957	102
No major activity	3,130	1,905	1,058	782	498	152	347	268	214	29
Limited kind or amount of major activity.	3,540	2,073	1,357	965	586	180	406	363	318	23
Other limitation	4,653	2,787	1,721	1,194	586	133	453	589	426	51
Not limited	18,720	13,507	4,593	2,843	1,258	279	979	1,545	1,442	150

[1]Includes unknown if person has hearing trouble.

[2]Includes persons who did not respond to either scale.

[3]Includes persons who did not respond to Gallaudet Hearing Scale.

Table 13. Average annual percent distribution and number of persons 3 years of age and over by age and age at onset of hearing trouble, according to type of reported hearing trouble: United States, 1990–91

[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]

Age and age at onset	Trouble hearing							
			Bilateral hearing trouble					
				At best can hear shouted words				
	All levels of hearing trouble[1]	All speech comprehensive statuses[2]	Total	None or at best words shouted in ear	Can hear words shouted across a room	Can hear words spoken or whispered	Unilateral hearing trouble	Borderline hearing trouble
	Percent distribution							
3 years of age and over, all onsets[3]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Onset before 19 years[4]	20.9	16.2	16.6	26.6	13.4	16.0	28.4	24.2
Onset before 3 years	5.6	5.2	6.6	14.9	4.0	4.2	6.1	6.6
Onset between 3–18 years	14.7	10.4	9.4	11.4	8.8	11.2	21.6	17.3
Onset 19 years and after	79.1	83.8	83.4	73.4	86.6	84.0	71.6	75.7
3–17 years of age, all onsets[3]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Onset before 18 years[4]	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Onset before 3 years	43.6	49.5	60.6	84.3	46.5	44.2	38.3	43.1
Onset between 3–17 years	55.1	49.1	36.5	*15.7	48.8	55.5	60.6	58.5
18–44 years of age, all onsets[3]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Onset before 19 years[4]	42.0	38.4	49.9	79.8	41.2	33.7	47.0	30.1
Onset before 3 years	9.5	11.3	22.3	57.3	12.3	6.8	8.3	*6.3
Onset between 3–18 years	31.2	25.7	25.8	21.8	26.9	25.8	37.6	23.3
Onset between 19–44 years	58.0	61.6	50.1	20.2	58.6	66.2	53.0	69.9
45–64 years of age, all onsets[3]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Onset before 19 years[4]	13.1	10.6	15.1	32.1	11.0	8.0	17.4	11.3
Onset before 3 years	2.8	2.8	5.2	14.7	2.8	1.4	3.1	*1.5
Onset between 3–18 years	9.7	7.4	9.4	17.4	7.5	6.1	13.5	*9.4
Onset between 19–64 years	86.9	89.4	84.9	67.9	89.0	92.0	82.6	89.2
65 years of age and over[3]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Onset before 19 years[4]	6.7	5.4	6.8	10.8	5.5	3.8	10.3	*6.9
Onset before 3 years	1.3	1.1	1.6	2.9	1.1	*0.7	2.0	*0.5
Onset between 3–18 years	5.1	4.0	5.0	7.5	4.2	2.8	8.0	*5.9
Onset 19 years and after[4]	93.3	94.6	93.2	89.2	94.5	96.2	89.7	93.1
Onset between 19–64 years	36.8	37.9	39.0	38.8	39.0	37.0	36.5	23.2
Onset 65 years and after	46.8	46.3	43.8	40.2	45.0	48.8	46.9	54.7
	Number in thousands							
3 years of age and over, all onsets[3]	20,295	11,474	4,811	1,152	3,659	6,498	7,168	828
Onset before 19 years[4]	4,097	1,817	786	301	485	1,014	1,996	164
Onset before 3 years	1,091	584	311	168	144	267	430	45
Onset between 3–18 years	2,876	1,169	447	129	318	711	1,517	117
Onset 19 years and after	15,484	9,394	3,951	830	3,122	5,337	5,033	513
3–17 years of age, all onsets[3]	968	456	143	52	91	303	370	75
Onset before 18 years[4]	901	434	137	51	86	292	355	65
Onset before 3 years	393	215	83	43	40	129	136	28
Onset between 3–17 years	497	213	50	*8	42	162	215	38

18–44 years of age, all onsets[3]	4,690	2,001	571	128	443	1,400	2,237	262
Onset before 19 years[4]	1,878	745	277	99	178	461	1,029	62
Onset before 3 years	424	219	124	71	53	93	181	*13
Onset between 3–18 years	1,395	499	143	27	116	352	824	48
Onset between 19–44 years	2,592	1,196	278	25	253	904	1,161	144
45–64 years of age, all onsets[3]	5,909	3,232	1,168	228	940	2,029	2,162	239
Onset before 19 years[4]	746	334	174	72	102	157	370	23
Onset before 3 years	161	87	60	33	26	27	66	*3
Onset between 3–18 years	552	232	109	39	70	120	288	*19
Onset between 19–64 years	4,964	2,815	980	152	828	1,816	1,757	181
65 years of age and over[3]	8,729	5,784	2,928	744	2,185	2,765	2,399	252
Onset before 19 years[4]	572	305	198	79	119	104	243	*14
Onset before 3 years	113	63	45	21	24	*18	46	*1
Onset between 3–18 years	433	225	145	55	90	77	189	*12
Onset 19 years and after[4]	7,925	5,383	2,693	653	2,040	2,616	2,115	189
Onset between 19–64 years	3,123	2,155	1,127	284	842	1,006	860	47
Onset 65 years and after	3,973	2,634	1,267	294	972	1,328	1,106	111

[1]Includes unknown type of hearing trouble.

[2]Includes persons who did not respond to Gallaudet Hearing Scale.

[3]Percent distribution excludes and number in thousands includes unknown age at onset.

[4]Includes known age-range of age at onset but not specific age; thus subgroups do not add to total for group.

Table 14. Average annual percent distribution and number of persons 18 years of age and over by selected characteristics, according to type and age at onset of reported hearing trouble: United States, 1990–91

[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]

Selected characteristic	*All hearing trouble*[1]			*At best can hear shouted speech*			*All other hearing trouble*		
	Age at onset			*Age at onset*			*Age at onset*		
	All[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*
18 years of age and over[3]	Percent distribution								
All persons	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sex:									
Male	59.3	51.8	60.9	58.3	49.0	59.7	59.1	51.9	60.8
Female	40.7	48.2	39.1	41.7	51.0	40.3	40.9	48.1	39.2
Race:									
White	92.2	92.3	92.4	92.8	93.4	92.7	92.1	92.0	92.3
Black	5.7	5.1	5.7	5.2	4.2	5.4	5.8	5.4	5.8
Other	2.0	2.6	1.9	2.0	*2.5	1.9	2.1	2.7	1.9
Ethnic origin:									
Hispanic	4.1	6.2	3.6	3.4	6.5	2.9	4.3	5.9	3.9
Non-Hispanic	95.9	93.8	96.4	96.6	93.5	97.2	95.7	94.1	96.1
Family income:									
Under $10,000	16.9	17.4	16.8	21.5	20.4	21.6	15.6	17.0	15.4
$10,000–$24,999	35.0	31.8	35.7	40.6	34.8	41.7	33.5	31.1	33.9
$25,000–$49,999	30.8	34.1	30.2	26.4	32.4	25.4	32.0	34.5	31.5
$50,000 and over	17.3	16.7	17.3	11.5	12.5	11.3	18.9	17.5	19.2
Education:									
Under 12 years	33.1	27.7	34.4	44.1	38.6	45.1	29.3	24.6	30.5
12 years	35.2	37.6	34.4	31.5	34.6	30.8	36.4	38.5	35.8
13 years and over	31.8	34.7	31.1	24.4	26.9	24.1	34.3	36.8	33.7
Employment status:									
In the labor force	46.0	63.8	42.0	29.2	47.5	26.1	51.3	67.9	47.5
Not in the labor force	54.1	36.2	58.0	70.8	52.5	73.9	48.7	32.2	52.5
Occupation:									
Professional and managerial	28.8	25.3	30.1	27.7	22.7	29.3	29.0	25.7	30.3
Sales, service, and administrative support	34.2	39.9	32.4	32.1	39.8	29.7	35.0	40.4	33.2
Other	37.0	34.8	37.5	40.2	37.5	41.0	36.0	33.8	36.5
Marital status:									
Never married	8.2	21.4	5.3	6.3	19.0	4.2	9.0	21.9	5.9
Married, living with spouse	64.0	58.3	65.0	60.6	55.2	61.5	64.6	59.0	65.8
Other	27.8	20.3	29.7	33.1	25.9	34.3	26.4	19.1	28.3
Living arrangement:									
Living alone	22.6	19.7	23.5	23.4	20.5	24.0	22.8	19.9	23.7
Living with nonrelatives	1.6	3.1	1.3	1.3	*2.3	1.2	1.8	3.4	1.4
Living with relatives	75.8	77.2	75.2	75.3	77.2	74.9	75.4	76.8	74.9
Geographic region:									
Northeast	16.8	17.3	16.7	16.2	19.0	15.9	17.0	16.9	16.9
Midwest	26.8	26.8	26.9	25.3	27.0	25.2	27.3	26.8	27.5
South	34.8	31.8	35.4	36.6	30.7	37.4	34.3	32.4	34.7
West	21.5	24.1	21.0	21.9	23.4	21.5	21.4	24.0	20.9

Place of residence:									
Central city of MSA	26.5	28.9	25.9	25.6	27.6	25.3	26.8	29.1	26.1
MSA, not central city	45.1	47.0	44.7	43.3	45.3	42.8	45.7	47.9	45.3
Not in MSA	28.4	24.1	29.4	31.1	27.0	31.9	27.5	23.0	28.6
Limitation of activity:									
Limited in activity, all	38.2	31.0	40.0	54.2	55.6	54.0	32.9	24.7	34.9
Unable to perform major activity	12.2	9.6	12.8	18.8	17.4	18.8	10.0	7.5	10.6
Limited kind/amount major activity	13.1	12.3	13.4	19.0	23.9	18.3	11.1	9.2	11.6
Limited in other activity	12.9	9.1	13.7	16.4	14.2	16.9	11.8	8.0	12.7
Not limited in activity	61.8	69.0	60.0	45.8	44.4	46.0	67.1	75.4	65.1
18–44 years of age and over[3]									
All persons	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sex:									
Male	64.3	55.0	71.1	61.5	50.5	71.6	64.1	55.0	70.3
Female	35.7	45.0	28.9	38.5	49.5	28.4	35.9	45.0	29.7
Race:									
White	91.1	90.8	91.7	90.9	92.1	89.2	91.2	90.6	92.0
Black	6.0	6.1	5.5	5.4	*5.4	*5.8	6.0	6.3	5.5
Other	2.9	3.0	2.7	3.7	*2.5	*5.0	2.8	3.1	2.5
Ethnic origin:									
Hispanic	6.8	7.9	5.7	7.9	9.7	*5.8	6.6	7.4	5.9
Non-Hispanic	93.2	92.1	94.3	92.1	90.3	93.9	93.4	92.6	94.1
Family income:									
Under $10,000	12.6	16.1	10.0	16.0	21.0	10.9	12.4	15.6	10.1
$10,000–$24,999	28.0	29.8	27.0	31.2	27.8	35.6	27.8	30.3	26.2
$25,000–$49,999	39.4	37.6	40.9	39.3	39.9	38.1	39.4	37.0	41.2
$50,000 and over	19.9	16.5	22.1	13.6	11.7	15.8	20.5	17.1	22.5
Education:									
Under 12 years	17.1	20.9	14.5	22.6	28.2	15.8	16.2	19.4	14.1
12 years	40.8	40.9	40.7	40.3	39.6	40.6	40.8	41.4	40.6
13 years and over	42.2	38.2	44.7	37.1	32.2	43.5	43.0	39.2	45.2
Employment status:									
In the labor force	83.5	78.9	86.9	74.1	66.8	81.7	84.9	81.1	87.4
Not in the labor force	16.5	21.1	13.1	26.1	33.2	18.3	15.1	18.9	12.6
Occupation:									
Professional and managerial	25.3	23.2	26.5	25.2	19.1	30.6	25.4	23.9	26.3
Sales, service, and administrative support	34.0	40.0	30.0	33.7	42.1	26.1	34.6	40.1	31.0
Other	40.7	36.8	43.5	41.1	38.8	43.2	40.0	35.9	42.7
Marital status:									
Never married	21.3	32.3	12.8	24.0	35.7	11.5	21.1	31.5	13.3
Married, living with spouse	65.4	56.6	72.0	62.9	50.9	75.2	65.2	57.5	70.8
Other	13.3	11.1	15.2	13.1	13.4	13.3	13.7	11.0	16.0
Living arrangement:									
Living alone	13.5	14.8	12.9	11.2	14.1	8.6	14.3	15.3	13.8
Living with nonrelatives	3.6	4.6	3.0	*3.2	*4.3	*2.2	3.8	4.8	3.1
Living with relatives	82.8	80.6	84.2	85.6	81.9	89.2	81.9	79.9	83.1

Table 14. Average annual percent distribution and number of persons 18 years of age and over by selected characteristics, according to type and age at onset of reported hearing trouble: United States, 1990–91—Con.

[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]

Selected characteristic	*All hearing trouble*[1]			*At best can hear shouted speech*			*All other hearing trouble*		
	Age at onset			*Age at onset*			*Age at onset*		
	All[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*
	Percent distribution								
Geographic region:									
Northeast	14.5	15.5	13.4	13.8	18.8	9.7	14.4	14.9	13.6
Midwest	26.6	25.8	27.4	26.4	26.4	26.6	26.5	25.7	27.3
South	34.1	32.3	35.3	33.8	31.0	35.3	34.5	32.7	35.6
West	24.8	26.4	23.9	26.1	23.8	28.4	24.6	26.7	23.5
Place of residence:									
Central city of MSA	27.7	29.7	26.0	27.8	24.9	30.6	27.8	30.4	25.6
MSA, not central city	47.6	48.0	47.0	45.7	52.0	38.5	47.8	47.7	47.5
Not in MSA	24.8	22.3	27.0	26.6	23.1	30.9	24.5	21.8	26.9
Limitation of activity:									
Limited in activity, all	23.6	24.8	23.2	45.7	54.9	36.0	20.4	19.4	21.7
Unable to perform major activity	7.5	7.6	7.6	16.3	19.1	12.2	6.2	5.4	7.1
Limited kind/amount major activity	9.4	10.5	8.9	20.1	25.6	14.7	7.8	7.7	8.2
Limited in other activity	6.6	6.7	6.7	9.5	10.1	9.4	6.4	6.2	6.4
Not limited in activity	76.4	75.2	76.8	54.5	45.1	64.0	79.6	80.6	78.3
45–64 years of age and over[3]									
All persons	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sex:									
Male	66.8	54.6	68.9	69.2	52.9	72.1	65.8	54.5	67.6
Female	33.2	45.4	31.2	30.8	47.1	27.9	34.2	45.5	32.4
Race:									
White	91.7	95.2	91.3	91.1	97.7	89.9	92.0	94.4	91.7
Black	5.9	3.1	6.3	6.5	*1.7	7.3	5.6	*3.5	5.9
Other	2.4	*1.7	2.4	2.4	*0.6	2.8	2.4	*2.2	2.3
Ethnic origin:									
Hispanic	4.1	4.4	4.0	3.3	*4.6	3.1	4.3	4.0	4.5
Non-Hispanic	95.9	95.6	96.0	96.7	95.4	97.0	95.7	96.0	95.5
Family income:									
Under $10,000	11.8	13.2	11.6	15.9	18.0	15.6	10.7	11.9	10.6
$10,000–$24,999	26.4	28.3	26.0	32.7	30.2	33.1	25.4	27.7	24.7
$25,000–$49,999	35.0	35.2	35.1	33.7	35.3	33.8	34.9	35.6	34.8
$50,000 and over	26.7	23.3	27.3	17.7	17.3	17.6	29.0	24.9	29.8
Education:									
Under 12 years	27.3	29.9	26.9	36.2	38.5	35.8	24.7	27.0	24.3
12 years	38.9	36.0	39.0	37.6	36.2	37.7	39.3	36.1	39.6
13 years and over	33.8	34.0	34.1	26.2	25.9	26.5	36.0	37.0	36.1
Employment status:									
In the labor force	66.7	64.5	67.0	58.8	55.7	59.4	68.4	66.7	68.7
Not in the labor force	33.3	35.5	33.0	41.2	44.3	40.6	31.6	33.5	31.3
Occupation:									
Professional and managerial	30.7	29.8	31.1	25.9	26.0	25.7	31.8	30.0	32.4
Sales, service, and administrative support	32.5	39.4	31.5	30.4	35.4	29.7	33.2	40.6	32.0
Other	36.8	31.1	37.4	43.7	37.5	44.6	35.0	29.2	35.6

Marital status:									
Never married	3.8	5.1	3.6	3.5	*7.5	2.9	4.0	4.6	3.8
Married, living with spouse	76.0	71.0	76.6	75.9	64.4	78.1	75.6	73.2	76.0
Other	20.2	23.9	19.8	20.5	28.2	19.1	20.4	22.4	20.2
Living arrangement:									
Living alone	14.9	16.4	14.9	15.2	21.8	14.2	15.1	15.1	15.2
Living with nonrelatives	1.3	*1.2	1.3	*0.9	*1.1	*0.8	1.4	*1.1	1.4
Living with relatives	83.8	82.6	83.8	83.7	77.0	85.0	83.5	84.0	83.4
Geographic region:									
Northeast	16.1	19.0	15.7	14.8	18.4	14.4	16.4	19.1	15.9
Midwest	26.9	26.8	26.7	24.3	20.7	25.0	27.5	28.7	27.2
South	34.8	31.9	35.2	37.1	35.6	37.2	34.1	31.5	34.4
West	22.2	22.4	22.4	23.8	25.3	23.4	22.0	20.7	22.5
Place of residence:									
Central city of MSA	24.0	25.3	23.7	22.0	30.5	20.5	24.6	23.6	24.7
MSA, not central city	48.4	50.3	48.2	47.2	44.3	47.6	48.5	52.4	48.3
Not in MSA	27.6	24.4	28.1	30.9	25.3	31.8	26.8	24.2	27.1
Limitation of activity:									
Limited in activity, all	36.4	39.0	36.2	51.1	62.1	49.1	32.7	32.4	32.9
Unable to perform major activity	16.1	15.8	16.2	24.3	22.4	24.7	14.0	13.8	14.0
Limited kind/amount major activity	12.5	15.3	12.2	15.9	28.2	13.9	11.7	11.5	11.9
Limited in other activity	7.8	7.9	7.8	10.9	11.5	10.5	7.0	7.3	7.0
Not limited in activity	63.6	61.0	63.8	48.9	37.9	50.9	67.3	67.6	67.1
65 years of age and over[3]									
All persons	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sex:									
Male	51.5	37.8	52.5	53.3	42.9	54.0	50.1	34.5	51.4
Female	48.5	62.2	47.5	46.7	56.6	46.0	49.9	65.5	48.6
Race:									
White	93.2	93.4	93.3	93.9	90.9	94.1	92.9	94.2	92.9
Black	5.4	4.4	5.5	4.7	*4.5	4.7	5.8	*4.1	5.9
Other	1.3	*2.3	1.2	1.5	*4.0	1.3	1.3	*1.7	1.2
Ethnic origin:									
Hispanic	2.6	*2.8	2.6	2.6	*3.5	2.5	2.6	*2.5	2.6
Non-Hispanic	97.4	97.2	97.4	97.4	96.5	97.5	97.4	97.5	97.4
Family income:									
Under $10,000	23.3	27.9	23.0	25.1	21.8	25.4	22.7	31.3	22.0
$10,000–$24,999	45.7	43.7	45.7	46.3	51.0	45.9	45.2	40.1	45.5
$25,000-$49,999	22.3	19.7	22.7	20.3	17.0	20.6	23.5	21.2	23.8
$50,000 and over	8.6	8.6	8.6	8.3	*10.2	8.2	8.6	7.7	8.6
Education:									
Under 12 years	45.7	47.4	45.7	51.5	53.3	51.5	42.6	43.3	42.5
12 years	29.6	28.6	29.5	27.3	26.2	27.3	30.8	30.3	30.7
13 years and over	24.7	24.0	24.8	21.2	20.5	21.2	26.6	26.4	26.7
Employment status:									
In the labor force	11.8	13.5	11.7	8.6	13.1	8.3	13.2	12.7	13.3
Not in the labor force	88.2	86.5	88.3	91.4	86.4	91.7	86.8	87.3	86.7

Table 14. Average annual percent distribution and number of persons 18 years of age and over by selected characteristics, according to type and age at onset of reported hearing trouble: United States, 1990–91—Con.

[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]

Selected characteristic	*All hearing trouble*[1]			*At best can hear shouted speech*			*All other hearing trouble*		
		Age at onset			*Age at onset*			*Age at onset*	
	All[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*
					Percent distribution				
Occupation:									
Professional and managerial	35.8	40.6	35.4	37.2	*36.0	37.7	34.5	*40.5	34.0
Sales, service, and administrative support	41.9	42.0	42.0	34.6	*40.0	33.3	44.8	*45.2	45.0
Other	22.4	*17.4	22.7	28.2	*24.0	28.5	20.7	*11.9	21.0
Marital status:									
Never married	4.1	7.0	4.0	4.0	*5.6	4.0	4.3	6.9	4.1
Married, living with spouse	55.1	47.4	55.4	54.0	53.0	54.0	55.2	44.2	55.8
Other	40.8	45.6	40.6	42.0	41.4	42.1	40.5	48.9	40.1
Living arrangement:									
Living alone	32.6	39.9	32.3	29.0	28.3	29.1	35.2	46.7	34.6
Living with nonrelatives	0.8	*0.7	0.8	1.2	*0.5	1.2	0.7	*0.8	0.7
Living with relatives	66.6	59.3	66.9	69.9	71.2	69.7	64.1	52.5	64.7
Geographic region:									
Northeast	18.6	21.0	18.5	17.1	19.7	17.1	19.4	21.8	19.2
Midwest	26.9	30.4	26.8	25.5	33.3	25.1	27.7	28.5	27.7
South	35.3	29.9	35.5	37.0	25.8	37.7	34.3	32.0	34.5
West	19.2	18.7	19.2	20.4	21.2	20.1	18.6	17.4	18.6
Place of residence:									
Central city of MSA	27.5	31.1	27.3	26.6	28.8	26.6	27.9	31.5	27.5
MSA, not central city	41.6	39.3	41.8	41.2	36.9	41.4	41.8	41.7	42.0
Not in MSA	30.9	29.5	31.0	32.1	34.3	32.0	30.2	26.5	30.5
Limitation of activity:									
Limited in activity, all	47.4	40.9	47.8	57.1	51.0	57.7	42.1	35.9	42.4
Unable to perform major activity	12.1	8.0	12.4	17.0	11.1	17.4	9.4	6.6	9.6
Limited kind/amount major activity	15.5	14.3	15.7	20.0	17.7	20.3	13.0	12.7	13.0
Limited in other activity	19.7	18.5	19.7	20.0	22.7	19.9	19.7	16.6	19.8
Not limited in activity	52.6	59.1	52.2	43.0	48.5	42.4	57.9	64.1	57.6
18 years of age and over[3]					Number in thousands				
All persons	19,327	3,196	15,482	4,668	649	3,951	13,778	2,467	10,896
Sex:									
Male	11,461	1,656	9,424	2,721	318	2,360	8,147	1,280	6,627
Female	7,867	1,540	6,059	1,947	331	1,591	5,631	1,187	4,269
Race:									
White	17,829	2,949	14,306	4,332	606	3,661	12,690	2,269	10,056
Black	1,102	163	887	244	27	215	802	133	635
Other	396	84	290	92	*16	75	286	66	205
Ethnic origin:									
Hispanic	784	197	553	159	42	113	590	146	424
Non-Hispanic	18,490	2,986	14,893	4,501	607	3,830	13,148	2,309	10,448

Family income:									
Under $10,000	2,670	475	2,118	787	109	669	1,797	362	1,390
$10,000–$24,999	5,543	867	4,505	1,491	186	1,291	3,851	663	3,067
$25,000–$49,999	4,879	930	3,803	969	173	787	3,686	736	2,853
$50,000 and over	2,737	457	2,186	422	67	349	2,176	373	1,738
Education:									
Under 12 years	6,351	882	5,297	2,035	248	1,763	4,022	606	3,311
12 years	6,747	1,195	5,302	1,454	222	1,206	4,996	947	3,887
13 years and over	6,096	1,102	4,795	1,126	173	942	4,705	906	3,661
Employment status:									
In the labor force	8,881	2,039	6,507	1,362	308	1,033	7,070	1,674	5,171
Not in the labor force	10,447	1,157	8,975	3,305	341	2,919	6,708	794	5,725
Occupation:									
Professional and managerial	2,507	505	1,917	367	69	293	2,014	421	1,539
Sales, service, and administrative support	2,976	795	2,065	425	121	297	2,426	661	1,685
Other	3,215	694	2,394	532	114	410	2,496	554	1,854
Marital status:									
Never married	1,584	684	823	296	123	167	1,233	539	638
Married, living with spouse	12,351	1,860	10,052	2,826	358	2,428	8,893	1,453	7,165
Other	5,371	647	4,592	1,543	168	1,355	3,635	470	3,082
Living arrangement:									
Living alone	4,362	629	3,631	1,090	133	947	3,141	490	2,582
Living with nonrelatives	318	99	205	63	*15	46	249	83	156
Living with relatives	14,647	2,468	11,646	3,515	501	2,958	10,388	1,894	8,158
Geographic region:									
Northeast	3,255	552	2,589	754	123	629	2,348	417	1,846
Midwest	5,185	858	4,158	1,183	175	994	3,760	660	2,994
South	6,733	1,016	5,477	1,708	199	1,478	4,724	799	3,777
West	4,155	769	3,258	1,022	152	850	2,946	592	2,279
Place of residence:									
Central city of MSA	5,119	925	4,010	1,195	179	1,001	3,695	717	2,849
MSA, not central city	8,721	1,502	6,926	2,019	294	1,690	6,293	1,182	4,932
Not in MSA	5,487	769	4,546	1,454	175	1,260	3,790	568	3,115
Limitation of activity:									
Limited in activity, all	7,390	991	6,188	2,529	361	2,134	4,535	609	3,802
Unable to perform major activity	2,362	307	1,984	876	113	744	1,376	184	1,154
Limited kind/amount major activity	2,536	392	2,081	887	155	724	1,532	228	1,268
Limited in other activity	2,493	292	2,124	766	92	666	1,627	197	1,380
Not limited in activity	11,937	2,205	9,294	2,139	288	1,817	9,243	1,859	7,094
18–44 years of age and over[3]									
All persons	4,690	1,878	2,592	571	277	278	3,912	1,555	2,212
Sex:									
Male	3,018	1,033	1,842	351	140	199	2,506	855	1,555
Female	1,672	845	750	220	137	79	1,406	699	657
Race:									
White	4,272	1,706	2,377	519	255	248	3,567	1,409	2,034
Black	280	115	143	31	*15	*16	235	98	122
Other	138	57	71	21	*7	*14	110	48	56

Table 14. Average annual percent distribution and number of persons 18 years of age and over by selected characteristics, according to type and age at onset of reported hearing trouble: United States, 1990–91—Con.

[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]

Selected characteristic	*All hearing trouble*[1]			*At best can hear shouted speech*			*All other hearing trouble*		
		Age at onset			*Age at onset*			*Age at onset*	
	All[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*
	Number in thousands								
Ethnic origin:									
Hispanic	318	148	148	45	27	*16	258	114	129
Non-Hispanic	4,353	1,721	2,435	526	250	261	3,637	1,431	2,076
Family income:									
Under $10,000	526	266	232	81	52	27	430	214	201
$10,000–$24,999	1,167	494	628	158	69	88	966	415	520
$25,000–$49,999	1,641	622	950	199	99	94	1,369	506	819
$50,000 and over	830	273	513	69	29	39	713	234	448
Education:									
Under 12 years	796	390	375	128	77	44	632	301	312
12 years	1,903	764	1,054	228	108	113	1,591	641	897
13 years and over	1,969	712	1,157	210	88	121	1,676	608	998
Employment status:									
In the labor force	3,914	1,482	2,252	423	185	227	3,320	1,261	1,933
Not in the labor force	775	396	340	149	92	51	592	294	279
Occupation:									
Professional and managerial	978	337	592	105	35	68	834	296	505
Sales, service, and administrative support	1,315	582	671	140	77	58	1,134	496	595
Other	1,576	536	972	171	71	96	1,312	444	820
Marital status:									
Never married	998	606	332	137	99	32	825	489	293
Married, living with spouse	3,064	1,060	1,863	359	141	209	2,547	891	1,565
Other	621	208	394	75	37	37	534	170	353
Living arrangement:									
Living alone	635	278	334	64	39	24	559	238	305
Living with nonrelatives	171	86	77	*18	*12	*6	149	74	68
Living with relatives	3,884	1,513	2,182	489	227	248	3,204	1,242	1,839
Geographic region:									
Northeast	682	291	348	79	52	27	565	232	301
Midwest	1,247	485	709	151	73	74	1,036	399	604
South	1,599	607	915	193	86	98	1,349	509	787
West	1,162	495	620	149	66	79	961	415	520
Place of residence:									
Central city of MSA	1,297	558	674	159	69	85	1,086	473	567
MSA, not central city	2,232	902	1,219	261	144	107	1,868	742	1,051
Not in MSA	1,161	418	699	152	64	86	957	339	594
Limitation of activity:									
Limited in activity, all	1,105	466	602	261	152	100	800	301	479
Unable to perform major activity	354	143	197	93	53	34	244	84	156
Limited kind/amount major activity	441	197	231	115	71	41	307	120	181
Limited in other activity	310	126	174	54	28	26	249	97	142
Not limited in activity	3,585	1,412	1,990	311	125	178	3,112	1,254	1,733

45–64 years of age[3]									
All persons	5,909	746	4,964	1,168	174	980	4,440	550	3,756
Sex:									
Male	3,946	407	3,418	808	92	707	2,920	300	2,540
Female	1,963	339	1,547	360	82	273	1,519	250	1,216
Race:									
White	5,418	710	4,533	1,064	170	881	4,084	519	3,446
Black	347	23	311	76	*3	72	250	*19	223
Other	143	*13	120	28	*1	27	106	*12	87
Ethnic origin:									
Hispanic	241	33	200	38	*8	30	191	22	167
Non-Hispanic	5,653	711	4,756	1,128	166	949	4,236	526	3,583
Family income:									
Under $10,000	585	82	487	153	25	127	403	56	341
$10,000–$24,999	1,315	176	1,093	314	42	269	961	130	794
$25,000–$49,999	1,742	219	1,473	324	49	275	1,318	167	1,117
$50,000 and over	1,330	145	1,148	170	24	143	1,098	117	958
Education:									
Under 12 years	1,605	223	1,331	420	67	348	1,094	148	912
12 years	2,287	268	1,930	436	63	367	1,740	198	1,484
13 years and over	1,990	253	1,685	304	45	258	1,595	203	1,352
Employment status:									
In the labor force	3,939	481	3,327	687	97	582	3,036	367	2,581
Not in the labor force	1,970	265	1,638	481	77	398	1,403	184	1,175
Occupation:									
Professional and managerial	1,187	140	1,020	175	25	147	950	108	824
Sales, service, and administrative support	1,260	185	1,031	205	34	170	993	146	813
Other	1,425	146	1,226	295	36	255	1,045	105	905
Marital status:									
Never married	225	38	178	41	*13	28	176	25	144
Married, living with spouse	4,486	529	3,801	887	112	765	3,355	402	2,852
Other	1,192	178	983	240	49	187	904	123	758
Living arrangement:									
Living alone	881	122	739	178	38	139	670	83	572
Living with nonrelatives	76	*9	63	*11	*2	*8	63	*6	54
Living with relatives	4,952	616	4,162	978	134	833	3,706	462	3,131
Geographic region:									
Northeast	949	142	778	173	32	141	728	105	598
Midwest	1,590	200	1,325	284	36	245	1,223	158	1,023
South	2,057	238	1,749	433	62	365	1,512	173	1,292
West	1,314	167	1,113	278	44	229	977	114	844
Place of residence:									
Central city of MSA	1,418	189	1,175	257	53	201	1,092	130	926
MSA, not central city	2,860	375	2,395	551	77	466	2,155	288	1,813
Not in MSA	1,630	182	1,394	361	44	312	1,192	133	1,017

Table 14. Average annual percent distribution and number of persons 18 years of age and over by selected characteristics, according to type and age at onset of reported hearing trouble: United States, 1990–91—Con.

[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]

Selected characteristic	*All hearing trouble*[1]			*At best can hear shouted speech*			*All other hearing trouble*		
	Age at onset			*Age at onset*			*Age at onset*		
	All[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*
					Number in thousands				
Limitation of activity:									
Limited in activity, all	2,149	291	1,796	597	108	481	1,451	178	1,235
Unable to perform major activity	950	118	804	284	39	242	621	76	527
Limited kind/amount major activity	737	114	606	186	49	136	520	63	447
Limited in other activity	461	59	386	127	20	103	310	40	262
Not limited in activity	3,760	455	3,169	571	66	499	2,989	372	2,521
65 years of age and over[3]									
All persons	8,729	572	7,925	2,928	198	2,693	5,427	362	4,927
Sex:									
Male	4,497	216	4,163	1,562	85	1,454	2,721	125	2,531
Female	4,232	356	3,762	1,367	112	1,240	2,706	237	2,396
Race:									
White	8,139	534	7,395	2,749	180	2,533	5,039	341	4,576
Black	475	25	433	137	*9	126	317	*15	290
Other	115	*13	98	43	*8	34	70	*6	61
Ethnic origin:									
Hispanic	225	*16	205	75	*7	67	140	*9	128
Non-Hispanic	8,484	555	7,702	2,847	191	2,620	5,275	352	4,789
Family income:									
Under $10,000	1,559	126	1,399	553	32	516	964	93	848
$10,000–$24,999	3,061	197	2,784	1,019	75	934	1,924	119	1,752
$25,000–$49,999	1,496	89	1,380	446	25	419	999	63	917
$50,000 and over	578	39	525	183	*15	166	365	23	332
Education:									
Under 12 years	3,950	269	3,592	1,487	104	1,371	2,296	156	2,087
12 years	2,557	162	2,317	790	51	727	1,664	109	1,507
13 years and over	2,138	136	1,953	612	40	563	1,434	95	1,311
Employment status:									
In the labor force	1,028	77	928	253	26	223	715	46	657
Not in the labor force	7,702	495	6,998	2,676	171	2,470	4,712	316	4,270
Occupation:									
Professional and managerial	342	28	306	87	*9	78	230	*17	209
Sales, service, and administrative support	401	29	363	81	*10	69	299	*19	277
Other	214	*12	196	66	*6	59	138	*5	129
Marital status:									
Never married	360	40	314	118	*11	107	232	25	202
Married, living with spouse	4,801	271	4,387	1,580	105	1,453	2,991	160	2,748
Other	3,558	261	3,216	1,228	82	1,132	2,197	177	1,971
Living arrangement:									
Living alone	2,847	228	2,557	848	56	784	1,912	169	1,705
Living with nonrelatives	72	*4	66	34	*1	32	37	*3	34
Living with relatives	5,811	339	5,303	2,047	141	1,877	3,478	190	3,188

Geographic region:									
Northeast	1,624	120	1,463	502	39	461	1,055	79	946
Midwest	2,348	174	2,124	748	66	675	1,501	103	1,367
South	3,077	171	2,813	1,082	51	1,015	1,863	116	1,698
West	1,680	107	1,525	596	42	542	1,008	63	915
Place of residence:									
Central city of MSA	2,404	178	2,161	780	57	715	1,516	114	1,356
MSA, not central city	3,629	225	3,311	1,207	73	1,116	2,270	151	2,068
Not in MSA	2,696	169	2,453	941	68	862	1,641	96	1,503
Limitation of activity:									
Limited in activity, all	4,136	234	3,790	1,671	101	1,553	2,284	130	2,088
Unable to perform major activity	1,058	46	983	498	22	468	511	24	471
Limited kind/amount major activity	1,357	82	1,244	586	35	548	705	46	641
Limited in other activity	1,721	106	1,564	586	45	537	1,067	60	976
Not limited in activity	4,593	338	4,135	1,258	96	1,141	3,143	232	2,840

[1]Includes unknown type of hearing trouble.

[2]Includes unknown age at onset.

[3]Percent distribution excludes and number in thousands includes unknown ethnic origin, family income, education, occupation, and marital status.

Table 15. Average annual percent distribution and number of persons 3 years and over with reported hearing trouble who use a hearing aid by selected characteristics, according to type and age at onset of reported hearing trouble: United States, 1990–91

[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]

Selected characteristic	*All hearing trouble*[1]			*At best can hear shouted speech*			*All other hearing trouble*		
	Age at onset			*Age at onset*			*Age at onset*		
	All[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*
	Percent								
All persons 3 years of age and over who use a hearing aid[3]	18.0	12.3	19.9	43.1	43.6	43.2	10.2	4.7	12.0
Age									
3–17 years	7.6	7.7	–	36.4	36.5	–	*2.4	*2.2	–
18–44 years	5.6	8.4	3.7	27.3	39.4	14.7	2.5	2.9	2.3
45–64 years	12.2	13.8	12.1	32.6	38.5	31.5	7.3	6.0	7.5
65 years and over	29.6	30.6	30.1	50.8	59.6	50.4	19.1	15.2	19.7
Sex									
Male	17.1	10.4	19.2	40.2	38.9	40.8	10.3	4.0	12.1
Female	19.1	14.4	21.1	47.2	48.6	47.0	10.0	5.5	11.8
Race									
White	18.4	12.3	20.5	44.2	44.3	44.4	10.4	4.5	12.3
Black	11.5	10.1	12.3	26.8	*26.2	26.5	7.3	*6.7	7.7
Other	15.0	*17.3	15.2	37.5	*60.0	33.3	8.8	*8.0	*8.8
Ethnic origin									
Hispanic	12.3	13.0	12.4	36.3	50.0	28.3	6.6	*4.4	8.2
Non-Hispanic	18.2	12.3	20.2	43.4	43.0	43.7	10.3	4.7	12.1
Family income									
Under $10,000	17.0	11.8	19.0	36.8	31.9	38.1	8.7	5.9	9.8
$10,000–$24,999	20.1	13.6	22.2	46.0	52.0	45.3	10.6	4.1	12.7
$25,000–$49,999	16.2	11.3	18.2	42.9	41.1	43.6	9.9	4.8	11.9
$50,000 and over	14.5	10.2	16.3	44.2	41.7	45.3	9.2	4.3	10.9
Education[4]									
Under 12 years	20.1	14.6	21.3	39.0	36.7	39.6	11.1	5.9	12.1
12 years	17.1	13.3	18.5	44.9	47.7	44.5	9.6	5.4	11.0
13 years and over	18.1	13.0	19.9	49.2	54.3	48.5	11.1	5.0	12.9
Employment status[4]									
In the labor force	10.6	9.3	11.2	35.7	39.3	34.5	6.1	3.9	6.9
Not in the labor force	25.2	21.2	26.2	46.5	50.7	46.3	15.3	8.6	16.5
Occupation[4]									
Professional and managerial	11.7	10.5	12.4	37.3	47.8	35.2	7.5	*3.8	8.6
Sales, service, and administrative support	11.6	10.9	12.2	43.1	43.8	42.8	6.3	5.0	7.1
Other	8.5	6.9	9.1	28.4	28.9	28.3	4.5	*2.5	5.1

Marital status[4]									
Never married	13.8	13.5	14.7	43.6	52.0	37.1	6.8	4.8	9.1
Married, living with spouse	17.8	13.0	19.2	43.0	42.5	43.3	10.5	5.7	11.7
Other	21.3	15.9	22.3	43.9	45.8	43.9	12.0	5.1	13.2
Living arrangement[4]									
Living alone	20.6	15.3	21.7	45.7	49.6	45.2	11.9	5.5	13.3
Living with nonrelatives	11.0	*6.1	12.7	36.5	*40.0	*30.4	*5.2	–	*7.1
Living with relatives	18.0	13.5	19.5	42.8	44.1	42.8	10.3	5.5	11.6
Geographic region									
Northeast	19.8	17.0	21.5	47.0	47.3	47.1	12.0	8.4	13.5
Midwest	18.8	11.6	21.0	46.0	43.8	46.6	10.8	4.0	13.0
South	15.8	9.6	17.7	37.7	36.1	38.2	8.7	3.7	10.3
West	18.9	13.5	21.0	46.1	50.5	45.3	10.2	4.3	12.2
Place of residence									
Central city of MSA	18.0	11.0	20.7	43.4	40.2	44.3	10.4	4.2	12.9
MSA, not central city	18.1	11.9	20.2	45.1	44.4	45.5	10.2	4.4	12.2
Not in MSA	17.7	14.7	18.7	40.1	45.8	39.4	9.8	6.0	10.7
Limitation of activity									
Limited in activity, all	21.8	20.8	22.4	41.8	45.6	41.3	11.1	7.1	12.1
Unable to perform major activity	19.1	18.0	19.6	36.1	36.7	36.2	8.9	*6.3	9.5
Limited kind/amount major activity	21.5	22.1	21.5	42.6	47.8	41.3	9.6	6.5	10.5
Limited in other activity	24.8	21.3	25.8	47.3	50.9	47.1	14.5	8.7	15.7
Not limited in activity	15.6	8.6	18.3	44.7	41.4	45.5	9.7	3.9	11.9
					Number in thousands[5]				
All persons 3 years of age and over who use a hearing aid[3]	3,644	504	3,083	2,075	343	1,708	1,475	149	1,303
Age									
3–17 years	74	69	–	52	50	–	*18	*16	–
18–44 years	263	157	97	156	109	41	99	45	51
45–64 years	719	103	603	381	67	309	322	33	283
65 years and over	2,588	175	2,383	1,486	118	1,358	1,036	55	969
Sex									
Male	2,058	226	1,806	1,124	152	962	880	68	802
Female	1,585	278	1,277	951	192	747	595	82	502
Race									
White	3,442	460	2,930	1,968	321	1,626	1,384	129	1,236
Black	138	25	109	70	*11	57	64	*13	49
Other	64	*19	44	36	*12	25	27	*7	*18
Ethnic origin									
Hispanic	114	43	69	66	32	32	46	*11	35
Non-Hispanic	3,519	459	3,008	2,003	309	1,672	1,425	138	1,265

Table 15. Average annual percent distribution and number of persons 3 years and over with reported hearing trouble who use a hearing aid by selected characteristics, according to type and age at onset of reported hearing trouble: United States, 1990–91—Con.

[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]

Selected characteristic	*All hearing trouble*[1]			*At best can hear shouted speech*			*All other hearing trouble*		
	Age at onset			*Age at onset*			*Age at onset*		
	All[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*
	Number in thousands[5]								
Family income									
Under $10,000	479	72	402	301	44	255	165	27	136
$10,000–$24,999	1,167	153	1,001	705	116	585	432	36	390
$25,000–$49,999	836	136	691	429	83	343	390	46	340
$50,000 and over	422	62	356	199	40	158	212	21	189
Education[4]									
Under 12 years	1,274	129	1,129	794	91	699	446	36	401
12 years	1,155	159	979	653	106	537	481	51	426
13 years and over	1,105	143	952	554	94	457	521	45	471
Employment status[4]									
In the labor force	939	190	729	486	121	356	429	65	356
Not in the labor force	2,631	245	2,354	1,538	173	1,352	1,028	68	947
Occupation[4]									
Professional and managerial	294	53	237	137	33	103	152	*16	132
Sales, service, and administrative support	346	87	252	183	53	127	154	33	119
Other	273	48	219	151	33	116	112	*14	95
Marital status[4]									
Never married	218	92	121	129	64	62	84	26	58
Married, living with spouse	2,202	241	1,934	1,214	152	1,051	935	83	838
Other	1,146	103	1,026	678	77	595	436	24	406
Living arrangement[4]									
Living alone	897	96	789	498	66	428	375	27	344
Living with nonrelatives	35	*6	26	23	*6	*14	*13	–	*11
Living with relatives	2,638	333	2,268	1,503	221	1,265	1,068	105	947
Geographic region									
Northeast	676	118	557	367	71	296	295	44	249
Midwest	1,023	130	875	560	92	463	430	35	388
South	1,116	126	969	660	86	564	434	38	388
West	828	131	683	488	95	385	316	32	279
Place of residence									
Central city of MSA	969	129	831	537	88	443	408	38	368
MSA, not central city	1,660	228	1,400	940	158	769	678	66	601
Not in MSA	1,014	147	852	598	97	496	388	45	334

Limitation of activity									
Limited in activity, all	1,670	259	1,384	1,090	199	881	524	55	459
Unable to perform major activity .	454	58	389	319	44	269	123	*12	110
Limited kind/amount major activity	585	126	448	402	100	299	159	22	133
Limited in other activity.	632	75	547	369	54	314	242	21	216
Not limited in activity	1,974	246	1,699	985	145	827	951	95	844

[1]Includes unknown type of hearing trouble.

[2]Includes unknown age at onset.

[3]Includes unknown ethnic origin, family income, education, occupation, and marital status.

[4]Persons 18 years of age and over.

[5]To obtain denominators for the estimates shown in this table, divide the numerator by the corresponding percent estimate.

Table 16. Percent distribution and number of reported causes of hearing trouble of persons 3 years of age and over by type of cause, according to type and age at onset of reported hearing trouble: United States, 1991

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

Age and reported cause of hearing trouble	*All hearing trouble*[1]			*At best can hear shouted speech*			*All other hearing trouble*		
	Age at onset			*Age at onset*			*Age at onset*		
	All[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*	*All*[2]	*Before 19 years*	*19 years and after*
All ages					Percent distribution				
All reported causes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
At birth	4.4	15.8	1.5	6.3	28.8	2.2	3.8	12.8	1.3
Ear infection	12.2	33.2	7.0	8.7	24.7	5.7	13.8	35.4	7.8
Ear injury	4.9	9.6	3.7	4.0	6.2	3.5	5.2	10.4	3.8
Loud brief noise	10.3	5.3	11.6	10.0	*3.4	11.1	10.5	5.9	11.9
Other noise	23.4	7.6	27.4	21.8	4.7	25.1	23.8	8.3	28.2
Getting older	28.0	4.0	33.9	32.6	7.0	37.4	25.9	3.3	32.0
Other	16.9	24.4	15.0	16.7	25.3	15.1	17.0	23.9	15.0
3–44 years									
All reported causes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
At birth	10.9	18.5	2.8	24.5	38.3	*2.5	8.9	15.0	2.6
Ear infection	23.1	35.6	10.0	18.8	26.2	*7.2	24.0	37.3	10.8
Ear injury	7.4	8.8	5.9	5.6	*5.7	*5.0	7.8	9.4	6.0
Loud brief noise	11.1	5.4	17.2	8.1	*2.2	17.9	11.4	6.2	16.9
Other noise	25.8	8.8	44.1	21.9	*6.3	47.2	26.0	9.4	43.2
Getting older	3.3	*0.9	5.7	*3.5	*2.0	*5.3	3.4	*0.8	6.1
Other	18.5	21.9	14.5	17.6	19.5	14.5	18.4	22.0	14.2
45–64 years									
All reported causes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
At birth	2.8	12.5	1.3	6.3	23.8	3.3	1.9	9.1	*0.8
Ear infection	10.9	30.0	8.1	9.0	24.7	6.4	12.0	32.7	9.0
Ear injury	4.9	11.3	3.9	4.3	*6.0	3.9	4.9	12.2	3.9
Loud brief noise	13.2	5.7	14.3	14.5	*6.0	15.8	12.8	*6.0	14.0
Other noise	30.2	5.7	33.7	28.1	*3.0	32.6	30.4	6.0	33.9
Getting older	20.7	4.5	23.1	19.4	*7.7	21.4	20.6	*3.6	23.0
Other	17.5	30.3	15.5	18.5	29.4	16.7	17.4	30.2	15.3
65 years and over									
All reported causes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
At birth	1.7	7.8	1.3	2.3	*12.8	1.7	1.4	*5.6	1.1
Ear infection	6.7	26.3	5.4	6.3	21.1	5.3	7.3	28.5	5.7
Ear injury	3.4	11.3	2.9	3.5	*7.5	3.2	3.5	13.2	2.7
Loud brief noise	7.9	*4.1	8.2	8.5	*3.5	8.7	7.8	*4.5	8.1
Other noise	17.5	*4.5	18.5	19.2	*3.1	20.2	16.7	*5.4	17.6
Getting older	47.1	17.1	49.1	44.6	17.6	46.4	47.7	16.8	49.8
Other	15.7	28.5	14.8	15.7	34.4	14.5	15.7	25.7	15.0

All ages					Number in thousands				
All reported causes	24,648	4,828	19,487	6,234	969	5,208	17,151	3,693	13,239
At birth	1,083	764	298	394	279	112	652	473	169
Ear infection	2,997	1,602	1,362	540	239	296	2,369	1,307	1,039
Ear injury	1,199	464	716	247	60	183	897	384	500
Loud brief noise	2,533	256	2,253	622	*33	578	1,797	219	1,573
Other noise	5,772	368	5,337	1,359	46	1,305	4,080	306	3,734
Getting older	6,895	192	6,601	2,033	68	1,949	4,434	121	4,241
Other	4,168	1,180	2,920	1,038	245	786	2,922	884	1,984
3–44 years									
All reported causes	6,346	3,210	3,050	840	507	318	5,194	2,585	2,549
At birth	691	595	84	206	194	*8	462	388	67
Ear infection	1,463	1,143	305	158	133	*23	1,248	963	276
Ear injury	468	281	179	47	*29	*16	403	243	154
Loud brief noise	702	174	524	68	*11	57	594	159	432
Other noise	1,640	284	1,344	184	*32	150	1,351	242	1,102
Getting older	210	*30	173	*29	*10	*17	179	*20	155
Other	1,172	703	441	148	99	46	957	569	363
45–64 years									
All reported causes	7,338	911	6,310	1,589	235	1,345	5,348	645	4,621
At birth	203	114	85	100	56	44	99	59	*36
Ear infection	798	273	513	143	58	86	640	211	417
Ear injury	357	103	248	68	*14	52	263	79	182
Loud brief noise	965	52	902	230	*14	212	685	39	647
Other noise	2,213	52	2,124	446	*7	439	1,628	39	1,565
Getting older	1,521	41	1,460	308	*18	288	1,104	*23	1,065
Other	1,281	276	979	294	69	225	928	195	709
65 years and over									
All reported causes	10,964	706	10,126	3,805	227	3,546	6,609	463	6,068
At birth	189	55	129	88	*29	59	92	*26	66
Ear infection	735	186	544	239	48	187	480	132	346
Ear injury	375	80	289	132	*17	115	231	61	164
Loud brief noise	866	*29	827	324	*8	309	517	*21	493
Other noise	1,919	*32	1,870	729	*7	716	1,101	*25	1,066
Getting older	5,164	121	4,968	1,696	40	1,645	3,150	78	3,021
Other	1,716	201	1,500	596	78	514	1,037	119	912

Notes: At birth includes mother had rubella in pregnancy, at birth for a genetic reason, and at birth, other reason. Ear infection includes infectious disease such as measles and meningitis and ear infection. Ear injury includes ear injury and ear surgery.

[1]Includes unknown type of hearing trouble.

[2]Includes unknown age at onset.

Appendixes

Contents

Appendix I
Technical notes on methods

Background

This report is one of a series of statistical reports published by the staff of the National Center for Health Statistics (NCHS). It is based on information collected in a continuing nationwide sample of households included in the National Health Interview Survey (NHIS). Data are obtained on the personal, sociodemographic, and health characteristics of the family members and unrelated individuals living in these households.

Field operations for the survey are conducted by the U.S. Bureau of the Census under specifications established by NCHS. The U.S. Bureau of the Census participates in the survey planning, selects the sample, and conducts the interviews. The data are then transmitted to NCHS for preparation, processing, and analysis.

Summary reports and reports on special topics for each year's data are prepared by the staff of the Division of Health Interview Statistics for publication in Series 10 publications of NCHS. Data are also tabulated for other reports published by NCHS staff and for use by other organizations and by researchers within and outside the Government. Since 1969, public-use tapes have been prepared for each year of data collection.

It should be noted that the health characteristics described by NHIS estimates pertain only to the resident, civilian noninstitutionalized population of the United States living at the time of the interview. The sample does not include persons residing in nursing homes, members of the armed forces, institutionalized persons, or U.S. nationals living abroad.

Statistical design of NHIS

General design

Data from NHIS have been collected continuously since 1957. The sample design of the survey has undergone changes following each decennial census. This periodic redesign of the NHIS sample allows the incorporation of the latest population information and statistical methodology into the survey design. The data presented in this report are from an NHIS sample design first used in 1985. It is anticipated that this design will be used until 1995.

The sample design plan of the NHIS follows a multistage probability design that permits a continuous sampling of the civilian noninstitutionalized population residing in the United States. The survey is designed in such a way that the sample scheduled for each week is representative of the target population, and the weekly samples are additive over time. This design permits estimates for high-frequency measures or for large population groups to be produced from a short period of data collection. Estimates for low-frequency measures or for smaller population subgroups can be obtained from a longer period of data collection. The annual sample is designed so that tabulations can be provided for each of the four major geographic regions. Because interviewing is done throughout the year, there is no seasonal bias for annual estimates.

The continuous data collection also has administrative and operational advantages because fieldwork can be handled on a continuing basis with an experienced, stable staff.

Sample selection

The target population for NHIS is the civilian noninstitutionalized population residing in the United States. For the first stage of the sample design, the United States is considered to be a universe composed of approximately 1,900 geographically defined primary sampling units (PSU's). A PSU consists of a county, a small group of contiguous counties, or a metropolitan statistical area. The PSU's collectively cover the 50 States and the District of Columbia. The 52 largest PSU's are selected into the sample with certainty and are referred to as self-representing PSU's. The other PSU's in the universe are referred to as non-self-representing PSU's. These PSU's are clustered into 73 strata, and 2 sample PSU's are chosen from each stratum with probability proportional to population size. This gives a total of 198 PSU's selected in the first stage.

Within a PSU, two types of second-stage units are used: area segments and permit area segments. Area segments are defined geographically and contain an expected eight households. Permit area segments cover geographical areas containing housing units built after the 1980 census. The permit area segments are defined using updated lists of building permits issued in the PSU since 1980 and contain an expected four households.

Within each segment all occupied households are targeted for interview. On occasion, a sample segment

may contain a large number of households. In this situation the households are subsampled to provide a manageable interviewer workload.

The sample was designed so that a typical NHIS sample for the data collection years 1985 to 1995 will consist of approximately 7,500 segments containing about 59,000 assigned households. Of these households, an expected 10,000 will be vacant, demolished, or occupied by persons not in the target population of the survey. The expected sample of 49,000 occupied households will yield a probability sample of about 127,000 persons.

Features of the NHIS sample redesign

Starting in 1985, the NHIS design incorporated several new design features (18). The major changes include the following:

1. *The use of an all-area frame.* The NHIS sample is now designed so that it can serve as a sample frame for other NCHS population-based surveys. In previous NHIS designs, about two-thirds of the sample was obtained from lists of addresses compiled at the time of the decennial census, that is, a list frame. Due to U.S. Bureau of the Census confidentiality restrictions, these sample addresses could be used for only those surveys being conducted by the U.S. Bureau of the Census. The methodology used to obtain addresses in the 1985 NHIS area frame does not use the census address lists. The sample addresses thus obtained can be used as a sampling frame for other NCHS surveys.
2. *The NHIS as four panels.* Four national subdesigns, or panels, constitute the full NHIS. Each panel contains a representative sample of the U.S. civilian noninstitutionalized population. Each of the four panels has the same sampling properties, and any combination of panels defines a national design. Panels were constructed to facilitate the linkage of NHIS to other surveys, and also to efficiently make large reductions in the size of the sample by eliminating panels from the survey.
3. *The oversampling of black persons.* One of the goals in designing the current NHIS was to improve the precision of estimates for black persons. This was accomplished by the use of differential sampling rates in PSU's with between about 5- and 50-percent black population. Sampling rates for selection of segments were increased in areas known to have the highest concentrations of black persons. Segment sampling rates were decreased in other areas within the PSU to ensure that the total sample in each PSU was the same size as it would have been without oversampling black persons.
4. *The reduction of the number of sampled PSU's.* Interviewer travel to sample PSU's constitutes a large component of the total field costs for the NHIS. The previous NHIS design included 376 PSU's. Research showed that reducing the number of sample PSU's while increasing the sample size within PSU's would reduce travel costs and also maintain acceptable reliability of health estimates. The design now contains 198 PSU's.
5. *The selection of two PSU's per non-self-representing stratum.* In the previous design, one PSU was selected from each non-self-representing stratum. This feature necessitated the use of less efficient variance estimation procedures; the selection of two PSU's allows more efficient variance estimation methodology.

Collection and processing of data

The NHIS questionnaire contains two major parts: The first consists of topics that remain relatively the same from year to year. Among these topics are the incidence of acute conditions, the prevalence of chronic conditions, persons limited in activity due to chronic conditions, restriction in activity due to impairment or health problems, and utilization of health care services involving physician care and short-stay hospitalization. Occasionally new questions are incorporated into the main questionnaire. Since 1985, questions that ask the household members' city and State of birth, social security number, and father's last name, have been included. In 1989, questions were added that ask the location (city, county, and State) of any physician contact whether by telephone or in person; and for household members born in the United States, how many years they have lived in the State of residence, and for household members born in a foreign country, how many years they have lived in the United States. The second part consists of special topics added as supplements to each year's questionnaire.

Careful procedures are followed to assure the quality of data collected in the interview. Most households in the sample are contacted by mail before the interviewers arrive. Potential respondents are informed of the importance of the survey and assured that all information obtained in the interview will be held in strict confidence. Interviewers make repeated trips to a household when a respondent is not immediately found. The success of these procedures is indicated by the response rate for the survey, which has been between 95 and 98 percent over the years.

When contact is made, the interviewer attempts to have all family members of the household 19 years of age and over present during the interview. When this is not possible, proxy responses for absent adult family members are accepted. In most situations, proxy respondents are used for persons under 19 years of age. Persons 17 and 18 years of age may respond for themselves, however.

Interviewers undergo extensive training and retraining. The quality of their work is checked by means of periodic observation and by reinterview. Their work is also evaluated by statistical studies of the data they obtain in their interviews. A field edit is performed on all completed interviews so that if there are any problems with the information on the questionnaire, respondents may be recontacted to solve the problem.

Completed questionnaires are sent from the U.S. Bureau of the Census field offices to NCHS for coding and editing. To ensure the accuracy of coding, a 5-percent sample of all questionnaires is recoded and keyed by other coders. A 100-percent verification procedure is used if certain error tolerances are exceeded. Staff of the Division of Health Interview Statistics then edit the files to remove impossible and inconsistent codes.

The interview, fieldwork, and data processing procedures summarized above are described in detail in Series 1, No. 18 (19).

Estimation procedures

Because the design of NHIS is a complex multistage probability sample, it is necessary to reflect these complex procedures in the derivation of estimates (18). The estimates presented in this report are based upon 1990 and 1991 sample person counts weighted to produce national estimates. The weight for each sample person is the product of four component weights:

1. *Probability of selection.* The basic weight for each person is obtained by multiplying the reciprocals of the probabilities of selection at each step in the design: PSU, segment, and household.
2. *Household nonresponse adjustment within segment.* Because of household nonresponse, a weighting adjustment is used. The nonresponse adjustment weight is a ratio with the number of households in a sample segment as the numerator and the number of households actually interviewed in that segment as the denominator. This adjustment reduces bias in an estimate to the extent that persons in the noninterviewed households have the same characteristics as the persons in the interviewed households in the same segment.
3. *First-stage ratio adjustment.* The weight for persons in the non-self-representing PSU's is ratio adjusted to the 1980 population within four race-residence classes of the non-self-representing strata within each geographic region.
4. *Poststratification by age-sex-race.* Within each of 60 age-sex-race cells, a weight is constructed each quarter to ratio adjust the first-stage population estimate based on the NHIS to an independent estimate of the population of each cell. These independent estimates are prepared by the U.S. Bureau of the Census and are updated quarterly.

The main effect of the ratio-estimating process is to make the sample more closely representative of the target population by age, sex, race, and residence. The poststratification adjustment helps to reduce the component of bias resulting from sampling frame undercoverage; furthermore, this adjustment frequently reduces sampling variance.

NHIS data are collected on a weekly basis, with each week's sample representing the resident, civilian noninstitutionalized population of the United States living during that week. The weekly samples are consolidated to produce quarterly files (each consisting of data for 13 weeks). Weights to adjust the data to represent the U.S. population are assigned to each of the four quarterly files. These quarterly files are later consolidated to produce the annual file, which is the basis of most tabulations of NHIS data.

Reliability of the estimates

Because NHIS estimates are based on a sample, they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same survey and processing procedures. There are two types of errors possible in an estimate based on a sample: sampling and nonsampling errors. To the extent possible, these types of errors are kept to a minimum by methods built into the procedures described earlier (20). Although it is difficult to measure the extent of bias in NHIS, studies have been conducted to examine this problem. The results have been published in several reports (21–23).

Nonsampling errors

Interviewing process—Information, such as the number of days of restricted activity caused by the condition, can be obtained more accurately from household members than from any other source because only the persons concerned are in a position to report this information. However, there are limitations to the accuracy of diagnostic and other information collected in household interviews. For example, 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. Further, a respondent may not answer a question in the intended manner because he or she has not properly understood the question, has forgotten the event, does not know, or does not wish to divulge the answer. Regardless of the type of measure, all NHIS data are estimates of known reported morbidity, disability, and so forth.

Population estimates—Some of the published tables include population figures for specified categories. Except for overall totals for the 60 age, sex, and race groups, which are adjusted to independent estimates, these figures are based on the sample of households in NHIS. They are given primarily to provide denominators for rate computation, and for this purpose they 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 race mentioned above, the population figures may differ from figures (which are derived from different sources) published in reports of the U.S. Bureau of the Census. Official population estimates are presented in U.S. Bureau of the Census reports in Series P-20, P-25, and P-60.

The population estimates included in this report are inflated to national population controls by age, race, and

sex. The population controls are based on the 1980 census carried forward to 1991. The estimates in this report, therefore, may differ from 1990 census results brought forward to the survey date. Population controls incorporating the 1990 census results will be used for survey estimation beginning later in the decade.

Rounding of numbers—In published tables, the figures are rounded to the nearest thousand, although they are not necessarily accurate to that detail. Derived statistics, such as rates and percent distributions, are computed after the estimates on which these are based have been rounded to the nearest thousand.

Combining data years—To reduce sampling error, data for a number of years may be combined. However, in so doing, the questionnaire for each of the years should be checked, because even a small change in the questionnaire design may lead to large changes in the derived estimates. This caution also applies to using NHIS data on health measures where changes in other events, such as legislative changes, have occurred over time.

Sampling errors

The standard error is primarily a measure of sampling error, that is, the variations that might occur by chance because only a sample of the population is surveyed. The chances are about 68 in 100 that an estimate from the sample would differ from a complete census by less than the standard error. The chances are about 95 in 100 that the difference would be less than twice the standard error and about 99 in 100 that it would be less than 2 1/2 times as large.

Individual standard errors were not computed for each estimate in this report. Instead, standard errors were computed for a broad spectrum of estimates for 1990 and for 1991. Regression techniques were then applied to produce equations from which a standard error for any estimate for each year can be approximated. The parameters for 2 years of data were combined in the following manner to produce the approximated standard errors used in this report:

$$a(1990\text{–}91) = a(1990) + a(1991)/4 = -0.000007$$
$$b(1990\text{–}91) = b(1990) + b(1991)/4 = 1{,}748$$

Rules explaining their use are given below.

The reader is cautioned that this procedure will give an approximate standard error of an estimate rather than the precise standard error. The reader is further cautioned that particular care should be exercised when the denominator of a rate or percent is small.

General rules for determining standard errors

Estimates confined to age, sex, or race categories (or any combination of them) have no sampling variation because they are adjusted to U.S. Census Bureau population projections. For other estimates, the approximate standard error (SE) of a frequency, SE(x), may be determined by substituting the estimated frequency (x) in the following formula:

$$\mathrm{SE}(x) = \sqrt{ax^2 + bx}$$

The approximate standard error of a percent SE(p) may be determined by substituting the estimated percent (p) in the following formula:

$$\mathrm{SE}(p) = \sqrt{\frac{bp(100-p)}{y}}$$

where y is the denominator of the percent.

Relative standard errors

Prior to 1985, relative standard error (RSE) curves were present in NHIS reports for approximating relative standard errors. For readers who wish to continue using them, the following provides guidance. The RSE of an estimate is obtained by dividing the standard error of the estimate by the estimate x itself. This quantity is expressed as a percent of the estimate:

$$\mathrm{RSE} = 100\,\frac{\mathrm{SE}(x)}{x}$$

Appendix II
Definitions of certain terms used in this report

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.

Geographic region—For the purpose of classifying the population by geographic area, the States are grouped into four regions. These regions, which correspond to those used by the U.S. Bureau of the Census, are as follows:

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

Place of residence—The place of residence of a member of the civilian noninstitutionalized population is classified as inside a metropolitan statistical area (MSA) or outside an MSA. Place of residence inside an MSA is further classified as either central city or not central city.

Metropolitan statistical area—The definition and titles of MSA's are established by the U.S. Office of Management and Budget with the advice of the Federal Committee on Metropolitan Statistical Areas. Generally speaking, an MSA consists of a county or group of counties containing at least one city (or twin cities) having a population of 50,000 or more plus adjacent counties that are metropolitan in character and are economically and socially integrated with the central city. In New England, towns and cities rather than counties are the units used in defining MSA's. There is no limit to the number of adjacent counties included in the MSA as long as they are integrated with the central city, nor is an MSA limited to a single State; boundaries may cross State lines. The metropolitan population in this report is based on MSA's as defined in the 1980 census and does not include any subsequent additions or changes.

Central city of an MSA—The largest city in an MSA is always a central city. One or two additional cities may be secondary central cities in the MSA on the basis of either of their population size.

Not central city of an MSA—This includes all of the MSA that is not part of the central city itself.

Not in MSA—This includes all other places in the country.

Race—The population is divided into three racial groups: "white," "black," and "all other." "All other" included Aleut, Eskimo or American Indian, Asian, or Pacific Islander, and any other races. Race characterization is based on the respondent's description of his or her racial background.

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 or she 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 incomes.

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—for example, wages, salaries, rents from property, pensions, government payments, and help from relatives—is included.

Currently employed—Persons 18 years of age and over who reported that at any time during the 2-week period covered by the interview they either worked at or had a job or business are currently employed. Current employment includes paid work as an employee of someone else; self-employment in business, farming, or professional practice; and unpaid work in a family business or farm. Persons who were temporarily absent from a job or business because of a temporary illness, vacation, strike, or bad weather are considered as currently employed if they expected to work as soon as the particular event causing the absence no longer existed.

Freelance workers are considered currently employed if they had a definite arrangement with one employer or more to work for pay according to a weekly or monthly schedule, either full time or part time.

Excluded from the currently employed population are persons who have no definite employment schedule but work only when their services are needed. Also excluded from the currently employed population are (a) persons receiving revenue from an enterprise but not participating in its operation, (b) persons doing housework or charity work for which they received no pay, (c) seasonal workers during the portion of the year they were not working, and (d) persons who were not working, even though having a job or business, but were on layoff and looking for work.

Unemployed—Persons not meeting the above criteria for currently employed but who have been looking for work at any time during the 2 weeks preceding the interview are classified as unemployed.

Not in the labor force—Persons 18 years of age and over not meeting either of the two previous definitions are classified as not in the labor force.

Occupation—Currently employed persons are asked to name and describe their present occupation and the industry in which they now work. The same questions are asked of unemployed workers about their last employment. The responses are edited and coded in terms of the U.S. Bureau of the Census classification of occupations. As used in this report, "Other" includes the following occupational types: service (including private household, protective, and other); farming (except farm managers, who were included in the category of managers), forestry, and fishing; and precision production, craft, and repair occupations.

Hispanic origin—Respondents are asked whether any of a list of Hispanic subgroups (Puerto Rican, Cuban, etc.) are their national origin or ancestry, and if any, to indicate which. Those denying membership in any of the subgroups are classified as non-Hispanic.

Education—The amount of education refers to completed years in an academic setting. It does not include other types of schooling such as might be obtained in a vocational or trade school.

Marital status—"Married, living with spouse" includes persons living together as husband and wife even if they are not legally married. "Other" includes persons who are widowed, separated, divorced, or married but not living together.

Living arrangement—"Living alone" means no one else living in the household, including nonrelatives. "Living with nonrelatives" includes a person living with a family, none of whom are related by blood, marriage, or adoption to the person, as well as a person living with roommates.

Limitation of activity due to chronic conditions—Persons are classified in terms of the major activity usually associated with their particular age group. The major activities for the age groups are (a) ordinary play for children under 5 years of age, (b) attending school for those 5–17 years of age, (c) working or keeping house for persons 18–69 years of age, and (d) capacity for independent living (for example, the ability to bathe, shop, dress, eat, and so forth, without needing the help of another person) for those 70 years of age and over. People aged 18–69 years who are classified as keeping house are also classified by their ability to work at a job or business. (In this report, the major activity of persons 65–69 years is assumed to be working or keeping house; however, questions were also asked about the capacity for independent living in this age group, which would permit an alternative definition of limitation.)

In regard to these activities, each person is classified into one of four categories: (a) unable to perform the major activity, (b) able to perform the major activity but limited in the kind or amount of this activity, (c) not limited in the major activity but limited in the kind or amount of other activities, and (d) not limited in any way. In regard to these four categories, NHIS publications often classify persons only by whether they are limited (groups a-c) or not limited (group d). Persons are not classified as limited in activity unless one or more chronic conditions are reported as the cause of the activity limitation. If more than one condition is reported, the respondent is asked to identify the condition that is the major cause of the limitation.

Terms relating to the type and degree of hearing loss and the age at onset of the hearing loss are defined in the text.

Appendix III
Questionnaire items that produced the data used in this report

L. DEMOGRAPHIC BACKGROUND PAGE

L1 *Refer to age.*

L1 ☐ Under 5 *(NP)* ☐ 5–17 *(2)* ☐ 18 and over *(1)*

1a. Did — — EVER serve on active duty in the Armed Forces of the United States?

1a. 1 ☐ Yes 2 ☐ No *(2)*

b. When did — — serve?

Mark box in descending order of priority. Thus, if person served in Vietnam and in Korea mark VN.

Vietnam Era (Aug. '64 to April '75) . . . . . VN
Korean War (June '50 to Jan. '55) . . . . . KW
World War II (Sept. '40 to July '47) . . . . . WWII
World War I (April '17 to Nov. '18) . . . . . WWI
Post Vietnam (May '75 to present) . . . . . PVN
Other Service (all other periods) . . . . . OS

b. 1 ☐ VN 2 ☐ KW 3 ☐ WWII 4 ☐ WWI 5 ☐ PVN 8 ☐ OS 9 ☐ DK

c. Was — — EVER an active member of a National Guard or military reserve unit?

c. ☐ Yes 2 ☐ No *(2)* 7 ☐ DK *(2)*

d. Was ALL of — — active duty service related to National Guard or military reserve training?

d. 1 ☐ Yes 3 ☐ No 9 ☐ DK

2a. What is the highest grade or year of regular school — — has ever attended?

2a. 00 ☐ Never attended or kindergarten *(NP)*

Elem: 1 2 3 4 5 6 7 8
High: 9 10 11 12
College: 1 2 3 4 5 6 +

b. Did — — finish the *(number in 2a)* **[grade/year]?**

b. 1 ☐ Yes 2 ☐ No

Hand Card R. Ask first alternative for first person; ask second alternative for other persons.

3a. [What is the number of the group or groups which represents — — race?] [What is — — race?]

3a. 1 2 3 4 5 →

Circle all that apply
1 — Aleut, Eskimo, or American Indian
2 — Asian or Pacific Islander
3 — Black
4 — White
5 — Another group not listed — *Specify*

(Specify)

Ask if multiple entries:
b. Which of those groups; that is, *(entries in 3a)* **would you say BEST represents — — race?**

b. 1 2 3 4 5 →

(Specify)

c. Mark observed race of respondent(s) only.

c. 1 ☐ W 2 ☐ B 3 ☐ O

Hand Card O.

4a. Are any of those groups — — national origin or ancestry? (Where did — — ancestors come from?)

4a. 1 ☐ Yes 2 ☐ No *(NP)*

b. Please give me the number of the group.

Circle all that apply.
1 — Puerto Rican
2 — Cuban
3 — Mexican/Mexicano
4 — Mexican American
5 — Chicano
6 — Other Latin American
7 — Other Spanish

b. 1 2 3 4 5 6 7

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L. DEMOGRAPHIC BACKGROUND PAGE, Continued

L2 *Refer to "Age" and "Wa/Wb" boxes in C1.*

L2
0☐ Under 18 *(NP)*
1☐ Wa box marked *(6a)*
2☐ Wb box marked *(5a)*
3☐ Neither box marked *(5b)*

5a. Earlier you said that —— has a job or business but did not work last week or the week before. Was —— looking for work or on layoff from a job during those 2 weeks?

5a. 1☐ Yes *(5c)* 2☐ No *(6b)*

b. Earlier you said that —— didn't have a job or business last week or the week before. Was —— looking for work or on layoff from a job during those 2 weeks?

b. 1☐ Yes 2☐ No *(NP)*

c. Which, looking for work or on layoff from a job?

c. 1☐ Looking *(6c)* 3☐ Both *(6b)*
2☐ Layoff *(6b)*

6a. Earlier you said that —— worked last week or the week before. *Ask 6b.*

b. For whom did —— work? *Enter name of company, business, organization, or other employer.*

c. For whom did —— work at —— last full-time job or business lasting 2 consecutive weeks or more? *Enter name of company, business, organization, or other employer, or mark "NEV" or "AF" box in person's column.*

6b. and c. Employer ☐NEV *(6g)* ☐AF *(6e)*

d. What kind of business or industry is this? *For example, TV and radio manufacturing, retail shoe store, State Labor Department, farm.*

d. Industry

If "AF" in 6b/c, mark "AF" box in person's column without asking.

e. What kind of work was —— doing? *For example, electrical engineer, stock clerk, typist, farmer.*

e. Occupation ☐AF *(NP)*

f. What were —— most important activities or duties at that job? *For example, types, keeps account books, files, sells cars, operates printing press, finishes concrete.*

f. Duties

Complete from entries in 6b—f. If not clear, ask:

g. Was ——

An employee of a PRIVATE company, business or individual for wages, salary, or commission ..... **P**
A FEDERAL government employee? ..... **F**
A STATE government employee? ..... **S**
A LOCAL government employee? ..... **L**

Self-employed in OWN business, professional practice, or farm?
Ask: **Is the business incorporated?**
Yes ..... **I**
No ..... **SE**

Working WITHOUT PAY in family business or farm? ..... **WP**

— NEVER WORKED or never worked at a full-time job lasting 2 weeks or more ..... **NEV**

g. Class of worker
1☐ P 5☐ I
2☐ F 6☐ SE
3☐ S 7☐ WP
4☐ L 8☐ NEV

FOOTNOTES

L. DEMOGRAPHIC BACKGROUND PAGE, Continued

Mark box if under 14. If "Married" refer to household composition and mark accordingly.

7. Is — — now married, widowed, divorced, separated, or has — — never been married?

7.
- 0 ☐ Under 14
- 1 ☐ Married — spouse in HH
- 2 ☐ Married — spouse not in HH
- 3 ☐ Widowed
- 4 ☐ Divorced
- 5 ☐ Separated
- 6 ☐ Never married

8a. Was the total combined FAMILY income during the past 12 months — that is, yours, *(read names, including Armed Forces members living at home)* more or less than $20,000? Include money from jobs, social security, retirement income, unemployment payments, public assistance, and so forth. Also include income from interest, dividends, net income from business, farm, or rent, and any other money income received.

Read if necessary: **Income is important in analyzing the health information we collect. For example, this information helps us to learn whether persons in one income group use certain types of medical care services or have certain conditions more or less often than those in another group.**

8a.
- 1 ☐ $20,000 or more *(Hand Card I)*
- 2 ☐ Less than $20,000 *(Hand Card J)*

Read parenthetical phrase if Armed Forces member living at home or if necessary.

b. Of those income groups, which letter best represents the total combined FAMILY income during the past 12 months (that is, yours, *(read names, including Armed Forces members living at home)*)? Include wages, salaries, and other items we just talked about.

Read if necessary: **Income is important in analyzing the health information we collect. For example, this information helps us to learn whether persons in one income group use certain types of medical care services or have certain conditions more or less often than those in another group.**

b.

00 ☐ A	10 ☐ K	20 ☐ U
01 ☐ B	11 ☐ L	21 ☐ V
02 ☐ C	12 ☐ M	22 ☐ W
03 ☐ D	13 ☐ N	23 ☐ X
04 ☐ E	14 ☐ O	24 ☐ Y
05 ☐ F	15 ☐ P	25 ☐ Z
06 ☐ G	16 ☐ Q	26 ☐ ZZ
07 ☐ H	17 ☐ R	
08 ☐ I	18 ☐ S	
09 ☐ J	19 ☐ T	

R

a. *Mark first appropriate box.*

Ra.
- 1 ☐ Present for all questions
- 2 ☐ Present for some questions
- 3 ☐ Not present

b. *Enter person number of respondent.*

b. _____ Person number(s) of respondent(s)

L3 *Enter person number of first parent listed or mark box.*

L3 _____ Person number of parent

00 ☐ None in household

L4 *Enter person number of spouse or mark box.*

L4 _____ Person number of spouse

00 ☐ None in household

FOOTNOTES

B. LIMITATION OF ACTIVITIES PAGE

B1 *Refer to age.*	**B1**	1 ☐ 18–69 *(1)* 2 ☐ Other *(NP)*
1. What was —— doing MOST OF THE PAST 12 MONTHS; working at a job or business, keeping house, going to school, or something else? *Priority if 2 or more activities reported: (1) Spent the most time doing; (2) Considers the most important.*	**1.**	1 ☐ Working *(2)* 2 ☐ Keeping house *(3)* 3 ☐ Going to school *(5)* 4 ☐ Something else *(5)*
2a. Does any impairment or health problem NOW keep —— from working at a job or business?	**2a.**	1 ☐ Yes *(7)* ☐ No
b. Is —— limited in the kind OR amount of work —— can do because of any impairment or health problem?	**b.**	2 ☐ Yes *(7)* 3 ☐ No *(6)*
3a. Does any impairment or health problem NOW keep —— from doing any housework at all?	**3a.**	4 ☐ Yes *(4)* ☐ No
b. Is —— limited in the kind OR amount of housework —— can do because of any impairment or health problem?	**b.**	5 ☐ Yes *(4)* 6 ☐ No *(5)*
4a. What (other) condition causes this? *Ask if injury or operation:* **When did [the** *(injury)* **occur?/—— have the operation?]** *Ask if operation over 3 months ago:* **For what condition did —— have the operation?** *If pregnancy/delivery or 0–3 months injury or operation —* *Reask question 3 where limitation reported, saying:* **Except for ——** *(condition)*, . . .? *OR reask 4b/c.*	**4a.**	*(Enter condition in C2, THEN 4b)* 1 ☐ Old age *(Mark "Old age" box, THEN 4c)*
b. Besides *(condition)* **is there any other condition that causes this limitation?**	**b.**	☐ Yes *(Reask 4a and b)* ☐ No *(4d)*
c. Is this limitation caused by any (other) specific condition?	**c.**	☐ Yes *(Reask 4a and b)* ☐ No
Mark box if only one condition. **d. Which of these conditions would you say is the MAIN cause of this limitation?**	**d.**	☐ Only 1 condition Main cause
5a. Does any impairment or health problem keep —— from working at a job or business?	**5a.**	1 ☐ Yes *(7)* ☐ No
b. Is —— limited in the kind OR amount of work —— could do because of any impairment or health problem?	**b.**	2 ☐ Yes *(7)* 3 ☐ No
B2 *Refer to questions 3a and 3b.*	**B2**	1 ☐ "Yes" in 3a or 3b *(NP)* 2 ☐ Other *(6)*
6a. Is —— limited in ANY WAY in any activities because of an impairment or health problem?	**6a.**	1 ☐ Yes 2 ☐ No *(NP)*
b. In what way is —— limited? *Record limitation, not condition.*	**b.**	Limitation
7a. What (other) condition causes this? *Ask if injury or operation:* **When did [the** *(injury)* **occur?/—— have the operation?]** *Ask if operation over 3 months ago:* **For what condition did —— have the operation?** *If pregnancy/delivery or 0–3 months injury or operation —* *Reask question 2, 5, or 6 where limitation reported, saying:* **Except for ——** *(condition)*, . . .? *OR reask 7b/c.*	**7a.**	*(Enter condition in C2, THEN 7b)* 1 ☐ Old age *(Mark "Old age" box, THEN 7c)*
b. Besides *(condition)* **is there any other condition that causes this limitation?**	**b.**	☐ Yes *(Reask 7a and b)* ☐ No *(7d)*
c. Is this limitation caused by any (other) specific condition?	**c.**	☐ Yes *(Reask 7a and b)* ☐ No
Mark box if only one condition. **d. Which of these conditions would you say is the MAIN cause of this limitation?**	**d.**	☐ Only 1 condition Main cause

B. LIMITATION OF ACTIVITIES PAGE, Continued

B3	*Refer to age.*	**B3** 0 ☐ Under 5 *(10)* 2 ☐ 18–69 *(NP)* 1 ☐ 5–17 *(11)* 3 ☐ 70 and over *(8)*
8.	**What was —— doing MOST OF THE PAST 12 MONTHS; working at a job or business, keeping house, going to school, or something else?** *Priority if 2 or more activities reported: (1) Spent the most time doing; (2) Considers the most important.*	**8.** 1 ☐ Working 2 ☐ Keeping house 3 ☐ Going to school 4 ☐ Something else
9a.	**Because of any impairment or health problem, does —— need the help of other persons with —— personal care needs, such as eating, bathing, dressing, or getting around this home?**	**9a.** 1 ☐ Yes *(13)* ☐ No
b.	**Because of any impairment or health problem, does —— need the help of other persons in handling —— routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?**	**b.** 2 ☐ Yes *(13)* 3 ☐ No *(12)*
10a.	**Is —— able to take part AT ALL in the usual kinds of play activities done by most children —— age?**	**10a.** ☐ Yes 0 ☐ No *(13)*
b.	**Is —— limited in the kind OR amount of play activities —— can do because of any impairment or health problem?**	**b.** 1 ☐ Yes *(13)* 2 ☐ No *(12)*
11a.	**Does any impairment or health problem NOW keep —— from attending school?**	**11a.** 1 ☐ Yes *(13)* ☐ No
b.	**Does —— attend a special school or special classes because of any impairment or health problem?**	**b.** 2 ☐ Yes *(13)* ☐ No
c.	**Does —— need to attend a special school or special classes because of any impairment or health problem?**	**c.** 3 ☐ Yes *(13)* ☐ No
d.	**Is —— limited in school attendance because of —— health?**	**d.** 4 ☐ Yes *(13)* 5 ☐ No
12a.	**Is —— limited in ANY WAY in any activities because of an impairment or health problem?**	**12a.** 1 ☐ Yes 2 ☐ No *(NP)*
b.	**In what way is —— limited?** *Record limitation, not condition.*	**b.** _____ Limitation
13a.	**What (other) condition causes this?** *Ask if injury or operation:* **When did [the** *(injury)* **occur?/—— have the operation?]** *Ask if operation over 3 months ago:* **For what condition did —— have the operation?** *If pregnancy/delivery or 0–3 months injury or operation — Reask question where limitation reported, saying:* **Except for ——** *(condition)*, . . .**?** *OR reask 13b/c.*	**13a.** *(Enter condition in C2, THEN 13b)* 1 ☐ Old age *(Mark "Old age" box, THEN 13c)*
b.	**Besides** *(condition)* **is there any other condition that causes this limitation?**	**b.** ☐ Yes *(Reask 13a and b)* ☐ No *(13d)*
c.	**Is this limitation caused by any (other) specific condition?**	**c.** ☐ Yes *(Reask 13a and b)* ☐ No
d.	*Mark box if only one condition.* **Which of these conditions would you say is the MAIN cause of this limitation?**	**d.** ☐ Only 1 condition _____ Main cause

FOOTNOTES

B. LIMITATION OF ACTIVITIES PAGE, Continued

B4	*Refer to age.*	**B4**	0 ☐ Under 5 *(NP)* 2 ☐ 60–69 *(14)* 1 ☐ 5–59 *(B5)* 3 ☐ 70 and over *(NP)*
B5	*Refer to "Old age" and "LA" boxes. Mark first appropriate box.*	**B5**	☐ "Old age" box marked *(14)* ☐ Entry in "LA" box *(14)* ☐ Other *(NP)*
14a. Because of any impairment or health problem, does — — need the help of other persons with — — personal care needs, such as eating, bathing, dressing, or getting around this home?		**14a.**	1 ☐ Yes *(15)* ☐ No
If under 18, skip to next person; otherwise ask: **b. Because of any impairment or health problem, does — — need the help of other persons in handling — — routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?**		**b.**	2 ☐ Yes 3 ☐ No *(NP)*
15a. What (other) condition causes this? *Ask if injury or operation:* **When did [the** *(injury)* **occur?/— — have the operation?]** *Ask if operation over 3 months ago:* **For what condition did — — have the operation?** *If pregnancy/delivery or 0—3 months injury or operation —* *Reask question 14 where limitation reported, saying:* **Except for — —** *(condition)*, . . .? *OR reask 15b/c.*		**15a.**	*(Enter condition in C2, THEN 15b)* 1 ☐ Old age *(Mark "Old age" box, THEN 15c)*
b. Besides *(condition)* **is there any other condition that causes this limitation?**		**b.**	☐ Yes *(Reask 15a and b)* ☐ No *(15d)*
c. Is this limitation caused by any (other) specific condition?		**c.**	☐ Yes *(Reask 15a and b)* ☐ No
Mark box if only one condition. **d. Which of these conditions would you say is the MAIN cause of this limitation?**		**d.**	☐ Only 1 condition _____ Main cause

FOOTNOTES

H. HEARING CONDITIONS

H1

1 ☐ Condition list 2 asked (H2)
8 ☐ Other (1)

H2

1 ☐ Any CL LTR A or B in C2 *(Mark "HP" box for appropriate person(s), THEN 3)*
8 ☐ Other *(3)*

1a. Does anyone in the family NOW have deafness in one or both ears?

☐ Yes ☐ No *(2)*

b. Who is this?

Enter "deafness" (or the condition) and "XX" in appropriate person's column and mark HP box.

c. Does anyone else NOW have deafness in one or both ears?

☐ Yes *(Reask 1b and c)* ☐ No

2a. Does anyone in the family NOW have any other trouble hearing with one or both ears?

☐ Yes ☐ No *(3)*

b. Who is this?

Enter "trouble hearing" (or the condition) and "YY" in appropriate person's column and mark HP box.

c. Does anyone else NOW have any other trouble hearing with one or both ears?

☐ Yes *(Reask 2b and c)* ☐ No

3a. Does anyone in the family NOW use a hearing aid?

☐ Yes ☐ No *(Hospital page)* ☐ DK *(Hospital page)*

b. Who is this?

Ask: **For what condition does — — need this?**

Enter the condition and "ZZ" in appropriate person's column and mark "HA" box.

c. Does anyone else NOW use a hearing aid?

☐ Yes *(Reask 3b and c)* ☐ No *(Hospital page)*

FOOTNOTES

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Section A — HEARING		PERSON 1 (3–4)
Now I'm going to ask some questions about hearing problems. Please tell me if anyone has these problems, even if you have mentioned them before. **1a. Does anyone in the family NOW have deafness in one or both ears?**	1a.	5 1 ☐ Yes 2 ☐ No } *(2)* 9 ☐ DK
b. Who is this? *Mark "Deafness" box in person's column.*	b.	6 1 ☐ Deafness
c. Anyone else?		7 1 ☐ Yes *(Reask 1b and c)* 2 ☐ No
2a. Does anyone in the family NOW have any other trouble hearing with one or both ears?	2a.	8 1 ☐ Yes 2 ☐ No } *(3)* 9 ☐ DK
b. Who is this? *Mark "Trouble hearing" box in person's column.*	b.	9 1 ☐ Trouble hearing
c. Anyone else?		10 1 ☐ Yes *(Reask 2b and c)* 2 ☐ No
3a. Does anyone in the family NOW use a hearing aid?	3a.	11 1 ☐ Yes 2 ☐ No } *(A1)* 9 ☐ DK
b. Who is this? *Mark "Hearing aid" box in person's column.*	b.	12 1 ☐ Hearing aid
c. Does anyone else NOW use a hearing aid?		13 1 ☐ Yes *(Reask 3b and c)* 2 ☐ No
ITEM A1 *Mark first appropriate box:*	A1	14 1 ☐ 1b, 2b, OR 3b marked for one or more people in family *(A2)* 2 ☐ Others *(Section B)*
ITEM A2 *Refer to 1—3. Mark first appropriate box.*	A2	15 1 ☐ "Deafness" in 1b 2 ☐ "Trouble hearing" in 2b } *(4)* 3 ☐ "Hearing aid" in 3b 4 ☐ All three blank *(NP)*
Include parenthetical if "Hearing aid" marked in 3b. **4a. Which statement best describes — — hearing in — — LEFT ear (without a hearing aid) — good, a little trouble, a lot of trouble, or deaf?**	4a.	16 1 ☐ Good 2 ☐ Little trouble 3 ☐ Lot of trouble 4 ☐ Deaf 9 ☐ DK
b. Which statement best describes — — hearing in — — RIGHT ear (without a hearing aid) — good, a little trouble, a lot of trouble, or deaf?	b.	17 1 ☐ Good 2 ☐ Little trouble 3 ☐ Lot of trouble 4 ☐ Deaf 9 ☐ DK
Mark box or ask: **5a. (Without a hearing aid) Can — — usually HEAR AND UNDERSTAND what a person says without seeing his face if that person WHISPERS to — — from across a quiet room?**	5a.	18 0 ☐ Under 3 *(7)* 1 ☐ Yes *(6a)* 2 ☐ No 9 ☐ DK
b. (Without a hearing aid) Can — — usually HEAR AND UNDERSTAND what a person says without seeing his face if that person TALKS IN A NORMAL VOICE to — — from across a quiet room?	b.	19 1 ☐ Yes *(6a)* 2 ☐ No 9 ☐ DK
c. (Without a hearing aid) Can — — usually HEAR AND UNDERSTAND what a person says without seeing his face if that person SHOUTS to — — from across a quiet room?	c.	20 1 ☐ Yes *(6b)* 2 ☐ No 9 ☐ DK
d. (Without a hearing aid) Can — — usually HEAR AND UNDERSTAND what a person says without seeing his face if that person SPEAKS LOUDLY into — — better ear?	d.	21 1 ☐ Yes 2 ☐ No } *(6b)* 9 ☐ DK

Notes

FORM HIS-2 (1991) (1-23-91)

Section A — HEARING — Continued		PERSON 1
6a. How old was — — when — — began to have trouble hearing?	**6a. and b.**	22–23 00 ☐ At birth 01 ☐ Less than 1 year old _____ Years old 98 ☐ No trouble 99 ☐ DK *(6c)* *(7)*
b. How old was — — when — — began to have serious trouble hearing or became deaf?		
c. Was it before or after — — 19th birthday?	**c.**	24 1 ☐ Before *(6d)* 2 ☐ After 9 ☐ DK *(7)*
d. Was it before or after — — 3rd birthday?	**d.**	25 1 ☐ Before 2 ☐ After 9 ☐ DK
Hand Card A1. Read all categories. **7.** What was the cause of — — hearing trouble or deafness —		26
a. Mother had German measles (rubella) during pregnancy?	**7a.**	1 ☐ Yes 2 ☐ No 9 ☐ DK
b. At birth for a genetic reason?	**b.**	27 1 ☐ Yes 2 ☐ No 9 ☐ DK
c. Present at birth for some other reason, not including infectious disease?	**c.**	28 1 ☐ Yes 2 ☐ No 9 ☐ DK
d. An infectious disease such as measles or meningitis?	**d.**	29 1 ☐ Yes 2 ☐ No 9 ☐ DK
e. An ear infection?	**e.**	30 1 ☐ Yes 2 ☐ No 9 ☐ DK
f. An ear injury?	**f.**	31 1 ☐ Yes 2 ☐ No 9 ☐ DK
g. Ear surgery?	**g.**	32 1 ☐ Yes 2 ☐ No 9 ☐ DK
h. Loud, brief noise from gunfire, blasts, or explosions?	**h.**	33 1 ☐ Yes 2 ☐ No 9 ☐ DK
i. Other noise from machinery, aircraft, power tools, loud music, appliances, Walkman personal stereos, hair dryers, etc.?	**i.**	34 1 ☐ Yes 2 ☐ No 9 ☐ DK
j. Getting older?	**j.**	35 1 ☐ Yes 2 ☐ No 9 ☐ DK
k. Some other cause?	**k.**	36 1 ☐ Yes — *Specify* _____ 2 ☐ No 9 ☐ DK
ITEM A3 **a.** *Mark first appropriate box:*	**A3 a.**	37 1 ☐ Present for all questions 2 ☐ Present for some questions 3 ☐ Not present
b. *Enter person number(s) of respondent(s).*	**b.**	38–39 40–41 _____ Person number(s) of respondent(s) *(A2 for NP or Sec. B)*

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