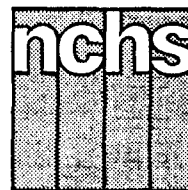


# Advance Data



From Vital and Health Statistics of the National Center for Health Statistics

## Disability and Health: Characteristics of Persons by Limitation of Activity and Assessed Health Status, United States, 1984–88

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### Introduction

Health status and disability status are conceptually distinct but empirically interrelated. For instance, a person may be disabled by blindness and yet be in excellent health, and a person with a chronic heart condition may have adequate capacities to function in an average way in relation to his or her social roles and therefore not be disabled. However, in practice a large proportion of persons who are in bad health have some disability, and a large proportion of persons who are disabled are in bad health. This report gives estimates of the number of persons in the civilian noninstitutionalized population of the United States, combining measures of both disability and health status, and describes the resulting groups in relation to sociodemographic and other health characteristics.

Each year the National Center for Health Statistics publishes estimates from the National Health Interview Survey (NHIS) of the number of persons by disability status and health status (1). There are many

ways to define "disability," and the concept of limitation of activity due to chronic conditions is used in NHIS. Limitation of activity is defined in terms of level of ability to perform certain major activities associated with specific age ranges (for instance, the ability to attend a regular school, for children 5–17 years of age). The NHIS concept of health status is based on responses to the question, "Would you say \_\_\_'s health in general is excellent, very good, good, fair, or poor?" Because responsible adult family members respond for their children and for other adult members of the family who are not present at the interview or are incapable of responding, the estimates associated with this concept are most properly referred to as "respondent-assessed health status." For convenience of expression, the briefer term "health status" is often used in this publication.

The published annual estimates from NHIS are shown separately for each of these characteristics. Occasionally special reports are released showing detailed estimates

for each characteristic for many subgroups within the population (2,3). However, rarely do estimates appear showing these two characteristics cross-classified in terms of, for instance, the health status of persons limited in activity or the limitation status of persons in poor health. This is because disabled people and people with chronic illness, who ordinarily constitute the subgroups of major interest in health statistics, are relatively small proportions of the total population. Thus, cross-classifying persons by these characteristics produces many estimates with very high sampling errors.

To overcome this limitation, this report shows these types of estimates on the basis of accumulating all of the individuals included in the NHIS sample from 1984 to 1988, amounting to an overall population sample of about 504,000 persons. However, even with a sample this large, some of the estimates to be shown in this report would be statistically unreliable if the two health-related characteristics were to be cross-classified in all



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possible detail. For this reason, the estimates are shown in terms of only two categories for each of the characteristics. Persons are classified as limited or not limited in activity (their degree of limitation being disregarded) and as in fair or poor health (combined) or in good, very good, or excellent health (combined). The presentation of the results focuses on the sociodemographic and health differences of the four subgroups produced by this simple cross-classification.

**Table 1. Average annual percent distribution and number of persons by limitation of activity due to chronic conditions and respondent-assessed health status: United States, 1984-88**

Health status	Total	Limited in activity	Not limited in activity
		Percent distribution	
All health statuses . . . . .	<sup>1</sup> 100.0	13.8	86.2
Fair or poor . . . . .	10.2	6.1	4.1
Good to excellent . . . . .	89.8	7.7	82.1
		Number of persons in thousands	
All health statuses . . . . .	<sup>2</sup> 236,122	32,411	202,514
Fair or poor . . . . .	24,070	14,385	9,685
Good to excellent . . . . .	210,855	18,026	192,829

<sup>1</sup>Excludes persons for whom health status was not determined.

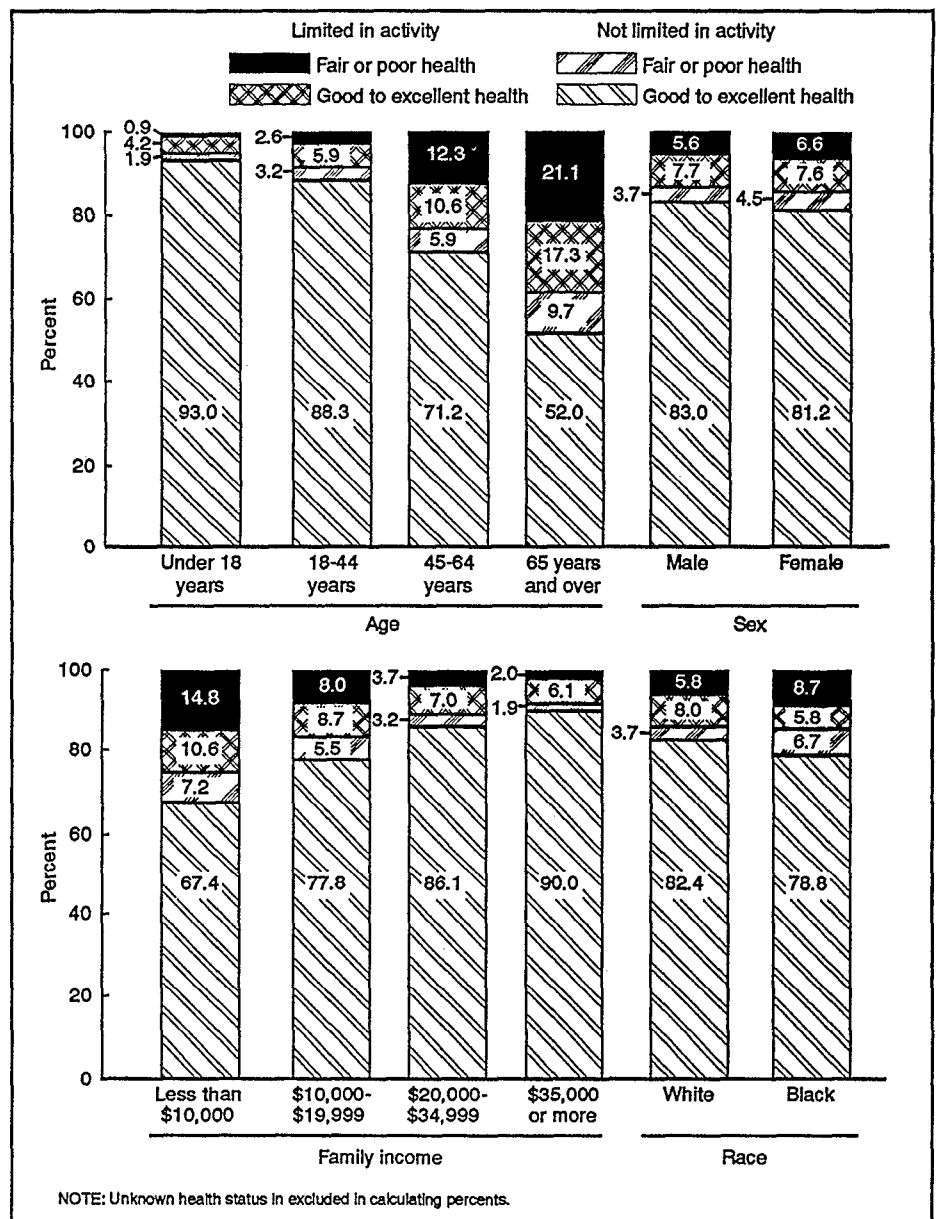
<sup>2</sup>Includes persons for whom health status was not determined.

**Results**

Table 1 shows that most persons in the population (82.1 percent) were not limited in activity and were in good to excellent health. Among the other 17.9 percent of the population, 6.1 percent were both limited in activity and in fair or poor health, 7.7 percent were limited in activity but in good to excellent health, and 4.1 percent were in only fair or poor health but were not limited in activity.

Figure 1 shows the distribution of the population of these four subgroups according to age, sex, family income, and race. The relative proportion of each of the groups associated with limitation and/or fair or poor health increases with age. For instance, only about 7.0 percent of persons under 18 years of age were limited in activity, in fair or poor health, or both, but about 48.1 percent of persons 65 years of age and over fell into one of these three groups.

The relative proportions of persons who are both limited and in fair or poor health increase with age in relation to the percents of persons who are either limited or in fair or poor health but not both. For instance, although for persons under 18 years of age only 12.9 percent (0.9 percent divided by 7.0 percent) of those who were limited and/or in fair or poor health were both limited and in fair or poor health, the corresponding estimate for persons 65 years of age and over is 43.9 percent



**Figure 1. Average annual percent distribution of persons by limitation of activity due to chronic conditions and respondent-assessed health status, according to selected characteristics: United States, 1984-88**

(21.1 percent divided by 48.1 percent).

The relative differences according to sex are minor compared with the differences shown for the other characteristics in figure 1. About 83.0 percent of males were not limited in activity and in good to excellent health; for females, the corresponding estimate is 81.2 percent.

About 1 of 3 persons (32.6 percent) in families with an annual income of less than \$10,000 was limited in activity, in fair or poor health, or both; the corresponding proportion for persons in families with an annual income of \$35,000 or more was 1 in 10 persons (10.0 percent). Also, the ratio of persons limited and in fair or poor health to those either limited or in fair or poor health (but not both) increases as family income decreases. The ratio of persons with both characteristics to those with at least one characteristic is 45.4 percent (14.8 percent divided by 32.6 percent) for incomes of less than \$10,000; the corresponding estimate for persons in families with an annual family income of \$35,000 or more is 20.0 percent (2.0 percent divided by 10.0 percent).

Figure 1 also shows the results for white and black persons. About 82.4 percent of white persons were not limited in activity and in good to excellent health. The corresponding estimate for black persons is 78.8 percent. The major difference among those who were limited and/or in fair or poor health is that, in contrast to white persons (and unlike the comparisons in figure 1 for age, sex, and family income), the proportion of black persons who were in fair or poor health but not limited in activity (6.7 percent) was larger than the proportion who were limited but not in fair or poor health (5.8 percent). The corresponding estimates for white persons were 3.7 percent and 8.0 percent, respectively. However, the proportion who were both limited and in fair or poor health among black persons (8.7 percent) was larger than the

proportion for white persons (5.8 percent).

Table 2 shows the estimates in figure 1 for sex and race by age. It also includes estimates for the four limitation and health status groups by family income, region, and place of residence. The estimates by geographic region are similar, except that a lower proportion of persons in the South were in good to excellent health and not limited in activity (80.2 percent). In regard to place of residence, the lowest proportion of persons in good to excellent health and not limited in activity was among those persons living outside of metropolitan statistical areas (79.3 percent).

Regarding other health characteristics of the four groups of persons distinguished in terms of limitation of activity and assessed health status, figure 2 shows the results for restricted-activity days, physician contacts, and short-stay hospital days. These data are shown by age, sex, race, family income, geographic region, and place of residence in tables 3–5.

A restricted-activity day is a day on which a person stays in bed, misses work or school, or cuts down on his or her usual activity because of illness, impairment, or injury. As may be noted, the estimates for the four groups range from 7.4 days per person per year for those not limited and in good to excellent health to 88.2 days per person per year for persons limited and in fair or poor health. Persons in this latter group experience some form of activity restriction on about one out of every four days (24.2 percent) in a year.

Figure 2 also shows the results for physician contacts. A physician contact is defined as a contact with a physician or a medical assistant working under the supervision of a physician for purposes of treatment, diagnosis, or consultation. Contacts of this nature over the telephone are included, but contacts with medical personnel while an overnight patient in a hospital are not. However, visits to a hospital clinic or emergency room are included. The estimates for

physician contacts range from 3.8 per person per year for those not limited in activity and in good to excellent health to 17.1 per person per year for persons who were limited and in fair or poor health.

The range of the estimates is greatest for the third measure shown in figure 2—hospital days, a measure of the number of nights a person spent as an admitted patient in a short-stay hospital. Persons not limited in activity who were in good to excellent health had 33.2 hospital days per 100 persons per year, but those who were limited and in fair to poor health had a corresponding rate of 530.2.

It may be noted from the relationships among the rates shown for each of the health measures in figure 2 that the rates for mixed groups (limited but not in fair or poor health, in fair or poor health but not limited) show little variation. This suggests, at least in terms of these three measures of morbidity, that health status and disability status when considered alone have similar effects with regard to morbidity measures.

Aside from comparing morbidity rates for the four subgroups described in this report, one may examine the proportion of the total morbidity for selected measures associated with each subgroup. Table 6 shows that although during an average year from 1984 to 1988, persons who were limited in activity and in fair or poor health constituted only 6.1 percent of the population, they accounted for 36.6 percent of restricted-activity days, 19.8 percent of physician contacts, and 40.5 percent of short-stay hospital days.

It remains to consider the types of conditions associated with the four limitation and health status groups that to this point have been described only in terms of sociodemographic and health-impact measures. Both limitation of activity and assessed health status are measures of the impact of chronic conditions. Indeed, table 7 shows small differences for the four groups in the incidence rates of acute conditions. Acute conditions

Table 2. Average annual percent distribution and number of persons by limitation of activity due to chronic conditions and respondent-assessed health status, according to selected sociodemographic characteristics: United States, 1984-88

Characteristic	Total <sup>1</sup>	Limited in activity		Not limited in activity		Total <sup>2</sup>	Limited in activity		Not limited in activity	
		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health
		Percent distribution					Number in thousands			
All persons <sup>3</sup>	100.0	6.1	7.7	4.1	82.1	236,122	14,385	18,026	9,685	192,829
Age										
Under 18 years	100.0	0.9	4.2	1.9	93.0	63,035	568	2,632	1,160	58,170
Under 5 years	100.0	0.7	1.6	2.3	95.5	18,154	118	295	406	17,181
5-17 years	100.0	1.0	5.3	1.7	92.0	44,882	450	2,338	754	40,989
18-44 years	100.0	2.6	5.9	3.2	88.3	100,740	2,584	5,922	3,258	88,650
18-24 years	100.0	1.2	4.5	2.9	91.4	26,790	323	1,206	779	24,383
25-44 years	100.0	3.1	6.4	3.4	87.2	73,950	2,262	4,716	2,479	64,267
45-64 years	100.0	12.3	10.6	5.9	71.2	44,788	5,464	4,743	2,624	31,752
65 years and over	100.0	21.1	17.3	9.7	52.0	27,558	5,769	4,728	2,644	14,257
65-69 years	100.0	20.5	17.5	6.9	55.1	9,477	1,933	1,650	651	5,201
70-74 years	100.0	18.4	13.9	11.7	56.0	7,485	1,367	1,035	868	4,169
75 years and over	100.0	23.5	19.4	10.7	46.4	10,597	2,469	2,044	1,126	4,887
Sex and age										
Male, all ages	100.0	5.6	7.7	3.7	83.0	114,181	6,343	8,758	4,183	94,303
Under 5 years	100.0	0.7	1.8	2.5	95.0	9,290	65	166	226	8,755
5-17 years	100.0	1.1	6.2	1.5	91.2	22,936	244	1,422	340	20,750
18-24 years	100.0	1.1	5.0	2.2	91.7	13,082	147	647	289	11,943
25-44 years	100.0	2.8	6.9	2.8	87.6	36,172	1,020	2,471	995	31,568
45-64 years	100.0	11.8	10.2	5.7	72.4	21,347	2,496	2,168	1,207	15,370
65 years and over	100.0	21.0	16.7	10.0	52.4	11,354	2,371	1,883	1,126	5,917
Female, all ages	100.0	6.6	7.6	4.5	81.2	121,941	8,042	9,268	5,502	98,526
Under 5 years	100.0	0.6	1.5	2.0	95.9	8,864	53	129	180	8,426
5-17 years	100.0	0.9	4.2	1.9	92.9	21,946	206	916	414	20,240
18-24 years	100.0	1.3	4.1	3.6	91.0	13,708	175	559	490	12,439
25-44 years	100.0	3.3	6.0	3.9	86.8	37,778	1,242	2,245	1,484	32,699
45-64 years	100.0	12.7	11.0	6.1	70.2	23,441	2,968	2,575	1,416	16,382
65 years and over	100.0	21.1	17.7	9.4	51.8	16,204	3,398	2,845	1,518	8,341
Race and age										
White, all ages	100.0	5.8	8.0	3.7	82.4	200,424	11,661	16,035	7,437	164,321
Under 5 years	100.0	0.6	1.6	2.0	95.9	14,742	84	229	286	14,027
5-17 years	100.0	0.9	5.4	1.4	92.3	36,562	324	1,960	493	33,512
18-24 years	100.0	1.1	4.7	2.5	91.7	22,155	246	1,033	548	20,247
25-44 years	100.0	2.7	6.7	2.9	87.8	62,923	1,671	4,204	1,808	55,059
45-64 years	100.0	11.2	10.9	5.2	72.6	39,184	4,379	4,265	2,040	28,324
65 years and over	100.0	20.1	17.6	9.2	53.2	24,859	4,956	434	2,263	13,153
Black, all ages	100.0	8.7	5.8	6.7	78.8	28,543	2,472	1,644	1,904	22,336
Under 5 years	100.0	1.1	2.1	3.8	93.0	2,771	31	58	103	2,548
5-17 years	100.0	1.6	4.9	3.4	90.0	6,874	112	335	231	6,131
18-24 years	100.0	1.9	3.6	5.1	89.4	3,688	69	133	189	3,282
25-44 years	100.0	6.3	4.9	6.7	82.2	8,438	527	412	559	6,904
45-64 years	100.0	22.1	8.6	11.1	58.2	4,474	983	383	494	2,589
65 years and over	100.0	32.9	14.2	14.3	38.6	2,297	750	324	327	882
Family income										
Less than \$10,000	100.0	14.8	10.6	7.2	67.4	33,392	4,913	3,516	2,391	22,381
\$10,000-\$19,999	100.0	8.0	8.7	5.5	77.8	45,832	3,652	3,991	2,510	35,487
\$20,000-\$34,999	100.0	3.7	7.0	3.2	86.1	62,655	2,333	4,366	1,970	53,778
\$35,000 or more	100.0	2.0	6.1	1.9	90.0	62,667	1,254	3,788	1,196	56,197
Geographic region										
Northeast	100.0	5.5	7.3	3.8	83.4	49,963	2,754	3,627	1,864	41,429
Midwest	100.0	5.6	8.0	3.8	82.6	58,544	3,290	4,646	2,194	48,160
South	100.0	7.5	7.4	4.9	80.2	80,320	6,017	5,892	3,923	64,035
West	100.0	4.9	8.2	3.6	83.2	47,296	2,324	3,861	1,705	39,205
Place of residence										
MSA	100.0	5.6	7.5	3.9	83.0	177,599	9,883	13,278	6,860	146,651
Central city	100.0	6.7	7.6	4.7	81.0	71,194	4,748	5,403	3,301	57,340
Not central city	100.0	4.9	7.4	3.4	84.3	106,405	5,136	7,876	3,559	89,311
Not MSA	100.0	7.7	8.2	4.8	79.3	58,523	4,501	4,748	2,825	46,178

<sup>1</sup>Excludes persons whose health status was not assessed.<sup>2</sup>Includes persons whose health status was not assessed.<sup>3</sup>Includes persons of races other than white or black and persons with unknown family income.

NOTE: MSA is metropolitan statistical area.

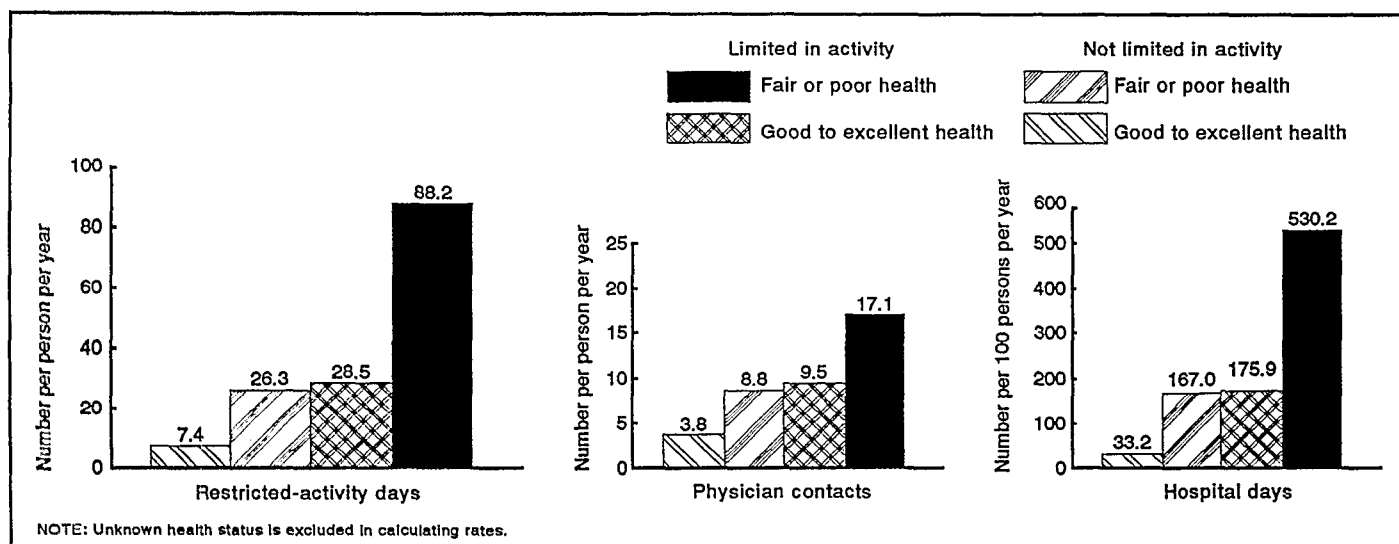


Figure 2. Average annual rates for respondent-assessed health status and limitation of activity due to chronic conditions for restricted-activity days, physician contacts, and short-stay hospital days: United States, 1984–88

play a relatively insignificant role in explaining the large differences among the four groups in the rates shown earlier for restricted-activity days, physician contacts, and hospital days.

Showing the prevalence rates for each of the four limitation and health groups of all of the chronic conditions for which NHIS collects data would be beyond the scope of this report. However, as suggested earlier in the example of blindness, an impairment differs from other types of chronic conditions in that it does not necessarily imply a health problem. Thus the interaction of impairments with disability and health status is of special interest.

In NHIS, a condition is considered chronic if (a) the respondent indicates it was first noted 3 months or more before the reference date of the interview or (b) it is a type of condition that ordinarily has a duration of more than 3 months. An impairment is a chronic or permanent defect, usually static in nature, that results from disease, injury, or congenital malformation.

As expected, considerably lower percentages of persons with impairments than persons in the general population were not limited in activity and were in good to excellent health. As shown in table 8,

these percents were lower for persons with an impairment than for all persons for every impairment measured. There is, however, some variation by impairment in the proportions of people not limited in activity and in good to excellent health. At one extreme is color blindness, with roughly three-quarters of persons reported as not limited and in good health. At the other extreme is paralysis of extremities, with only about 1 out of 10 persons so reported.

Estimates for the other impairments range from about 40 to 55 percent. Persons with reported cataracts and those with glaucoma were among the least likely to indicate good health and no limitation; those in the categories of hearing impairment and deformity or orthopedic impairment of the back and lower extremities were most likely.

The relationship of the percents for the two health categories among the population with an activity limitation also differs by impairment. For instance, like the population in general, persons with speech impairments and those with deformity or orthopedic impairments were more likely to be limited but in good to excellent health than to be limited and in fair or poor health. This was not true for the other impairments.

In interpreting the speech impairment data, it is useful to remember that this is one impairment for which children are likely to have higher prevalence rates than adults. In 1988, of an estimated 2,640,000 persons with reported speech impairments, 1,151,000 (43.6 percent) were under the age of 18 years. That children in general are in good health and that so many of the persons with reported speech impairments are children could help to explain why the percent who were limited in activity but in good to excellent health was relatively high for this group.

Also important is the fact that the reported impairments may differ in severity. For example, the overall prevalence rate reported for hearing impairment over the period 1984–88 was relatively high, 89.8 per 1,000 persons. Past studies (4,5) have documented that this category includes various levels of hearing impairment. The rate for paralysis of extremities was much lower, 5.8 per 1,000 persons. There may not be much variation in severity for this condition, however. Almost one-half of the population with paralysis of extremities indicated that they were limited in activity and in fair to poor health.

To discern whether the observed patterns are a function of the

Table 3. Average annual number per person per year and number of restricted-activity days, by limitation of activity due to chronic conditions, respondent-assessed health status, and selected sociodemographic characteristics: United States, 1984-88

Characteristic	Total <sup>1</sup>	Limited in activity		Not limited in activity		Total <sup>1</sup>	Limited in activity		Not limited in activity		
		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health	
		Number per person per year					Number in thousands				
All persons <sup>2</sup>	14.8	88.2	28.5	26.3	7.4	3,492,089	1,269,208	513,288	255,175	1,433,153	
Age											
Under 5 years	10.2	84.4	24.9	34.6	8.8	184,942	9,955	7,360	14,035	151,905	
5-17 years	8.8	56.9	18.0	22.2	7.5	395,341	25,618	42,137	16,723	307,667	
18-24 years	9.6	71.4	25.0	26.9	7.5	258,194	23,047	30,142	20,934	183,369	
25-44 years	12.1	91.5	31.3	27.7	7.3	897,053	207,040	147,544	68,730	470,660	
45-64 years	19.8	88.6	29.7	21.4	6.3	886,192	484,011	140,939	56,211	199,513	
65 years and over	31.6	90.1	30.7	29.7	8.4	870,369	519,538	145,167	78,544	120,039	
Sex and age											
Male, all ages	12.9	83.2	25.6	23.2	6.5	1,468,806	527,574	224,165	96,960	610,565	
Under 5 years	10.3	81.4	25.9	33.8	8.8	95,678	5,294	4,303	7,644	77,410	
5-17 years	8.2	52.3	16.4	21.0	6.9	186,981	12,754	23,291	7,148	142,390	
18-24 years	7.7	67.1	22.4	21.2	5.8	100,399	9,868	14,484	6,124	69,666	
25-44 years	10.4	90.4	28.3	21.9	6.1	377,990	92,206	69,931	21,764	192,987	
45-64 years	18.2	85.1	29.3	19.9	5.6	389,108	212,330	63,424	24,013	86,683	
65 years and over	28.1	82.3	25.9	26.9	7.0	318,651	195,122	48,733	30,267	41,428	
Female, all ages	16.6	92.2	31.2	28.8	8.3	2,023,283	741,634	289,123	158,215	822,588	
Under 5 years	10.1	87.9	23.7	35.5	8.8	89,263	4,661	3,056	6,391	74,495	
5-17 years	9.5	62.4	20.6	23.1	8.2	208,360	12,863	18,846	9,575	165,277	
18-24 years	11.5	75.3	28.0	30.2	9.1	157,795	13,179	15,658	14,810	113,703	
25-44 years	13.7	92.5	34.6	31.7	8.5	519,063	114,834	77,614	46,966	277,673	
45-64 years	21.2	91.5	30.1	22.7	6.9	497,084	271,681	77,515	32,198	112,829	
65 years and over	34.0	95.5	33.9	31.8	9.4	551,718	324,415	96,433	48,276	78,611	
Race and age											
White, all ages	14.7	87.7	28.1	27.3	7.6	2,943,152	1,023,214	451,239	202,779	1,248,494	
Under 5 years	10.6	89.9	26.9	38.9	9.2	155,838	7,555	6,167	11,138	129,631	
5-17 years	9.2	60.9	18.6	26.0	7.9	338,095	19,721	36,437	12,804	266,231	
18-24 years	9.9	73.5	25.4	28.8	7.8	218,374	18,084	26,215	15,790	157,849	
25-44 years	11.7	91.2	30.2	27.3	7.4	735,836	152,336	126,946	49,398	405,134	
45-64 years	18.8	87.3	29.4	22.3	6.3	735,875	382,183	125,455	45,480	177,656	
65 years and over	30.5	89.5	29.9	30.1	8.5	759,133	443,336	130,019	68,169	111,992	
Black, all ages	16.7	89.8	32.6	24.3	6.8	477,113	221,919	53,515	46,239	151,879	
Under 5 years	8.8	67.0	*17.9	25.8	7.3	24,468	2,078	1,039	2,655	18,491	
5-17 years	7.0	41.1	15.9	15.0	5.6	48,246	4,602	5,326	3,473	34,635	
18-24 years	8.8	64.6	26.0	24.1	6.0	32,454	4,454	3,452	4,557	19,726	
25-44 years	16.4	91.4	41.1	30.5	8.0	138,467	48,191	16,929	17,032	55,265	
45-64 years	29.9	94.6	33.5	19.2	6.9	133,587	92,985	12,849	9,465	17,902	
65 years and over	43.5	92.8	43.0	27.7	6.6	99,891	69,609	13,921	9,057	5,859	
Family income											
Less than \$10,000	25.2	94.7	31.7	28.7	8.5	841,379	465,201	111,477	68,719	190,870	
\$10,000-\$19,999	16.9	85.1	28.9	25.8	7.9	772,558	310,647	115,144	64,737	278,585	
\$20,000-\$34,999	12.4	83.6	26.6	24.1	7.7	776,856	194,989	116,335	47,438	415,369	
\$35,000 or more	10.0	82.8	26.8	25.5	6.9	627,806	103,888	101,598	30,557	388,500	
Geographic region											
Northeast	13.8	85.0	29.6	26.2	7.1	687,757	234,127	107,449	48,849	293,123	
Midwest	13.3	80.5	25.6	25.9	6.9	779,020	264,702	118,772	56,801	333,448	
South	16.0	89.1	28.7	24.9	7.4	1,282,756	536,215	168,884	97,624	471,468	
West	15.7	100.8	30.6	30.4	8.5	742,556	234,164	118,183	51,902	335,115	
Place of residence											
MSA	14.7	91.6	29.9	27.3	7.6	2,615,601	905,042	396,531	187,021	1,110,397	
Central city	16.2	94.8	31.2	26.7	7.7	1,154,269	450,253	168,711	88,030	439,963	
Not central city	13.7	88.5	28.9	27.8	7.5	1,461,331	454,789	227,820	98,991	670,434	
Not MSA	15.2	81.3	24.9	24.7	7.1	838,109	348,903	111,910	65,874	307,418	

<sup>1</sup>Includes persons whose health status was not assessed.<sup>2</sup>Includes persons of races other than white or black and persons with unknown family income.

NOTE: MSA is metropolitan statistical area.

Table 4. Average annual number per person per year and number of physician contacts, by limitation of activity due to chronic conditions, respondent-assessed health status, and selected sociodemographic characteristics: United States, 1984-88

Characteristic	Total <sup>1</sup>	Limited in activity		Not limited in activity		Total <sup>1</sup>	Limited in activity		Not limited in activity		
		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health	
		Number per person per year					Number in thousands				
All persons <sup>2</sup>	5.3	17.1	9.5	8.8	3.8	1,244,439	245,779	171,595	85,361	735,521	
Age											
Under 5 years	6.6	28.2	14.3	14.8	6.1	119,676	3,328	4,220	5,998	105,327	
5-17 years	3.3	16.4	7.7	6.6	2.8	146,154	7,363	17,975	4,989	114,940	
18-24 years	4.2	17.2	8.5	9.2	3.6	111,521	5,551	10,213	7,186	88,265	
25-44 years	4.8	20.1	9.9	9.6	3.7	355,082	45,462	46,764	23,712	238,214	
45-64 years	6.1	16.9	9.6	7.5	3.7	275,332	92,166	45,682	19,682	116,230	
65-74 years	8.0	15.8	9.7	8.7	4.7	135,885	51,983	26,027	13,175	43,658	
75 years and over	9.5	16.2	10.1	9.4	5.9	100,788	39,927	20,713	10,619	28,888	
Sex and age											
Male, all ages	4.4	15.6	8.1	7.7	3.2	503,891	98,957	71,184	32,359	298,235	
Under 18 years	4.2	19.4	8.1	9.5	3.8	136,841	5,964	12,862	5,391	111,630	
18-44 years	3.3	17.0	7.5	7.2	2.5	162,419	19,852	23,365	9,209	109,447	
45-64 years	5.3	15.4	8.2	6.6	3.1	113,258	38,342	17,794	8,004	48,264	
65 years and over	8.0	14.7	9.1	8.7	4.9	91,374	34,798	17,162	9,756	28,894	
Female, all ages	6.1	18.3	10.8	9.6	4.4	740,548	146,822	100,411	53,002	437,286	
Under 18 years	4.2	18.3	8.9	9.4	3.8	128,989	4,727	9,334	5,597	108,637	
18-44 years	5.9	22.0	12.0	11.0	4.8	304,185	31,160	33,612	21,689	217,032	
45-64 years	6.9	18.1	10.8	8.2	4.1	162,075	53,824	27,888	11,678	67,966	
65 years and over	9.0	16.8	10.4	9.2	5.2	145,299	57,111	29,578	14,038	43,652	
Race and age											
White, all ages	5.4	17.6	9.6	9.4	4.0	1,085,630	204,776	154,154	69,894	651,568	
Under 18 years	4.5	22.3	8.9	11.7	4.1	232,040	9,105	19,428	9,077	192,928	
18-44 years	4.7	21.0	9.7	10.3	3.8	401,120	40,352	50,727	24,321	284,798	
45-64 years	6.1	17.2	9.6	7.8	3.7	238,961	75,195	40,952	15,859	105,659	
65 years and over	8.6	16.2	9.9	9.1	5.2	213,510	80,124	43,046	20,637	68,182	
Black, all ages	4.6	15.0	8.7	6.9	3.0	132,190	37,016	14,300	13,223	66,861	
Under 18 years	2.9	10.0	6.1	4.7	2.5	27,696	1,426	2,413	1,569	22,122	
18-44 years	4.4	15.8	9.5	7.4	3.2	53,255	9,411	5,158	5,540	32,849	
45-64 years	6.9	15.5	9.4	6.7	3.2	30,714	15,217	3,612	3,333	8,344	
65 years and over	8.9	14.6	9.6	8.5	4.0	20,524	10,963	3,117	2,781	3,546	
Family income											
Less than \$10,000	6.5	16.0	8.9	8.2	3.8	216,542	78,803	31,315	19,595	85,420	
\$10,000-\$19,999	5.3	15.9	9.2	8.2	3.6	245,088	58,201	36,837	20,489	128,559	
\$20,000-\$34,999	5.1	19.0	10.1	9.5	3.9	318,026	44,328	43,956	18,745	209,625	
\$35,000 or more	5.1	22.9	10.3	12.0	4.2	321,016	28,712	39,064	14,387	237,819	
Geographic region											
Northeast	5.1	18.2	10.2	9.5	3.6	254,529	50,047	36,978	17,644	148,404	
Midwest	5.4	17.8	9.6	9.3	4.0	317,520	58,579	44,620	20,313	192,726	
South	5.1	15.0	8.4	7.6	3.7	407,151	90,502	49,642	29,741	234,937	
West	5.6	20.1	10.5	10.4	4.1	265,238	46,651	40,355	17,664	159,454	
Place of residence											
MSA	5.4	18.1	10.1	9.4	3.9	956,458	179,117	134,690	64,281	573,545	
Central city	5.5	18.2	10.4	9.5	3.8	393,452	86,426	56,300	31,247	217,373	
Not central city	5.3	18.0	10.0	9.3	4.0	563,006	92,691	78,389	33,034	356,172	
Not MSA	4.9	14.8	7.8	7.5	3.5	287,981	66,662	36,906	21,080	161,976	

<sup>1</sup>Includes persons whose health status was not assessed.<sup>2</sup>Includes persons of races other than white or black and persons with unknown family income.

NOTE: MSA is metropolitan statistical area.

Table 5. Average annual number per 100 persons per year and number of short-stay hospital days, by limitation of activity due to chronic conditions, respondent-assessed health status, and selected sociodemographic characteristics: United States, 1984-88

Characteristic	Total <sup>1</sup>	Limited in activity		Not limited in activity		Total <sup>1</sup>	Limited in activity		Not limited in activity	
		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health
		Number per 100 persons per year				Number in thousands				
All persons <sup>2</sup>	80.2	530.2	175.9	167.0	33.2	189,252	76,265	31,706	16,176	64,042
Age										
Under 5 years	51.7	1,582.2	220.0	321.7	31.9	9,387	1,867	649	1,306	5,481
5-17 years	20.2	345.6	88.5	65.3	11.8	9,045	1,555	2,069	492	4,826
18-24 years	47.2	476.8	146.8	134.3	33.9	12,648	1,540	1,771	1,046	8,262
25-44 years	58.4	466.5	149.9	136.4	34.3	43,153	10,552	7,070	3,382	22,028
45-64 years	110.7	489.8	168.8	130.0	34.9	49,558	26,764	8,007	3,412	11,073
65-74 years	207.6	570.6	219.1	242.4	69.9	35,211	18,831	5,882	3,682	6,553
75 years and over	285.5	613.9	306.1	253.6	119.1	30,251	15,157	6,257	2,856	5,818
Sex and age										
Male, all ages	75.5	600.5	171.3	178.8	26.4	86,161	38,087	15,002	7,478	24,853
Under 18 years	28.0	378.2	96.5	137.3	18.4	9,038	1,165	1,533	77	5,422
18-44 years	41.4	522.9	144.8	107.2	19.1	20,399	6,102	4,515	1,377	8,311
45-64 years	128.6	612.0	203.6	163.3	36.5	27,461	15,275	4,415	1,971	5,612
65 years and over	257.7	655.7	241.1	297.7	93.1	29,263	15,546	4,539	3,352	5,507
Female, all ages	84.5	474.7	180.2	158.1	39.8	103,091	38,178	16,704	8,699	39,189
Under 18 years	30.5	871.4	113.4	171.9	17.0	9,394	2,257	1,185	1,021	4,886
18-44 years	68.8	422.7	154.3	154.5	48.7	35,402	5,990	4,326	3,050	21,979
45-64 years	94.3	387.1	139.5	101.8	33.3	22,096	11,490	3,593	1,441	5,461
65 years and over	223.4	542.7	267.2	209.9	82.3	36,200	18,442	7,601	3,187	6,863
Race and age										
White, all ages	79.4	529.1	174.6	178.7	33.6	159,105	61,695	28,002	13,290	55,221
Under 18 years	27.8	596.1	103.4	160.2	17.3	14,279	2,432	2,264	1,248	8,215
18-44 years	53.0	456.6	142.0	142.1	33.7	45,065	8,753	7,436	3,349	25,401
45-64 years	105.8	485.9	163.2	138.2	35.8	41,466	21,278	6,959	2,819	10,144
65 years and over	234.5	589.8	261.1	259.6	87.1	58,295	29,232	11,342	5,874	11,460
Black, all ages	95.7	549.5	205.4	136.7	34.0	27,316	13,584	3,377	2,603	7,600
Under 18 years	39.5	655.9	111.7	147.6	21.7	3,812	938	439	493	1,884
18-44 years	78.8	527.7	238.7	129.1	40.4	9,556	3,145	1,301	966	4,120
45-64 years	168.8	535.5	237.1	113.2	30.5	7,554	5,264	908	559	789
65 years and over	278.4	564.9	224.7	178.9	91.6	6,395	4,237	728	585	808
Family income										
Less than \$10,000	136.4	495.1	213.4	163.1	43.0	45,530	24,326	7,504	3,900	9,619
\$10,000-\$19,999	98.9	540.1	179.2	183.1	38.5	45,337	19,726	7,151	4,602	13,670
\$20,000-\$34,999	63.7	570.4	150.0	155.1	31.4	39,939	13,308	6,549	3,056	16,864
\$35,000 or more	45.9	531.4	128.0	145.0	27.4	28,757	6,664	4,848	1,734	15,395
Geographic region										
Northeast	85.8	641.1	194.8	189.1	34.9	42,855	17,657	7,067	3,524	14,464
Midwest	83.4	542.6	186.7	208.4	36.1	48,820	17,851	8,674	4,573	17,372
South	89.0	523.2	188.8	151.7	35.1	71,471	31,483	11,124	5,953	22,452
West	55.2	399.1	125.4	124.7	24.9	26,105	9,275	4,842	2,126	9,754
Place of residence										
MSA	77.8	544.0	183.9	168.4	32.5	138,091	53,760	24,417	11,554	47,602
Central city	87.9	555.2	210.2	155.9	33.9	62,576	26,361	11,355	5,145	19,446
Not central city	71.0	533.5	165.8	180.1	31.5	75,515	27,399	13,062	6,409	28,155
Not MSA	87.4	500.0	153.5	163.6	35.6	51,162	22,505	7,289	4,623	16,441

<sup>1</sup>Includes persons whose health status was not assessed.<sup>2</sup>Includes persons of races other than white or black and persons with unknown family income.

NOTE: MSA is metropolitan statistical area.



**Table 6. Average annual percent distribution of persons with restricted-activity days, physician contacts, and hospital days by limitation of activity and respondent-assessed health status: United States, 1984-88**

Event	Total <sup>1</sup>	Limited in activity		Not limited in activity	
		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health
Percent distribution					
Population . . . . .	100.0	6.1	7.7	4.1	82.1
Restricted-activity days . . . . .	100.0	36.6	14.8	7.4	41.3
Physician contacts . . . . .	100.0	19.8	13.9	6.9	59.4
Hospital days . . . . .	100.0	40.5	16.8	8.6	34.0

<sup>1</sup>Excludes persons whose health status was not assessed.

**Table 7. Average annual number of acute conditions per 100 persons per year, by limitation of activity due to chronic conditions and respondent-assessed health status: United States, 1984-88**

Limitation of activity and assessed health status	Number per 100 persons per year
Total . . . . .	178.0
Limited, fair or poor health . . . . .	190.5
Limited, good to excellent health . . . . .	184.6
Not limited, fair or poor health . . . . .	216.3
Not limited, good to excellent health . . . . .	174.6

**Table 8. Unadjusted and age-adjusted average annual percent distribution of selected chronic impairments by limitation of activity and respondent-assessed health status, according to impairment: United States, 1984-88**

Impairment	Total <sup>1</sup>	Limited in activity		Not limited in activity	
		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health
Unadjusted percent distribution					
Total population . . . . .	100.0	6.1	7.7	4.1	82.1
Visual Impairment . . . . .	100.0	25.2	17.6	5.2	52.0
Color blindness . . . . .	100.0	9.5	9.1	3.5	77.9
Cataracts . . . . .	100.0	29.4	21.5	9.0	40.1
Glaucoma . . . . .	100.0	26.1	22.4	8.8	42.7
Hearing Impairment . . . . .	100.0	19.1	18.0	7.1	55.8
Tinnitus . . . . .	100.0	23.7	18.3	7.1	50.9
Speech Impairment . . . . .	100.0	20.1	30.0	4.9	44.9
Absence of extremities . . . . .	100.0	24.3	20.0	5.3	50.3
Paralysis of extremities . . . . .	100.0	48.3	39.2	1.9	10.6
Deformity or orthopedic Impairment . . . . .	100.0	17.6	22.2	5.5	54.7
Back . . . . .	100.0	18.8	20.0	6.1	55.2
Upper extremities . . . . .	100.0	22.2	27.8	4.8	45.2
Lower extremities . . . . .	100.0	18.6	25.4	4.9	51.1
Age-adjusted percent distribution					
Visual Impairment . . . . .	100.0	17.8	14.9	4.4	62.9
Color blindness . . . . .	100.0	8.0	8.7	3.3	80.0
Cataracts . . . . .	100.0	19.5	20.6	4.9	55.0
Glaucoma . . . . .	100.0	18.2	17.0	7.5	57.3
Hearing Impairment . . . . .	100.0	12.5	16.5	5.9	65.1
Tinnitus . . . . .	100.0	16.3	16.7	6.4	60.6
Speech Impairment . . . . .	100.0	21.1	29.5	4.9	44.5
Absence of extremities . . . . .	100.0	17.1	20.1	3.6	59.2
Paralysis of extremities . . . . .	100.0	37.4	48.4	2.0	12.2
Deformity or orthopedic Impairment . . . . .	100.0	14.9	21.6	5.1	58.4
Back . . . . .	100.0	16.4	19.3	5.8	58.6
Upper extremities . . . . .	100.0	17.3	29.2	4.0	49.6
Lower extremities . . . . .	100.0	15.6	24.8	4.5	55.1

<sup>1</sup>Excludes persons whose health status was not assessed.

particular age distribution for each pattern, the data were adjusted for age. The distributions for four age groups (under 45 years, 45-64 years, 65-74 years, and 75 years and over) were calculated using the total population in each age group as the base, rather than the population in each age group with the particular impairment. The resulting populations in each age group are summed and divided by the total population to obtain an age-adjusted percent distribution of activity limitation for each impairment.

The patterns observed in the actual data generally hold in the age-adjusted distributions. Because, with one exception, impairments are positively associated with age, the age-adjusted percents in good health with no activity limitation are higher than the actual ones. The exception is speech impairments, for which the

**Table 9. Unadjusted and age-adjusted average annual number of selected chronic impairments per 1,000 persons, by limitation of activity and respondent-assessed health status: United States, 1984-88**

Impairment	Total <sup>1</sup>	Limited in activity		Not limited in activity	
		Fair or poor health	Good to excellent health	Fair or poor health	Good to excellent health
Unadjusted number per 1,000 persons					
Visual impairment . . . . .	34.9	143.5	80.0	44.1	22.1
Color blindness . . . . .	11.3	17.5	13.4	9.5	10.7
Cataracts . . . . .	23.4	112.3	65.5	51.1	11.4
Glaucoma . . . . .	7.9	33.9	23.1	16.9	4.1
Hearing impairment . . . . .	89.8	280.2	210.1	155.7	61.0
Tinnitus . . . . .	26.1	101.1	62.4	44.8	16.2
Speech impairment . . . . .	10.6	34.8	41.5	12.7	5.8
Absence of extremities . . . . .	7.0	27.9	18.4	9.1	4.3
Paralysis of extremities . . . . .	5.8	45.6	29.6	2.7	0.7
Deformity or orthopedic impairment . . . . .	113.1	325.5	327.2	150.4	75.3
Back . . . . .	64.2	196.6	166.9	94.9	43.1
Upper extremities . . . . .	13.3	48.1	48.0	15.6	7.3
Lower extremities . . . . .	48.3	146.7	160.2	57.5	30.1
Age-adjusted number per 1,000 persons					
Visual impairment . . . . .	34.8	123.3	66.5	36.5	23.7
Color blindness . . . . .	11.3	14.8	12.8	9.2	10.9
Cataracts . . . . .	23.4	43.7	33.2	23.4	17.0
Glaucoma . . . . .	7.9	17.2	13.2	9.8	5.7
Hearing impairment . . . . .	89.8	200.9	166.0	115.0	73.1
Tinnitus . . . . .	26.1	75.7	48.7	34.2	19.2
Speech impairment . . . . .	10.6	45.0	53.1	15.8	5.6
Absence of extremities . . . . .	7.0	22.6	15.7	6.2	5.0
Paralysis of extremities . . . . .	5.8	42.6	29.8	2.4	0.9
Deformity or orthopedic impairment . . . . .	113.1	380.2	341.8	148.6	77.5
Back . . . . .	64.2	252.9	173.0	96.7	44.1
Upper extremities . . . . .	13.3	49.0	51.3	12.9	7.9
Lower extremities . . . . .	48.4	173.7	166.7	54.7	30.9

<sup>1</sup>Excludes persons whose health status was not assessed.

percent is unchanged. At the same time, the adjusted percents for persons in good health and with no limitation are virtually unchanged for color blindness and paralysis of extremities. After age adjustment, almost one-half of the persons with paralysis of extremities are seen to have had an activity limitation but to have been in good health. In the actual distribution one-half are limited and in fair or poor health. Likewise, the percents of persons limited but in good health are higher than the percents limited and in fair or poor health for those who have hearing impairments and absence of extremities in the adjusted distributions but not in the unadjusted distributions.

As might be expected, the prevalence rates for reported impairments tend to be highest among persons limited in activity and in fair or poor health. They are lowest among those not limited and in good health, as demonstrated in

table 9. There are a few exceptions to this pattern. The prevalence rates per 1,000 persons of reported impairments of speech and of the lower extremities were higher for persons limited in activity and in good health than for those limited and in less than good health.

For persons limited in activity and in fair to poor health, the prevalence rates per 1,000 persons for reported visual impairments, cataracts, glaucoma, and absence or paralysis of extremities were very high compared with those for all persons. In sharp contrast, color blindness did not show much variation in reported rates.

Rates of impairments were generally higher for those limited but in good health than for those not limited but in fair to poor health. Among those not limited but in fair to poor health, reported rates for cataracts and glaucoma were relatively high.

As with the percent distributions, the prevalence rates were adjusted for age. Rates for four age groups (under 45 years, 45-64 years, 65-74 years, and 75 years of age and over) were calculated using the total population in each age group as the base, rather than the population in each age group with a particular activity limitation and health status configuration. The resulting populations in each age group are summed and divided by the total population to obtain an age-adjusted rate for each configuration.

In general, the patterns found in the unadjusted data hold. The adjusted rates tend to be lower for persons either with an activity limitation or in fair or poor health, because these populations tend to be older than the population with no limitations and in good health. The adjusted rate for deformity or orthopedic impairment of lower extremities among persons limited and in fair or poor health is higher

than among those limited but in good to excellent health. This is not true for the unadjusted rate.

To summarize, there appear to be particular patterns of association among various impairment categories and various configurations of activity limitation and self-assessed health status. Visual impairment, cataract, glaucoma, and absence of extremities are associated with fair to poor health; reported speech impairment and deformity or orthopedic impairment are associated with limited activity but good health. Color blindness is associated with good health and no activity limitation, but paralysis of extremities is associated with activity limitation and, to a lesser extent, with less than good health.

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### Symbols

---	Data not available
...	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
*	Figure does not meet standard of reliability or precision

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## Technical notes

The National Health Interview Survey (NHIS) is a continuous, cross-sectional, nationwide survey conducted by household interview. Each week a probability sample of households in the civilian noninstitutionalized population of the United States is interviewed by personnel of the U.S. Bureau of the Census to obtain information on the health and other characteristics of each member of the household. A description of the survey design, methods used in estimation, and general qualifications of the NHIS data is provided in the Current estimates report for 1989 (6).

The NHIS sample for the 5 years 1984-88 was composed of about 194,000 eligible households, containing approximately 504,000 persons living at the time of interview. The total noninterview rate for NHIS was about 4.3 percent. Estimates were produced by summing the frequencies for the 5-year period and dividing by 5. Thus, the

Table I. Parameters used to compute estimated standard errors for the estimates shown in this report

Characteristic	Parameter	
	a	b
Population group defined by characteristics other than age, sex, or race . . . . .	0.00001028	10,901
Restricted-activity days . . . . .	0.000105	118,358
Physician contacts . . . . .	0.0000156	36,892
Hospital discharge days . . . . .	0.00055	22,224

frequencies, percents, and rates represent average annual estimates for this 5-year period and not estimates for the whole period.

The sampling errors associated with the estimates shown in this report may be obtained by consulting appendix I of the Current estimates report for 1989 (6) and using the appropriate formulas and the parameters for 5 years of data shown in table I.

Population estimates restricted to age, sex, or race categories are adjusted to U.S. Bureau of the Census estimates and therefore have no sampling variation.

### Suggested citation

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