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Data in this report from health and demographic surveys present statistics by age and other variables on adoption; use of contraceptives and family planning services; wanted and unwanted childbearing; child care arrangements; developmental, learning, and emotional problems of children; and AIDS knowledge and attitudes. Estimates are based on the civilian noninstitutionalized population of the United States. These reports were originally published in 1990.

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Advance Data

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

Adoption in the 1980's

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Introduction

Adoption has long provided a mechanism for the care of children whose biological parents are unable to provide for them and an alternative means of creating a family for couples unable to have biological children. During most of the 1970's and 1980's, when legal abortion and the development of new reproductive technologies created additional alternatives to unwanted pregnancy and infertility, there has been a need for information on adoption trends, on the characteristics of children placed for adoption, on the characteristics of adoptive families and persons seeking adoption, and on the outcomes for children, biological parents, and adoptive parents. This information is necessary for formulation of adoption policies at the Federal level as well as for State and local public child welfare agencies. Three major developments in recent years have heightened the need for information: (1) the emphasis on finding permanent homes for children in the foster care system; (2) the belief that all waiting children are "adoptable"; and (3) the belief that foster families could serve as permanent families for children who could not return to their own families.

Despite the salience of these issues, information about adoption in the United States is very limited. Information on adoptions arranged through the public sector has been available since 1982, when the Office of Human Development Services implemented the Voluntary Cooperative Information System (VCIS) to collect data annually from State child welfare agencies on children in substitute care (1). National estimates of all types of adoption have not been produced by the Federal Government since the mid-1970's (2). Estimates have been developed by a private organization for 1982 and 1986, but are subject to variability in the completeness of reporting from State to State (3,4). These national estimates are used for indicating likely trends in adoption and for describing a limited number of characteristics, but cannot be used to assess the determinants and consequences of adoption on the individual level.

This report presents information on adoptions reported by a national sample of women 20–54 years of age in 1987. Results suggest that the proportion of ever-married women 20–44 years of age who have ever adopted may have declined during the mid-1980's; that the proportion of unrelated adoptions (those in which the adoptive parent and child are not related before the adoption) in which children are placed in adoptive homes as infants may be lower in the 1980's than in the 1970's; and that the proportion of unrelated adoptions involving white adoptive mothers was lower in the 1980's than in the 1970's. The results also indicate that the proportions who have adopted unrelated children are lower among black women and women of Hispanic origin than among nonminority women, and lower among women of low socioeconomic status, as indicated by educational and income level, compared with their more advantaged counterparts. Interracial adoptions, which constituted about 8 percent of all adoptions reported by women 20–54 years of age, consisted primarily

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of the adoption of children of races other than black or white by white adoptive mothers.

Data and methods

Survey data on adoption have been collected by the National Center for Health Statistics (NCHS) periodically since 1973. By providing measurement on an individual basis, such data may add substantially to the understanding of factors that influence adoption and its outcomes. However, most survey data on adoption are extremely limited. Adoption takes place rarely, and affects only a small fraction of the population. As a result, extremely large national surveys are required to produce sufficient numbers of cases for detailed analyses of adoption. Previous reports based on the NCHS survey the National Survey of Family Growth (NSFG) have been useful in providing some basic estimates of adoption, relinquishment, and social and economic outcomes, but have been severely limited in scope and precision by the small numbers of cases available for analysis (5–8).

In the mid-1980's, NCHS and the Administration for Children, Youth and Families (ACYF) initiated a collaborative effort to improve the precision and usefulness of survey data on adoption by expanding the range of adoption items included in the NSFG and including a comparable set of basic items on another large national survey conducted by NCHS—the National Health Interview Survey (NHIS). As a result of this effort, a comparable set of questions on adoption was asked of more than 30,000 women 20–54 years of age participating in the 1987 NHIS, and of more than 8,400 women 15–44 years of age participating in the 1988 NSFG. Because the samples for these two surveys were selected from the same sampling frame, the results can eventually be combined to produce estimates of greater precision than either would produce alone. This report presents estimates based on the data collected in the 1987 NHIS along with comparative estimates based on the 1982 NSFG.

The purpose of adoption items on the NHIS questionnaire was to provide information on the characteristics of women who adopt and on the adoptions themselves. Women were asked if they had ever adopted a child and, if so, the number adopted. Information on the date of birth, place of birth (United States or other), date of adoptive placement, relationship to the child before the adoption, and means of arranging the adoption was collected for up to two (most recently adopted) children. In addition, a broad range of social, demographic, and health information was collected about the women and about those adoptive children who were still living in the home.

Questions were directed to women 20–54 years of age both because this age group is believed to account for the vast majority of adoptions and also to avoid double counting of adoptions involving both male and female petitioners (adoptive parents). The limitation to females differentially affects estimates of unrelated adoptions and related adoptions. Related adoptions include adoptions of stepchildren and other children related to the adoptive parent by blood or marriage. Unrelated adoptions include adoptions where no prior relationship existed between adoptive parent and child, and adoptions of foster children by their foster parents. Estimates of unrelated adoptions are not materially affected by the limitation to females because the vast majority involve a married couple (9). However, related adoptions are underestimated to the extent that such adoptions, a large proportion of which are stepparent adoptions, involve only male petitioners. Unrelated adoptions are of particular interest because they are most likely to signal a real change in parenthood. In related adoptions, the adoption signals a formalization of a preexisting relationship that may or may not have been previously characterized by parenting.

Data collected in the NHIS were evaluated carefully for internal consistency, comparability to previous survey data and to existing national estimates relating to adoption. Results of this evaluation, along with procedures for estimating standard errors of estimates, are provided in the technical notes.

Adoption trends and differentials in the 1980's

The percent of ever-married women who have ever adopted a child is presented in table 1 according to relationship to the adopted child and other selected characteristics. To facilitate comparisons over time, data from both the 1987 NHIS and the 1982 NSFG are limited to ever-married women 20–44 years of age, the age group for which comparable questions were asked in both surveys.

The estimates in table 1 suggest a decline in adoption during the 1980's. The estimated proportion of those who had ever adopted any child was 2.2 percent in 1982 and 1.7 percent in 1987. The estimated proportion of those who had ever adopted an unrelated child was 1.7 percent in 1982 and 1.3 percent in 1987. The apparent decline in the adoption of unrelated children is most striking in those age groups where adoption typically occurs most frequently: the late twenties and early thirties. However, these differences between 1982 and 1987 are not statistically significant. Estimates for both years, but those particularly for 1982, lack sufficient precision to say with reasonable certainty that a decline in adoption has taken place. However, similarity between the estimates for 1982 and those for earlier years (5,6), and close correspondence between the estimates from the 1987 NHIS and unpublished preliminary estimates based on the 1988 NSFG, increase confidence that a decline in adoption did occur.

Previous studies of adoption based on survey data have indicated substantial differences in the likelihood of having adopted, differences according to age, marital status, the number of biological children ever born, and the ability to bear children (5,6,8). These results

Table 1. Number of ever-married women 20–44 years of age and percent who ever adopted a child, by relationship to child before the adoption, and selected characteristics: United States, 1982 and 1987

[Data are based on household interviews of the civilian noninstitutionalized population. The survey designs, general qualifications, and information on the reliability of the estimates are given in the technical notes]

Characteristic	Number of ever-married women in thousands	Relationship to child		
		Any child[1]	Unrelated child	Related child
1987 National Health Interview Survey		Percent		
Total[2]	38,077	1.7	1.3	*0.4
Age at interview:				
20–24 years	4,598	*0.1	*0.1	*0.0
25–29 years	8,218	0.6	*0.3	*0.2
30–34 years	9,186	1.5	1.1	*0.3
35–39 years	8,799	2.4	1.9	*0.3
40–44 years	7,277	3.4	2.8	*0.4
Marital status:				
Currently married	31,695	1.8	1.4	0.2
Previously married	6,382	1.3	1.0	*0.4
Race:				
White	32,894	1.8	1.4	0.2
Black	3,770	1.5	*0.8	*0.6
Hispanic origin:				
Hispanic	3,111	*0.8	*0.4	*0.4
Non-Hispanic	34,788	1.8	1.4	0.3
Education:				
Less than 12 years	5,367	1.0	*0.5	*0.5
12 years	16,705	1.5	1.1	*0.2
13 years or more	15,842	2.2	1.9	*0.2
Family income:				
Below poverty	3,614	*0.9	*0.4	*0.5
At or above poverty	32,393	1.9	1.5	0.2
Under $15,000	6,399	0.9	*0.4	*0.4
$15,000–24,999	7,482	1.6	1.2	*0.3
$25,000–34,999	7,398	1.8	1.4	*0.2
$35,000 or more	12,713	2.3	1.9	*0.2
1982 National Survey of Family Growth				
Total[2]	34,253	2.2	1.7	*0.4
Age at interview:				
20–24 years	4,818	*0.7	*0.0	*0.7
25–29 years	7,778	*0.9	*0.9	*0.0
30–34 years	8,218	*3.1	*2.9	*0.3
35–39 years	7,349	*2.1	*1.6	*0.4
40–44 years	6,090	*4.3	*2.9	*0.9
Marital status:				
Currently married	27,620	2.2	1.8	*0.3
Previously married	6,633	*2.5	*1.5	*1.0
Race:				
White	30,419	2.3	1.9	*0.3
Black	3,440	*1.6	*0.9	*0.8
Hispanic origin:				
Hispanic	2,773	*0.7	*0.2	*0.6
Non-Hispanic	31,480	2.4	1.9	*0.4
Education:				
Less than 12 years	6,576	*1.6	*0.4	*1.2
12 years	14,844	*2.3	*2.0	*0.2
13 years or more	13,515	*2.5	*2.1	*0.3
Family income:				
Below poverty	4,128	*2.2	*0.8	*1.4
At or above poverty	30,807	2.3	1.9	*0.3
Under $15,000	7,014	*2.3	*1.6	*0.7
$15,000–24,999	7,575	*2.0	*1.8	*0.3
$25,000–34,999	6,326	*2.8	*2.7	*0.2
$35,000 or more	8,558	*2.3	*1.7	*0.3

[1] The sum of the percents who adopted unrelated and related children may not equal the percent who adopted any child because of missing information and women who adopted children in both categories.

[2] Includes women of other races and women for whom information on specific characteristics is not ascertained.

have shown, not surprisingly, that adoption is most likely among married couples who are unable to have biological children and that the likelihood of having adopted increases with age. These studies have also noted tendencies for adoption to occur most commonly among couples of high socioeconomic status, but the studies have lacked the precision to demonstrate such relationships conclusively. The greater precision of the NHIS data provides an opportunity to reexamine the extent to which adoption varies among different groups in the population.

Results of the NHIS, shown in the top panel of table 1, confirm the expected relationship between age at the time of survey and the likelihood of ever having adopted a child. Less than 1 percent of ever-married women in their twenties, 2 percent of women in their thirties, and 3 percent of women in their forties had adopted a child at some time in their lives. This relationship results primarily from the fact that older women have had more time to discover that they cannot have biological children and to initiate and complete the adoption process. Differences by marital status in the percents adopting were not statistically significant: Women who were married at the time of the survey and women who were not married but had been married previously were about equally likely to have adopted by the time of the survey. However, this does not mean that marital status has no effect on the likelihood of adoption: As previous studies have shown, the overwhelming majority of adopting parents are married at the time of the adoption (5).

The percents of white and black ever-married women who had ever adopted any child were similar (1.8 and 1.5 percent, respectively). However, the percent who had adopted an unrelated child was substantially higher among white women (1.4) than among black women (0.8). By contrast, black women appeared more likely to have adopted a child related to them than white women (0.6 percent compared with 0.2 percent), although the statistical significance of this difference fell short of the 5-percent level.

Women of Hispanic origin were significantly less likely to have adopted a child or to have adopted a child unrelated to them than women who were not of Hispanic origin. Among non-Hispanic women 1.8 percent had adopted a child and 1.4 percent had adopted an unrelated child, compared with 0.8 percent and 0.4 percent, respectively, of Hispanic women. The percents reporting having adopted a related child were similar among these two groups of women.

Results shown in table 1 also indicate a positive association between educational attainment and the likelihood of having adopted. Women who had completed at least 1 year of college were more than twice as likely to have adopted than women who had not finished high school (2.2 compared with 1.0 percent), and they were nearly four times as likely to have adopted a child unrelated to them (1.9 compared with 0.5 percent). Although differences were not statistically significant, women with lower educational attainment appeared somewhat more likely to have adopted related children than women with higher educational levels.

Results by family income followed a similar pattern: Women with family incomes below the poverty level were less likely to have adopted any child, and less likely to have adopted an unrelated child, compared with women whose family incomes equaled or exceeded the poverty level. Differences by absolute levels of family income were similar: The percent who had adopted any child and the percent who had adopted an unrelated child were both lowest at the lowest income level and highest among those with the highest incomes. Related adoption did not differ significantly by poverty or income level, but appeared to be highest at the lowest income levels.

Estimates from the 1982 NSFG, shown in the lower panel of table 1, display similar patterns of adoption by age, marital status, race, Hispanic origin, educational attainment, and family income in most but not all cases. Their similarity adds to the confidence that the patterns of differentials observed in 1987 reflect true population differences. Interpretation of the NSFG data is limited, however, by its lack of precision (most statistics have relative standard errors in excess of 30 percent). Because of this, many differences are not statistically significant.

These results clearly indicate a lower prevalence of unrelated adoption among members of minority groups such as black and Hispanic women, and among those with relatively low socioeconomic status, as indicated by educational attainment and poverty. Because minority women are disproportionately poor and of low educational attainment, it is very likely that these findings are interdependent. Minority women may adopt unrelated children less often because they lack the required economic resources, or because of other factors such as higher marital instability, lower levels of childlessness, or less favorable attitudes toward the adoption of strangers. When minority or poor women do adopt, these data clearly suggest they are most likely to adopt a related child. This pattern may reflect a greater orientation toward the extended family as a mechanism for providing for children in need of care among these groups, or a greater pool of related children needing care from which to adopt.

Characteristics of adopted children

Characteristics of children adopted by women 20–54 years of age in 1987 are shown in table 2. This table is limited to unrelated adoptions, because related adoptions are incompletely represented by the NHIS. Estimates are shown for all adoptions, and for those occurring during the 1970's and 1980's separately. All estimates, especially those for adoptions in a given decade, are characterized by relatively high standard errors. Small or even moderate changes in characteristics over time, therefore, may not reflect actual change in the population of

Table 2. Number of unrelated children ever adopted by women 20–54 years of age and percent distribution by selected characteristics, according to year of adoption: National Health Interview Survey, 1987

[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 the technical notes]

Characteristic	Year of adoption		
	All years[1]	1970–79	1980–87
	Number in thousands		
All children[2]	1,081	404	315
	Percent distribution		
Total	100.0	100.0	100.0
Child's place of birth			
United States	91.4	88.4	90.3
Foreign country	8.6	11.6	9.7
How adoption arranged			
Public agency	40.7	41.4	36.5
Private agency	35.3	35.8	35.4
Independent	23.9	22.7	28.1
Age of child at placement			
Under 1 year	81.1	82.9	72.8
1 year	5.1	*3.7	9.0
2 years	*3.4	*2.9	4.6
3–5 years	*3.6	*5.1	3.3
6 years or over	6.7	*5.6	10.3
Child's current health status[3]			
Any limitation or fair or poor health	8.7	---	---
No limitation and good, very good, or excellent health	91.3	---	---
Age of adoptive mother at placement			
24 years or under	12.7	---	---
25–29 years	34.2	---	---
30–34 years	35.4	---	---
35–39 years	13.3	---	---
40 years or over	4.4	---	---
Race of adoptive mother			
White	93.2	96.0	87.0
Black	4.5	*3.6	9.0
Other	*2.3	*0.4	4.1
Hispanic origin of adoptive mother			
Hispanic	*2.5	*3.5	3.0
Non-Hispanic	97.5	96.5	97.0
Education of adoptive mother			
Less than 12 years	6.6	*9.0	1.9
12 years	39.4	38.8	32.5
13 years or more	54.0	52.3	65.6
Race of adoptive mother and child[3]			
Same race	92.4	---	---
White	85.4	---	---
Black	5.9	---	---
Other	*1.1	---	---
Different race	7.6	---	---
White mother, black child	*1.2	---	---
White mother, child of race other than black	4.8	---	---
Mother of other race, white child	*1.6	---	---
All other	*0.0	---	---

[1] Includes adopted children for whom date of adoption not ascertained and children adopted before 1970.
[2] Includes adopted children for whom information on specific characteristics is not ascertained; percent distributions based on known cases.
[3] Based on adoptive children known to be living in household with adoptive mother at time of survey.

adopted children. Even those comparisons that meet the criterion of statistical significance must be interpreted with caution, because in estimates based on a sample some significant differences will occur by chance.

Among all unrelated adoptions reported by women 20–54 years of age in 1987, about 9 percent involved children born outside the United States. Despite the fact that data from the Immigration and Naturalization Service (INS) show a doubling in the number of immigrant children admitted to the United States for the purpose of adoption—from nearly 5,000 in 1981 to more than 10,000 in 1987 (3,10)—the NHIS-NSFG estimate for foreign adoptions occurring during the 1980's is not significantly different from that for the 1970's. Because the INS data are widely believed to be accurate, it is likely that the absence of an increase in the NHIS data results from sampling or reporting errors (see the technical notes for a discussion of sampling error).

Since the mid-1970's, national estimates of adoptions have been limited mainly to those arranged through State social service agencies, but almost no information has been available on the percent of all adoptions arranged in this way. As of 1975, the last year for which a Federal agency published national adoption estimates, 39 percent of unrelated adoptions were arranged through public agencies, 38 percent through private agencies, and 23 percent independently, through lawyers or other means (11). Estimates made by the National Committee For Adoption for 1982 and 1986 indicated a similar percent arranged through public agencies (38 in 1982 and 39 in 1986), a lower percent arranged through private agencies (29 in both 1982 and 1986), and a higher percent arranged independently (33 percent in 1982 and 31 percent in 1986) (3,4).

Estimates based on NHIS data (table 2) are generally consistent with

these earlier estimates. Overall, 41 percent of unrelated adoptions were arranged through public agencies, 35 percent through private agencies, and 24 percent independently. Differences between adoptions in the 1970's and 1980's were not statistically significant, but they do suggest a slightly higher percent arranged independently in the 1980's (28 percent versus 23 percent), consistent with data from the National Committee For Adoption.

There is some evidence from the estimates in table 2 that suggest that the proportion of unrelated adoptions involving children placed into adoptive homes as infants may have declined. For adoptions occurring in the 1970's this proportion was 83 percent; for those occurring in the 1980's, the estimated proportion was 73 percent. The difference, however, was significant at only the 10-percent level. An apparent increase in the percent of unrelated children adopted at 6 years of age or older was not statistically significant. A decline in the proportion of adopted children placed as infants could be of some concern in view of evidence suggesting that the older the child at the age of adoption, the greater the likelihood of behavior and learning problems (12). Viewed differently, however, such a decline could also reflect success in placing older children in permanent homes.

By linking information on adoptions reported by mothers with information on the children themselves, estimates were derived of the current health status of adopted children who were still living in the household at the time of the survey (about 78 percent of all unrelated adoptions). These estimates indicate that the vast majority of adopted children are in good health: Only about 9 percent reported any limitation in activities due to health problems or reported health to be only fair or poor. Furthermore, adopted children appear to be as healthy as children in general: The percent of adopted children who were limited in activities and the percent in fair or poor health were similar to those observed for all children under 18 years of age (13).

Data on the age of the adoptive mother at the time of the adoption confirm the findings of earlier studies that most adoptions involve adoptive mothers between the ages of 25 and 34. About 70 percent of unrelated adoptions to women 20–54 years of age in 1987 had involved women in this age range, a percent similar to that observed for women 15–44 years of age in the 1982 National Survey of Family Growth (76 percent) (5). Estimates by age of mother are not shown by decade of adoption because of truncation bias: Women adopting in the 1970's are less likely to be represented in the NHIS adoption data the greater their age at adoption. For example, a woman who adopted in 1970 at age 40 would be 57 at the time of the NHIS survey, and she therefore would not have been asked about adoption. A woman who adopted in 1970 at age 30 would be only 47 at the time of the survey, and she would have been asked these questions and represented in the data. Because of this systematic bias, comparisons by decade in the age at adoption would be misleading.

The overwhelming majority (93 percent) of unrelated adoptions by women 20–54 years of age in 1987 involved white adoptive mothers, but there is some evidence that this percent may have declined. The estimated percent involving white mothers was 96 among adoptions occurring in the 1970's, and 87 among those occurring in the 1980's. This difference was statistically significant at the 5-percent level. There were apparent increases in the percent of unrelated adoptions involving both black mothers and mothers of other races between the two decades, but both fell short of the 5-percent significance level. Mothers of Hispanic origin accounted for only 2.5 percent of all unrelated adoptions by women 20–54 years of age in 1987, and there was no evidence of any change between the 1970's and 1980's.

Given the higher proportions of women who had ever adopted unrelated children among college-educated women than among women who had not completed high school, observed in table 1, it is not surprising that more than half of unrelated adoptions involved mothers with at least some college education. This proportion appears to have increased between the 1970's and 1980's, from slightly more than half to nearly two-thirds, but this apparent change is significant at only the 10-percent level. A parallel decline in the percent of unrelated adoptions involving women who had not completed high school, from 9 percent during the 1970's to 2 percent during the 1980's, was significant at the 5-percent level. These changes may reflect general advances in the educational attainment of women of childbearing age over the 2 decades as well as a greater concentration of unrelated adoptions among the more advantaged segments of the population in the 1980's.

Interracial adoption

Researchers and policymakers seeking estimates of the prevalence of interracial adoption in the United States have had few resources with which to work. In 1975, the most recent year for which such estimates were available, the necessary data were reported by only 23 States. Of the nearly 12,000 unrelated adoptions reported by these States, 16 percent involved parents and children of different racial or ethnic groups, and about 2 percent involved black children placed with parents who were not black (9).

Estimates of interracial adoption were derived from the 1987 NHIS by linking information on the race of the adoptive mother with that of the adopted child. Estimates are limited to adoptions in which the child was still living in the adoptive mother's household at the time of the survey. Of these adoptions, only 8 percent involved parents and children of different races. Five percent were adoptions of children of races other than white or black by white mothers, 1 percent were adoptions of black children by white mothers, and 2 percent were adoptions of white

children by mothers of other races. No instances of interracial adoption by black mothers or of black children by mothers of races other than white were apparent in the NHIS data. Because many of these interracial adoptions are likely to involve children born outside the United States, the prevalence of interracial adoption among U.S.-born children may be quite low.

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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 Current Estimates from the National Health Interview Survey: United States, 1987 (13).

The NHIS sample for 1987 was composed of 47,240 households containing 122,859 persons. The total noninterview rate was 4.7 percent. Questions on adoption were asked of all women 20–54 years of age enumerated in the NHIS household. Of a total of 31,124 such women, 566 reported ever having adopted a child; 416 had adopted one child; 128 had adopted two; and 22 had adopted three or more. If more than two children were adopted, detailed information was obtained only for the two children adopted most recently. Information was obtained for 716 adopted children, including 555 who were reported to be unrelated to the adoptive mother before the adoption. Additional information on topics such as health and demographic characteristics collected in the core NHIS interview is available for up to two most recently adopted children who were still living in the NHIS household at the time of the interview.

The National Survey of Family Growth (NSFG) is a periodic survey conducted by the National Center for Health Statistics to provide data on fertility, family planning, and related aspects of maternal and child health. The third cycle of the NSFG, conducted in 1982, is based on interviews with a national probability sample of 7,969 women 15–44 years of age. Detailed information on the design, procedures, estimation procedures, and reliability of sample estimates for the NSFG Cycle III is available elsewhere (14). Data on adoption from the NSFG Cycle III are presented in this report for comparative purposes. These data are based on the reports of 94 sample respondents who reported they had adopted one or more children.

Evaluation of data

The quality of data on adoption collected in the NHIS was assessed in several ways. Comparisons with earlier survey data indicated reasonable levels of consistency, taking into account sampling error and the likelihood of some change over time. Estimates were also compared with independent estimates of adoptions available on a national basis.

Estimates of yearly adoptions based on the NHIS data would be expected to fall short of the annual numbers of adoptions occurring nationally for several reasons. Men were not asked about adoption; nor were women outside 20–54 years of age. Adoptions that occurred many years before the survey would be particularly susceptible to undercounting, because a greater proportion of the adopting parents would have died, entered an institution, or attained age 55 and become ineligible for the questions. Because independent information on age of adopting parents is not available, it is impossible to assess what percent of adoptions in the years immediately preceding the survey would involve women outside 20–54 years of age. However, the percent is presumed to be relatively small. Exclusion of men should primarily affect the estimates of related adoptions, because most unrelated adoptions involve a married couple. Although current information is not available, estimates prepared by the National Center for Social Statistics show that only 0.4 percent of children adopted by unrelated petitioners in 1975 were adopted by men who were not married at the time of the adoption (8). Estimates of unrelated adoptions for the years immediately preceding the 1987 survey, therefore, should be relatively complete, and relatively less complete as time between the adoption and the survey lengthens.

To evaluate the completeness of adoption reporting in the NHIS, estimated numbers of annual adoptions of unrelated children were compared with independent national estimates for those years in which such data are available, and with comparable estimates based on the 1982 National Survey of Family Growth (15). Results are shown in table I. The estimates derived from the two surveys are three-year averages (for example, the estimate for 1980 is the average number of unrelated adoptions for the years 1979–81). They have also been adjusted for nonresponse to items on adoption, using the assumption that nonresponses to specific items would be distributed proportionately to responses. Standard errors for the adjusted 3-year totals on which the averages are based are shown in parentheses. Clearly, sampling error alone places a wide confidence interval around each of these annual estimates. However, the general level of the estimates is very much in line with the few estimates available that are based on annual State reports, and it is generally consistent as well with estimates based on the 1982 NSFG. The only years for which serious bias appears to exist are those before 1974, a bias that reflects the expected tendency for coverage to decrease as time since the adoption increases.

These estimates suggest that the NHIS provides relatively good coverage of unrelated adoptions. Much of the data presented by this report, however, is additionally affected by missing information on the items relating to adoption. For example, information on whether the woman had ever adopted was missing for 2.5 percent of women. Of the adopted children reported, information on the relationship before the adoption was missing for 7.4 percent. Of those adopted children known to

Table I. Estimates of number (with standard error) of unrelated adoptions by survey, annual State reports, and year of adoption

Year	Survey				Annual State reports
	1987 National Health Interview Survey		1982 National Survey of Family Growth		
1986	49,200	(7,700)	---		51,157
1985	43,300	(7,300)	---		---
1984	48,400	(7,700)	---		---
1983	44,100	(7,300)	---		---
1982	46,700	(7,500)	---		50,720
1981	43,500	(7,300)	67,700	(29,900)	---
1980	42,200	(7,200)	49,900	(25,700)	---
1979	46,600	(7,500)	58,400	(27,800)	---
1978	44,600	(7,400)	50,700	(25,900)	---
1977	47,200	(7,600)	46,900	(24,900)	---
1976	50,700	(7,800)	23,700	(17,700)	---
1975	50,900	(7,900)	25,400	(18,300)	47,700
1974	49,200	(7,700)	29,600	(19,800)	49,700
1973	38,100	(6,800)	40,200	(23,000)	59,200
1972	34,000	(6,400)	42,000	(23,600)	67,300

NOTES: Estimates are based on annual State reports for years 1972–75 as published in Maza, 1984. Estimates for 1982 and 1986 are from National Committee For Adoption, 1985 and 1989. All estimates are based on incomplete data and adjusted to approximate national totals. Estimates based on survey data are 3-year averages adjusted for nonresponse. Standard errors for 3-year averages are shown in parentheses.

be unrelated, information for year of the adoption and how the adoption was arranged were each missing for 3.2 percent, although information on place of birth was complete. In addition, information was ascertained only for the two children adopted most recently by each woman. Other adopted children for which no effort was made to ascertain information constitute approximately 3 percent of the adoptions reported by NHIS respondents. To the extent that children for whom information is unavailable differ from those for whom it is, the results shown in this report will be biased.

Reliability of estimates

Because the estimates shown in this report are based on samples of the population rather than on the entire population, they are subject to sampling error. A measure of sampling error is given by the standard error. Appropriate standard errors for estimated percents in tables 1 and 2 of this report are given by the formula

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

where SE is the standard error, p is the estimated percent, b is the parameter associated with the numerator characteristics, and y is the denominator. The b parameter is 3,640 for estimates based on NHIS data, approximately 39,809 for estimates relating to white women or women of all races from NSFG Cycle III data, and approximately 6,346 for NSFG Cycle III estimates relating to black women. The approximate standard error of a difference between percents is given by the formula

$$\mathrm{SE}(x_1 - x_2) = \sqrt{\mathrm{SE}(x_1)^2 + \mathrm{SE}(x_2)^2}$$

where x_1 and x_2 are the two percents being compared, $x_1 - x_2$ is the difference between them, and $\mathrm{SE}(x_1)$ and $\mathrm{SE}(x_2)$ are the standard errors of the two percents.

The relative standard error of a statistic is the ratio of the standard error to the statistic. Estimates with relative standard errors of 30 percent or greater are indicated with asterisks. The reader may wish to combine these estimates with related estimates to produce a more reliable overall estimate for a broader category.

In this report, terms such as "similar" and "the same" mean that no statistically significant difference was detected between the statistics being compared. Terms relating to difference (for example, "greater" or "less") indicate that differences are statistically significant. A two-tailed t-test was used to test all comparisons discussed. A difference was considered statistically significant at the 5-percent level if the difference $(x_1 - x_2)$ was at least 1.96 times as large as its standard error, and as statistically significant at the 10-percent level if it was at least 1.65 times as large as its standard error. Because the statistics presented in this report have relatively high standard errors, the failure to detect a statistically significant difference between two statistics does not necessarily mean that no such difference exists in the population. Lack of comment regarding the difference between any two statistics does not mean that the difference was tested and found to be not significant.

Symbols	
- - -	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision
#	Figure suppressed to comply with confidentiality requirements

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Advance Data

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

Contraceptive Use in the United States, 1973–88

by William D. Mosher, Ph.D., and William F. Pratt, Ph.D., Division of Vital Statistics

The percent of married couples using sterilization as a method of contraception increased dramatically between 1973 and 1982, and continued its increase until 1988—more than doubling in 15 years (figure 1). In contrast, the percent of married couples using the pill declined sharply between 1973 and 1982, but that decline did not continue between 1982 and 1988. Among never married women, the proportion using the pill increased between 1982 and 1988. The pill was the leading method among never married women in both 1982 and 1988. In contrast, female sterilization was the leading method among currently married couples and formerly married women in 1982 and 1988. Use of the condom has been suggested as a protection against human immunodeficiency virus (HIV) infection and other sexually transmitted diseases. The percent using the condom did not change significantly among married couples, but it did increase significantly among never married women, for whom it was the second leading method, after the pill. These findings are based on the 1973, 1982, and 1988 National

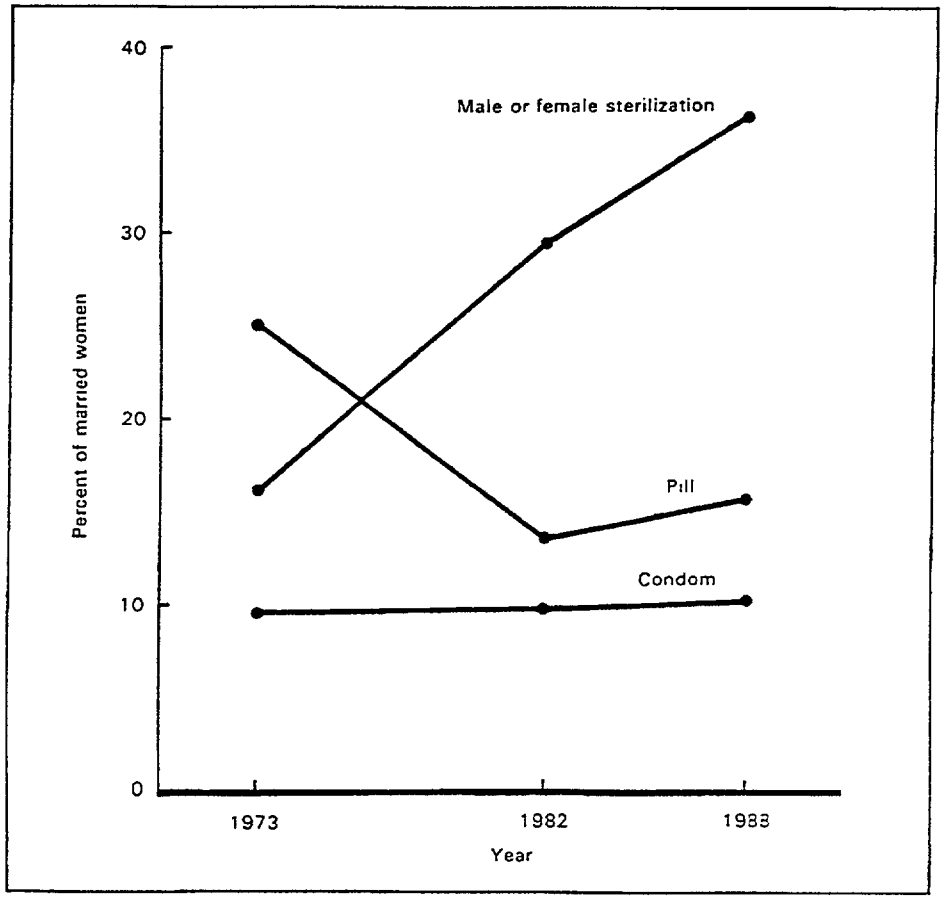

Figure 1. Percent of married couples (wives 15–44 years of age) using sterilization, the pill, and the condom: United States, 1973, 1982, and 1988

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics
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Table 1. Number of women 15–44 years of age and percent distribution by current contraceptive status and method, according to race: United States, 1982 and 1988

(Statistics are based on samples of the female population of the conterminous United States. See Technical notes for estimates of sampling variability and definitions of terms. Data for 1988 are preliminary)

Contraceptive status and method	All races[1]		White		Black	
	1988	1982	1988	1982	1988	1982
	Number in thousands					
All women	57,900	54,099	47,077	45,367	7,679	6,985
	Percent distribution					
Total	100.0	100.0	100.0	100.0	100.0	100.0
Sterile	29.7	27.2	30.5	27.7	29.6	23.7
Surgically sterile	28.3	25.7	29.2	26.1	27.8	22.2
Contraceptively sterile	23.6	19.0	24.5	19.4	22.1	16.3
Female	16.6	12.9	16.1	12.5	21.6	15.6
Male	7.0	6.1	8.4	6.9	*0.5	*0.7
Noncontraceptively sterile	4.7	6.6	4.7	6.7	5.7	5.9
Female	4.7	6.3	4.6	6.3	5.7	5.9
Male	0.0	0.3	0.0	0.3	*0.0	0.0
Nonsurgically sterile	1.4	1.5	1.3	1.6	1.8	1.5
Pregnant or post partum	4.8	5.0	4.8	4.8	5.0	5.6
Seeking pregnancy	3.8	4.2	3.7	4.0	3.9	5.4
Other nonuser[2]	25.0	26.9	23.8	26.2	26.9	29.6
Never had intercourse	11.5	13.6	11.0	13.9	9.7	10.3
No intercourse in last 3 months	6.2	5.9	6.2	6.0	6.3	5.8
Intercourse in last 3 months	6.5	7.4	5.7	6.4	10.2	13.5
Nonsurgical contraceptors	36.7	36.7	37.2	37.2	34.6	35.7
Pill	18.5	15.6	18.4	15.1	21.6	19.8
IUD	1.2	4.0	1.1	3.9	1.7	4.7
Diaphragm	3.5	4.5	3.8	5.0	1.1	1.8
Condom	8.8	6.7	9.2	7.2	5.8	3.2
Foam	0.6	1.3	0.6	1.4	*0.6	1.4
Periodic abstinence[3]	1.4	2.2	1.4	2.2	1.2	1.6
Natural family planning	0.4	0.3	0.4	0.4	*0.1	0.1
Withdrawal	1.3	1.1	1.3	1.2	0.8	0.7
Douche	0.1	0.1	0.0	0.0	*0.2	0.7
Other methods	1.2	1.3	1.2	1.2	1.6	1.7

[1] Includes white, black, and other races.
[2] Includes women who had intercourse only once, not shown separately.
[3] Includes natural family planning and other types of periodic abstinence.

SOURCE: National Survey of Family Growth, National Center for Health Statistics. Data for 1988 are preliminary. Data for 1982 are based on a revised classification of the contraceptive intent of sterilization operations, intended to be comparable to the 1988 classification.

Surveys of Family Growth. The 1988 data are the most recent national estimates of contraceptive use in the United States.

The National Survey of Family Growth is conducted by the National Center for Health Statistics. The interview includes information on a number of topics related to childbearing, family planning, and related aspects of maternal and child health. The 1988 data in this report are from Cycle IV of this survey, which was based on personal interviews conducted between January and August 1988 with 8,450 women 15–44 years of age in the noninstitutional population of the United States. The other data in this report are from Cycle III of the National Survey of Family Growth, conducted in 1982, and Cycle I, conducted in 1973. The design of the survey and estimates of sampling variability are discussed in the Technical notes.

Findings

In 1988 about 60 percent of women 15–44 years of age were currently using contraception: 24 percent were using contraceptive sterilization, and 37 percent were currently using other contraceptive methods (table 1). This means that of the 57.9 million women of reproductive age, about 35 million were using contraception in 1988. In 1982 about 30 million out of the 54 million women of reproductive age were using contraception (calculated from table 1).

Some women who usually use contraception were not currently using it, because they were currently pregnant, postpartum, trying to become pregnant, noncontraceptively sterile, or nonsurgically sterile. About 40 percent of women were not currently using contraception. Of this 40 percent, only 7 percent were at risk of having an unintended pregnancy—those who were classified as "other nonusers" who had "intercourse in the last 3 months." The other 33 percent (out of 40 percent) who were not using contraception were not at risk of unintended pregnancy: 5 percent were sterilized for noncontraceptive (health) reasons; 1 percent, sterile for reasons other than surgery; 5 percent were currently pregnant or had been pregnant less than 2 months before they were interviewed (pregnant or postpartum); 4 percent were trying to become pregnant, 12 percent had never had intercourse, and 6 percent had not had intercourse in the 3 months before the interview.

Thus, many women of reproductive age are not at risk of unintended pregnancy. If we calculate the percent using contraception among those currently at risk of unintended pregnancy, the percentage currently using was 90 percent in 1988 and 88 percent in 1982. Those who are at risk of unintended pregnancy include those currently using contraception plus those classified as "other nonusers" who had "had intercourse in the last 3 months."

Among the 6 percent of women in table 1 who were not trying to get pregnant but had intercourse without contraception in the last 3 months, about one-third of that 6 percent had had intercourse in the last 3 months, but were not having intercourse during the month of interview; about one-fourth had fecundity impairments and thought their chances of conceiving were low; others may have been indifferent to the possibility of a pregnancy, had personal objections to using contraception, or health concerns about contraceptive use.

If male and female sterilization are counted as one method, then the

leading method in 1988, as in 1982, was sterilization, used by 24 percent of women (or their husbands or partners), followed by the pill (19 percent). If male and female sterilization are counted as separate methods, then the leading method in 1988 (as in 1982) was the pill (19 percent), followed by female sterilization (17 percent). The other methods, in rank order, were the condom (9 percent), male sterilization (7 percent), the diaphragm (4 percent), periodic abstinence (which includes calendar rhythm, temperature rhythm, and natural family planning), withdrawal, and the IUD (1 percent each), and foam and douche with less than 1 percent each.

The number of contraceptors increased by 4.8 million between 1982 and 1988, an increase of 16 percent. The numbers of users of 3 methods increased by more than 25 percent each: the pill, female sterilization, and the condom. About 10.7 million women were using the pill in 1988, compared with just 8.4 million in 1982. In 1988, 9.6 million women were using female sterilization, up from 7.0 million in 1982. About 5.1 million were using the condom, compared with 3.6 million in 1982—a 41-percent increase. The number using the intrauterine device (IUD) dropped by two-thirds, from 2.2 million in 1982 to 0.7 million in 1988, probably because some companies stopped distributing the IUD in the United States.

If we add the percents "contraceptively sterile" and "nonsurgical contraceptors" in tables 1–3, we get the percent using some form of contraception (these percents are also shown in the second column of table 4). The percent using a method increased between 1982 and 1988, from 56 to 60 percent. For white women, the increase was from 57 percent using a method in 1982 to 62 percent in 1988. For black women, the percent currently using a method increased from 52 percent in 1982 to 57 percent in 1988. A look at the "contraceptively sterile" and "nonsurgical contraceptors" lines in table 1 shows that overall and for both white and black women separately, the increase in the percent using contraception was due to an increase in the use of sterilization, not in the percent using nonsurgical methods. This, in turn, is partially due to changing age composition: in 1988, 30 percent of all women 15–44 years of age were 35–44 years of age—the group most likely to be sterilized—compared with 26 percent in 1982.

Table 2. Number of women 15–44 years of age and percent distribution by current contraceptive status and method, according to age: United States, 1982 and 1988

(Statistics are based on samples of the female population of the conterminous United States. See Technical notes for estimates of sampling variability and definitions of terms. Data for 1988 are preliminary)

Contraceptive status and method	15–24 years		25–34 years		35–44 years	
	1988	1982	1988	1982	1988	1982
	Number in thousands					
All women	18,592	20,150	21,726	19,644	17,582	14,305
	Percent distribuution					
Total	100.0	100.0	100.0	100.0	100.0	100.0
Sterile	3.1	3.2	27.0	27.9	61.3	60.1
Surgically sterile	2.4	2.6	26.0	26.4	58.7	57.3
Contraceptively sterile	2.2	2.4	23.3	21.5	46.7	39.0
Female	1.6	1.3	16.6	14.8	32.5	26.8
Male	*0.6	1.1	6.7	6.7	14.2	12.2
Noncontraceptively sterile	*0.2	*0.2	2.7	4.9	12.0	18.3
Female	*0.2	0.2	2.7	4.6	11.9	17.4
Male	*0.0	*0.0	0.0	0.3	0.0	0.8
Nonsurgically sterile	0.7	*0.6	0.9	1.5	2.7	2.8
Pregnant or post partum	5.0	6.3	7.6	6.5	1.1	1.0
Seeking pregnancy	2.7	3.5	5.8	6.2	2.4	2.5
Other nonuser[1]	45.7	48.6	16.7	14.2	13.5	13.8
Never had intercourse	30.0	32.5	3.6	2.7	1.6	2.0
No intercourse in last 3 months	5.4	6.9	6.4	5.1	6.8	5.8
Intercourse in last 3 months	7.8	9.2	6.4	6.5	5.0	6.0
Nonsurgical contraceptors	43.5	38.4	43.0	45.2	21.6	22.6
Pill	29.7	23.5	21.6	17.1	3.0	2.3
IUD	*0.1	1.4	1.4	6.5	2.1	4.2
Diaphragm	1.3	3.7	4.8	6.8	4.1	2.4
Condom	9.5	5.5	9.1	7.6	7.7	7.0
Foam	*0.3	0.8	0.8	1.5	0.8	1.8
Periodic abstinence[2]	*0.6	1.2	1.7	2.8	1.8	2.6
Natural family planning	*0.2	*0.1	0.5	0.6	0.4	0.3
Withdrawal	1.5	1.2	1.9	1.2	0.6	0.8
Douche	*0.0	*0.1	0.0	0.1	0.2	0.3
Other methods	*0.5	1.0	1.7	1.6	1.4	1.1

[1]Includes women who have had intercourse only once, not shown separately.
[2]Includes natural family planning and other types of periodic abstinence.

SOURCE: National Survey of Family Growth, National Center for Health Statistics. Data for 1988 are preliminary. Data for 1982 are based on a revised classification of the contraceptive intent of sterilization operations, intended to be comparable to the 1988 classification.

Age

Current contraceptive use varies sharply by the age of the woman, as shown in table 2. The percent contraceptively sterile increased rapidly with age in both 1982 and 1988. For example in 1988, the percent contraceptively sterile was 2 percent at age 15–24, 23 percent at 25–34, and 47 percent at age 35–44. In contrast, the percent currently pregnant or postpartum was 5 percent at age 15–24, 8 percent at 25–34, and only 1 percent at age 35–44. The percent who had never had intercourse was 30 percent in the youngest age group and 2 percent in the oldest. For this reason, comparisons of the percents using particular methods are strongly affected by these different proportions who have never had intercourse; so comparisons between age groups should be made among women using contraception, as shown later in this report. However, the leading methods in each age group can be gleaned from table 2. The leading method in the youngest age group was the pill in both 1982 and 1988, followed by the condom. In the oldest age group—35–44 years of age—the leading method was female sterilization, followed by male sterilization and the condom.

Table 3. Number of women 15–44 years of age and percent distribution by current contraceptive status and method, according to marital status: United States, 1982 and 1988

(Statistics are based on samples of the female population of the conterminous United States. See Technical notes for estimates of sampling variability and definitions of terms. Data for 1988 are preliminary)

Contraceptive status and method	Never married		Currently married			Widowed, divorced, or separated		
	1988	1982	1988	1982	1973	1988	1982	1973
	Number in thousands							
All women	21,058	19,164	29,147	28,231	26,646	7,695	6,704	3,601
	Percent distribution							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sterile	5.2	3.2	44.0	40.9	23.9	42.6	38.0	21.4
Surgically sterile	4.3	2.6	42.4	38.9	22.9	40.9	36.1	20.9
Contraceptively sterile	3.4	1.9	36.2	29.5	16.4	31.3	23.6	12.5
Female	2.7	1.3	23.4	18.7	8.6	29.2	21.8	12.3
Male	0.7	0.6	12.9	10.8	7.8	2.1	*1.9	*0.1
Noncontraceptively sterile	0.9	0.7	6.2	9.3	6.5	9.7	12.5	8.4
Female	0.9	0.7	6.1	8.7	6.3	9.7	12.5	8.4
Male	0.0	0.0	*0.0	0.6	0.2	0.0	*0.0	*0.0
Nonsurgically sterile	1.0	0.7	1.6	2.0	0.9	1.7	*1.9	*0.5
Pregnant or post partum	2.4	2.5	7.1	7.2	7.3	2.5	2.6	2.9
Seeking pregnancy	1.3	1.2	6.0	6.7	7.0	2.0	2.1	*0.0
Other nonuser[1]	52.5	59.7	4.8	5.0	8.7	26.6	25.6	45.3
Never had intercourse	31.5	38.4	–	–	–	–	–	–
No intercourse in last 3 months	9.4	11.2	*0.3	*0.2	---	19.5	15.1	---
Intercourse in last 3 months	9.0	10.1	4.5	4.8	---	7.1	10.4	---
Nonsurgical contraceptors	38.5	33.3	38.1	40.1	53.2	26.3	31.8	30.3
Pill	24.7	18.7	15.1	13.4	25.1	14.5	15.8	18.1
IUD	0.6	1.9	1.5	4.8	6.7	2.1	6.4	7.2
Diaphragm	2.1	4.7	4.6	4.5	2.4	3.0	3.7	1.3
Condom	8.2	4.1	10.6	9.8	9.4	3.4	*0.8	*0.9
Foam	0.2	0.4	1.0	2.0	3.5	0.5	*1.1	*0.7
Periodic abstinence	0.6	0.9	2.1	3.2	2.8	1.1	*1.4	*0.4
Withdrawal, douche, and other methods	2.1	2.6	3.2	2.3	3.4	1.7	2.7	1.7

[1] Includes women who have had intercourse only once, not shown separately.

Marital status

Table 3 shows differences in contraceptive use by marital status. Trend data are shown for 1973, 1982, and 1988 for currently married and formerly married women. Data for never married women are shown only for 1982 and 1988 because most never married women were not represented in the 1973 survey. The "other nonuser" category in 1973 is not divided into those who had intercourse in the 3 months before the survey, and those who did not, because those data are not available for 1973. Finally, the question on whether a sterilization operation was done for contraceptive or noncontraceptive reasons was asked differently in 1973 than it was in 1982 and 1988, but this difference in question wording does not obscure the very large increase in sterilization that occurred between 1973 and 1988 (see the discussion of sterilization for currently married and formerly married, below). See the Definitions of terms for more details on how sterilization operations were classified in each survey year.

If we add the categories "contraceptively sterile" and "nonsurgical contraceptors" in table 3, we obtain the percent using some form of contraception (the percent using any method is also shown in the second column of table 4). The percent currently using contraception varies sharply by marital status, from 42 percent of never married women to 74 percent of currently married women.

Among never married women, the proportion who had never had intercourse dropped markedly from 38 percent in 1982 to 32 percent in 1988. To compare the percentages using contraception in 1982 and 1988, then, we need to adjust for the higher proportion having intercourse in 1988, by computing the proportion using contraception as a percent of those having intercourse in the 3 months before the survey. If we set aside women who had never had intercourse (31.5 percent in 1988) and those who did not have intercourse in the 3 months before the survey (9.4 percent in 1988), we are left with 59.1 percent who had intercourse in the last 3 months. If the percent using contraception (3.4 plus 38.5 equals 41.9 in 1988), is divided by the 59.1 percent who had intercourse in the last 3 months, the result is that 71 percent of sexually active never married women were using contraception in 1988. A similar procedure yields 70 percent of sexually active never married women using contraception in 1982, a small difference. Changes in contraceptive methods used by never married women will be discussed in connection with table 4.

Among currently married couples, the proportion surgically sterile (by vasectomy, tubal operation, hysterectomy, or other operation) for contraceptive reasons ("contraceptively sterile") more than doubled between 1973 and 1988, from

Table 4. Number of women 15–44 years of age, percent using any method of contraception, and percent distribution of contraceptors by method of contraception, according to age, race, and marital status: United States, 1982 and 1988

(Statistics are based on samples of the female population of the conterminous United States. See Technical notes for estimates of sampling variability and definitions of terms. Data for 1988 are preliminary)

Age, race, and marital status	Number of women in thousands	Percent using any method	All methods	Female sterilization	Male sterilization	Pill	IUD	Diaphragm	Condom	Other methods
1988			Percent distribution							
All women	57,900	60.3	100.0	27.5	11.7	30.7	2.0	5.7	14.6	7.7
Age										
15–24	18,592	45.7	100.0	3.6	*1.3	64.9	*0.2	2.7	20.8	6.5
25–34	21,726	66.3	100.0	25.0	10.2	32.6	2.1	7.3	13.7	9.1
35–44	17,582	68.3	100.0	47.6	20.8	4.3	3.1	6.0	11.2	6.9
Race										
White	47,077	61.8	100.0	26.1	13.6	29.8	1.8	6.2	14.9	7.5
Black	7,679	56.7	100.0	38.1	*0.9	38.0	3.1	1.9	10.3	7.8
Marital status										
Never married	21,058	41.9	100.0	6.4	*1.8	59.0	1.3	4.9	19.6	7.0
Currently married	29,147	74.3	100.0	31.4	17.3	20.4	2.0	6.2	14.3	8.4
Formerly married	7,695	57.6	100.0	50.7	3.6	25.3	3.6	5.3	5.9	5.7
1982										
All women	54,099	55.7	100.0	23.2	10.9	28.0	7.1	8.1	12.0	10.7
Age										
15–24	20,150	40.8	100.0	3.2	*2.7	57.6	3.4	9.0	13.5	10.6
25–34	19,644	66.7	100.0	22.1	10.1	25.7	9.7	10.3	11.4	10.7
35–44	14,305	61.6	100.0	43.5	19.9	3.7	6.9	4.0	11.3	10.8
Race										
White	45,367	56.7	100.0	22.1	12.2	26.7	6.9	8.8	12.7	10.7
Black	6,985	52.0	100.0	30.0	*1.4	38.0	9.1	3.5	6.2	11.7
Marital status										
Never married	19,164	35.3	100.0	3.7	*1.8	53.0	5.4	13.4	11.6	11.1
Currently married	28,231	69.7	100.0	26.9	15.5	19.3	6.9	6.5	14.1	10.8
Formerly married	6,704	55.5	100.0	39.2	*3.4	28.4	11.5	6.7	*1.5	9.2

SOURCE: Data for 1982 are based on a revised classification of the contraceptive intent of sterilization operations, intended to be comparable to the 1988 classification.

16 percent in 1973 to 36 percent in 1988 (table 3 and figure 1). In turn, most of this increase was in female sterilization: 9 percent used female sterilization in 1973, 19 percent in 1982, and 23 percent in 1988. The proportion using male sterilization was 8 percent in 1973, 11 percent in 1982, and 13 percent in 1988.

As the proportion of married couples using sterilization increased from 1973 to 1988, the proportion using other methods of contraception declined, from 53 percent in 1973 to 40 percent in 1982 and 38 percent in 1988. The proportion using the pill declined from 25 percent in 1973 to 13 percent in 1982; the increase to 15 percent in 1988 was not statistically significant. Use of the IUD declined from 7 percent in 1973 to 5 percent in 1982 and 2 percent in 1988. Use of the condom did not change significantly among married couples between 1982 and 1988.

The number of widowed, divorced, and separated (or formerly married) women more than doubled, from 3.6 million in 1973 to 7.7 million in 1988, as a result of increasing numbers of women aged 25–44, rising rates of separation and divorce and declining rates of remarriage, particularly in the 1970's (1). The proportion of women not using a method because they were not having intercourse in the 3 months before the interview increased from 15 percent in 1982 to 20 percent in 1988. At the same time, the proportion having intercourse but not using any method declined from 10 to 7 percent. Neither of these changes was statistically significant, but the increase in the percent using the condom was statistically significant. These three changes are all in the direction of less exposure to HIV infection (AIDS) and other sexually transmitted diseases.

Three of the major changes in contraceptive practice among formerly married women were similar to those for currently married women: first, the proportion using female contraceptive sterilization rose sharply, from 22 percent in 1982 to 29 percent in 1988. Secondly, there was no significant change in the percent using the pill among formerly married women between 1982 and 1988. Thirdly, the proportion using the IUD decreased sharply, from 6 percent in 1982 to 2 percent in 1988. Changes in other categories were generally small.

Contraceptors

Groups classified by marital status, race, age, and other factors differ sharply in the percent currently using contraception. These differences are due primarily to the differing percentages of each group who had not had intercourse recently or ever, and the proportions pregnant or trying to become pregnant. Because these groups have differing proportions using any method, they will also have different proportions using particular methods. It is, therefore, often useful to compare method choices only among women who are using some method of contraception or "contraceptors." This kind of comparison is shown in table 4, for 1982 and 1988 (the years in which women of all marital statuses were interviewed).

Among contraceptors under 25 years of age and never married contraceptors, the leading method by far was the pill in both 1982 and 1988. For example, in 1988, 59 percent of never married contraceptors were using the pill, while only 20 percent were using the second leading method, the condom. Among currently married and formerly married women, the leading method was female sterilization in both 1982 and 1988. For example, in 1988, 31 percent of currently married and 51 percent of formerly married contraceptors were using female sterilization.

As shown in table 4, black women were less likely to be using contraception than white women (57 percent of black women and 62 percent of white women in 1988; 52 and 57 percent in 1982). Black women were more likely than white women to have had intercourse in the last 3 months and not be using a method (10 percent compared with 6 percent, table 1).

The data in table 4 show that in 1982 and 1988, black women were less likely than white women to use a method. But among those who did use a method, black women using contraception were significantly more likely than white contraceptors to use the two most effective female methods—female sterilization (38 percent compared with 26 percent in 1988) and the pill (38 percent compared with 30 percent in 1988). In contrast, black contraceptors in 1988 were *less* likely to rely on male sterilization (1 percent compared with 14 percent), the diaphragm (2 percent compared with 6 percent), and the condom (10 percent compared with 15 percent).

Overall, between 1982 and 1988, the percent of contraceptors using female sterilization increased from 23 to 28 percent. The data suggest that the proportion using the pill rose from 28 to 31 percent. The proportion using the condom increased from 12 to 15 percent; and the proportion using the IUD dropped sharply, from 7 percent to 2 percent of contraceptors. The decrease in use of the IUD occurred in all groups, but the changes in female sterilization, the pill, and the condom occurred mainly in certain subgroups.

The largest increase in use of female sterilization occurred among formerly married contraceptors: from 39 percent in 1982 to 51 percent in 1988, an increase of 12 percentage points. Among currently married contraceptors, the increase was from 27 to 31 percent—only about 4 percentage points. Use of female sterilization increased by 8 percentage points—from 30 to 38 percent—among black contraceptors between 1982 and 1988. In contrast, the increase in the percent using female sterilization among white contraceptors was only 4 percentage points (22 to 26 percent).

The percent using the pill increased among contraceptors aged 15–24 (58 to 65 percent) and those aged 25–34 (26 to 33 percent). The data suggest that the percent using the pill also rose among never married women, from 53 percent in 1982 to 59 percent in 1988.

Given the increased concern in the 1980's about HIV infection, as well as other sexually transmitted diseases, the changes in condom use are of interest. By age, the percent using the condom increased significantly only among those 15–24, from 14 to 21 percent. By race, the percent using the condom increased from 6 to 10 percent among black contraceptors. By marital status, the percent of never married contraceptors using the condom increased from 12 percent in 1982 to 20 percent in 1988, and from 2 to 6 percent of formerly married contraceptors. There was no significant change in the proportion of currently married contraceptors using the condom (14 percent in both years).

Current condom users

The measure used in this report, current contraceptive status, is designed to measure the exposure of women of reproductive age to the risk of pregnancy in the month of interview. Women coded as using more than one method are coded in the order that the methods are listed in tables 1 and 2: female sterilization, male sterilization, pill, IUD, diaphragm, condom, foam, periodic abstinence, withdrawal, douche, and other. Therefore if a woman is using the pill and the condom, she is coded as using the pill, because the pill is more effective in *preventing pregnancy* than the condom (2). To obtain a complete estimate of the numbers using the condom, the data were retabulated to show all those using the condom, regardless of what other methods they may have been using. This retabulation, not shown in the tables, reveals that, in addition to the 5.1 million using the condom under the contraceptive status classification used in tables 1–4 of this report, another 0.7 million were currently using the condom usually in combination with other methods, for a total of 5.8 million condom users in 1988. The comparable numbers in 1982 were 3.6 million using the condom under the contraceptive status classification, plus 0.5 million other current condom users, for a total number of 4.1 million current condom users in 1982. Thus, the total number of current condom users increased from 4.1 million in 1982 to about 5.8 million in 1988, or from about 7 percent of all women 15–44 years of age in 1982 to 10 percent in 1988.

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Technical notes

The National Survey of Family Growth (NSFG) is a periodic survey conducted by the National Center for Health Statistics to collect data on factors affecting childbearing, contraception, infertility, and related aspects of maternal and infant health. The survey is jointly funded by the National Center for Health Statistics, the National Institute for Child Health and Human Development, and the Office of Population Affairs, all of the U.S. Department of Health and Human Services. Fieldwork was conducted under contract by Westat, Inc., in 1982 and 1988, respectively.

For the 1988 survey (Cycle IV), personal interviews were conducted with a national sample of women who were 15–44 years of age on March 15, 1988. The interviews were conducted between January and August of 1988. In 1982 the population covered women 15–44 years of age living in the civilian noninstitutionalized population of the conterminous United States. In 1988 Alaska and Hawaii were included, so the population covered was the civilian noninstitutionalized population of the entire United States. Interviews were completed with 7,969 women in 1982 and 8,450 women in 1988. Further details on the sample design and procedures of the 1982 survey (Cycle III)are given in references 3 and 4. Fieldwork for Cycle I was conducted by the National Opinion Research Center in 1973. Interviews were completed with 9,797 women. Further details on the 1973 survey may be found in any of the reports based on it, such as reference 5.

Interviews for Cycle IV of the survey were conducted between January and August of 1988 from households which had been interviewed in the National Health Interview Survey (NHIS) between October of 1985 and March of 1987. The NHIS is also conducted by NCHS. As in previous cycles of the NSFG, black women were oversampled. Interviews were conducted in person in the respondent's home by trained female interviewers and lasted an average of about 70 minutes. The interview focused on the woman's pregnancy history; her past and current use of contraception; ability to bear children (fecundity and infertility); use of medical services for family planning, infertility, and prenatal care; her marital history, occupation and labor force participation, and a wide range of social, economic, and demographic characteristics.

Table I. Preliminary estimates of the parameters A and B for estimating standard errors for women, by race

Race	Parameter A	Parameter B
Total or white	-0.00018	10738
Black	-0.000626	5181

Reliability of estimates

Because the statistics presented in this report are based on a sample, they may differ by chance variations from the statistics that would result if all 57.9 million women represented by the NSFG had been interviewed. The standard error of an estimate is a measure of such differences. The standard error of a number or percent is calculated by using the appropriate values of A and B from table I in the equations,

$$SE(N) = \sqrt{(A + B/N)}\ N$$

and

$$SE(P) = \sqrt{\frac{B\ P\ (100-P)}{X}}$$

where N = the number of women
P = the percent
X = the number of women in the denominator of the percent

The parameters shown in table I were used to generate table II, which shows preliminary estimates of standard errors for percents of total or white women, and table III, which shows preliminary estimates of standard errors for percents of black women.

A similar table for the Cycle III (1982) survey is given in reference 3.

The chances are about 68 out of 100 (about 2 out of 3) that a sample

Table II. Preliminary estimates of standard errors expressed in percentage points for percents of total or white women: 1988 National Survey of Family Growth

Base of percent	Estimated percent						
	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100,000	4.6	7.1	9.8	13.1	15.0	16.1	16.4
500,000	2.1	3.2	4.4	5.9	6.7	7.2	7.3
1,000,000	1.5	2.3	3.1	4.1	4.7	5.1	5.2
5,000,000	0.6	1.0	1.4	1.9	2.1	2.3	2.3
10,000,000	0.5	0.7	1.0	1.3	1.5	1.6	1.6
30,000,000	0.3	0.4	0.6	0.8	0.9	0.9	0.9
50,000,000	0.2	0.3	0.4	0.6	0.7	0.7	0.7
58,000,000	0.2	0.3	0.4	0.5	0.6	0.7	0.7

Table III. Preliminary estimates of standard errors expressed in percentage points for percents of black women: 1988 National Survey of Family Growth

Base of percent	Estimated percent						
	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100,000	3.2	5.0	6.8	9.1	10.4	11.2	11.4
500,000	1.4	2.2	3.1	4.1	4.7	5.0	5.1
1,000,000	1.0	1.6	2.2	2.9	3.3	3.5	3.6
5,000,000	0.5	0.7	1.0	1.3	1.5	1.6	1.6
7,500,000	0.4	0.6	0.8	1.1	1.2	1.3	1.3

estimate would fall within one standard error of a statistic based on a complete count of the population represented by the NSFG. The chances are about 95 in 100 that a sample estimate would fall within two standard errors of the same measure obtained if all people in the population were interviewed. Differences between percents discussed in this report were found to be statistically significant at the 5-percent level using a 2-tailed normal deviate test. This means that in repeated samples of the same type and size, a difference as large as the one observed would occur in only 5 percent of samples if there were, in fact, no difference between the percents in the population.

In the text, terms such as "greater," "less," "increase," or "decrease" indicate that the observed differences were statistically significant at the 0.05 level using a 2-tailed normal deviate test. Statements using the phrase "the data suggest" indicate that the difference was significant at the 0.10 (10 percent) level but not the 0.05 (5 percent) level. Lack of comment in the text about any two statistics does not mean that the difference was tested and found not to be significant.

The relative standard error (or coefficient of variation) of a statistic is the ratio of the standard error to the statistic and usually is expressed as a percent of the estimate. In this report statistics with a relative standard error of 30 percent or more are indicated with an asterisk (*). These estimates may be viewed as unreliable by themselves, but they may be combined with other estimates to make comparisons of greater precision.

Statistics in this report also may be subject to nonsampling error, that is, errors or omissions in responding to the interview, recording answers, and processing data. The data have been adjusted for nonresponse by means of adjustments to the sample weights assigned to each case. Other types of nonsampling error were minimized by a series of quality control measures as described in reports on Cycle III (such as reference 3).

Definitions of terms

Current contraceptive status

Sterile—A currently married woman was classified as sterile under the current contraceptive status classification if she reported that it was impossible for her to have a baby, or her husband to father a child, for any reason, including sterilization operations or other causes. An unmarried woman was classified as sterile if she reported that it was impossible for her to have a baby, or if her current method of contraception was male sterilization.

Nonsurgical—A woman or couple was classified as nonsurgically sterile if she reported that it was impossible for her to have a baby, or impossible for her husband to father a child, for any reason other than surgical sterilization. Nonsurgical reasons for sterility include menopause, sterility from accident, illness, congenital causes, or unexplained inability to conceive.

Surgical—A woman(or couple) was classified as surgically sterile if she or her husband were completely sterile due to an operation.

Surgical sterilizations were classified as contraceptive or noncontraceptive because, while most are obtained because of their effectiveness in preventing pregnancy, some are obtained for therapeutic reasons. This classification in successive cycles of the survey has been affected by changes in the wording of questions. In the 1973 (Cycle I) survey, a sterilizing operation was classified as contraceptive if the respondent answered "yes" to the question "Was the operation done at least partly so that you would not have any more children?" However, since all sterilizing operations are contraceptive in effect, though not by intention, this question was ambiguous; for example, this question classified many hysterectomies as "contraceptive." In 1976 the question was revised to reflect more clearly the motive of family limitation, asking: "Was one reason for the operation because you had all the children you wanted?" This question resulted in a lower proportion of hysterectomies reported as contraceptive, but it also resulted in lower proportions of other operations reported as contraceptive—because it excluded women who would have liked more children, but for whom pregnancy would be a health risk. This problem was investigated in the 1982 survey and rectified in the 1988 survey.

The figures for 1982 and 1988 are highly comparable. In this report, noncontraceptive operations in 1982 and 1988 are those for which the respondent reported that the main or only reason for the operation was "medical problems with my female organs (such as infections, cancer, etc.)." All other operations were classified as contraceptive, in its literal sense: to prevent pregnancy, regardless of why she wanted to prevent pregnancy. Reasons for contraceptive operations in 1982 and 1988 included the following: she had all the children she wanted, or wanted none; her husband wanted no more; a pregnancy would have been dangerous to her health; she could not carry the pregnancy to term; she could not afford or take care of more children; or she did not like her previous method of birth control. The data on the contraceptive intent of sterilization operations for 1973 may not be perfectly comparable to those in 1982 and 1988 because the later surveys contained these explicit answer categories for a number of reasons for sterilizations, while the 1973 question did not. It is not clear how women who had operations because pregnancy would be dangerous to their health would have answered the question in 1973.

It should be noted that the estimates of male contraceptive sterilization show the number of *women* relying on this method, and not necessarily the number of men who have been sterilized for contraceptive reasons.

Pregnant—A woman was classified as pregnant if she answered "yes" to the question, "Are you pregnant now?" or for those in doubt, "Well, do you think you are probably pregnant or not?" However, a woman who reported that the onset of her last menstrual period was within the last 30 days before the intervew was automatically classified as not currently pregnant.

Seeking pregnancy—A woman was classified as seeking pregnancy if she reported that she was not using a method at the date of the interview because she wanted to become pregnant as soon as possible.

Post partum—A woman was classified as post partum if she reported that she was not currently using a method, was not trying to become pregnant, and her last pregnancy had terminated within 2 months before the date she was interviewed.

Other nonusers—Women (or couples) who reported that they were currently using no contraceptive method and could not be classified in any of the preceding categories of noncontraceptors were classified here. Among these are women who had never had intercourse, had had intercourse only once, had not had intercourse in the last 3 months, were indifferent to the chances of pregnancy, had a very low risk of pregnancy due to a fecundity impairment, or objected to contraceptive methods for personal or religious reasons.

Never had intercourse—A woman was classified as never having had intercourse if she was not currently using a method and she had never had sexual intercourse at any time up to the date of interview, or if she had had sexual intercourse, but not since her menstrual periods began.

Intercourse only once—These women reported that they had had intercourse only once. They are not shown as a separate category in tables 1–3, but they are included in the overall "other nonusers" category.

No intercourse in last 3 months—A woman was classified as not having had intercourse in the last 3 months if she was not currently using a method and reported not having sexual intercourse at all in any of the 3 months preceding the interview.

Intercourse in last 3 months—A woman (or couple) was classified as having intercourse in the last 3 months if she was not currently using a method and was having sexual intercourse currently or in any of the 3 months preceding the interview.

Contraceptors—A woman (or couple) who reported using a method at the date of interview was classified according to the specific method used. When more than one method was currently being used, they were coded using the following priority order: female sterilization, male sterilization, pill, IUD, diaphragm, condom, foam, periodic abstinence, withdrawal, douche, and other. Methods used by extremely small proportions of the population, such as jelly, cream, suppositories, or abstinence, not in combination with any other methods, were grouped into the category "other."

Demographic Terms

Age—Age is classified by the age of the respondent in completed years as of March 15, 1988, the approximate midpoint of interviewing.

Race—Race refers to the race of the woman interviewed and is classified as black, white, or other. In Cycles III (1982) and IV (1988), race was classified according to the woman's report of the race that best described her.

Marital status—Women were classified by marital status as currently married, widowed, divorced, separated, or never married. In Cycles III (1982) and IV (1988), in order to improve the comparability of NSFG data on marital status over time and with other sources of data, informally married or cohabiting women—who reported that they were not married but living with their sexual partner—were classified by their legal marital status. In all NSFG surveys, women who were married but separated from their spouse were classified as separated if the reason for the separation was marital discord, and as currently married otherwise.

Cooperating agencies

Cycle IV of the National Survey of Family Growth was supported in part by the National Institute of Child Health and Human Development, National Institutes of Health, and the Office of Population Affairs, Offfice of the Assistant Secretary of Health. These agencies also participated in the design of the questionnaire.

Symbols

- - -	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision
#	Figure suppressed to comply with confidentiality requirements

Recent Issues of *Advance Data From Vital and Health Statistics*

No. 181. Adoption in the 1980's (January 5, 1990)

No. 180. Characteristics of Persons Dying From Cerebrovascular Diseases (February 8, 1990)

No. 179. AIDS Knowledge and Attitudes for April–June 1989 (November 1, 1989)

No. 178. Firearm Mortality Among Children and Youth (November 3, 1989)

No. 177. Utilization of Controlled Drugs in Office-Based Ambulatory Care: National Ambulatory Medical Care Survey, 1985 (August 29, 1989)

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Advance Data

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

AIDS Knowledge and Attitudes for July–September 1989

Provisional Data From the National Health Interview Survey

by Deborah A. Dawson, Ph.D., Division of Health Interview Statistics

Introduction

The National Center for Health Statistics (NCHS) has included a special set of supplemental questions on the adult population's knowledge and attitudes about acquired immunodeficiency syndrome (AIDS) in the National Health Interview Survey (NHIS). The first AIDS Knowledge and Attitudes Survey was in the field from August through December 1987. Provisional results of that survey were published on a monthly basis in *Advance Data From Vital and Health Statistics* (Nos. 146, 148, 150, 151, and 153). A public use data tape containing the information collected in 1987 is available from NCHS.

During the first 4 months of 1988, the NHIS AIDS questionnaire was revised to meet current program needs for information about AIDS awareness. The revised AIDS Knowledge and Attitudes Survey entered the field in May 1988. Provisional findings for the remainder of 1988 were published periodically (*Advance Data From Vital and Health Statistics* Nos. 160, 161, 163, 164, 167, and 175); in addition, two special reports focusing on minority populations were published from the 1988 data (*Advance Data From Vital and Health Statistics* Nos. 165 and 166). A public use data tape of the 1988 AIDS Knowledge and Attitudes Survey is now available. The NHIS AIDS questionnaire used in 1988 was continued throughout 1989. Reports based on the 1989 data are being issued on a quarterly basis. This report presents provisional data for the period July–September 1989.

The *Advance Data* reports describing the NHIS AIDS data have been restricted to simple descriptive statistics to facilitate their timely release. Thus, these reports do not attempt to explain or interpret differences among population subgroups or to examine relationships among various measures of knowledge and AIDS-related behavior (e.g., testing). The NHIS AIDS data bases permit more complex analyses than those presented in this series of *Advance Data* reports, and such analyses are being undertaken by various groups in the Public Health Service.

The AIDS questionnaires were designed to estimate public knowledge about AIDS virus (HIV) transmission and its prevention. The data were needed as input for the planning and development of AIDS educational campaigns and for monitoring major educational efforts, for example, the series of radio and television public service announcements entitled "America Responds to AIDS" and the brochure "Understanding AIDS," both developed by the Centers for Disease Control.

The NHIS AIDS questionnaires were developed by the National Center for Health Statistics and interagency working groups established by the Information, Education and Risk Factor Reduction Subcommittee of the Public Health Service Executive Task Force on AIDS. The working groups included representatives from the Centers for Disease Control; the National Institutes of Health; the Alcohol, Drug Abuse and Mental Health Administration; and the Health Resources and Services Administration.

The 1988 and 1989 AIDS questionnaires included items on sources of AIDS information; self-assessed levels of AIDS knowledge;

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Public Health Service
Centers for Disease Control
National Center for Health Statistics
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basic facts about the AIDS virus (HIV) and how it is transmitted; blood donation experience; awareness of and experience with the blood test for HIV; personal acquaintance with persons with AIDS or HIV; and willingness to take part in a proposed national seroprevalence survey. A general risk behavior question, similar to that asked by the Red Cross of potential blood donors, was included in the 1988 and 1989 AIDS questionnaires.

This report presents provisional data for July—September 1989 for most items included in the AIDS questionnaire. Table 1 displays percent distributions of persons 18 years of age and over by response categories according to age, sex, race, and education. In most cases, the actual questions asked of the respondents are reproduced verbatim in table 1 along with the coded response categories. In a few cases, questions or response categories have been rephrased or combined for clearer or more concise presentation of results. Refusals and other nonresponse categories (generally comprising less than 1 percent of total responses) are excluded from the denominator in the calculation of estimates, but responses of "don't know" are included.

The NHIS AIDS questionnaire uses the phrase "the AIDS virus" rather than "HIV," because it was felt that the general population might not be familiar with the more scientific terminology at the time the survey began. In this report, the two terms will be used synonymously.

Selected findings

The following highlights describe various aspects of AIDS knowledge and attitudes as observed in the July—September 1989 data from the NHIS AIDS survey. Unless otherwise noted in the text, all measures described remained stable over this 3-month period. Any differences cited in the text are statistically significant at the .05 level (see table II for provisional standard errors of estimates).

Sources of AIDS information—Throughout 1989 there has been no change in the proportions of adults 18 years of age and over who reported having seen or heard public service announcements (PSA's) about AIDS on television (79 percent) or on the radio (44 percent) in the month preceding the NHIS interview. Less than one-fourth of the adults who had seen PSA's about AIDS reported that they were part of the series entitled "America Responds to AIDS." The percentage of adults claiming to have read brochures or pamphlets about AIDS in the preceding month decreased slightly since the start of the year—from 24 percent in the first quarter of 1988 to 22 and 21 percent, respectively, in the second and third quarters. The proportion of adults who said they had ever read brochures or pamphlets about AIDS remained steady, 62 percent in July-September 1989. As in preceding months, the most frequently cited sources of informational brochures and pamphlets were through the mail (26 percent) and at doctors' offices (22 percent).

Adults 50 years of age and over were less likely than younger adults to have seen or heard PSA's or to have read brochures and pamphlets about AIDS. This has been true throughout 1988 and 1989. Black and white adults were equally likely to have seen AIDS-related PSA's on the television, but exposure via the radio was reported more frequently by black than white persons. Black adults were also more likely than white adults to have read brochures or pamphlets about AIDS in the preceding month (29 versus 19 percent in July–September 1989) and to have ever read brochures or pamphlets about AIDS (66 versus 62 percent). The latter difference represents a departure from previous months; formerly, black and white adults were equally likely to have ever read AIDS brochures. As in previous months, educational attainment was directly related to the probability of having seen, heard, or read about AIDS.

Sixty-three percent of adults with children age 10–17 years reported having discussed AIDS with these children; 62 percent said they had discussed AIDS with friends or relatives. These percentages have remained fairly stable for many months. Sixty-five percent of adults with children age 10–17 years stated that their children had received AIDS education in school, about the same as in the second quarter of 1989 (64 percent) but higher than in the first quarter (61 percent).

Self-assessed knowledge—Adults' perceptions of how much they know about AIDS have not changed in 1989. In July–September 1989, as in earlier months, 23 percent of adults stated that they knew a lot about AIDS, and 44 percent said they knew "some." Twenty-five percent claimed that they knew a little about AIDS, and 8 percent felt that they knew nothing about the disease. As in preceding months, self-assessed level of knowledge increased sharply with education. The proportion of persons who reported knowing a lot about AIDS was more than 3 times as high for persons with more than 12 years of school (35 percent) as for those with less than 12 years of school (11 percent). Although black and white adults were equally likely to state that they knew a lot about AIDS, black adults were almost twice as likely to feel that they knew nothing about AIDS, 13 compared with 7 percent. Nearly one-fifth (18 percent) of adults age 50 years and over said they knew nothing about AIDS, 6 times the proportion for younger adults (3 percent).

General knowledge—During 1989 there has been virtually no change in the general public's knowledge about AIDS, as measured by the items in the NHIS AIDS questionnaire. Awareness of the basic facts concerning AIDS continues to be high. In July–September 1989, three-fourths or more of U.S. adults stated that it was definitely true that AIDS can reduce the body's natural protection against disease (75 percent), that AIDS leads to death (84 percent), and that HIV can be spread via shared needles, sexual intercourse, and perinatal transmission (94 percent, 83 percent, and 80 percent, respectively). Three-fourths or more stated that it was

definitely false that AIDS is especially common in older people (75 percent) and that teenagers cannot get AIDS (93 percent).

One aspect of AIDS knowledge showed a slight decline between July and September 1989. The percentage of adults who thought it definitely false that there is a vaccine for AIDS declined from 75 percent in July (the same as in the second quarter) to 73 percent in September. The decline was most pronounced among (persons with less than 12 years of education, for whom the proportion fell from 60 percent in the second quarter to 54 percent in the third quarter. This may reflect confusion on the part of the public about the difference between a vaccine for AIDS and the AIDS treatments that have been heavily publicized, such as AZT (zidovudine).

While black and white adults generally demonstrated similar levels of knowledge about AIDS, some racial differences existed. Black adults were the more likely to realize that AIDS can damage the brain and that AIDS leads to death, while white adults were the more likely to understand that AIDS affects the immune system, that a person can be infected with HIV and not have AIDS, that a person infected with HIV can look and feel healthy, and that there is no vaccine for AIDS. Other demographic factors that showed a more consistent association with AIDS knowledge were education (positively related) and age (lowest levels of knowledge for persons age 50 years and over, highest for those age 30–49 years).

Misperceptions about HIV transmission—The 1987, 1988, and 1989 NHIS AIDS surveys included a series of questions addressing misperceptions about HIV transmission by means of various forms of casual contact. Accurate knowledge in this area, as expressed by the proportion of adults who thought it very unlikely or definitely not possible to spread HIV through casual contact, improved throughout 1987 and between May and July 1988. After that, the proportions of adults responding correctly to these questions declined slightly, so that by December 1988, responses were similar to those recorded in May of that year.

Throughout 1989 there has been no meaningful change in the level of misperceptions surrounding HIV transmission through casual contact, despite occasional fluctuations of 1 or 2 percentage points in the proportions of adults answering the individual items correctly. As was true in 1988, the activities perceived as riskiest are those involving potential exposure to the saliva of a person infected with HIV. For example, only 23 percent of adults stated that it was very unlikely or definitely not possible to become infected with HIV by kissing (with exchange of saliva) a person with the virus.

Blood donation and testing—In July–September 1989, 40 percent of adults reported ever having donated blood. This includes 15 percent who donated blood since March 1985, when routine screening for HIV antibodies began, and 7 percent who claimed to have donated blood in the preceding year. These figures have remained stable for many months. Three-fourths (74 percent) of adults had heard of the blood test for the AIDS virus (i.e., the test to detect HIV antibodies), and two-thirds (66 percent) thought blood donations are routinely tested. Six percent of adults said that they had received a blood transfusion between 1977, when HIV is thought to have entered the United States, and 1985, when routine screening began. About half (47 percent) of all adults thought the present supply of blood is safe for transfusions. All of these estimates are similar to those reported throughout 1989.

As of July–September 1989, 21 percent of adults age 18 years and over were estimated to have had their blood tested for HIV. This proportion is fairly evenly divided between persons who reported having been tested (11 percent) and those who did not report testing but had donated blood since automatic screening of donations was initiated (10 percent). The percentage of U.S. adults tested for HIV has increased steadily over the last year, up from 16 percent in May 1988.

The proportion of adults tested decreased sharply with age, from 29 percent of those age 18–29 years to 9 percent of those 50 years of age and over. Sixty-eight percent of the individuals who had been tested for HIV reported being tested as a part of blood donation and 1 percent as part of a blood transfusion. Eighteen percent voluntarily sought testing, and 17 percent were tested as part of some other activity that requires a routine blood test (up from 14 percent in the first quarter of 1989).

Seven percent of adults reported plans to have their blood tested in the year following interview. There has been no change in this figure during 1989. This proportion declined with age, from 10 percent of persons age 18–29 years to 8 and 2 percent, respectively, of those age 30–49 years and 50 years and over. Black adults were almost twice as likely as white adults to report plans to be tested, 11 versus 6 percent. Of persons who reported plans to be tested, nearly half (46 percent) said that the test would be sought voluntarily as opposed to performed routinely in connection with some other activity.

Preventive measures—During the first three quarters of 1989, there was a slight decrease in the perceived effectiveness of condoms as a method for preventing HIV transmission during sexual intercourse. In July–September 1989, 33 percent rated condoms as very effective, and 52 percent stated that they were somewhat effective; in January–March 1989, 37 percent thought condoms were very effective, and 54 percent considered them somewhat effective. Throughout 1989 more than half of all adults stated that diaphragms, spermicides, and vasectomies were not at all effective, while more than 80 percent considered mutual monogamy with an uninfected partner to be very effective.

Risk of getting HIV—During July–September 1989, 2 percent of adults reported belonging to one or more of the groups with behaviors

associated with increased risk of AIDS (e.g., hemophiliacs, intravenous drug users, and homosexual men). This proportion has not varied since the question was introduced in May 1988.

Eighty-three percent of U.S. adults felt there was no chance of their already being infected with HIV, i.e., of "having the AIDS virus." Thirteen percent assessed their chances of having HIV as low, 2 percent as medium, and less than 1 percent as high. Seventy-eight percent of adults felt that they had no chance of becoming infected, i.e., "of getting the AIDS virus." This proportion rose steadily in 1987 and 1988, but has remained stable throughout 1989. The proportions who stated that their chances of getting HIV were low, medium, and high were 17, 2 and less than 1 percent, respectively.

Fourteen percent of U.S. adults reported knowing someone with AIDS or HIV. This percentage has more than doubled since August 1987. Adults age 30–49 years were the most likely to report knowing someone with AIDS or HIV (17 percent), followed by persons 18–29 years (14 percent) and those 50 years of age and over (9 percent).

Suggested citation

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Symbols

-	Quantity zero
0	Quantity more than zero but less than 0.05

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1988 National Health Interview Survey, by selected characteristics: United States, July–September 1989

[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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
Total	100	100	100	100	100	100	100	100	100	100	100
1. In the past month, have you—											
1a. Seen any public service announcements about AIDS on television?											
Yes	79	81	81	77	80	79	79	80	73	80	82
No	19	19	18	20	18	20	19	19	25	18	17
Don't know	2	1	2	3	2	2	2	1	2	2	2
1b. Heard any public service announcements about AIDS on the radio?											
Yes	44	51	49	34	49	40	43	50	35	45	49
No	52	45	47	61	47	56	52	47	62	51	47
Don't know	4	4	4	4	4	4	4	3	3	4	4
2. Were any of those public service announcements called "America Responds to AIDS"?											
Yes	23	33	25	15	22	25	22	28	22	25	22
No	12	13	12	12	14	11	12	14	11	11	15
Don't know	47	40	47	53	48	46	49	41	43	48	49
Neither heard nor saw any public service announcements.	17	15	16	20	16	18	17	17	23	16	15
3. In the past month, have you read any brochures or pamphlets about AIDS?											
Yes	21	25	24	14	19	22	19	29	15	20	25
No	78	74	75	85	80	77	80	71	85	80	74
Don't know	1	1	1	1	1	1	1	1	1	1	1
4. Have you ever read any brochures or pamphlets about AIDS?											
Yes	62	69	70	48	59	65	62	66	40	62	74
No	37	31	29	51	40	34	37	34	59	37	26
Don't know	1	1	1	1	1	1	1	1	1	1	1
5. Where did you get the pamphlets or brochures?[1,2]											
Clinic, other than work clinic	4	5	4	2	3	4	3	7	5	3	3
Doctor's office (HMO)	22	23	22	19	19	24	22	20	22	23	20
Drug store	2	2	1	2	1	2	2	2	2	2	1
Public health department	3	4	4	2	3	4	3	7	4	3	4
Received in mail without asking	26	17	27	35	25	27	27	21	29	27	25
Red Cross/Red Cross blood donation	3	3	4	2	4	3	4	1	1	3	4
Other blood donation	1	1	1	0	1	1	1	0	0	1	1
School	11	21	9	4	11	11	11	8	7	9	14
Sent/phoned for/requested it	1	0	1	1	1	1	1	1	1	0	1
Federal/State/local government	14	8	15	17	14	13	15	8	11	12	16
Work, other than clinic or nurse	15	11	18	12	17	13	14	18	7	14	18
Work, nurse or clinic	5	5	5	4	3	6	4	6	2	4	6
Other	17	19	17	16	18	16	16	22	21	16	16
Don't know	5	3	4	7	6	4	5	4	5	5	4
15. Have you ever discussed AIDS with any of your children aged 10-17?[3]											
Yes	63	60	64	53	50	73	63	66	57	61	67
No	37	40	36	47	49	27	37	34	43	39	33
Don't know	0	–	0	–	0	0	0	0	–	0	0
16. Have any or all of your children aged 10-17 had instruction at school about AIDS?[3]											
Yes	65	55	65	64	62	67	65	65	62	63	68
No	12	22	12	9	10	15	13	10	12	13	12
Don't know	23	23	22	27	28	18	22	25	26	24	20
21. How much would you say you know about AIDS?											
A lot	23	26	28	15	24	23	23	24	11	18	35
Some	44	49	48	35	43	45	45	37	27	49	48
A little	25	22	21	32	26	24	25	26	36	28	15
None	8	3	3	18	8	8	7	13	25	5	2
Don't know	0	–	0	0	0	0	0	0	0	0	0
22. To the best of your knowledge, is there a difference between having the AIDS virus and having the disease AIDS?											
Yes	67	66	74	59	67	67	68	59	42	66	80
No	15	22	15	11	16	14	15	19	17	17	12
Other	0	0	0	0	0	0	0	–	0	0	0
Don't know	18	12	11	30	17	19	17	22	41	16	7
23a. AIDS can reduce the body's natural protection against disease.											
Definitely true	75	77	82	64	76	73	77	63	51	75	87
Probably true	11	12	9	14	12	11	11	13	16	12	8
Probably false	2	2	1	2	1	2	1	3	4	2	1
Definitely false	3	3	3	3	3	4	3	6	5	4	2
Don't know	9	5	5	17	8	10	8	15	24	7	3

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1988 National Health Interview Survey, by selected characteristics: United States, July–September 1989—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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
23b. AIDS is especially common in older people.											
Definitely true	1	1	1	1	1	1	1	1	1	1	0
Probably true	1	1	1	1	1	1	1	2	2	1	1
Probably false	16	17	14	17	16	16	17	11	16	15	17
Definitely false	75	75	79	70	76	75	76	76	65	79	77
Don't know	7	5	5	10	7	7	6	10	16	4	4
23c. AIDS can damage the brain.											
Definitely true	27	22	28	29	27	27	26	36	29	26	26
Probably true	29	30	29	29	30	28	30	27	27	30	30
Probably false	10	13	10	7	10	10	11	5	5	10	13
Definitely false	9	11	11	5	9	9	9	7	5	9	12
Don't know	25	24	21	29	23	26	25	25	34	25	19
23d. AIDS usually leads to heart disease.											
Definitely true	9	8	9	10	9	9	8	16	12	10	7
Probably true	21	19	23	22	20	22	21	23	22	22	21
Probably false	18	22	20	13	19	17	19	12	8	17	24
Definitely false	17	18	20	12	19	15	17	14	10	15	22
Don't know	35	32	28	43	32	37	35	35	47	36	26
23e. AIDS is an infectious disease caused by a virus.											
Definitely true	64	70	71	53	67	62	64	65	50	63	74
Probably true	18	18	16	19	17	19	18	15	19	19	15
Probably false	2	2	2	3	2	2	2	2	3	3	2
Definitely false	5	4	5	5	4	5	5	4	4	6	4
Don't know	11	7	6	20	10	12	10	14	24	9	6
23f. Teenagers cannot get AIDS.											
Definitely true	1	1	1	1	1	1	1	1	1	1	1
Probably true	0	0	0	1	0	1	0	0	1	0	0
Probably false	3	2	2	5	3	3	3	4	4	3	2
Definitely false	93	96	95	89	94	92	94	89	86	94	96
Don't know	3	1	1	5	2	3	2	6	8	1	1
23g. AIDS leads to death.											
Definitely true	84	85	84	84	83	86	84	88	86	86	81
Probably true	12	11	14	11	13	11	13	7	8	11	16
Probably false	1	1	1	0	1	0	1	0	0	1	1
Definitely false	1	1	1	0	1	1	1	1	1	1	1
Don't know	2	1	1	4	2	2	2	3	5	1	1
23h. A person can be infected with the AIDS virus and not have the disease AIDS.											
Definitely true	58	61	64	50	59	58	60	52	39	58	70
Probably true	20	19	19	20	19	20	20	20	19	21	19
Probably false	3	4	3	4	4	3	3	4	4	4	3
Definitely false	4	6	5	3	5	4	4	5	6	5	4
Don't know	14	11	9	23	14	15	13	19	33	13	6
23i. Looking at a person is enough to tell if he or she has the AIDS virus.											
Definitely true	3	2	3	3	3	2	2	4	4	2	2
Probably true	5	4	4	6	5	4	4	7	7	5	3
Probably false	13	13	12	16	13	13	13	14	15	15	11
Definitely false	70	74	76	59	70	69	71	62	51	70	79
Don't know	10	6	6	17	9	11	9	14	23	9	4
23j. Any person with the AIDS virus can pass it on to someone else during sexual intercourse.											
Definitely true	83	86	84	79	82	83	83	83	78	85	82
Probably true	12	10	12	13	13	11	12	10	11	10	14
Probably false	1	1	1	1	1	1	1	0	1	1	1
Definitely false	1	1	1	1	1	1	1	1	0	1	1
Don't know	4	2	2	7	3	4	3	5	9	3	2
23k. A person who has the AIDS virus can look and feel healthy and well.											
Definitely true	49	53	55	37	51	46	50	45	32	46	61
Probably true	28	28	27	29	27	29	29	25	25	31	27
Probably false	7	6	5	9	7	7	6	8	9	8	4
Definitely false	5	5	4	6	4	5	4	7	8	5	3
Don't know	12	8	8	19	11	12	11	15	26	11	5
23l. A pregnant woman who has the AIDS virus can give the AIDS virus to her baby.											
Definitely true	80	84	83	74	77	83	80	83	73	82	83
Probably true	14	13	12	16	16	12	15	10	15	14	14
Probably false	0	0	0	0	0	0	0	1	1	0	0
Definitely false	1	0	1	0	1	0	1	0	0	1	1
Don't know	5	2	3	9	5	5	5	6	12	3	3

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1988 National Health Interview Survey, by selected characteristics: United States, July–September 1989—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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
23m. There is a vaccine available to the public that protects a person from getting the AIDS virus.											
Definitely true	2	3	2	2	2	2	2	5	4	2	1
Probably true	3	3	2	3	2	3	2	3	5	2	2
Probably false	10	11	9	10	10	10	10	10	11	11	8
Definitely false	73	74	79	65	74	72	75	63	54	73	83
Don't know	12	9	9	19	11	13	11	19	26	12	6
23n. There is no cure for AIDS at present.											
Definitely true	85	85	87	82	84	85	86	82	76	86	88
Probably true	8	8	7	8	8	7	8	7	9	8	8
Probably false	1	1	1	1	1	1	1	1	1	1	1
Definitely false	2	2	2	2	2	2	2	2	2	2	2
Don't know	5	3	3	7	4	5	4	8	11	4	2
24. How likely do you think it is that a person will get AIDS or the AIDS virus infection from—											
24a. Living near a hospital or home for AIDS patients?											
Very likely	1	1	1	2	1	1	1	2	2	1	1
Somewhat likely	3	3	3	3	3	3	2	5	4	3	2
Somewhat unlikely	7	7	7	6	7	7	6	10	8	7	6
Very unlikely	37	38	37	37	39	35	37	36	35	38	37
Definitely not possible	46	47	49	41	43	48	47	37	34	45	52
Don't know	6	4	4	11	6	6	6	10	16	5	2
24b. Working near someone with the AIDS virus?											
Very likely	2	2	2	3	2	2	2	5	4	3	1
Somewhat likely	9	9	8	10	9	9	9	9	10	10	7
Somewhat unlikely	11	12	12	10	12	11	12	12	11	12	11
Very unlikely	40	41	41	37	40	39	40	38	33	39	44
Definitely not possible	31	32	33	27	30	32	31	28	25	31	34
Don't know	7	4	4	12	6	7	6	9	17	5	3
24c. Eating in a restaurant where the cook has the AIDS virus?											
Very likely	7	6	6	8	7	7	6	10	11	7	4
Somewhat likely	17	18	17	17	18	17	17	17	18	18	16
Somewhat unlikely	15	18	16	12	16	14	15	13	10	15	17
Very unlikely	30	31	32	28	31	30	31	26	23	29	36
Definitely not possible	19	21	20	16	18	19	19	17	13	19	21
Don't know	12	7	9	19	10	13	11	16	24	11	6
24d. Kissing—with exchange of saliva—a person who has the AIDS virus?											
Very likely	26	22	25	31	26	27	26	30	31	28	22
Somewhat likely	28	28	28	27	29	27	28	26	25	28	29
Somewhat unlikely	13	15	14	9	13	12	13	10	8	12	16
Very unlikely	16	19	17	11	16	15	16	13	11	15	19
Definitely not possible	7	9	8	6	7	7	7	7	6	7	8
Don't know	10	7	7	15	9	11	9	15	18	9	6
24e. Shaking hands, touching, or kissing on the cheek someone who has the AIDS virus?											
Very likely	2	2	1	3	2	2	2	3	4	2	1
Somewhat likely	6	5	6	7	6	6	6	7	7	7	5
Somewhat unlikely	13	14	14	12	14	12	13	14	12	14	13
Very unlikely	39	39	40	39	41	38	40	39	37	40	41
Definitely not possible	33	38	35	28	31	36	34	28	25	32	39
Don't know	6	3	4	11	6	6	5	10	15	5	2
24f. Sharing plates, forks, or glasses with someone who has the AIDS virus?											
Very likely	9	8	8	12	9	9	9	12	13	10	7
Somewhat likely	20	18	21	20	20	20	20	21	20	21	18
Somewhat unlikely	14	15	15	11	15	13	14	14	11	14	16
Very unlikely	28	30	30	25	29	28	29	26	23	27	32
Definitely not possible	19	22	19	16	18	19	19	14	14	17	22
Don't know	10	7	7	16	9	11	10	13	20	10	5
24g. Using public toilets?											
Very likely	6	5	5	8	5	7	5	9	11	6	3
Somewhat likely	12	12	11	13	12	12	12	12	14	13	9
Somewhat unlikely	12	13	13	11	13	12	12	13	9	12	14
Very unlikely	34	33	36	32	35	33	34	33	26	34	38
Definitely not possible	26	31	29	20	27	26	27	20	18	25	32
Don't know	10	6	6	17	9	11	9	14	21	10	4

See footnotes at end of table.

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AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
					Percent distribution[1]						
24h. Sharing needles for drug use with someone who has the AIDS virus?											
Very likely	94	96	96	92	95	94	95	90	90	95	96
Somewhat likely	2	2	2	3	2	2	2	3	3	2	2
Somewhat unlikely	0	0	0	0	0	0	0	1	1	0	0
Very unlikely	1	1	1	0	1	1	0	1	0	0	1
Definitely not possible	0	0	0	0	0	0	0	0	1	0	0
Don't know	2	1	1	4	2	2	2	4	6	1	1
24i. Being coughed or sneezed on by someone who has the AIDS virus?											
Very likely	7	5	6	10	6	8	7	11	11	7	5
Somewhat likely	20	18	20	23	21	20	20	22	21	22	19
Somewhat unlikely	17	19	18	14	17	16	17	14	13	16	19
Very unlikely	29	31	32	24	30	28	30	26	22	29	33
Definitely not possible	16	19	17	11	15	16	16	12	11	15	18
Don't know	11	7	8	18	10	12	10	15	22	10	6
24j. Attending school with a child who has the AIDS virus?											
Very likely	2	2	2	3	2	2	2	4	4	2	1
Somewhat likely	5	3	5	5	5	4	4	6	6	5	4
Somewhat unlikely	10	11	10	10	11	10	10	11	10	11	10
Very unlikely	42	41	45	41	44	41	43	41	37	43	45
Definitely not possible	33	40	34	28	31	36	34	28	26	33	38
Don't know	7	3	4	13	7	7	6	10	17	5	3
24k. Mosquitoes or other insects?											
Very likely	9	9	9	9	9	9	8	15	13	9	6
Somewhat likely	16	19	16	14	17	15	16	17	16	18	15
Somewhat unlikely	9	11	9	7	9	8	9	9	6	9	9
Very unlikely	25	24	27	23	26	24	26	22	18	24	29
Definitely not possible	19	19	20	17	18	20	20	14	13	18	23
Don't know	23	18	20	29	21	24	22	23	33	22	18
25. Have you ever donated blood?											
Yes	40	32	42	42	50	30	41	33	27	36	50
No	60	68	58	58	50	70	59	67	72	64	50
Don't know	0	0	0	0	0	0	0	0	0	0	0
26a. Have you donated blood since March 1985?											
Yes	15	21	18	7	19	12	16	11	7	13	22
No	84	78	81	93	81	88	84	89	93	87	78
Don't know	0	0	0	0	1	0	0	0	1	0	0
26b. Have you donated blood in the past 12 months?											
Yes	7	8	9	3	8	5	7	4	2	6	10
No	93	91	91	96	91	94	92	96	97	94	89
Don't know	0	0	0	1	1	0	0	0	1	0	0
27. Have you ever heard of a blood test that can detect the AIDS virus infection?											
Yes	74	81	83	60	75	74	76	65	53	74	86
No	22	16	15	34	21	22	20	31	40	21	11
Don't know	4	3	3	7	4	4	4	4	6	4	3
28. To the best of your knowledge, are blood donations routinely tested now for the AIDS virus infection?											
Yes	66	72	74	52	66	66	68	54	43	65	78
No	4	3	4	3	4	3	3	4	3	3	4
Don't know	5	6	5	5	5	5	5	7	7	6	4
Never heard of test[4]	26	19	17	40	25	26	24	35	47	26	14
29a. Have you ever received counseling or had a talk with a health professional about taking the AIDS virus test?											
Yes	4	6	5	1	4	4	4	5	3	3	6
No	70	75	77	58	71	69	72	60	50	71	80
Don't know	0	0	0	0	0	0	0	0	0	0	0
Never heard of test[4]	26	19	17	40	25	26	24	35	47	26	14
29b. Was the discussion—[1,5]											
With a private doctor?	48	46	50	52	43	53	47	50	56	47	47
At a family-planning clinic?	9	11	8	6	5	12	9	13	17	10	6
On an AIDS hotline?	2	0	4	–	2	2	2	2	2	2	2
At a prenatal clinic?	6	9	4	1	1	10	6	7	6	9	4
At an STD or sexually transmitted disease clinic?	4	4	4	1	5	2	4	6	4	3	4
At an AIDS/HIV counseling and testing site?	10	8	11	10	10	10	11	7	3	12	10
With some other health professional?	41	38	43	46	46	37	42	41	21	43	45
With some other counselor?	8	11	7	4	12	6	8	10	13	9	7
30. During that discussion, did you receive information about how to avoid getting or passing on the AIDS virus?[5]											
Yes	59	67	55	50	65	54	57	72	59	67	55
No	40	32	43	50	34	45	42	28	41	33	44
Don't know	1	0	1	–	1	1	1	–	–	–	1

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1988 National Health Interview Survey, by selected characteristics: United States, July–September 1989—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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
31. Have you ever been advised by a health professional not to have the blood test for the AIDS virus infection?											
Yes	0	0	0	0	0	0	0	0	0	0	0
No	74	81	82	59	75	73	76	65	53	74	85
Don't know	0	–	0	–	0	0	0	0	0	–	0
Never heard of test[4]	26	19	17	40	25	26	24	35	47	26	14
32. Have you ever been advised by friends or relatives not to have the blood test for the AIDS virus infection?											
Yes	0	0	0	0	0	0	0	0	0	0	0
No	74	81	82	59	75	73	76	64	53	74	85
Don't know	0	–	0	0	0	0	0	0	–	0	0
Never heard of test[4]	26	19	17	40	25	26	24	35	47	26	14
33. Have you had your blood tested for the AIDS virus infection?											
Yes[5]	21	29	25	9	25	17	21	19	11	18	28
No	54	53	58	51	51	57	56	46	42	57	58
Don't know	2	2	1	2	2	1	2	2	2	2	2
Never heard of test[4]	24	16	16	39	22	25	22	33	45	24	12
35a. How many times have you had your blood tested for the AIDS virus infection?[7]											
Once	6	9	8	2	7	6	6	7	4	5	8
Twice	2	3	2	0	2	1	2	2	1	1	2
3–5 times	1	2	2	0	2	1	1	1	0	1	2
6–12 times	1	1	1	0	1	0	1	1	0	1	1
More than 12 times	0	0	0	0	0	0	0	0	0	0	0
Don't know[6]	10	15	12	5	12	9	11	8	5	9	14
Never heard of or never took test[8]	80	71	75	92	76	83	79	82	89	82	72
35b. How many times in the past 12 months have you had your blood tested for the AIDS virus infection?[7]											
None in the past 12 months	3	5	4	1	4	3	3	2	1	3	4
Once	6	8	7	2	7	5	5	7	4	5	8
More than once	2	2	3	1	3	1	2	2	1	2	3
Don't know[6]	10	14	11	5	12	8	10	8	5	9	14
Never heard of or never took test[8]	80	71	75	92	76	83	79	82	89	82	72
36. Was the test/were any of the tests, including those you had before the past 12 months—[1]											
Part of a blood donation?[6,7]	68	63	67	80	69	66	70	52	56	65	71
Part of a blood transfusion?[9]	1	1	1	2	1	1	1	1	2	1	1
Voluntarily sought?[9]	18	18	19	15	13	24	16	33	22	18	17
Part of some other activity that requires a blood sample?[9]	17	21	17	6	20	13	17	16	21	17	16
38. Did you get the results of your test/any of your tests?[9]											
Yes	57	62	54	55	54	62	55	68	68	55	56
No	42	38	45	44	46	38	44	32	32	44	43
Don't know	1	0	1	1	1	1	1	0	–	0	1
41. Do you expect to have a blood test for the AIDS virus infection in the next 12 months?											
Yes	7	10	8	2	8	6	6	11	5	6	9
No	64	66	70	55	63	65	67	46	45	64	73
Don't know	4	6	4	2	4	3	3	8	3	4	4
Never heard of test[4]	26	19	17	40	25	26	24	35	47	26	14
42. Will the test be—[1,10]											
Part of a blood donation?	45	40	48	51	50	40	52	24	27	43	53
Voluntarily sought?	46	52	42	48	43	51	41	68	63	51	38
Part of some other activity that requires a blood sample?	20	23	21	11	22	18	19	19	13	20	23
44a. Did you have a blood tranfusion at any time between 1977 and 1985?											
Yes	6	3	5	8	5	6	6	5	7	6	5
No	93	96	94	90	94	93	93	94	92	93	94
Don't know	1	1	1	2	1	1	1	1	2	1	1
44b. Do you think the present supply of blood is safe for tranfusions?											
Yes	47	51	49	41	51	44	49	33	33	46	55
No	28	27	29	29	26	30	28	35	33	29	25
Other	0	0	0	0	0	0	0	0	0	0	0
Don't know	25	21	21	31	23	26	23	31	33	24	20
45. Here are some methods people use to prevent getting the AIDS virus through sexual activity. How effective is—											
45a. Using a diaphragm?											
Very effective	2	2	2	3	3	2	2	4	3	2	1
Somewhat effective	13	13	12	13	12	13	13	12	11	12	14
Not at all effective	59	63	66	47	58	60	61	50	39	61	67
Don't know how effective	20	15	16	27	20	20	19	22	30	19	14
Don't know method	7	7	5	10	8	6	6	11	17	6	3

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1988 National Health Interview Survey, by selected characteristics: United States, July–September 1989—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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
45b. Using a condom?											
Very effective	33	39	37	25	36	31	33	34	25	34	38
Somewhat effective	52	51	53	51	52	52	53	46	43	53	54
Not at all effective	5	5	5	5	5	6	5	8	7	6	4
Don't know how effective	7	4	4	14	6	9	7	8	18	6	3
Don't know method	2	1	1	5	2	3	2	3	7	1	1
45c. Using a spermicidal jelly, foam, or cream?											
Very effective	1	1	2	1	2	1	1	2	2	1	1
Somewhat effective	14	16	14	12	15	13	14	13	9	13	17
Not at all effective	57	63	64	45	56	59	58	53	42	60	63
Don't know how effective	21	15	16	31	22	21	21	23	33	21	15
Don't know method	6	5	4	11	6	7	6	8	14	5	4
45d. Having a vasectomy?											
Very effective	2	3	1	2	2	2	2	3	2	2	2
Somewhat effective	3	4	2	2	3	2	2	3	2	3	2
Not at all effective	73	73	82	63	74	72	75	64	53	74	82
Don't know how effective	16	14	11	24	15	17	15	21	27	15	10
Don't know method	7	6	4	9	6	7	5	10	15	5	3
45e. Two people who do not have the AIDS virus having sex only with each other?											
Very effective	83	84	87	78	85	82	85	74	71	85	88
Somewhat effective	8	9	7	9	8	9	8	13	10	8	8
Not at all effective	2	4	2	2	2	2	2	5	4	2	2
Don't know how effective	5	3	3	9	4	5	4	7	11	4	2
Don't know method	2	1	1	3	1	2	1	2	4	1	1
46. What are your chances of having the AIDS virus?											
High	0	0	0	0	0	0	0	1	0	0	0
Medium	2	2	2	1	2	1	1	2	1	2	2
Low	13	19	15	7	14	12	13	12	6	12	17
None	83	78	81	90	82	85	84	80	88	84	80
Don't know	2	2	2	2	2	2	1	5	5	1	1
47. What are your chances of getting the AIDS virus?											
High	0	0	0	0	0	0	0	0	0	0	0
Medium	2	3	2	1	3	2	2	3	2	2	2
Low	17	23	20	8	18	15	17	13	9	14	23
None	78	70	75	87	76	80	78	77	83	81	73
Don't know	3	3	2	3	3	2	2	6	6	2	2
High chance of already having AIDS virus	0	0	0	0	0	0	0	1	0	0	0
49. Do you say your chance of getting AIDS is high or medium because you—[11]											
Have had a blood transfusion?	9	6	7	17	6	11	8	6	12	9	6
Have had sexual contact with someone who might have the virus?	18	22	17	13	17	19	16	25	28	14	16
Some other reason?	54	49	63	46	50	59	55	54	47	45	69
52. Have you ever discussed AIDS with a friend or relative?											
Yes	62	70	70	46	59	64	62	62	42	61	72
No	38	30	30	54	41	35	38	38	57	39	28
Don't know	0	0	0	0	0	0	0	0	0	0	0
53. When was the last time you discussed AIDS with a friend or relative?											
0–3 days ago	6	8	7	4	6	7	6	9	5	5	8
4–7 days ago	7	8	8	5	7	8	7	9	5	7	8
8–14 days ago	6	6	7	5	5	6	6	7	5	5	6
15–31 days ago	12	13	14	9	12	13	12	10	7	12	15
More than 31 days ago	25	32	28	17	24	27	26	22	15	26	30
Don't know	5	5	5	5	6	4	5	5	4	6	5
Never discussed[12]	39	30	30	54	42	36	38	38	58	39	28
54. Have you ever personally known anyone with AIDS or the AIDS virus?											
Yes	14	14	17	9	13	14	14	17	7	10	21
No	85	85	81	89	86	84	85	82	91	89	78
Don't know	2	1	2	2	1	2	1	2	2	1	2
55. How long has it been since you saw this person?											
Within past 2 weeks	1	1	1	0	1	1	1	1	1	1	1
2 weeks–less than 1 month	1	1	1	0	1	1	1	1	0	0	1
1 month–less than 3 months	1	1	2	1	1	1	1	1	1	1	2
3 months–less than 6 months	1	2	2	1	1	1	1	3	1	1	2
6 months or more	10	9	12	7	9	10	10	11	5	7	15
Don't know	0	0	0	0	0	0	0	0	0	0	0
Never knew anyone with AIDS[13]	86	86	83	91	87	86	86	83	93	90	79

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1988 National Health Interview Survey, by selected characteristics: United States, July–September 1989—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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
56. How well do you know this person?											
Very well	2	2	2	1	2	2	2	3	2	1	2
Fairly well	3	4	4	2	3	3	3	4	2	2	5
Not very well	5	6	6	4	5	6	5	6	2	4	9
Don't really know personally	2	2	3	1	2	2	2	3	1	2	3
Other	1	1	2	1	1	1	1	1	0	1	2
Don't know how well	–	–	–	–	–	–	–	–	–	–	–
Never knew anyone with AIDS[13]	86	86	83	91	87	86	86	83	93	90	79
57. Is any of these statements true for you?											
a. You have hemophilia and have received clotting factor concentrates since 1977.											
b. You are a native of Haiti or Central or East Africa who has entered the United States since 1977.											
c. You are a man who has had sex with another man at some time since 1977, even 1 time.											
d. You have taken illegal drugs by needle at any time since 1977.											
e. Since 1977, you are or have been the sex partner of any person who would answer yes to any of the items above (57 a-d).											
f. You have had sex for money or drugs at any time since 1977.											
Yes to at least 1 statement	2	4	3	0	2	2	2	3	2	2	2
No to all statements	98	96	97	99	97	98	98	97	98	98	98
Refused	0	0	0	0	0	0	0	0	0	0	0
Don't know	0	0	0	0	0	0	0	–	0	0	0
58. The U.S. Public Health Service has said that AIDS is one of the major health problems in the country but exactly how many people it affects is not known. The Surgeon General has proposed that a study be conducted and blood samples be taken to help find out how widespread the problem is. If you were selected in this national sample of people to have their blood tested with assurances of privacy of test results, would you have the test?											
Yes	73	78	75	66	75	71	74	69	66	72	77
No	21	17	18	26	19	22	20	23	25	21	18
Other	1	1	1	1	1	1	1	1	1	1	1
Don't know	6	4	5	6	5	6	5	7	7	6	4
59. Why wouldn't you take part in the test?[14]											
Don't want to know if I have AIDS	4	8	5	1	4	4	4	3	3	4	5
Don't want any counseling about AIDS	1	1	1	1	1	1	1	1	1	1	1
Fear I'll get AIDS	5	5	5	5	6	5	5	5	6	6	4
Don't like to give blood	14	21	17	9	14	15	14	17	10	14	17
Don't trust Government programs	6	6	8	5	9	4	6	5	6	6	7
It is a waste of money	3	1	3	4	3	3	3	2	3	3	3
Don't believe AIDS can really be cured anyway	1	1	2	1	1	1	1	3	1	2	1
Other	51	40	47	59	49	52	52	41	49	49	54
Don't know	1	0	1	1	1	1	1	2	1	1	1
61. When Federal public health officials give information about AIDS, do you believe what they say or are you doubtful about the information they give?											
Believe	68	74	70	61	66	69	67	69	58	68	73
Doubtful	27	22	27	30	28	25	27	24	30	28	24
Don't know	6	4	4	9	5	6	5	7	13	4	3
62. When they [public health officials] give advice about how to help keep from getting AIDS, do you believe their advice or are you doubtful about what they say?											
Believe	82	87	84	75	82	81	82	80	71	83	87
Doubtful	14	10	14	17	14	14	14	14	19	14	11
Don't know	4	3	2	7	4	4	4	5	11	3	2

[1] Multiple responses may sum to more than 100.
[2] Based on persons answering yes to question 4 (includes yes to question 3).
[3] Based on persons answering yes to question 11, "Do you have any children aged 10 through 17?" Question 12 was "How many do you have?"
[4] Persons answering no or don't know to question 27.
[5] Based on persons answering yes to question 29a.
[6] Includes persons answering yes to question 26a and no or don't know to questions 27 and 33.
[7] Based on yes answers to question 33. See footnote 6.
[8] Persons answering no or don't know to questions 26a, 27, and 33.
[9] Based on persons answering yes to question 33; excludes persons answering yes to question 26a.
[10] Based on persons answering yes to question 41.
[11] Based on persons answering high or medium to question 46.
[12] Based on persons answering no or don't know to question 52.
[13] Based on persons answering no or don't know to question 54.
[14] Based on persons not answering yes to question 58.

Technical notes

The National Health Interview Survey (NHIS) is a continuous, cross-sectional household interview survey. Each week, a probability sample of the civilian noninstitutionalized population 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. Information on special health topics is collected for all or a sample of household members. The 1989 National Health Interview Survey of AIDS Knowledge and Attitudes is asked of one randomly chosen adult 18 years of age or over in each family. The estimates in this report are based on completed interviews with 10,277 persons, or about 87 percent of eligible respondents.

Table I contains the estimated population size of each of the demographic subgroups included in table 1 to allow readers to derive provisional estimates of the number of people in the United States with a given characteristic, for example, the number of men who have had their blood tested for HIV. The population figures in table I are based on 1988 data from the NHIS; they are not official population estimates. Table II shows approximate standard errors of estimates presented in table 1. Both the estimates in table 1 and the standard errors in table II are provisional. They may differ slightly from estimates made using the final data file because they were calculated using a simplified weighting procedure that does not adjust for all the factors used in weighting the final data file. A final data file covering the entire data collection period for 1989 will be available at the end of 1990.

Table I. Sample sizes for the 1988 National Health Interview Survey of AIDS Knowledge and Attitudes and estimated adult population 18 years of age and over, by selected characteristics: United States, July–September, 1989

Characteristic	Sample size	Estimated population in thousands
All adults	10,277	177,321
Age		
18–29 years	2,266	46,957
30–49 years	4,197	68,986
50 years and over	3,814	61,377
Sex		
Male	4,378	84,131
Female	5,899	93,190
Race		
White	8,453	149,510
Black	1,427	19,457
Education		
Less than 12 years	2,300	39,502
12 years	3,924	68,301
More than 12 years	4,005	67,872

Table II. Standard errors, expressed in percentage points, of estimated percents from the National Health Interview Survey of AIDS Knowledge and Attitudes, by selected characteristics: United States, July–September, 1989

		Age			Sex		Race		Education		
Estimated percent	Total	18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
5 or 95	0.3	0.6	0.4	0.5	0.4	0.4	0.3	0.7	0.6	0.4	0.4
10 or 90	0.4	0.8	0.6	0.6	0.6	0.5	0.4	1.0	0.8	0.6	0.6
15 or 85	0.5	1.0	0.7	0.7	0.7	0.6	0.5	1.2	1.0	0.7	0.7
20 or 80	0.5	1.1	0.8	0.8	0.8	0.7	0.6	1.4	1.1	0.8	0.8
25 or 75	0.5	1.2	0.9	0.9	0.8	0.7	0.6	1.5	1.2	0.9	0.9
30 or 70	0.6	1.2	0.9	1.0	0.9	0.8	0.6	1.6	1.2	0.9	0.9
35 or 65	0.6	1.3	0.9	1.0	0.9	0.8	0.7	1.6	1.3	1.0	1.0
40 or 60	0.6	1.3	1.0	1.0	1.0	0.8	0.7	1.7	1.3	1.0	1.0
45 or 55	0.6	1.3	1.0	1.0	1.0	0.8	0.7	1.7	1.3	1.0	1.0
50	0.6	1.4	1.0	1.0	1.0	0.8	0.7	1.7	1.3	1.0	1.0

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Advance Data

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

Use of Family Planning Services in the United States: 1982 and 1988

by William D. Mosher, Ph.D., Division of Vital Statistics

Introduction

About 20 million women had one visit or more for family planning services in the 12 months before the 1988 National Survey of Family Growth. This was about the same number who had one visit or more in the 12 months before a similar survey conducted in 1982. Women 20–24 years of age were most likely to have had a visit for family planning in the last year (59 percent), and women 40–44 were least likely (only 6 percent). Black women were more likely to have received services in the past year than white women (39 versus 34 percent). About two-thirds of women who used services in the last year (64 percent) received their most recent family planning services at the offices of a private doctor, group of doctors, or Health Maintenance Organization (HMO); another one-third (36 percent) received that service from a clinic. Black women, poor women, and teenagers were more likely to rely on clinics for their family planning services than white, higher-income, and older women.

These findings are based on preliminary data from Cycle IV of the National Survey of Family Growth (NSFG), conducted by the National Center for Health Statistics. They are the most recent estimates of the use of family planning services in the United States. The 1988 data in this report are from Cycle IV of the survey, which was based on personal interviews conducted between January and August of 1988 with 8,450 women 15–44 years of age in the civilian noninstitutionalized population of the United States. The other data in this report are from Cycle III of the National Survey of Family Growth, conducted in 1982. The NSFG interview includes information on a number of topics related to childbearing, family planning, and maternal and infant health. The design of the 1988 survey and estimates of sampling errors are discussed further in the technical notes.

Findings

In the 1982 and 1988 surveys, a detailed series of questions was asked on family planning services that women received in the 12 months before the interview; services received at the last visit, regardless of when it occurred; and services received at the first family planning visit the woman ever had. The specific services asked about are listed in the technical notes, but the major ones are getting a new method of birth control, continuing a method already being used, checking for side effects of a method, and birth control counseling.

Table 1 shows the number of women 15–44 years of age in 1982 and 1988 and the percent who had one or more family planning visits in the 12 months before the survey. In both years, about 20 million women had one or more family planning visits. The proportion of women who had a family planning visit in the last 12 months was not significantly different in 1982 (37 percent) and 1988 (35 percent). In fact, *none* of the changes between 1982 and 1988 in table 1, either overall or by age or poverty level income, was statistically significant at the 5-percent level. In other words, there was no significant change between 1982 and 1988 in the proportion who used family planning services in any age or income group.

However, use of family planning services varied strongly by age in both 1982 and 1988. In 1988, the percent

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Table 1. Number and percent of women who had 1 family planning visit or more in the last 12 months, by age, poverty level income, and race: United States, 1982 and 1988

Age and poverty level income	All races[1]		White		Black	
	1988	1982	1988	1982	1988	1982
Age	Number in thousands					
15–44 years	57,900	54,099	47,077	45,367	7,679	6,985
15–19 years	9,179	9,521	7,313	7,815	1,409	1,416
20–24 years	9,413	10,629	7,401	8,855	1,364	1,472
25–29 years	10,796	10,263	8,672	8,569	1,459	1,335
30–34 years	10,930	9,381	9,010	7,916	1,406	1,144
35–39 years	9,583	7,893	7,936	6,697	1,170	884
40–44 years	7,999	6,412	6,745	5,515	872	734
Poverty level income						
0–149 percent	13,561	13,843	9,052	10,093	3,601	3,338
150 percent or more	44,339	40,256	38,024	35,275	4,078	3,647
Age	Percent					
15–44 years	34.5	36.5	34.3	35.8	39.3	43.0
15–19 years	30.4	30.6	29.2	28.6	40.9	43.4
20–24 years	59.0	56.2	59.8	54.9	65.5	65.1
25–29 years	53.0	55.7	54.5	55.9	52.1	56.7
30–34 years	34.9	33.9	34.8	33.4	38.0	38.3
35–39 years	17.0	19.4	17.0	19.4	15.6	20.0
40–44 years	6.0	7.0	5.7	7.0	8.0	7.9
Poverty level income						
0–149 percent	36.2	40.0	35.7	39.2	39.9	43.8
150 percent or more	34.0	35.3	34.0	34.8	38.8	42.2

[1]Includes white, black, and other races.

NOTE: For definitions of terms see technical notes. Because of rounding of estimates, figures may not add to totals.

who had a family planning visit in the last year increased from 30 percent at ages 15–19 to 59 percent at ages 20–24, and then decreased to 35 percent at ages 30–34, 17 percent at ages 35–39, and 6 percent at ages 40–44. In 1988, this general age pattern, with a peak at ages 20–24 and a low at ages 40–44, was observed for both white and black women (table 1). The pattern was similar in 1982, but the peak at ages 20–24 was less pronounced in that year.

The age pattern observed in table 1 is probably a result of the contraceptive methods used by women in the various age groups. Ages 20–24, the peak of the use of family planning services, are the ages when the oral contraceptive pill is the leading method (1). Using the pill requires regular visits to a doctor to renew the prescription and check for side effects. As women age and complete their families, use of the pill declines and use of sterilization increases. By ages 35–44, over half of women or their husbands are sterile from operations, either for contraceptive or health-related reasons (2). As sterility becomes more common (at the older ages), fewer women seek out family planning services.

In both 1982 and 1988, black women were significantly more likely than white women to have had a family planning visit in the past year. In 1988, 39 percent of black women and 34 percent of white women had had a visit in the past 12 months. The difference by race was largest among teenagers: in 1988, 41 percent of black teenagers and 29 percent of white teenagers had had a family planning visit in the last 12 months (table 1). One possible reason for this difference may be that higher proportions of black teenagers begin intercourse at an earlier age than white teenagers (3), and are therefore more likely to need family planning services during their teenage years. Differences by race at ages 20 and over were not statistically significant in 1988.

In 1982, low-income women were significantly more likely to have had a family planning visit than high-income women (40 versus 35 percent). The difference by poverty level income in 1982 was significant only at the 10-percent level for white women (39 versus 35 percent), and it was not significant for black women. In 1988, 36 percent of low-income women and 34 percent of high-income women had had a family planning visit in the last 12 months. This is not a significant difference; further, the differences by poverty level income for white and black women separately are also not statistically significant in 1988. Apparently in 1988, the two income groups were about equally likely to use family planning services of some kind. However, they differed strongly in where they obtained their family planning services, as shown below.

Most recent source of service

Women who reported in the survey that they had received family planning services were shown a card that listed the different kinds of clinics, doctors' offices, and counselors where women might get these services. The types of clinics listed included hospital clinics, family planning clinics, community health center clinics, public health department clinics, and other clinics. The types of doctors' offices included private doctor, private group practice, co-op, and HMO. Counselors included minister, priest, or religious counselor, school counselor, youth center, and other counselor. While visits to private doctors are usually paid for by insurance and the patient's own income, visits to clinics are often subsidized by Federal, State, or local governments and by private charitable groups. Tables 2–4 show some of the characteristics of women who use clinics and those who use private doctors.

Table 2 shows the 20 million women who used family planning services in the last 12 months, by whether they used a private doctor, clinic, or counselor for their most recent visit. About 64 percent of women used a private doctor for their most recent visit; 36 percent used a clinic; and less than 1 percent used a counselor. Black women were much more likely to use clinics than white women in both 1982 and 1988. In 1988, 53 percent of black women and

Table 2. Number of women who have had 1 family planning visit or more in the last 12 months and percent distribution by the most recent source of service, according to race: United States, 1982 and 1988

Race	Number of women in thousands	All sources	Private medical service	Clinic	Counselor
1988		Percent distribution			
All races[1]	19,991	100.0	64.1	35.5	0.4
White	16,151	100.0	67.5	32.1	0.4
Black	3,018	100.0	46.5	53.2	0.3
1982					
All races[1]	19,762	100.0	67.7	31.1	1.3
White	16,224	100.0	72.0	26.6	1.3
Black	3,001	100.0	44.4	54.5	1.1

[1]Includes white, black, and other races.

NOTE: For definitions of terms see technical notes.

Table 3. Number of women 15–44 years of age who had 1 family planning visit or more in the last 12 months and percent who used a clinic at their most recent family planning visit, by race, age, and poverty level income: United States, 1982 and 1988

Age and poverty level income	All races[1]		White		Black	
	1988	1982	1988	1982	1988	1982
Age	Number in thousands					
15–44 years	19,991	19,762	16,151	16,224	3,018	3,001
15–19 years	2,787	2,915	2,136	2,236	576	614
20–24 years	5,558	5,972	4,424	4,866	894	958
25–29 years	5,724	5,722	4,727	4,790	761	757
30–44 years	5,923	5,154	4,864	4,332	787	672
Poverty level income						
0–149 percent	4,911	5,533	3,229	3,959	1,437	1,462
150 percent or more	15,080	14,229	12,921	12,265	1,581	1,539
Age	Percent					
15–44 years	35.5	31.1	32.1	26.6	53.2	54.5
15–19 years	62.2	51.0	60.6	44.0	65.4	73.7
20–24 years	42.2	36.3	38.2	31.7	62.4	58.9
25–29 years	29.4	26.7	25.3	22.9	51.6	49.3
30–44 years	22.5	18.6	20.6	16.1	35.6	36.8
Poverty level income						
0–149 percent	60.2	48.0	56.1	40.1	67.0	67.9
150 percent or more	27.4	24.5	26.1	22.3	40.7	41.8

[1]Includes white, black, and other races.

NOTE: For definitions of terms see technical notes. Because of rounding of estimates, figures may not add to totals.

only 32 percent of white women used a clinic at their most recent visit. For both white and black women, nonmedical counselors not located in medical clinics or doctors' offices were not an important source of family planning services, probably because they cannot provide medical services and supplies that are needed for the contraceptive methods that most women use.

Table 3 shows the number of women who used family planning services in the last 12 months by the age, race, and poverty status (income) of the woman, and focuses on the percent who used a clinic at their most recent visit. The percent of black women using clinics was substantially higher than the percent of white women using clinics in every age category (except teenagers in 1988) and every income group in both 1982 and 1988 (table 3). Explaining the greater reliance of black women than white women on clinics is complex and is an appropriate subject for further research. Some studies have suggested, however, that black women are more likely to rely on clinics for family planning services because they are less likely than white women to have health insurance coverage or sufficient income to pay the fees of private doctors (4). Another recent study cited lack of insurance coverage and lack of a regular source of medical care as major reasons why some women use clinics rather than private doctors (5). Other factors, such as the location of clinics and private doctors' offices, may also help to explain the greater use of clinics by black women.

In 1982, black teenagers were much more likely to use clinics than white teenagers (74 versus 44 percent). But the difference shrank from 30 percentage points in 1982 to only 4 percentage points in 1988 (65 versus 61 percent: not significant). This shrinkage was the result of two changes. First, there was a sharp and significant increase, from 44 to 61 percent, in use of clinics by white teenagers between 1982 and 1988. There was also an apparent decrease, which was not statistically significant, in the proportion of black teenagers who used clinics (from 74 percent in 1982 to 65 percent in 1988).

However, at age 20 and older, the differences by race in the percent using a clinic were quite large in both 1982 and 1988. For example, in 1988, 62 percent of black women and 38 percent of white women ages 20–24 used a clinic at their most recent visit.

By age, the percent using a clinic is highest for teenagers and declines sharply and significantly as age increases. In 1988, 62 percent of teenagers and 23 percent of women 30 and over used a clinic at their most recent visit. In 1982, 51 percent of teenagers and 19 percent of women 30 and over used a clinic. Previous studies (cited in reference 4) suggest that many teenagers use clinics because clinics cost less than private doctors, and because clinics promise that the visit will remain confidential.

Many of the Federal, State, and local programs that fund clinic services are intended to serve low-income women (4). Table 3 also shows the percent who used a clinic at last visit by poverty level income—the total family income divided by the poverty level, expressed as a percent. Low-income women were much more likely than high-income women to rely on

Table 4. Number of women 15–24 years of age who have ever had a family planning visit and percent who used a clinic at their first visit, by race and age at first visit: United States, 1982 and 1988

Age	All races[1]		White		Black	
	1988	1982	1988	1982	1988	1982
	Number in thousands					
15–24 years	9,960	9,440	7,828	7,597	1,761	1,613
Under 18 years	4,761	4,903	3,492	3,750	1,114	1,066
18–19 years	3,304	2,869	2,679	2,410	475	365
20–24 years	1,895	1,637	1,657	1,408	172	182
	Percent					
15–24 years	57.8	47.3	54.4	42.5	70.2	69.4
Under 18 years	66.4	55.2	63.2	50.0	72.7	72.9
18–19 years	56.8	40.3	54.9	36.1	64.7	62.7
20–24 years	38.0	36.6	34.8	34.3	68.8	62.7

[1] Includes white, black, and other races.

NOTE: For definitions of terms see technical notes. Because of rounding of estimates, figures may not add to totals.

clinics for their family planning services. For example in 1988, 60 percent of low-income women used a clinic for their most recent visit, compared with only 27 percent of women with incomes of 150 percent of poverty or more. The proportion using a clinic was 56 percent for low-income white women and only 26 percent for higher-income white women, and 67 versus 41 percent for black women.

Looking at trends in table 3, the apparent drop in the percent of black teenagers using a clinic (from 74 percent in 1982 to 65 percent in 1988) was not statistically significant. As noted above, the increase for white teenagers, from 44 to 61 percent, was significant. Changes in other age groups were smaller and none were significant.

The percent of low-income white women using a clinic increased significantly, from 40 percent in 1982 to 56 percent in 1988 (which means that low-income white women were relying more on clinics for their family planning services in 1988 and were less likely to use private doctors). In the much larger group with incomes of 150 percent of poverty level or more, the change was not significant, and was much smaller (22 to 26 percent).

An additional question was asked of women who used a clinic at the most recent visit, to determine the name and address of the clinic. The name and address of the clinic was then used to determine whether the clinic was funded by Title X of the Public Health Service Act, also called the Population Research and Voluntary Family Planning Programs Act. An estimated 3.74 million women used a Title X clinic at their last visit in the last 12 months; of these, 2.57 million were white, 1.05 million were black, and the rest were of other races. The characteristics of Title X and other clinic users will be explored further in future reports.

First visit

As indicated earlier, family planning services include getting a new method of birth control, renewing a prescription for a method already being used, checking for side effects of method use, counseling on birth control methods, and other services. Women 15–24 years of age at the date of the survey were asked the type of doctor's office, clinic, or counselor they went to the first time they received any family planning services.

In 1988, about 58 percent of women 15–24 who had ever had a family planning visit used a clinic at their first visit (table 4); about 42 percent used a private doctor, and less than 1 percent used a nonmedical counselor (not shown). As at the most recent visit, black women were much more likely than white women to use clinics at the first visit (70 percent of black women and 54 percent of white women used a clinic at the first visit; table 4). The higher use of clinics at the first visit by black women in 1982 has been reported before (4, 6, 7).

For women of all races combined and for white women, but not for black women, the percent using a clinic at their first visit was highest at the youngest ages (table 4). For example, in 1988, 66 percent of women who made their first visit before they were 18 used a clinic at that first visit, compared with 57 percent at ages 18–19 and only 38 percent at age 20 and older. For black women, especially as reported in the 1988 survey, there was no significant variation by age at the first visit in the percent using a clinic.

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Technical notes

The National Survey of Family Growth (NSFG) is a periodic survey conducted by the National Center for Health Statistics to collect data on factors affecting childbearing, contraception, infertility, and related aspects of maternal and infant health. The survey is jointly funded by the National Center for Health Statistics, the National Institute of Child Health and Human Development, and the Office of Population Affairs, all of the U.S. Department of Health and Human Services. Fieldwork was conducted under contract by Westat, Inc., in both 1982 and 1988.

For the 1988 survey (Cycle IV) personal interviews were conducted with a national sample of women who were 15–44 years of age on March 15, 1988. The interviews were conducted between January and August of 1988. In 1982, the population covered was women 15–44 years of age living in the civilian noninstitutionalized population of the conterminous United States. In 1988, Alaska and Hawaii were included, so the population covered was the civilian noninstitutionalized population of the entire United States. Interviews were completed with 7,969 women in 1982 and 8,450 women in 1988. Further details on the sample design and procedures of the 1982 survey are given in references 7 and 8.

Interviews for Cycle IV of the survey were conducted between January and August of 1988 from households that had been interviewed in the National Health Interview Survey (NHIS) between October of 1985 and March of 1987. The NHIS is also conducted by NCHS. As in previous cycles of the NSFG, black women were oversampled. Interviews were conducted in person in the respondent women's homes by trained female interviewers and lasted an average of about 70 minutes. The interview focused on the woman's pregnancy history; her past and current use of contraception; ability to bear children (fecundity and infertility); use of medical services for family planning, infertility, and prenatal care; her marital history, occupation and labor force participation, and a wide range of social, economic, and demographic characteristics.

Reliability of estimates

Because the statistics presented in this report are based on a sample, they may differ by chance variations from the statistics that would result if all 57.9 million women represented by the NSFG had been interviewed. The standard error of an estimate is a measure of such differences. The standard error of an estimated number or percent is calculated by using the appropriate values of A and B from table I in the equations,

$$SE(N) = \sqrt{(A + B/N)}\ N$$

and

$$SE(P) = \sqrt{\frac{B\ P\ (100-P)}{X}}$$

where N = the number of women
P = the percent
X = the number of women in the denominator of the percent

Table I. Preliminary estimates of the parameters A and B for estimating standard errors for women, by race

Race	Parameters	
	A	B
Total or white . . .	−0.00018	10,738
Black.	−0.000626	5,181

The parameters shown in table I were used to generate table II, which shows preliminary estimates of standard errors for percents of total or white women, and table III, which shows preliminary estimates of standard errors for percents of black women.

A similar table for the Cycle III (1982) survey is given in reference 7.

The chances are about 68 in 100 (about 2 in 3) that a sample estimate would fall within one standard error of a statistic based on a complete count of the population represented by the NSFG. The chances are about 95 in 100 that a sample estimate would fall within two standard errors of the same measure obtained if all people in the population were interviewed. Differences between percents discussed in this report were found to be statistically significant at the 5-percent level using a 2-tailed normal deviate test. This means that in repeated samples of the same type and size, a difference as large as the one observed would occur in only 5 percent of samples if there were, in fact, no difference between the percents in the population.

In the text, terms such as "greater," "less," "increase," or "decrease" indicate that the observed differences are statistically significant at the 0.05 level using a two-tailed normal deviate test. Statements using the phrase "the data suggest" indicate that the difference is significant at the 0.10 (10 percent) level but not the 0.05 (5 percent) level. Lack of comment in the text about any two

Table II. Preliminary estimates of standard errors for percents of total or white women: 1988 National Survey of Family Growth

Base of percent	Estimated percent						
	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100,000	4.6	7.1	9.8	13.1	15.0	16.1	16.4
500,000	2.1	3.2	4.4	5.9	6.7	7.2	7.3
1,000,000	1.5	2.3	3.1	4.1	4.7	5.1	5.2
5,000,000	0.6	1.0	1.4	1.9	2.1	2.3	2.3
10,000,000.	0.5	0.7	1.0	1.3	1.5	1.6	1.6
30,000,000.	0.3	0.4	0.6	0.8	0.9	0.9	0.9
50,000,000.	0.2	0.3	0.4	0.6	0.7	0.7	0.7
58,000,000.	0.2	0.3	0.4	0.5	0.6	0.7	0.7

Table III. Preliminary estimates of standard errors for estimated percents of black women: 1988 National Survey of Family Growth

Base of percent	Estimated percent						
	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100,000	3.2	5.0	6.8	9.1	10.4	11.2	11.4
500,000	1.4	2.2	3.1	4.1	4.7	5.0	5.1
1,000,000	1.0	1.6	2.2	2.9	3.3	3.5	3.6
5,000,000	0.5	0.7	1.0	1.3	1.5	1.6	1.6
7,500,000	0.4	0.6	0.8	1.1	1.2	1.3	1.3

statistics does not mean that the difference was tested and found not to be significant.

The relative standard error (or coefficient of variation) of a statistic is the ratio of the standard error to the statistic, and usually is expressed as a percent of the estimate. In this report, statistics with a relative standard error of 30 percent or more are indicated with an asterisk (*). These estimates may be viewed as unreliable by themselves, but they may be combined with other estimates to make comparisons of greater precision.

Statistics in this report also may be subject to nonsampling error, that is, errors or omissions in responding to the interview, recording answers, and processing data. The data have been adjusted for nonresponse by means of adjustments to the sample weights assigned to each case. Other types of nonsampling error were minimized by a series of quality control measures as described in reports on Cycle III (such as reference 7).

Definitions of terms

Family planning services—In the 1982 and 1988 surveys, women were asked a series of questions about whether they had used any of the following services: to get a new method of birth control, renew a prescription, or get supplies for a method already being used; to get a sterilizing operation; to check for correct use or fit of a method or for side effects of a method; or to get counseling about birth control, about having a sterilizing operation, or what to do about a pregnancy. Women who reported receiving one or more of these services were classified as having used family planning services. These questions were asked separately about services received in the 12 months before the interview, services at the last (most recent) visit, and the first visit ever. Women were also asked if they received a pregnancy test. This is not considered a family planning service, but is often the main reason women first go to a family planning provider. First visits at which women received only a pregnancy test, and no other family planning services, were not counted as family planning visits in this report or in another analysis (6).

Source of family planning services—Women who had received family planning services were shown a card containing the following list of types of places: "Clinics" included hospital clinics, family planning clinics, community health center clinics, public health department clinics, and other clinics. Private medical services or private doctors included private doctors in solo or group practices, HMO's (health maintenance organizations), and co-ops. "Counselors" included minister, priest, or religious counselor, school counselor, social or family service agencies, youth centers, and other counselors, at places where medical family planning services are not offered.

Age at first visit—This is the woman's age in completed years at the time she made her first visit for family planning services.

Demographic terms

Age—Age is classified by the age of the respondent in completed years as of March 15, 1988, the approximate midpoint of interviewing.

Race—Race refers to the race of the woman interviewed and is classified as black, white, or other. In Cycles III (1982) and IV (1988), race was classified according to the woman's report of the race that best described her.

Poverty level income—The poverty level index is calculated by dividing the total family income in 1987 by the 1987 poverty level threshold for the woman's family size, as published by the U.S. Bureau of the Census. This definition takes into account the number of persons in the family (9). For a substantial number of respondents (22 percent in 1982 and 11 percent in 1988), total family income was not ascertained. Missing values of poverty level income were imputed from similar respondents with known data. Because of these relatively high levels of missing data, small differences between poverty level income categories should be interpreted with caution.

Cooperating agencies

Cycle IV of the National Survey of Family Growth was supported in part by the National Institute of Child Health and Human Development, National Institutes of Health, and the Office of Population Affairs, Offfice of the Assistant Secretary of Health. These agencies also participated in the design of the questionnaire.

Symbols

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

Recent Issues of *Advance Data From Vital and Health Statistics*

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Advance Data

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

1988 Summary: National Hospital Discharge Survey

by Edmund J. Graves, Division of Health Care Statistics

Introduction

During 1988, an estimated 31.1 million inpatients, excluding newborn infants, were discharged from short-stay non-Federal hospitals in the United States. These patients used 203.7 million days of inpatient hospital care. The discharge rate was 128 discharges per 1,000 civilian population and the average length of stay was 6.5 days.

These and other statistics presented in this report are based on data collected by means of the National Hospital Discharge Survey (NHDS), a continuous survey that has been conducted by the National Center for Health Statistics (NCHS) since 1965. In 1988, data were abstracted from the medical records of approximately 250,000 patients discharged from 422 short-stay non-Federal hospitals. Beginning in 1988, a new three-stage stratified sample design was put in operation. A brief description of the new design, data collection procedures, and estimation process and definitions of terms used in this report can be found in the section entitled "Technical notes." A description of the development and design of the original NHDS, which was in operation from 1965 to 1987, has been published (1). Differences may exist between data for 1988 and earlier years due to the redesign of the survey.

Medical data for hospitalized patients are coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (2). Up to seven diagnoses and four procedures are coded for each discharge. Although diagnoses included in the ICD–9–CM section entitled "Supplementary classification of external causes of injury and poisoning" (codes E800–E999) are used in the National Hospital Discharge Survey, these diagnoses are excluded from this report. The conditions diagnosed and procedures performed are presented here by chapter of ICD–9–CM. Within these chapters, a few diagnoses and procedures or groups thereof also are shown. These specific categories were selected primarily because of their large numbers of occurrences or because they are of special interest. Residual categories of the diagnostic and procedure classes, however, are not included in the tables. More detailed analyses of NHDS data are published in Series 13 of the NCHS *Vital and Health Statistics* reports.

Starting in 1985, some hospitals have submitted machine-readable data tapes through commercial abstracting services. In 1988, approximately 37 percent of the hospitals used this method to submit data. Analysis indicates that a greater number of nonsurgical procedures per patient are recorded from these hospitals than from hospitals submitting data in the traditional manual mode (see "Technical notes"). A portion of the increases from 1984 to 1988 in the estimates for miscellaneous diagnostic and therapeutic procedures and, therefore, for total procedures may be due to this change in data collection methods.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics
Manning Feinleib, M.D., Dr. P.H., Director

Data highlights

Utilization by patient and hospital characteristics

The number, rate, and average length of stay of patients discharged from short-stay non-Federal hospitals are shown by selected patient and hospital characteristics in tables 1–3. The 31.1 million patients discharged from short-stay hospitals during 1988 comprised an estimated 12.6 million males and 18.5 million females. The rate per 1,000 population for females was 147, which was 37 percent higher than the rate of 107 for males. The number and rate of discharges are higher for females than for males because of the large number of women in their childbearing years (15–44 years of age) who are hospitalized for deliveries and pregnancy-related conditions.

The average length of stay was 7.1 days for males and 6.2 days for females during 1988. The average length of stay of the 3.8 million women who were hospitalized for deliveries was 2.9 days. The average length of stay was 5.0 days for patients under 15 years of age, 4.7 days for patients 15–44 years of age, 6.8 days for patients 45–64 years of age, and 8.9 days for patients 65 years of age and over.

The number of discharges from short-stay hospitals by geographic region during 1988 ranged from 10.8 million in the South to 5.4 million in the West. Regional differences in the number of discharges are accounted for in part by variations in the population sizes. The rates per 1,000 population ranged from 140 in the Northeast region to 108 in the West. Average lengths of stay by geographic region were 5.8 days in the West, 6.2 days in the South, 6.4 days in the Midwest, and 7.7 days in the Northeast.

Table 1. Number of inpatients discharged from short-stay hospitals by selected characteristics: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants]

Selected characteristic	Both sexes	Male	Female
	Number of patients discharged in thousands		
All patients	31,146	12,642	18,504
Age			
Under 15 years	2,610	1,486	1,125
15–44 years	11,934	3,485	8,448
45–64 years	6,4560	3,221	3,235
65 years and over	10,146	4,450	5,696
Region			
Northeast	7,078	2,975	4,104
Midwest	7,832	3,268	4,564
South	10,845	4,244	6,601
West	5,391	2,155	3,236

Table 2. Rate of inpatients discharged from short-stay hospitals by selected characteristics: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants]

Selected characteristic	Both sexes	Male	Female
	Rate of patients discharged per 1,000 population		
All patients	127.6	106.9	147.0
Age			
Under 15 years	49.2	54.6	43.4
15–44 years	104.0	61.5	145.6
45–64 years	140.5	146.4	135.1
65 years and over	334.1	360.3	316.2
Region			
Northeast	140.2	123.3	155.8
Midwest	131.1	112.6	148.6
South	129.4	105.1	152.1
West	107.6	87.3	127.3

Table 3. Average length of stay for inpatients discharged from short-stay hospitals by selected characteristics: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants]

Selected characteristic	Both sexes	Male	Female
	Average length of stay in days		
All patients	6.5	7.1	6.2
Age			
Under 15 years	5.0	5.0	4.9
15–44 years	4.7	6.3	4.1
45–64 years	6.8	6.8	6.8
65 years and over	8.9	8.6	9.1
Region			
Northeast	7.7	8.1	7.4
Midwest	6.4	6.7	6.2
South	6.2	6.8	5.9
West	5.8	6.8	5.2

Utilization by diagnosis

Diseases of the circulatory system ranked first in 1988 of the ICD–9–CM diagnostic chapters as a principal or first-listed diagnosis for patients discharged from non-Federal short-stay hospitals. These conditions accounted for an estimated 5.3 million discharges. Other leading ICD–9–CM diagnostic chapters were supplementary classifications (including females with deliveries) (4.3 million discharges) and diseases of the digestive system (3.3 million discharges). About 40 percent of the patients discharged from non-Federal short-stay hospitals were included in these three ICD–9–CM diagnostic chapters.

The diagnostic categories presented in this report were selected

either because they appear as principal or first-listed diagnoses with great frequency or because the conditions are of special interest. Many of these categories (such as malignant neoplasms, psychoses, and fractures) are groupings of more detailed diagnoses.

The number and rate of discharges and average length of stay for each ICD–9–CM diagnostic chapter and selected categories are shown by sex and age in tables 4–6. The most common diagnostic categories for all patients were deliveries and heart disease. Other leading diagnostic categories were malignant neoplasms and fractures. Excluding deliveries, these last three diagnostic categories were the most common first-listed diagnoses for both males and females. Some of the more common diagnoses for patients under 15 years of age were pneumonia, acute respiratory infections, asthma, and chronic diseases of tonsils and adenoids. For patients 15–44 years of age, frequent diagnoses were deliveries, psychosis, fractures, and abortions and ectopic pregnancies. For patients 45–64 years of age and 65 years of age and over, heart disease and malignant neoplasms were major causes of hospital use. The average length of stay for all patients ranged from 1.2 days for chronic disease of tonsils and adenoids to 15.1 days for psychoses.

Utilization by procedures

One or more surgical or nonsurgical procedures were performed for an estimated 19.9 million of the 31.1 million inpatients discharged from short-stay hospitals during 1988. A total of 39.2 million procedures, or an average of 2.0 per patient who underwent at least one procedure, were recorded in 1988.

Procedures are grouped in the tables of this report by the ICD–9–CM procedure chapters. Selected procedures within these chapters also are presented by specific categories. Some of these categories (such as extraction of lens and hysterectomy) are presented as single categories even though they are divided into more precise subgroups in ICD–9–CM.

Three-fourths of all the surgical and nonsurgical procedures performed during 1988 are listed in just five of the 16 procedure chapters. These were diagnostic and therapeutic procedures (10.8 million), obstetrical procedures (6.0 million), operations on the digestive system (5.3 million), operations on the cardiovascular system (3.6 million), and operations on the musculoskeletal system (3.1 million).

The number and rate of all-listed procedures in 1988 for each ICD–9–CM procedure chapter and selected procedure categories are shown by sex and age in tables 7 and 8. Of the 39.2 million procedures performed during 1988, 15.7 million were for males and 23.5 million were for females. The corresponding rates per 100,000 population were 16,054.0 for both sexes, 13,309.3 for males, and 18,631.2 for females. Frequent procedures for males were arteriography and angiocardiography and computerized axial tomography. Procedures commonly performed on females were episiotomy, diagnostic ultrasound, cesarean section, and computerized axial tomography.

The rate of procedures per 100,000 population ranged from 3,860.0 for patients under 15 years of age to 41,761.8 for patients 65 years of age and over. Commonly performed procedures for patients under 15 years of age were spinal tap and tonsillectomy with or without adenoidectomy; for patients 15–44 years of age, episiotomy and cesarean section; for patients 45–64 years of age and 65 years of age and over, computerized axial tomography, arteriography and angiocardiography, diagnostic ultrasound, and circulatory monitoring.

References

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2. Public Health Service and Health Care Financing Administration. International Classification of Diseases, 9th Revision, Clinical Modification. Washington: Public Health Service. 1980.
3. SMG Marketing Group, Inc. Hospital Market Database. Chicago: Healthcare Information Specialists. 1989.
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Symbols

---	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standards of reliability or precision (see Technical notes)
#	Figure suppressed to comply with confidentiality requirements

Table 4. Number of inpatients discharged from short-stay hospitals, by category of first-listed diagnosis, sex, and age: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM)]

Category of first-listed diagnosis and ICD–9–CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15–44 years	45–64 years	65 years and over
	Number of patients discharged in thousands						
All conditions	31,146	12,642	18,504	2,610	11,934	6,456	10,146
Infectious and parasitic diseases .001–139	693	333	359	191	211	104	187
Neoplasms .140–239	2,098	851	1,247	53	378	708	958
Malignant neoplasms .140–208,230–234	1,670	772	898	37	187	566	880
Malignant neoplasm of large intestine and rectum .153–154,197.5	165	77	87	*	*5	41	118
Malignant neoplasm of trachea, bronchus, and lung .162,197.0,197.3	236	136	100	*	8	102	125
Malignant neoplasm of breast .174–175,198.81	177	*	176	–	20	81	76
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature .210–229, 235–239	428	78	350	16	191	142	79
Endocrine, nutritional and metabolic diseases, and immunity disorders .240–279	1,038	414	623	102	229	250	456
Diabetes mellitus .250	454	209	245	28	125	134	166
Diseases of the blood and blood-forming organs .280–289	295	140	155	47	86	52	110
Mental disorders .290–319	1,559	765	793	58	962	288	251
Psychoses .290–299	781	341	440	21	429	157	174
Alcohol dependence syndrome .303	237	179	58	*	158	63	14
Diseases of the nervous system and sense organs .320–389	922	430	492	194	222	190	317
Diseases of the central nervous system .320–336,340–349	348	169	179	57	119	69	103
Cataract .366	92	33	59	*	*	17	72
Diseases of the ear and mastoid process .380–389	200	99	102	106	37	26	32
Diseases of the circulatory system .390–459	5,296	2,722	2,574	25	419	1,628	3,224
Heart disease .391–392.0,393–398,402,404, 410–416,420–429	3,641	1,955	1,686	14	243	1,162	2,223
Acute myocardial infarction .410	716	451	265	*	45	241	430
Atherosclerotic heart disease .414.0	411	278	134	*	24	191	197
Other ischemic heart disease .411–412,414.1–414.9	921	491	431	*	53	366	502
Cardiac dysrhythmias .427	491	228	263	*5	36	131	320
Congestive heart failure .428.0	634	277	357	*	14	107	510
Cerebrovascular disease .430–438	784	336	448	*	32	171	578
Diseases of the respiratory system .460–519	2,937	1,464	1,473	699	540	525	1,172
Acute respiratory infections, except influenza .460–466	445	224	221	168	60	70	148
Chronic disease of tonsils and adenoids .474	197	87	110	125	70	*	*
Pneumonia, all forms .480–486	924	472	452	184	111	139	490
Asthma .493	479	210	270	164	110	93	112
Diseases of the digestive system .520–579	3,268	1,515	1,753	274	992	831	1,171
Ulcers of the stomach and small intestine .531–534	256	137	118	*	52	66	136
Gastritis and duodenitis .535	146	57	88	*6	45	41	54
Appendicitis .540–543	242	141	101	52	145	24	20
Inguinal hernia .550	257	232	25	30	65	78	84
Noninfectious enteritis and colitis .555–556,558	333	122	211	96	115	52	70
Cholelithiasis .574	484	132	352	*	183	146	154
Diseases of the genitourinary system .580–629	2,204	828	1,376	71	922	512	700
Calculus of kidney and ureter .592	287	183	104	*	137	106	41
Hyperplasia of prostate .600	247	247	...	–	*	56	191
Complications of pregnancy, childbirth, and the puerperium[1] .630–676	837	...	837	*3	833	*	...
Abortions and ectopic and molar pregnancies .630–639	266	...	266	*	264	*	...
Diseases of the skin and subcutaneous tissue .680–709	460	234	226	46	154	108	152
Diseases of the musculoskeletal system and connective tissue .710–739	1,647	774	872	54	621	495	477
Arthropathies and related disorders .710–719	459	191	267	18	129	116	196
Intervertebral disc disorders .722	417	247	170	*	223	142	51
Congenital anomalies .740–759	227	128	98	150	45	24	*8
Certain conditions originating in the perinatal period .760–779	158	92	66	158	*	*	*
Symptoms, signs, and ill-defined conditions .780–799	398	200	198	50	175	105	69
Injury and poisoning .800–999	2,817	1,535	1,281	348	1,216	498	755
Fractures, all sites .800–829	1,014	506	508	107	356	154	398
Fracture of neck of femur .820	254	68	186	*	10	24	217
Sprains and strains of back (including neck) .846–847	97	48	49	*	61	22	12
Intracranial injuries (excluding those with skull fracture) .850–854	201	124	78	46	103	26	16
Lacerations and open wounds .870–904	232	176	56	34	155	27	17
Supplementary classifications .V01–V82	4,295	217	4,078	88	3,929	138	139
Females with deliveries .V27	3,781	...	3,781	10	3,768	*	...

[1]First-listed diagnosis for females with deliveries is coded V27, shown under "supplementary classifications."

Table 5. Rate of inpatients discharged from short-stay hospitals, by category of first-listed diagnosis, sex, and age: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM)]

Category of first-listed diagnosis and ICD–9–CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15–44 years	45–64 years	65 years and over
	Rate of inpatients discharged per 10,000 population						
All conditions	1,275.8	1,069.3	1,469.7	491.5	1,040.5	1,404.9	3,341.2
Infectious and parasitic diseases .001–139	28.4	28.2	28.6	35.9	18.4	22.6	61.6
Neoplasms .140–239	85.9	72.0	99.1	10.0	33.0	154.1	315.6
Malignant neoplasms .140–208, 230–234	68.4	65.3	71.3	6.9	16.3	123.3	289.7
Malignant neoplasm of large intestine and rectum .153–154,197.5	6.7	6.6	6.9	*	*0.5	8.9	39.0
Malignant neoplasm of trachea, bronchus, and lung .162, 197.0,197.3	9.7	11.5	7.9	*	0.7	22.2	41.2
Malignant neoplasm of breast .174–175, 198.81	7.2	*	14.0	–	1.7	17.6	25.0
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature .210–229,235–239	17.5	6.6	27.8	3.0	16.7	30.8	25.9
Endocrine, nutritional and metabolic diseases, and immunity disorders .240–279	42.5	35.0	49.5	19.2	20.0	54.4	150.3
Diabetes mellitus .250	18.6	17.7	19.5	5.2	10.9	29.3	54.8
Diseases of the blood and blood-forming organs .280–289	12.1	11.8	12.3	8.9	7.5	11.3	36.2
Mental disorders .290–319	63.8	64.7	63.0	10.9	83.9	62.7	82.5
Psychoses .290–299	32.0	28.8	35.0	4.0	37.4	34.1	57.5
Alcohol dependence syndrome .303	9.7	15.1	4.6	*	13.8	13.8	4.8
Diseases of the nervous system and sense organs .320–389	37.8	36.4	39.1	36.5	19.3	41.3	104.3
Diseases of the central nervous system .320–336,340–349	14.3	14.3	14.2	10.8	10.4	14.9	33.8
Cataract .366	3.8	2.8	4.7	*	*	3.8	23.8
Diseases of the ear and mastoid process .380–389	8.2	8.3	8.1	20.0	3.2	5.6	10.5
Diseases of the circulatory system .390–459	216.9	230.2	204.5	4.7	36.5	354.4	1,061.6
Heart disease .391–392.0,393–398,402,404, 410–416,420–429	149.2	165.4	133.9	2.6	21.2	252.8	731.9
Acute myocardial infraction .410	29.3	38.1	21.1	*	3.9	52.4	141.6
Atherosclerotic heart disease .414.0	16.9	23.5	10.6	*	2.0	41.5	64.8
Other ischemic heart disease .411–413,414.1–414.9	37.7	41.5	34.2	*	4.6	79.7	165.4
Cardiac dysrhythmias .427	20.1	19.3	20.9	*1.0	3.1	28.4	105.4
Congestive heart failure .428.0	26.0	23.5	28.3	*	1.3	23.2	168.1
Cerebrovascular disease .430–438	32.1	28.4	35.6	*	2.8	37.2	190.4
Diseases of the respiratory system .460–519	120.3	123.8	117.0	131.7	47.1	114.2	386.0
Acute respiratory infections, except influenza .460–466	18.2	18.9	17.6	31.6	5.2	15.2	48.7
Chronic disease of tonsils and adenoids .474	8.0	7.4	8.7	23.5	6.1	*	*
Pneumonia, all forms .480–486	37.9	40.0	35.9	34.7	9.7	30.3	161.3
Asthma .493	19.6	17.7	21.4	31.0	9.6	20.3	36.8
Diseases of the digestive system .520–579	133.9	128.1	139.3	51.5	86.5	180.8	385.7
Ulcers of the stomach and small intestine .531–534	10.5	11.6	9.4	*	4.6	14.3	44.9
Gastritis and duodenitis .535	6.0	4.8	7.0	*1.1	3.9	9.0	17.7
Appendicitis .540–543	9.9	11.9	8.0	9.9	12.7	5.2	6.7
Inguinal hernia .550	10.5	19.6	2.0	5.6	5.7	17.0	27.6
Noninfectious enteritis and colitis .555–556,558	13.6	10.3	16.7	18.1	10.0	11.4	23.0
Cholelithiasis .574	19.8	11.2	28.0	*	16.0	31.7	50.8
Diseases of the genitourinary system .580–629	90.3	70.1	109.3	13.3	80.3	111.4	230.5
Calculus of kidney and ureter .592	11.8	15.5	8.3	*	11.9	23.0	13.6
Hyperplasia of prostate .600	10.1	20.9	...	–	*	12.1	62.8
Complications of pregnancy, childbirth, and the puerperium[1] .630–676	34.3	...	66.5	*0.6	72.6	*	...
Abortions and ectopic and molar pregnancies .630–639	10.9	...	21.1	*	23.0	*	...
Diseases of the skin and subcutaneous tissue .680–709	18.8	19.8	17.9	8.6	13.5	23.4	50.1
Diseases of the musculoskeletal system and connective tissue .710–739	67.4	65.5	69.3	10.1	54.1	107.8	156.9
Arthropathies and related disorders .710–719	18.8	16.2	21.2	3.4	11.3	25 2	64.4
Intervertebral disc disorders .722	17.1	20.9	13.5	*	19.5	30.9	16.7
Congenital anomalies .740–759	9.3	10.9	7.8	28.2	3.9	5.2	*2.5
Certain conditions originating in the perinatal period .760–779	6.5	7.8	5.3	29.8	*	*	*
Symptoms, signs, and ill-defined conditions .780–799	16.3	16.9	15.7	9.3	15.2	22.8	22.7
Injury and poisoning .800–999	115.4	129.9	101.8	65.6	106.0	108.3	248.6
Fractures, all sites .800–829	41.5	42.8	40.4	20.1	31.0	33.4	131.1
Fracture of neck of femur .820	10.4	5.7	14.8	*	0.9	5.2	71.4
Sprains and strains of back (including neck) .846–847	4.0	4.1	3.9	*	5.3	4.8	3.9
Intracranial injuries (excluding those with skull fracture) .850–854	8.2	10.4	6.2	8.7	9.0	5.7	8.4
Lacerations and open wounds .870–904	9.5	14.9	4.5	6.3	13.5	5.9	5.7
Supplementary classifications .V01–V82	175.9	18.3	323.9	16.6	342.5	30.1	45.9
Females with deliveries .V27	154.9	...	300.3	2.0	328.6	*	...

[1] First-listed diagnosis for females with deliveries is coded V27, shown under "supplementary classifications."

Table 6. Average length of stay for inpatients discharged from short-stay hospitals, by category of first-listed diagnosis, sex, and age: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM)]

Category of first-listed diagnosis and ICD–9–CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15–44 years	45–64 years	65 years and over
	Average length of stay in days						
All conditions	6.5	7.1	6.2	5.0	4.7	6.8	8.9
Infectious and parasitic diseases .001–139	8.1	8.2	8.0	4.1	7.5	10.9	11.3
Neoplasms .140–239	8.5	9.0	8.1	6.5	5.8	8.1	9.9
Malignant neoplasms .140–208, 230–234	9.4	9.4	9.4	7.9	7.3	8.9	10.2
Malignant neoplasm of large intestine and rectum .153–154,197.5	13.1	12.6	13.4	*	*12.4	11.5	13.6
Malignant neoplasm of trachea, bronchus, and lung .162,197.0,197.3	9.5	9.1	10.0	*	11.3	9.4	9.5
Malignant neoplasm of breast .174–175,198.81	5.6	*	5.6	–	5.0	5.3	6.0
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature .210–229, 235–239	4.9	5.0	4.9	3.1	4.3	5.0	6.6
Endocrine, nutritional and metabolic diseases, and immunity disorders .240–279	7.5	7.5	7.5	4.6	5.4	7.2	9.4
Diabetes mellitus .250	8.2	7.8	8.6	5.2	5.7	8.3	10.5
Diseases of the blood and blood-forming organs .280–289	6.2	6.2	6.2	4.2	5.5	6.5	7.4
Mental disorders .290–319	13.0	12.4	13.7	25.0	12.6	11.9	13.3
Psychoses .290–299	15.1	14.3	15.8	28.0	14.7	14.1	15.5
Alcohol dependence syndrome .303	11.2	11.1	11.4	*	11.9	8.9	8.5
Diseases of the nervous system and sense organs .320–389	5.4	6.0	4.9	3.7	5.4	5.5	6.4
Diseases of the central nervous system .320–336,340–349	9.4	10.5	8.4	6.5	7.2	10.5	12.9
Cataract .366	1.4	1.5	1.3	*	*	1.3	1.4
Diseases of the ear and mastoid process .380–389	2.5	2.3	2.7	2.1	2.2	2.5	4.0
Diseases of the circulatory system .390–459	7.5	7.4	7.7	6.8	5.7	6.4	8.4
Heart disease .391–392.0,393–398,402,404, 410–416,420–429	7.1	6.9	7.4	6.6	5.7	6.2	7.8
Acute myocardial infarction .410	9.0	8.8	9.3	*	6.8	8.1	9.7
Atherosclerotic heart disease .414.0	6.1	5.7	6.9	*	5.0	5.1	7.1
Other ischemic heart disease .411–413,414.1–414.9	5.3	5.1	5.5	*	3.8	4.6	5.9
Cardiac dysrhythmias .427	5.6	5.6	5.7	*4.6	3.2	4.7	6.3
Congestive heart failure .428.0	8.8	8.6	8.9	*	6.8	9.3	8.7
Cerebrovascular disease .430–438	9.7	9.8	9.6	*	7.9	8.7	10.1
Diseases of the respiratory system .460–519	6.6	6.6	6.7	3.2	4.5	7.1	9.4
Acute respiratory infections, except influenza .460–466	5.1	4.8	5.4	3.3	3.9	5.7	7.5
Chronic disease of tonsils and adenoids .474	1.2	1.4	1.1	1.2	1.2	*	*
Pneumonia, all forms .480–486	8.4	8.3	8.6	4.6	7.3	8.4	10.2
Asthma .493	4.8	4.4	5.0	2.8	4.0	5.7	7.6
Diseases of the digestive system .520–579	6.2	5.8	6.5	3.6	4.6	6.3	8.0
Ulcers of the stomach and small intestine .531–534	7.2	6.8	7.7	*	5.5	6.7	8.2
Gastritis and duodenitis .535	4.4	4.1	4.6	*2.8	3.6	4.5	5.3
Appendicitis .540–543	5.2	5.4	4.9	4.9	3.9	7.1	12.8
Inguinal hernia .550	2.5	2.5	2.3	1.6	2.0	2.3	3.3
Noninfectious enteritis and colitis .555–556, 558	4.7	4.6	4.8	2.9	4.5	5.8	6.7
Cholelithiasis .574	6.5	7.4	6.2	*	5.1	6.2	8.6
Diseases of the genitourinary system .580–629	5.3	5.5	5.1	3.9	4.0	5.1	7.2
Calculus of kidney and ureter .592	3.1	2.8	3.6	*	2.5	3.2	4.6
Hyperplasia of prostate .600	6.3	6.3	...	–	*	7.2	6.0
Complications of pregnancy, childbirth, and the puerperium[1] .630–676	2.7	...	2.7	*2.4	2.7	*	...
Abortions and ectopic and molar pregnancies .630–639	2.3	...	2.3	*	2.3	*	...
Diseases of the skin and subcutaneous tissue .680–709	8.1	7.9	8.3	4.0	5.6	8.2	11.8
Diseases of the musculoskeletal system and connective tissue .710–739	6.3	5.8	6.8	4.8	4.6	5.9	9.2
Arthropathies and related disorders .710–719	7.4	6.1	8.4	3.8	4.1	6.8	10.4
Intervertebral disc disorders .722	5.9	5.5	6.5	*	5.4	6.0	8.3
Congenital anomalies .740–759	5.9	5.8	6.2	5.9	4.5	8.6	*7.2
Certain conditions originating in the perinatal period .760–779	12.4	12.1	13.0	12.4	*	*	*
Symptoms, signs, and ill-defined conditions .780–799	3.3	2.8	3.8	2.7	2.9	3.5	4.7
Injury and poisoning .800–999	6.8	6.4	7.3	4.1	5.3	7.1	10.2
Fractures, all sites .800–829	8.4	7.2	9.7	5.0	6.0	8.2	11.6
Fracture of neck of femur .820	13.4	13.0	13.6	*	14.2	12.5	13.5
Sprains and strains of back (including neck) .846–847	4.8	4.6	5.0	*	4.6	4.6	6.6
Intracranial injuries (excluding those with skull fracture) .850–854	5.5	6.4	4.1	2.5	5.9	6.9	8.0
Lacerations and open wounds .870–904	4.1	4.3	3.7	3.0	4.0	4.5	6.8
Supplementary classifications .V01–V82	3.3	6.6	3.1	6.1	2.9	4.7	9.5
Females with deliveries .V27	2.9	...	2.9	3.0	2.9	*	...

[1] First-listed diagnosis for females with deliveries is coded V27, shown under "supplementary classifications."

Table 7. Number of all-listed procedures for inpatients discharged from short-stay hospitals, by procedure category, sex, and age: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants. Procedure groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM)]

Procedure category and ICD–9–CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15–44 years	45–64 years	65 years and over
	Number of all-listed procedures in thousands						
All procedures	39,192	15,735	23,457	2,050	15,520	8,939	12,682
Operations on the nervous system .01–05	896	467	429	216	279	200	201
Spinal tap .03.31	353	183	171	154	79	48	72
Operations on the endocrine system .06–07	111	31	79	*	43	39	26
Operations on the eye .08–16	547	243	304	33	80	126	308
Extraction of lens .13.1–13.6	113	40	73	*	*	22	85
Insertion of prosthetic lens (pseudophakos) .13.7	106	35	71	*	*	18	87
Operations on the ear .18–20	198	109	88	107	46	25	19
Operations on the nose, mouth, and pharynx .21–29	820	436	385	220	372	135	94
Rhinoplasty and repair of nose .21.8	97	58	39	*6	68	18	*6
Tonsillectomy with or without adenoidectomy .28.2–28.3	213	94	119	135	75	*	*
Operations on the respiratory system .30–34	991	561	430	69	190	291	441
Bronchoscopy .33.21–33.23	145	84	61	22	28	38	57
Operations on the cardiovascular system .35–39	3,626	2,220	1,406	169	422	1,358	1,676
Removal of coronary artery obstruction .36.0	227	160	67	–	18	117	92
Direct heart revascularization .36.1	353	270	83	*	15	167	170
Cardiac catheterization .37.21–37.23	930	598	332	20	93	432	385
Pacemaker insertion, replacement, removal, repair .37.7–37.8	291	165	125	*	8	58	223
Operations on the hemic and lymphatic system .40–41	392	192	200	24	91	106	172
Operations on the digestive system .42–54	5,257	2,277	2,981	233	1,544	1,335	2,145
Esophagoscopy and gastroscopy (natural orifice) .42.23,44.13	127	68	59	8	23	36	60
Partial gastrectomy and resection of intestine .43.5–43.8,45.6–45.8	292	123	170	*7	36	81	169
Endoscopy of large intestine (natural orifice) .45.24	202	83	119	*	26	50	124
Appendectomy, excluding incidental .47.0	273	147	126	58	162	29	24
Hemorrhoidectomy .49.43–49.46	74	42	32	*	28	31	15
Cholecystectomy .51.2	497	132	365	*	191	150	155
Repair of inguinal hernia .53.0–53.1	290	261	29	36	70	86	98
Division of peritoneal adhesions .54.4	296	51	245	*4	146	66	79
Operations on the urinary system .55–59	1,706	1,018	688	48	398	426	833
Endoscopies (natural orifice) .55.21–55.22,56.31,57.32,58.22	588	424	164	9	98	139	343
Operations on the male genital organs .60–64	633	633	...	50	54	128	400
Prostatectomy .60.2–60.6	358	358	...	...	*	67	290
Operations on the female genital organs .65–71	2,501	...	2,501	10	1,773	516	202
Oophorectomy and salpingo-oophorectomy .65.3–65.6	451	...	451	*	246	165	39
Bilateral destruction or occlusion of fallopian tubes .66.2–66.3	406	...	406	*	404	*	...
Hysterectomy .68.3–68.7	578	...	578	–	340	188	50
Dilation and curettage of uterus .69.0	279	...	279	*	222	40	16
Repair of cystocele and rectocele .70.5	136	...	136	–	34	54	49
Obstetrical procedures .72–75	6,042	...	6,042	16	6,024	*	...
Episiotomy with or without forceps or vacuum extraction .72.1,72.21,72.31,72.71,73.6	1,680	...	1,680	*6	1,674	*	...
Cesarean section .74.0–74.2,74.4,74.99	933	...	933	*	931	*	...
Repair of current obstetric laceration .75.5–75.6	690	...	690	*	688	*	...
Operations on the musculoskeletal system .76–84	3,143	1,648	1,496	203	1,325	747	868
Open reduction of fracture except jaw .76.79,79.2–79.3,79.5–79.6	456	235	221	32	185	82	157
Other reduction of fracture except jaw .76.70,76.78,79.0–79.1,79.4	183	101	82	44	62	24	53
Excision or destruction of intervertebral disc and spinal fusion .80.5,81.0	340	206	134	*4	178	110	48
Arthroplasty and replacement of knee .81.41–81.47	204	95	109	*	78	34	90
Arthroplasty and replacement of hip .81.5–81.6	206	66	140	*	10	38	158
Operations on muscles, tendons, fascia, and bursa .82–83.1, 83.3–83.9	305	181	124	36	140	81	48
Operations on the integumentary system .85–86	1,475	639	836	105	537	393	440
Mastectomy .85.4	124	*	123	*	14	51	58
Excision or destruction of lesion or tissue of skin or subcutaneous tissue .86.2–86.4	531	291	241	37	194	124	177
Skin graft (except lip or mouth) .86.6–86.7	148	91	56	21	51	31	44
Miscellaneous diagnostic and therapeutic procedures .87–99	10,854	5,262	5,593	544	2,342	3,112	4,856
Computerized axial tomography .87.03,87.41,87.71,88.01,88.38	1,613	775	838	80	374	388	771
Pyelogram .87.73–87.75	324	191	133	9	122	90	102
Arteriography and angiocardiography using contrast material .88.4–88.5	1,624	995	629	20	189	734	680
Diagnostic ultrasound .88.7	1,562	599	963	97	476	348	641
Circulatory monitoring .89.6	846	430	415	32	127	217	469
Radioisotope scan .92.0–92.1	704	315	390	17	124	215	348

Table 8. Rate of all-listed procedures for inpatients discharged from short-stay hospitals, by procedure category, sex, and age: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants. Procedure groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM)]

Procedure category and ICD–9–CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15–44 years	45–64 years	65 years and over
	Rate of all-listed procedures per 100,000 population						
All procedures	16,054.0	13,309.3	18,631.2	3,860.0	13,532.0	19,453.4	41,761.8
Operations on the nervous system .01–05	367.0	395.4	340.4	407.4	243.0	435.6	661.2
Spinal tap .03.31	144.8	154.6	135.6	290.8	69.2	104.0	236.8
Operations on the endocrine system .06–07	45.3	26.5	63.0	*	37.4	85.9	84.2
Operations on the eye .08–16	224.0	205.4	241.4	61.3	70.0	274.0	1,014.4
Extractions of lens .13.1–13.6	46.4	34.0	58.0	*	*	47.4	279.3
Insertion of prosthetic lens (pseudophakos) .13.7	43.5	29.7	56.6	*	*	40.0	285.9
Operations on the ear .18–20	80.9	92.3	70.2	201.2	40.4	54.8	63.2
Operations on the nose, mouth, and pharynx .21–29	336.0	368.4	305.7	413.5	324.5	293.5	308.4
Rhinoplasty and repair of nose .21.8	39.7	49.1	30.8	*11.2	58.9	38.1	*19.0
Tonsillectomy with or without adenoidectomy .28.2–28.3	87.3	79.3	94.8	254.4	65.8	*	*
Operations on the respiratory system .30–34	406.0	474.5	341.6	130.3	165.5	632.5	1,453.8
Bronchoscopy .33.21–33.23	59.3	70.8	48.4	41.2	24.2	81.7	189.2
Operations on the cardiovascular system .35–39	1,485.2	1,877.8	1,116.6	319.0	367.9	2,956.0	5,519.6
Removal of coronary artery obstruction .36.0	92.8	135.3	52.9	–	15.4	255.0	302.0
Direct heart revascularization .36.1	144.6	228.1	66.2	*	13.2	362.7	558.6
Cardiac catheterization .37.21–37.23	380.9	505.6	263.8	37.0	81.5	940.5	1,266.3
Pacemaker insertion, replacement, removal, repair .37.7–37.8	119.2	139.9	99.6	*	7.4	127.2	733.1
Operations on the hemic and lymphatic system .40–41	160.7	162.7	158.8	45.5	79.1	229.6	565.9
Operations on the digestive system .42–54	2,153.5	1,925.6	2,367.5	437.8	1,346.3	2,905.5	7,065.1
Esophagoscopy and gastroscopy (natural orifice) .42.23,44.13	52.2	57.7	47.1	15.8	20.3	78.1	197.1
Partial gastrectomy and resection of intestine .43.5–43.8, 45.6–45.8	119.7	103.7	134.7	*12.4	31.0	176.6	555.8
Endoscopy of large intestine (natural orifice) .45.24	.82.7	69.9	94.7	*	23.1	109.1	409.0
Appendectomy, excluding incidental .47.0	111.3	124.0	100.4	109.1	141.4	63.3	78.2
Hemorrhoidectomy .49.43–49.46	30.5	35.7	25.6	*	24.4	68.2	49.7
Cholecystectomy .51.2	203.6	111.4	290.1	*	166.2	326.5	509.5
Repair of inguinal hernia .53.0–53.1	118.7	220.4	23.2	68.2	61.3	186.5	321.3
Division of peritoneal adhesions .54.4	121.2	43.1	194.5	*7.1	127.6	144.2	261.6
Operations on the urinary system .55–59	698.7	861.0	546.3	91.1	346.9	928.0	2,743.3
Endoscopies (natural orifice) .55.21–55.22,56.31,57.32,58.22	240.8	358.5	130.4	16.2	85.2	301.8	1,129.4
Operations on the male genital organs .60–64	259.2	535.2	...	94.9	47.4	278.5	1,316.9
Prostatectomy .60.2–60.6	146.5	302.4	...	...	*	146.7	953.9
Operations on the female genital organs .65–71	1,024.6	...	1,986.7	18.5	1,546.2	1,122.6	665.8
Oophorectomy and salpingo-oophorectomy .65.3–65.6	184.7	...	358.1	*	214.2	359.3	128.3
Bilateral destruction or occlusion of fallopian tubes .66.2–66.3	166.3	...	322.5	*	352.1	*	...
Hysterectomy .68.3–68.7	236.9	...	459.4	–	296.4	410.0	164.7
Dilation and curettage of uterus .69.0	114.4	...	221.8	*	193.2	87.6	53.9
Repair of cystocele and rectocele .70.5	55.7	...	108.0	–	29.3	116.8	160.1
Obstetrical procedures .72–75	2,474.9	...	4,798.8	29.5	5,252.3	*	...
Episiotomy with or without forceps or vacuum extraction .72.1,72.21,72.31,72.71,73.6	688.3	...	1,334.7	*10.4	1,459.5	*	...
Cesarean section .74.0–74.2,74.4,74.99	382.3	...	741.4	*	811.7	*	...
Repair of current obstetric laceration .75.5–75.6	282.8	–	548.3	*	599.6	*	...
Operations on the musculoskeletal system .76–84	1,287.6	1,393.7	1,187.9	382.9	1,155.0	1,625.8	2,858.8
Open reduction of fracture except jaw .76.79,79.2–79.3,79.5–79.6	186.7	199.0	175.2	60.0	161.0	177.9	518.6
Other reduction of fracture except jaw .76.70,76.78,79.0–79.1,79.4	74.9	85.8	64.8	83.0	54.3	52.2	173.3
Excision or destruction of intervertebral disc and spinal fusion .80.5, 81.0	139.1	173.8	106.5	*7.3	155.3	239.5	156.7
Arthroplasty and replacement of knee .81.41–81.47	83.5	80.3	86.6	*	68.2	74.0	295.5
Arthroplasty and replacement of hip .81.5–81.6	84.6	55.9	111.5	*	8.6	82.9	519.2
Operations on muscles, tendons, fascia, and bursa .82–83.1, 83.3–83.9	124.9	153.1	98.3	68.5	121.8	176.2	157.3
Operations on the integumentary system .85–86	604.1	540.2	664.1	197.1	468.0	854.9	1,450.2
Mastectomy .85.4	50.8	*	97.3	*	12.3	112.0	192.1
Excision or destruction of lesion or tissue of skin or subcutaneous tissue .86.2–86.4	217.6	245.8	191.1	69.5	168.8	269.5	582.4
Skin graft (except lip or mouth) .86.6–86.7	60.5	77.3	44.8	38.8	44.8	68.1	146.4
Miscellaneous diagnostic and therapeutic procedures .87–99	4,446.2	4,450.6	4,442.1	1,024.8	2,042.0	6,772.0	15,991.1
Computerized axial tomography .87.03,87.41,87.71,88.01,88.38	660.6	655.5	665.3	151.4	325.7	843.8	2,538.6
Pyelogram .87.73–87.75	132.7	161.6	105.5	17.5	106.8	195.8	336.6
Arteriography and angiocardiography using contrast material .88.4–88.5	665.2	841.3	499.7	38.4	165.0	1,597.9	2,238.8
Diagnostic ultrasound .88.7	639.8	506.5	764.9	181.8	415.0	758.3	2,110.3
Circulatory monitoring .89.6	346.3	363.8	329.9	61.0	110.7	471.7	1,545.8
Radioisotope scan .92.0–92.1	288.5	266.2	309.4	32.6	108.1	468.6	1,144.6

Technical Notes

Survey methodology

Source of data

The National Hospital Discharge Survey covers discharges from noninstitutional hospitals, exclusive of Federal, military, and Veterans Administrative hospitals, located in the 50 states and the District of Columbia. Only short-stay hospitals (hospitals with an average length of stay for all patients of less than 30 days) or those whose specialty is general (medical or surgical) or children's general are included in the survey. These hospitals must also have six or more beds staffed for patient use.

Beginning with 1988, the NHDS sampling frame consists of hospitals that were listed in the April 1987 SMG Hospital Market Tape (3), met the above criteria, and began accepting patients by August 1987. For 1988, the sample consisted of 542 hospitals. Of the 542 hospitals, 11 were found to be out of scope (ineligible) because they went out of business or otherwise failed to meet the criteria for the NHDS universe. Of the 531 in-scope (eligible) hospitals, 422 responded to the survey.

Table I. Approximate relative standard errors of estimated numbers of discharges and diagnoses: United States, 1988

Size of estimate	Under 15 years of age	All other ages
5,000	30.2	28.7
10,000	22.8	20.5
50,000	14.3	9.8
100,000	12.8	7.5
500,000	11.5	4.9
1,000,000	11.4	4.5
3,000,000	11.3	4.2
5,000,000	...	4.1
10,000,000	...	4.0
20,000,000	...	4.0
30,000,000	...	4.0
40,000,000	...	4.0

Table II. Approximate relative standard errors of estimated numbers of all listed procedures: United States, 1988

Size of estimate	Under 15 years of age	All other ages
5,000	33.0	30.4
10,000	24.7	21.8
50,000	14.9	10.9
100,000	13.2	8.6
500,000	11.7	6.2
1,000,000	11.5	5.8
3,000,000	11.3	5.6
5,000,000	...	5.5
10,000,000	...	5.5
20,000,000	...	5.5
30,000,000	...	5.5
40,000,000	...	5.5

Sample design and data collection

The NCHS has conducted the NHDS continuously since 1965. The original sample was selected in 1964 from a frame of short-stay hospitals listed in the National Master Facility Inventory. That sample was updated periodically with samples of hospitals that opened later. Sample hospitals were selected with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals. Within each sample hospital, a systematic random sample of discharges was selected. A report on the design and development of the original NHDS was published (1).

Beginning in 1988, the NHDS sample includes with certainty all hospitals with 1,000 or more beds or 40,000 or more discharges annually. The remaining sample of hospitals is based on a stratified three-stage design. The first stage consists of selection of 112 primary sampling units (PSU's) that comprise a probability subsample of PSU's used in the 1985–94 National Health Interview Survey. The second stage consists of selection of noncertainty hospitals from the sample PSU's. At the third stage, a sample of discharges was selected by a systematic random sampling technique.

Two data collection procedures were used for the survey. The first was a manual system of sample selection and data abstraction. The second was an automated method, used for approximately 37 percent of the respondent hospitals in 1988, that involved the purchase of data tapes from abstracting service organizations.

In the manual system, the sample selection and the transcription of information from the hospital records to abstract forms were performed at the hospitals. The completed forms, along with sample selection control sheets, were forwarded to NCHS for coding, editing, and weighting. A few of these hospitals submitted their data via computer printout or tape. Of the hospitals using the manual system in 1988, about two-thirds had the work performed by their own medical records staff. In the remaining hospitals using the manual system, personnel of the U.S. Bureau of the Census did the work on behalf of NCHS.

For the automated system, NCHS purchased tapes containing machine-readable medical record data from abstracting service organizations.

Records were systematically sampled by NCHS.

The medical abstract form and the abstract service data tapes contain items relating to the personal characteristics of the patient, including birth date, sex, race, and marital status but not name and address; administrative information, including admission and discharge dates, discharge status, and medical record number; and medical information, including diagnoses and surgical and nonsurgical operations or procedures. Since 1977, patient ZIP, Code expected source of payment, and dates of surgery have also been collected. (The medical record number and patient ZIP Code are confidential information and are not available to the public.)

Presentation of estimates

The selection of estimates for publication is based on the relative standard error of the estimate and the number of sample records on which the estimate is based (referred to as the sample size). Based on consideration of the complex sample design of the NHDS, the following guidelines are used for presenting the NHDS estimates:

- If the sample size is less than 30, the value of the estimate is not reported. Only an asterisk (*) is shown in the tables.
- If the sample size is 30–59, the value of the estimate is reported but should not be assumed to be reliable. The estimate is preceded by an asterisk (*) in the tables.
- If the sample size is 60 or more but the approximate relative standard error is over 30 percent, the estimate is reported but should not be assumed to be reliable. The estimate is preceded by an asterisk (*) in the tables.

Sampling errors and rounding of numbers

The standard error is primarily a measure of sampling variability that occurs by chance because only a sample rather than the entire universe is surveyed. The relative standard error of the estimate is obtained by dividing the standard error by the estimate itself and is expressed as a percent of the estimate. The resulting value is multiplied by 100, so the relative standard error is expressed as a percent of the estimate.

Estimates of sampling variability were calculated with SESUDAAN software, which computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and approach it uses has been published (4).

Table I provides the estimate of sampling variability for discharges and first-listed diagnoses for patients under 15 years of age and all other variables. Table II provides the estimates of sampling variability by all-listed procedures for patients under 15 years of age and all other variables.

Estimates have been rounded to the nearest thousand. For this reason, figures within tables do not always add to the totals. Rates and average lengths of stay were calculated from original, unrounded figures and will not necessarily agree precisely with rates or average lengths of stay calculated from rounded data.

Tests of significance

In this report, statistical inference is based on the two-sided test with a critical value of 1.96 (0.05 level of significance.) Terms such as "higher" and "less" indicate that differences are statistically significant. Terms such as "similar" or "no difference" mean that no statistically significant difference exists between the estimates being compared. A lack of comment on the difference between any two estimates does not mean that the difference was tested and found not to be significant.

Definition of terms

Terms relating to hospitals and hospitalization

Hospital—All hospitals with an average length of stay for all patients of less than 30 days or hospitals whose specialty is general (medical or surgical) or children's general are eligible for inclusion in NHDS, except Federal hospitals and hospital units of institutions. Hospitals must have six beds or more staffed for patient use.

Patient—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. In this report, patients refers to the number of discharges during the year, including any multiple discharges of the same individual from one or more short-stay hospitals. Infants admitted on the day of birth, directly or by transfer from another medical facility, with or without mention of disease, disorder, or immaturity, are included. All newborn infants, defined as those admitted by birth to the hospital, are excluded from this report. The terms "patient" and "inpatient" are used synonymously.

Discharge—The formal release of a patient by a hospital; that is, the termination of a period of hospitalization by death or by disposition to place of residence, nursing home, or another hospital. The terms "discharges" and "patients discharged" are used synonymously.

Discharge rate—The ratio of the number of hospital discharges during the year to the number of persons in the civilian population on July 1 of that year.

Days of care—The total number of patient days accumulated at time of discharge by patients discharged from short-stay hospitals during a year. A stay of less than 1 day (patient admission and discharge on the same day) is counted as 1 day in the summation of total days of care. For patients admitted and discharged on different days, the number of days of care is computed by counting all days from (and including) the date of admission to (but not including) the date of discharge.

Average length of stay—The total number of days of care accumulated at time of discharge by patients discharged during the year, divided by the number of patients discharged.

Terms relating to diagnoses and procedures

Discharge diagnoses—One or more diseases or injuries (or some factor that influences health status and contact with health services that is not itself a current illness or injury) listed by the attending physician on the medical record of a patient. In the NHDS, discharge (or final) diagnoses listed on the face sheet (summary sheet) of the medical record are transcribed in the order listed. Each sample discharge is assigned a maximum of seven five-digit codes according to ICD–9–CM (2).

Principal diagnosis—The condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care.

First-listed diagnosis—The coded diagnosis identified as the principal diagnosis or listed first on the face sheet of the medical record if the principal diagnosis cannot be identified. The number of first-listed diagnoses is equivalent to the number of discharges.

Procedure—One or more surgical or nonsurgical operations, procedures, or special treatments listed by the physician on the medical record. In the NHDS, all terms listed on the face sheet (summary sheet) of the medical record under the caption "operation," "operative procedures," "operations and/or special treatment," and the like are transcribed in the order listed. A maximum of four procedures are coded.

Rate of procedures—The ratio of the number of all-listed procedures during a year to the number of persons in the civilian population on July 1 of that year determines the rate of procedures.

Demographic terms

Age—Refers to the age of the patient on the birthday prior to admission to the hospital inpatient service.

Population—Civilian population is the resident population, excluding members of the Armed Forces.

Geographic region—Hospitals are classified by location in one of the four geographic regions of the United States corresponding to those used by the U.S. Bureau of the Census:

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

Recent Issues of *Advance Data From Vital and Health Statistics*

No. 184. Use of Family Planning Services in the United States: 1982 and 1988 (April 13, 1990)

No. 183. AIDS Knowledge and Attitudes for July–September 1989 (March 8, 1990)

No. 182. Contraceptive Use in the United States, 1973–88 (March 23, 1990)

No. 181. Adoption in the 1980's (January 5, 1990)

No. 180. Characteristics of Persons Dying From Cerebrovascular Diseases (February 8, 1990)

No. 179. AIDS Knowledge and Attitudes for April–June 1989 (November 1, 1989)

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Advance Data

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

AIDS Knowledge and Attitudes for October–December 1989

Provisional Data From the National Health Interview Survey

by Ann M. Hardy, Dr.P.H., Division of Health Interview Statistics

Introduction

The National Center for Health Statistics (NCHS) has included a special set of supplemental questions on the adult population's knowledge and attitudes about acquired immunodeficiency syndrome (AIDS) in the National Health Interview Survey (NHIS). The first AIDS Knowledge and Attitudes Survey was in the field from August through December 1987. Provisional results of that survey were published on a monthly basis in *Advance Data From Vital and Health Statistics* (Nos. 146, 148, 150, 151, and 153). A public use data tape containing the information collected in 1987 is available from NCHS.

During the first 4 months of 1988, the NHIS AIDS questionnaire was revised to meet current program needs for information about AIDS awareness. The revised AIDS Knowledge and Attitudes Survey entered the field in May 1988. Provisional findings for the remainder of 1988 were published periodically *Advance Data From Vital and Health Statistics* Nos. 160, 161, 163, 164, 167, and 175); in addition, two special reports focusing on minority populations were published from the 1988 data *Advance Data From Vital and Health Statistics* Nos. 165 and 166). A public use data tape of the 1988 AIDS Knowledge and Attitudes Survey is also now available. The NHIS AIDS questionnaire used in 1988 was continued throughout 1989. Reports based on the 1989 data are being issued on a quarterly basis. This report presents provisional data for the period October–December 1989.

The *Advance Data* reports describing the NHIS AIDS data have been restricted to simple descriptive statistics to facilitate their timely release. Thus, these reports do not attempt to explain or interpret differences among population subgroups or to examine relationships among various measures of knowledge and AIDS-related behavior (e.g., testing). The NHIS AIDS data bases permit more complex analyses than those presented in this series of *Advance Data* reports, and such analyses are being undertaken by various groups in the Public Health Service.

The AIDS questionnaires were designed to estimate public knowledge about AIDS virus (HIV) transmission and its prevention. These data are needed to plan and develop AIDS educational campaigns and to monitor major educational efforts, for example, the series of radio and television public service announcements entitled "America Responds to AIDS" and the brochure "Understanding AIDS," both developed by the Centers for Disease Control.

The NHIS AIDS questionnaires were developed by the National Center for Health Statistics and interagency working groups established by the Information, Education, and Risk Factor Reduction Subcommittee of the Public Health Service Executive Task Force on AIDS. The working groups included representatives from the Centers for Disease Control; the National Institutes of Health; the Alcohol, Drug Abuse and Mental Health Administration; and the Health Resources and Services Administration.

The current AIDS questionnaire includes items on sources of AIDS

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics
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information; self-assessed levels of AIDS knowledge; basic facts about the AIDS virus (HIV) and how it is transmitted; blood donation experience; awareness of and experience with the blood test for HIV; personal acquaintance with persons with AIDS or HIV; and willingness to take part in a proposed national seroprevalence survey. A general risk behavior question, similar to that asked by the Red Cross of potential blood donors, is also included.

This report presents provisional data for October–December 1989 for most items included in the AIDS questionnaire. Table 1 displays percent distributions of persons 18 years of age and over by response categories according to age, sex, race, and education. In most cases, the actual questions asked of the respondents are reproduced verbatim in table 1 along with the coded response categories. In a few cases, questions or response categories have been rephrased or combined for clearer or more concise presentation of results. Refusals and other nonresponse categories (generally comprising less than 1 percent of total responses) are excluded from the denominator in the calculation of estimates, but responses of "don't know" are included.

The NHIS AIDS questionnaire uses the phrase "the AIDS virus" rather than "HIV," because it was felt that the general population might not be familiar with the more scientific terminology at the time the survey began. In this report, the two terms are used synonymously.

Selected findings

The following highlights describe various aspects of AIDS knowledge and attitudes as observed in the October–December 1989 data from the NHIS AIDS survey. Unless otherwise noted in the text, all measures described remained stable over this 3-month period. Any differences cited in the text are statistically significant at the .05 level (see table II for provisional standard errors of estimates).

Sources of AIDS information—The proportion of adults 18 years of age and over who reported having seen or heard public service announcements (PSA's) about AIDS on television or on the radio in the month before the NHIS interview (80 percent and 45 percent, respectively) remained stable throughout 1989. For both, the proportion who had seen or heard these announcements increased with years of education. Black adults were more likely than white adults to report having heard radio PSA's (51 percent compared with 44 percent), a difference which has been noted since the question was introduced in 1988. As in previous months, approximately one quarter of those who had seen or heard these announcements recalled that they were part of the "America Responds to AIDS" series.

Twenty-one percent of adults reported that they had read AIDS brochures or pamphlets in the previous month. This figure also remained essentially unchanged throughout 1989, but is much lower than the 52 percent figure recorded in June and July 1988, coincident with the national mailout of the "Understanding AIDS" brochure. The proportion who reported ever having read brochures or pamphlets (61 percent) was similar to figures reported for previous months. Black adults were more likely than white adults to report having read brochures in the previous month (29 percent compared with 19 percent). However, the proportion who reported ever having read AIDS brochures was essentially the same in both racial groups. Proportions having read brochures in either time period increased with educational attainment; females were more likely than males to have read this type of information.

Sixty-two percent of parents with children between the ages of 10 and 17 years said they had ever discussed AIDS with them and 63 percent said their children in this age group had received instruction about AIDS in school. In addition, 61 percent of all adults had ever discussed AIDS with a friend or relative. All of these figures were higher for females than males and increased with increasing years of education. All figures remained essentially unchanged throughout 1989.

Self-assessed knowledge—Levels of self-assessed knowledge about AIDS among adults did not change in 1989 with 68 percent of the adult population claiming to know at least something about AIDS and the remainder stating that they knew little or nothing. While similar proportions of black and white adults said they knew a lot about AIDS (23 percent and 25 percent, respectively), a higher proportion of black adults than white adults claimed they knew little or nothing (41 percent compared with 30 percent). Other groups with a high proportion claiming little or no knowledge about AIDS included those with less than 12 years of education (50 percent) and those 50 years of age and over (49 percent).

General knowledge—The responses to most of the questions dealing with general AIDS knowledge remained unchanged during 1989. Knowledge about the three major modes of HIV transmission (sexual, through sharing contaminated needles for drug use, and from mother to baby during pregnancy), remained high in all demographic subgroups examined. The proportion who said it was definitely true that a pregnant woman with the AIDS virus could give it to her baby increased slightly from 81 percent in October and November 1989 to 84 percent in December 1989. There were also slight increases between the first and last quarters of 1989 in the proportion of adults who felt it was definitely true that a person can be infected with the AIDS virus and not have the disease AIDS (from 55 percent in quarter 1 to 58 percent in quarter 4) and in the proportion who stated it was definitely true that a person with the AIDS virus can look and feel healthy (from 48 percent to 51 percent).

As in previous months, general AIDS knowledge increased by education and was higher for those under 50 years of age than for those 50 years and over. There also remained racial differentials seen in previous months with white adults giving the correct definitive response more often than blacks. However, in

most instances, this differential was 10 percentage points or less.

Misperceptions about HIV transmission—Responses to most questions dealing with the possibility of HIV transmission by casual contact showed a slight increase in correct perceptions about this type of transmission from December 1988 to the fourth quarter of 1989. For these questions, the proportion of adults who thought it very unlikely or definitely not possible to spread HIV through casual contact increased by 3 to 5 percentage points (see figure 1). The two questions showing the largest increase dealt with the likelihood of transmission by shaking hands, touching, or kissing on the cheek someone with the AIDS virus and by attending school with a child who has AIDS. These improvements were noted in most demographic subgroups examined with slightly larger increases for black adults and those with less than 12 years of education.

Blood donation and testing—In October–December 1989, as in previous months, 40 percent of adults reported ever having donated blood including 16 percent who donated blood since March 1985 when routine screening for HIV antibodies began, and 7 percent who reported donating blood in the 12 months before interview. Also unchanged throughout 1989 was the proportion who said they had heard of the blood test for the AIDS virus (74 percent). This proportion remained lower among black adults (66 percent) compared with white adults (76 percent), among those 50 years of age or over (61 percent) compared with those who were younger (82 percent), and among those with less than a high school education (55 percent) compared with those with at least a high school education (79 percent). Sixty-five percent of adults believed that blood donations are routinely tested for HIV antibodies and 49 percent felt the present blood supply was safe for transfusion. Again, these figures have remained stable for many months.

In October–December 1989, 21 percent of adults indicated that they had been tested for the AIDS virus infection. As in the past, the majority of those who were tested had their testing done as part of a blood donation (67 percent), 19 percent sought testing voluntarily, and 17 percent were tested as part of another activity which required routine testing (such as a physical examination for military induction). The percent who have been tested has been rising steadily since May 1988 when the figure was 16 percent. Increases in the proportion who have been tested were noted during 1989 for five subgroups: those 18–29 years of age (from 26 percent in quarter 1 to 30 percent in quarter 4), males (from 22 to 26 percent), white adults (from 19 to 22 percent), black adults (from 15 to 20 percent), and those with more than 12 years of education (from 26 to 30 percent). Seven percent of adults

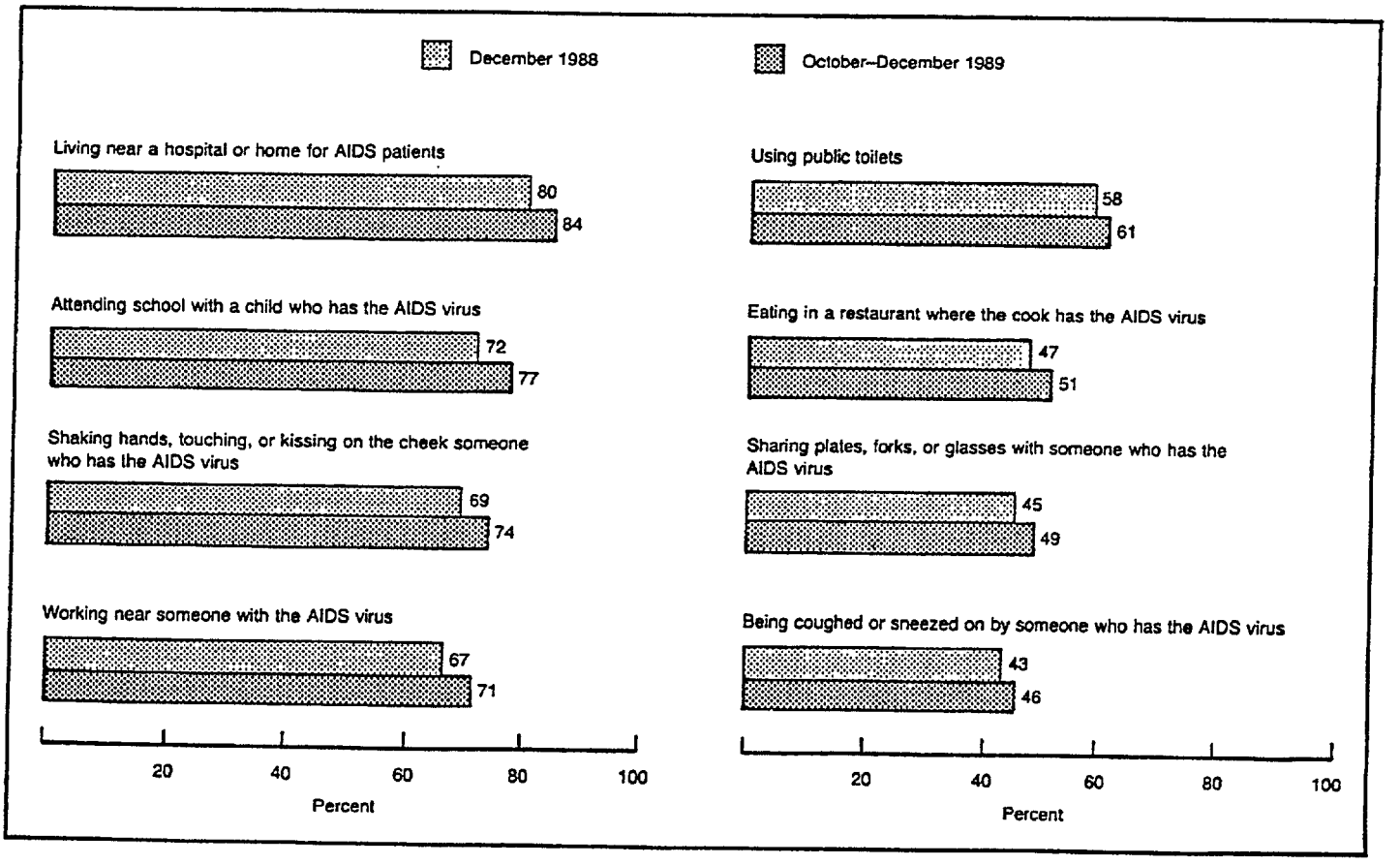

Figure 1. Provisional estimates of percent of adults who thought it very unlikely or definitely not possible to become infected with HIV in selected ways, December 1988 and October-December 1989

interviewed in October–December 1989 indicated that they expected to be tested for the AIDS virus infection in the next 12 months; this figure also remained stable during 1989.

Preventive measures—In the fourth quarter of 1989, 86 percent of adults felt that using condoms were somewhat or very effective in preventing HIV transmission through sexual activity. The perception that this prevention method was at least somewhat effective was high in all sociodemographic subgroups (71 percent or greater). These figures remained essentially the same during 1989. A monogamous relationship between two uninfected people was viewed as a very effective method of prevention by the majority of adults in all subgroups (74 percent or more). While the overall proportion who stated that monogamy was very effective remained stable throughout 1989, the proportion rose among black adults from 70 percent in quarter 1 to 79 percent in quarter 4.

Risk of getting HIV—During October–December 1989, 83 percent of adults felt that they had no chance of having HIV infection and 77 percent felt they had no chance of getting HIV infection. Both of these proportions remained unchanged from previous months. For both, females were more likely than males to report no chance of having or getting HIV. Those 50 years of age and over and those with 12 or fewer years of education were also more likely to report no chance of infection than younger and more educated persons. As in previous months, a small percent of adults (2 percent) reported belonging to one or more of the groups with behaviors associated with increased risk of AIDS (e.g., intravenous drug users and homosexually active men).

Knowing someone with AIDS or HIV infection—Fourteen percent of U.S. adults interviewed during October–December 1989 reported knowing someone with AIDS or HIV. This percentage has increased steadily since the survey began in August 1987. Increases in the proportion who reported knowing someone with AIDS were noted for several groups in 1989: those 18–29 years of age (from 11 to 14 percent), females (from 12 to 15 percent), white adults (from 11 to 14 percent), black adults (from 13 to 17 percent), and those with more than 12 years of education (from 17 to 20 percent).

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Symbols

–	Quantity zero
0	Quantity more than zero but less than 0.05

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1989 National Health Interview Survey, by selected characteristics: United States, October–December 1989

[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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
Total	100	100	100	100	100	100	100	100	100	100	100
1. In the past month, have you—											
1a. Seen any public service announcements about AIDS on television?											
Yes	80	79	82	78	80	80	80	79	71	82	83
No	18	19	17	20	18	19	18	20	27	17	16
Don't know	2	1	2	2	2	2	2	1	2	2	2
1b. Heard any public service announcements about AIDS on the radio?											
Yes	45	51	50	35	49	41	44	51	33	45	51
No	51	46	45	61	47	55	52	47	64	50	45
Don't know	4	3	5	4	4	4	4	3	3	4	4
2. Were any of those public service announcements called "America Responds to AIDS"?											
Yes	24	36	26	14	24	25	24	31	22	25	26
No	13	12	13	13	14	12	13	12	11	13	14
Don't know	46	36	46	53	46	46	47	40	42	47	47
Neither heard nor saw any public service announcements.	17	17	15	20	17	18	17	17	25	16	14
3. In the past month, have you read any brochures or pamphlets about AIDS?											
Yes	21	24	25	13	19	22	19	29	13	20	26
No	79	75	74	86	80	77	80	70	87	80	74
Don't know	1	1	1	1	1	1	1	1	1	1	1
4. Have you ever read any brochures or pamphlets about AIDS?											
Yes	61	69	70	45	58	64	61	63	41	59	74
No	38	31	29	54	41	36	38	36	58	40	26
Don't know	1	1	1	1	1	1	1	1	1	1	1
5. Where did you get the pamphlets or brochures?[1,2]											
Clinic, other than work clinic	3	5	3	2	2	4	2	8	6	3	3
Doctor's office (HMO)	23	23	24	20	19	26	23	23	25	23	22
Drug store	2	2	2	2	2	2	2	4	2	2	2
Public health department	3	4	3	2	3	3	2	6	3	3	3
Received in mail without asking	23	17	22	33	23	24	25	16	24	23	24
Red Cross/Red Cross blood donation	3	4	4	2	4	3	4	2	2	3	4
Other blood donation	1	1	1	0	1	1	1	0	1	1	1
School	13	24	11	4	12	14	13	9	8	10	16
Sent/phoned for/requested it	1	1	1	1	1	1	1	1	1	1	1
Federal/State/local government	12	7	13	16	13	12	14	6	11	13	12
Work, other than clinic or nurse	14	10	18	11	16	13	14	17	8	14	16
Work, nurse or clinic	4	3	6	3	3	5	4	6	2	3	6
Other	18	19	17	18	19	17	17	22	19	18	17
Don't know	5	4	4	8	7	4	6	2	6	5	5
15. Have you ever discussed AIDS with any of your children aged 10-17?[3]											
Yes	62	45	63	55	49	73	62	61	48	61	70
No	38	55	36	45	51	27	37	38	52	39	30
Don't know	0	–	0	–	0	0	0	0	0	0	–
16. Have any or all of your children aged 10-17 had instruction at school about AIDS?[3]											
Yes	63	42	65	60	58	69	63	69	56	63	67
No	13	31	12	10	12	14	13	10	14	14	12
Don't know	24	27	23	30	31	17	24	20	30	23	21
21. How much would you say you know about AIDS?											
A lot	24	26	31	15	24	24	25	23	11	20	35
Some	44	50	48	36	43	45	45	36	29	48	48
A little	24	22	19	33	25	24	23	30	38	27	15
None	7	3	3	16	8	7	7	11	22	5	2
Don't know	0	–	0	0	0	0	0	0	0	0	–
22. To the best of your knowledge, is there a difference between having the AIDS virus and having the disease AIDS?											
Yes	65	67	73	55	65	66	68	55	43	64	79
No	17	23	17	13	18	16	16	21	18	19	14
Other	0	0	0	0	0	0	0	0	0	0	0
Don't know	18	11	10	32	17	18	16	24	39	17	7
23a. AIDS can reduce the body's natural protection against disease.											
Definitely true	75	79	83	64	77	74	78	61	53	76	86
Probably true	11	12	9	14	11	11	11	12	16	11	9
Probably false	1	1	1	2	1	1	1	2	2	1	1
Definitely false	3	4	2	4	3	3	3	7	5	4	2
Don't know	9	5	5	17	8	10	7	18	24	8	2

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1989 National Health Interview Survey, by selected characteristics: United States, October–December 1989—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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
23b. AIDS is especially common in older people.											
Definitely true	1	1	1	1	1	1	1	2	2	1	0
Probably true	1	2	1	1	2	1	1	2	3	1	1
Probably false	15	17	15	16	16	15	16	12	16	15	16
Definitely false	76	75	79	72	75	77	77	73	65	78	80
Don't know	7	5	4	10	7	7	6	10	15	5	4
23c. AIDS can damage the brain.											
Definitely true	27	23	27	30	28	26	26	35	29	28	26
Probably true	30	30	29	31	30	30	30	28	30	30	30
Probably false	10	13	12	6	10	10	11	6	5	9	13
Definitely false	9	11	11	5	9	9	9	7	4	8	12
Don't know	24	23	21	29	22	26	24	23	32	25	19
23d. AIDS usually leads to heart disease.											
Definitely true	10	8	10	11	11	9	9	19	14	11	8
Probably true	21	21	21	22	21	22	21	22	23	22	20
Probably false	19	21	22	14	20	18	20	10	10	17	25
Definitely false	17	18	20	12	18	16	18	13	9	15	22
Don't know	33	31	26	41	30	35	32	35	44	35	25
23e. AIDS is an infectious disease caused by a virus.											
Definitely true	64	69	72	52	67	62	64	65	50	64	72
Probably true	18	19	15	20	17	18	18	14	21	18	15
Probably false	2	2	2	3	2	2	2	2	2	2	2
Definitely false	5	4	5	6	4	6	5	5	5	6	5
Don't know	11	6	6	20	10	12	10	14	22	10	6
23f. Teenagers cannot get AIDS.											
Definitely true	1	1	1	1	1	1	1	2	1	1	1
Probably true	0	0	0	1	0	1	0	0	1	0	0
Probably false	3	1	2	4	3	3	3	2	4	3	2
Definitely false	94	96	96	89	94	94	94	91	86	95	97
Don't know	2	1	1	5	2	2	2	4	8	1	0
23g. AIDS leads to death.											
Definitely true	85	84	85	84	84	86	84	89	85	87	82
Probably true	12	13	12	11	13	11	12	7	8	10	15
Probably false	1	1	1	0	1	1	1	0	0	0	1
Definitely false	1	2	1	1	1	1	1	1	1	1	1
Don't know	2	1	1	4	2	2	2	3	6	1	1
23h. A person can be infected with the AIDS virus and not have the disease AIDS.											
Definitely true	58	61	65	49	58	59	60	51	40	57	69
Probably true	20	19	19	22	20	19	20	16	20	21	18
Probably false	4	5	3	4	4	4	3	5	5	4	3
Definitely false	5	7	5	4	6	4	4	9	6	5	4
Don't know	13	9	8	23	12	15	12	19	29	13	6
23i. Looking at a person is enough to tell if he or she has the AIDS virus.											
Definitely true	3	2	3	3	2	3	2	5	4	2	3
Probably true	4	4	4	4	5	4	4	5	5	4	4
Probably false	13	11	11	16	13	13	13	13	17	13	10
Definitely false	71	77	77	60	71	71	73	63	53	72	80
Don't know	9	5	6	17	9	10	8	14	21	8	4
23j. Any person with the AIDS virus can pass it on to someone else during sexual intercourse.											
Definitely true	83	86	85	79	82	84	83	84	79	85	83
Probably true	11	11	11	13	12	11	12	10	11	10	13
Probably false	1	1	1	1	1	1	1	1	1	1	1
Definitely false	1	1	1	1	1	1	1	1	1	1	1
Don't know	4	2	2	7	4	3	3	5	8	3	2
23k. A person who has the AIDS virus can look and feel healthy and well.											
Definitely true	51	58	58	38	53	48	52	44	33	50	61
Probably true	27	26	26	29	26	27	27	24	25	28	27
Probably false	6	6	5	9	6	7	6	8	10	6	5
Definitely false	5	5	5	6	5	6	5	9	8	6	3
Don't know	11	6	7	19	10	11	10	16	24	10	4
23l. A pregnant woman who has the AIDS virus can give the AIDS virus to her baby.											
Definitely true	82	85	86	76	80	84	82	83	73	84	85
Probably true	13	12	11	15	14	11	13	11	16	12	12
Probably false	0	0	0	1	0	0	0	0	0	1	0
Definitely false	1	1	0	1	1	1	1	1	1	1	1
Don't know	4	2	3	7	5	4	4	6	10	3	2

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1989 National Health Interview Survey, by selected characteristics: United States, October–December 1989—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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
23m. There is a vaccine available to the public that protects a person from getting the AIDS virus.											
Definitely true	2	2	2	2	2	2	1	5	3	2	1
Probably true	3	4	2	3	3	3	3	5	5	3	2
Probably false	8	8	7	10	8	8	8	6	9	9	7
Definitely false	75	76	82	65	76	73	77	63	58	75	83
Don't know	12	9	7	20	10	14	11	20	26	12	6
23n. There is no cure for AIDS at present.											
Definitely true	85	86	88	80	84	85	86	82	76	86	88
Probably true	7	7	6	9	8	7	7	6	9	7	6
Probably false	1	2	1	1	2	1	1	2	1	1	2
Definitely false	2	2	2	2	2	2	2	3	3	2	2
Don't know	4	3	3	7	4	5	4	7	11	3	2
24. How likely do you think it is that a person will get AIDS or the AIDS virus infection from—											
24a. Living near a hospital or home for AIDS patients?											
Very likely	1	1	2	1	1	1	1	3	3	1	1
Somewhat likely	3	3	3	3	3	3	3	4	5	2	3
Somewhat unlikely	6	6	6	6	6	6	6	6	7	7	5
Very unlikely	37	38	35	37	39	35	37	37	35	38	36
Definitely not possible	47	49	51	42	45	49	49	40	36	47	54
Don't know	6	3	4	10	5	6	5	9	15	4	2
24b. Working near someone with the AIDS virus?											
Very likely	2	2	2	2	2	2	2	4	4	2	1
Somewhat likely	9	9	9	10	9	9	9	10	11	10	8
Somewhat unlikely	11	12	11	11	12	11	11	9	11	12	10
Very unlikely	38	40	39	37	39	37	39	38	33	38	41
Definitely not possible	33	35	35	29	32	34	34	31	26	33	37
Don't know	6	3	4	11	6	7	5	9	16	5	2
24c. Eating in a restaurant where the cook has the AIDS virus?											
Very likely	6	6	6	6	6	6	6	10	10	7	4
Somewhat likely	18	18	17	19	18	17	18	17	21	19	15
Somewhat unlikely	14	16	15	12	15	13	15	12	11	15	16
Very unlikely	31	32	32	27	31	30	31	27	23	29	36
Definitely not possible	20	21	23	16	19	21	20	18	14	20	24
Don't know	11	6	8	19	10	13	11	14	22	11	6
24d. Kissing—with exchange of saliva—a person who has the AIDS virus?											
Very likely	25	20	26	29	25	26	24	31	30	27	21
Somewhat likely	29	29	29	29	29	29	30	26	27	30	30
Somewhat unlikely	12	15	12	9	13	11	12	10	8	11	15
Very unlikely	16	20	18	11	17	15	16	13	10	14	21
Definitely not possible	8	10	8	5	7	9	8	8	7	8	8
Don't know	10	6	7	16	9	10	9	11	19	9	5
24e. Shaking hands, touching, or kissing on the cheek someone who has the AIDS virus?											
Very likely	2	1	2	2	2	2	2	3	3	2	1
Somewhat likely	6	6	5	7	6	6	6	8	9	6	5
Somewhat unlikely	12	12	11	12	12	11	12	10	13	12	11
Very unlikely	39	39	40	39	41	37	40	39	34	41	41
Definitely not possible	35	40	38	28	32	37	36	31	26	34	41
Don't know	6	3	3	11	6	6	5	9	15	5	2
24f. Sharing plates, forks, or glasses with someone who has the AIDS virus?											
Very likely	8	7	9	10	8	9	8	12	11	10	6
Somewhat likely	20	17	19	22	20	19	19	21	21	22	17
Somewhat unlikely	13	15	14	12	14	13	14	10	12	14	14
Very unlikely	29	32	30	26	31	27	30	28	22	27	34
Definitely not possible	20	24	21	15	18	21	20	17	15	18	24
Don't know	9	6	7	15	9	10	9	11	19	9	5
24g. Using public toilets?											
Very likely	6	6	5	6	5	6	5	11	9	6	4
Somewhat likely	12	12	10	14	11	12	11	14	16	13	9
Somewhat unlikely	12	13	12	12	13	12	12	9	11	13	12
Very unlikely	34	34	36	31	35	32	34	31	27	33	38
Definitely not possible	27	30	31	22	27	27	28	23	19	26	34
Don't know	9	5	7	15	8	10	9	12	19	10	4

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1989 National Health Interview Survey, by selected characteristics: United States, October–December 1989—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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
24h. Sharing needles for drug use with someone who has the AIDS virus?											
Very likely	95	96	97	92	95	94	95	93	89	96	97
Somewhat likely	2	2	2	3	2	2	2	3	4	2	2
Somewhat unlikely	0	0	0	0	0	0	0	0	0	0	0
Very unlikely	0	1	0	0	0	0	0	1	0	1	0
Definitely not possible	0	0	0	0	0	0	0	0	1	0	0
Don't know	2	0	1	4	1	2	2	3	6	1	1
24i. Being coughed or sneezed on by someone who has the AIDS virus?											
Very likely	7	5	7	9	6	8	7	11	10	7	5
Somewhat likely	20	18	19	23	21	19	20	20	22	22	17
Somewhat unlikely	16	17	17	15	17	16	17	15	14	17	17
Very unlikely	29	33	32	23	30	28	30	26	20	29	34
Definitely not possible	17	20	19	12	16	17	17	16	12	16	20
Don't know	11	7	7	17	10	12	10	12	21	10	6
24j. Attending school with a child who has the AIDS virus?											
Very likely	2	1	1	2	2	2	1	4	3	2	1
Somewhat likely	5	4	5	6	5	5	5	6	6	5	4
Somewhat unlikely	10	9	11	10	10	11	10	10	12	10	9
Very unlikely	42	42	43	41	45	39	43	39	36	43	44
Definitely not possible	35	40	37	29	33	37	36	30	26	34	40
Don't know	7	3	4	12	6	7	6	11	16	5	2
24k. Mosquitoes or other insects?											
Very likely	10	10	10	9	11	9	9	14	13	11	7
Somewhat likely	17	20	15	17	18	16	17	17	20	17	15
Somewhat unlikely	9	10	9	7	9	8	9	8	7	9	9
Very unlikely	24	24	25	22	25	22	24	20	17	23	28
Definitely not possible	20	19	22	18	19	21	21	16	14	19	25
Don't know	21	16	18	28	18	24	21	25	30	22	16
25. Have you ever donated blood?											
Yes	40	33	43	42	51	31	42	34	29	36	50
No	59	67	57	57	49	69	58	66	70	64	50
Don't know	0	0	0	0	0	0	0	0	0	0	0
26a. Have you donated blood since March 1985?											
Yes	16	22	19	7	19	12	16	13	5	14	23
No	84	77	81	93	80	88	83	86	94	86	77
Don't know	0	0	0	1	0	0	0	1	1	0	0
26b. Have you donated blood in the past 12 months?											
Yes	7	9	8	3	8	5	7	5	2	6	10
No	93	90	91	97	91	95	93	94	97	94	90
Don't know	0	0	0	1	1	0	0	1	1	0	0
27. Have you ever heard of a blood test that can detect the AIDS virus infection?											
Yes	74	80	82	61	74	74	76	66	55	73	85
No	22	18	15	33	22	22	20	29	39	22	12
Don't know	4	2	3	7	4	4	4	5	6	4	3
28. To the best of your knowledge, are blood donations routinely tested now for the AIDS virus infection?											
Yes	65	71	73	51	65	65	67	56	45	64	77
No	4	4	4	3	4	3	4	4	3	4	4
Don't know	5	6	5	6	5	6	5	7	6	6	5
Never heard of test[4]	26	20	18	39	26	26	24	34	45	27	15
29a. Have you ever received counseling or had a talk with a health professional about taking the AIDS virus test?											
Yes	4	7	6	1	5	4	4	5	2	4	6
No	70	73	76	59	70	69	71	60	52	70	79
Don't know	0	0	0	0	0	0	0	0	0	0	0
Never heard of test[4]	26	20	18	39	26	26	24	34	45	27	15
29b. Was the discussion—[1,5]											
With a private doctor?	52	51	50	72	46	58	53	54	52	51	53
At a family-planning clinic?	9	15	5	6	6	13	8	17	21	13	5
On an AIDS hotline?	2	2	1	2	2	1	2	–	2	2	1
At a prenatal clinic?	5	10	2	1	1	9	4	14	11	8	2
At an STD or sexually transmitted disease clinic?	3	4	3	2	4	3	3	6	3	7	2
At an AIDS/HIV counseling and testing site?	7	5	9	11	11	4	8	4	5	6	9
With some other health professional?	42	39	47	26	49	35	42	38	20	44	45
With some other counselor?	9	12	7	8	9	10	9	6	16	8	9
30. During that discussion, did you receive information about how to avoid getting or passing on the AIDS virus?[5]											
Yes	61	71	57	33	65	56	57	85	68	63	58
No	39	29	42	67	35	43	43	15	32	37	41
Don't know	0	–	1	–	0	0	1	–	–	–	1

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1989 National Health Interview Survey, by selected characteristics: United States, October–December 1989—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 technical notes]

AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
31. Have you ever been advised by a health professional not to have the blood test for the AIDS virus infection?											
Yes	0	1	1	0	0	0	0	0	0	0	1
No	74	79	81	61	74	73	75	66	54	73	84
Don't know	–	–	–	–	–	–	–	–	–	–	–
Never heard of test[4]	26	20	18	39	26	26	24	34	45	27	15
32. Have you ever been advised by friends or relatives not to have the blood test for the AIDS virus infection?											
Yes	0	0	0	0	0	0	0	0	0	0	0
No	74	79	81	61	74	74	75	66	54	73	85
Don't know	0	0	0	0	0	0	0	–	–	–	0
Never heard of test[4]	26	20	18	39	26	26	24	34	45	27	15
33. Have you had your blood tested for the AIDS virus infection?											
Yes[6]	21	30	26	9	26	17	22	20	10	19	30
No	52	50	55	51	49	56	53	47	43	55	55
Don't know	2	2	2	2	2	2	2	1	2	2	2
Never heard of test[4]	24	17	17	38	23	25	23	31	45	25	13
35a. How many times have you had your blood tested for the AIDS virus infection?[7]											
Once	7	10	9	2	8	6	7	6	5	6	9
Twice	1	2	2	0	2	1	1	3	1	1	2
3–5 times	2	3	2	0	2	1	2	2	0	1	2
6–12 times	1	1	1	0	1	0	1	0	0	1	1
More than 12 times	0	0	0	0	0	0	0	–	–	0	0
Don't know[5]	11	14	13	6	13	8	11	9	4	9	15
Never heard of or never took test[8]	79	70	74	91	74	83	78	80	90	82	70
35b. How many times in the past 12 months have you had your blood tested for the AIDS virus infection?[7]											
None in the past 12 months	4	6	5	2	5	3	4	3	3	3	6
Once	5	8	7	1	6	4	5	6	3	5	7
More than once	2	2	2	1	2	1	2	2	1	2	3
Don't know[5]	10	14	12	5	13	8	11	9	4	9	14
Never heard of or never took test[8]	79	70	74	91	74	83	78	80	90	81	70
36. Was the test/were any of the tests, including those you had before the past 12 months—[1]											
Part of a blood donation?[6,7]	67	65	66	74	68	65	68	58	49	68	69
Part of a blood transfusion?[9]	1	1	1	1	1	1	1	2	2	1	1
Voluntarily sought?[9]	19	17	21	14	16	23	17	32	23	19	18
Part of some other activity that requires a blood sample?[9]	17	22	16	13	21	13	17	15	30	17	16
38. Did you get the results of your test/any of your tests?[9]											
Yes	57	57	59	50	55	60	55	72	73	54	56
No	42	41	41	49	44	39	44	28	27	45	44
Don't know	1	1	0	1	0	1	1	–	–	1	1
41. Do you expect to have a blood test for the AIDS virus infection in the next 12 months?											
Yes	7	11	8	2	9	5	6	12	5	6	9
No	63	63	69	57	61	65	66	46	45	64	72
Don't know	4	6	4	2	4	4	3	8	5	4	4
Never heard of test[4]	26	20	18	39	26	26	24	34	45	27	15
42. Will the test be—[1,10]											
Part of a blood donation?	45	40	49	48	49	40	51	27	23	38	56
Voluntarily sought?	45	48	41	47	40	52	37	70	65	52	34
Part of some other activity that requires a blood sample?	18	22	15	14	20	14	18	16	20	19	17
44a. Did you have a blood tranfusion at any time between 1977 and 1985?											
Yes	5	3	6	7	5	6	5	6	6	5	5
No	93	97	93	91	94	93	93	92	92	94	94
Don't know	1	0	1	2	1	1	1	1	2	1	1
44b. Do you think the present supply of blood is safe for tranfusions?											
Yes	49	53	52	42	53	45	51	40	34	48	58
No	27	27	26	28	25	29	26	34	33	28	24
Other	0	0	0	0	0	0	0	0	0	0	0
Don't know	24	19	21	30	22	25	23	26	33	24	19
45. Here are some methods people use to prevent getting the AIDS virus through sexual activity. How effective is—											
45a. Using a diaphragm?											
Very effective	2	2	1	3	2	2	2	3	3	2	1
Somewhat effective	12	14	10	12	12	11	12	12	10	13	12
Not at all effective	61	62	70	49	60	62	63	52	43	60	71
Don't know how effective	20	16	14	29	20	19	19	25	32	20	13
Don't know method	6	5	4	8	6	6	5	8	12	5	3

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1989 National Health Interview Survey, by selected characteristics: United States, October–December 1989—Con.

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AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
45b. Using a condom?											
Very effective	33	40	35	25	35	31	33	34	25	31	38
Somewhat effective	53	52	55	52	53	53	54	48	46	55	55
Not at all effective	5	4	5	7	5	6	5	6	8	6	3
Don't know how effective	7	3	4	13	6	7	6	10	16	6	3
Don't know method	2	1	1	4	1	2	2	2	5	1	1
45c. Using a spermicidal jelly, foam, or cream?											
Very effective	1	2	1	1	1	1	1	2	1	1	1
Somewhat effective	13	17	13	10	14	12	13	12	9	13	16
Not at all effective	59	62	67	47	57	61	60	54	44	59	66
Don't know how effective	22	16	16	33	23	21	21	26	35	22	15
Don't know method	5	4	3	9	5	6	5	6	11	5	3
45d. Having a vasectomy?											
Very effective	2	3	2	2	2	2	2	3	2	2	2
Somewhat effective	2	4	2	2	3	2	2	4	3	3	2
Not at all effective	74	75	83	64	75	74	77	63	55	75	84
Don't know how effective	15	13	9	24	15	16	15	21	28	15	9
Don't know method	6	6	4	8	5	6	5	8	13	5	3
45e. Two people who do not have the AIDS virus having sex only with each other?											
Very effective	85	85	89	80	86	84	86	79	74	86	90
Somewhat effective	7	9	6	8	7	8	7	9	9	7	7
Not at all effective	2	3	2	2	2	2	2	3	3	3	1
Don't know how effective	4	3	2	8	4	5	4	7	11	4	1
Don't know method	1	1	1	3	1	2	1	2	4	1	1
46. What are your chances of having the AIDS virus?											
High	0	0	0	0	1	0	0	1	0	0	0
Medium	2	2	2	1	2	2	2	2	2	2	2
Low	13	18	15	7	15	11	13	13	8	12	17
None	83	78	81	88	80	85	83	80	85	85	80
Don't know	2	1	2	3	2	2	2	5	5	2	1
47. What are your chances of getting the AIDS virus?											
High	0	0	0	0	0	0	0	1	0	0	0
Medium	2	3	2	1	2	2	2	3	2	2	2
Low	18	24	21	9	21	15	19	14	10	16	24
None	77	69	74	86	73	80	77	76	81	80	71
Don't know	3	3	2	4	3	2	2	6	6	2	1
High chance of already having AIDS virus	0	0	0	0	1	0	0	1	0	0	0
49. Do you say your chance of getting AIDS is high or medium because you—[11]											
Have had a blood transfusion?	7	2	8	16	6	9	5	15	13	6	6
Have had sexual contact with someone who might have the virus?	19	27	20	3	22	16	19	31	29	17	17
Some other reason?	61	64	61	56	58	65	65	54	46	65	66
52. Have you ever discussed AIDS with a friend or relative?											
Yes	61	69	70	44	58	64	61	60	41	61	72
No	39	31	30	55	42	36	38	39	59	39	28
Don't know	0	0	0	0	0	0	0	1	0	0	0
53. When was the last time you discussed AIDS with a friend or relative?											
0–3 days ago	6	6	7	4	5	6	6	9	4	6	6
4–7 days ago	7	8	8	5	6	8	7	7	5	6	9
8–14 days ago	6	7	7	4	6	6	6	7	4	6	7
15–31 days ago	12	13	14	9	12	12	12	10	7	12	15
More than 31 days ago	26	31	30	17	24	27	26	23	17	26	30
Don't know	4	4	4	5	4	4	4	4	4	5	4
Never discussed[12]	39	31	30	56	42	37	39	40	59	40	28
54. Have you ever personally known anyone with AIDS or the AIDS virus?											
Yes	14	14	18	9	13	15	14	17	7	11	20
No	85	85	81	89	85	84	85	81	91	88	79
Don't know	2	1	2	2	2	1	1	2	2	1	1
55. How long has it been since you saw this person?											
Within past 2 weeks	1	1	1	1	1	1	1	1	0	1	2
2 weeks–less than 1 month	1	1	1	0	1	1	1	1	0	0	1
1 month–less than 3 months	1	1	1	0	1	1	1	1	0	1	1
3 months–less than 6 months	1	1	1	1	1	1	1	2	1	1	2
6 months or more	10	9	13	7	9	10	10	11	5	8	14
Don't know	0	0	0	0	0	0	0	0	0	0	0
Never knew anyone with AIDS[13]	86	86	82	91	87	85	86	83	93	89	80

See footnotes at end of table.

Table 1. Provisional estimates of the percent of persons 18 years of age and over with selected AIDS knowledge and attitudes from the 1989 National Health Interview Survey, by selected characteristics: United States, October–December 1989—Con.

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AIDS knowledge or attitude	Total	Age			Sex		Race		Education		
		18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
	Percent distribution[1]										
56. How well do you know this person?											
Very well	2	2	3	1	2	2	2	4	2	2	2
Fairly well	3	3	4	2	3	4	3	5	1	3	5
Not very well	6	6	7	4	5	6	6	5	3	4	8
Don't really know personally	2	2	2	1	2	2	2	3	1	2	3
Other	1	1	1	0	1	1	1	1	0	1	1
Don't know how well	–	–	–	–	–	–	–	–	–	–	–
Never knew anyone with AIDS[13]	86	86	82	91	87	86	86	83	93	89	80
57. Is any of these statements true for you?											
a. You have hemophilia and have received clotting factor concentrates since 1977.											
b. You are a native of Haiti or Central or East Africa who has entered the United States since 1977.											
c. You are a man who has had sex with another man at some time since 1977, even 1 time.											
d. You have taken illegal drugs by needle at any time since 1977.											
e. Since 1977, you are or have been the sex partner of any person who would answer yes to any of the items above (57 a-d).											
f. You have had sex for money or drugs at any time since 1977.											
Yes to at least 1 statement	2	4	3	0	3	2	2	3	2	2	3
No to all statements	97	96	97	99	97	98	97	97	97	98	97
Refused	0	0	–	0	0	0	0	0	0	–	0
Don't know	0	0	0	0	0	0	0	0	0	0	0
58. The U.S. Public Health Service has said that AIDS is one of the major health problems in the country but exactly how many people it affects is not known. The Surgeon General has proposed that a study be conducted and blood samples be taken to help find out how widespread the problem is. If you were selected in this national sample of people to have their blood tested with assurances of privacy of test results, would you have the test?											
Yes	74	80	76	66	76	72	75	71	67	74	77
No	20	15	18	26	19	21	19	22	24	20	18
Other	1	1	1	1	1	1	1	1	1	1	1
Don't know	5	5	5	6	5	6	5	6	8	5	4
59. Why wouldn't you take part in the test?[14]											
Don't want to know if I have AIDS	4	7	4	3	4	5	4	5	4	4	4
Don't want any counseling about AIDS	1	1	1	1	1	1	1	1	1	2	1
Fear I'll get AIDS	5	4	4	5	5	4	4	5	6	5	4
Don't like to give blood	14	18	14	11	12	15	13	15	14	14	13
Don't trust Government programs	7	6	11	5	9	6	7	9	5	7	10
It is a waste of money	4	2	3	5	4	3	4	3	2	4	4
Don't believe AIDS can really be cured anyway	1	1	2	1	1	1	1	4	1	1	1
Other	49	43	48	53	49	49	51	41	44	49	53
Don't know	2	1	1	2	2	1	2	2	2	1	2
61. When Federal public health officials give information about AIDS, do you believe what they say or are you doubtful about the information they give?											
Believe	67	75	69	58	66	68	67	66	59	66	72
Doubtful	27	21	28	32	29	26	28	26	29	29	25
Don't know	6	4	3	10	5	6	5	7	12	5	3
62. When they [public health officials] give advice about how to help keep from getting AIDS, do you believe their advice or are you doubtful about what they say?											
Believe	81	86	84	75	82	81	82	81	72	81	87
Doubtful	15	12	14	18	15	15	15	15	19	16	12
Don't know	3	2	2	7	3	4	3	5	9	3	1

[1] Multiple responses may sum to more than 100.
[2] Based on persons answering yes to question 4 (includes yes to question 3).
[3] Based on persons answering yes to question 11, "Do you have any children aged 10 through 17?" Question 12 was "How many do you have?"
[4] Persons answering no or don't know to question 27.
[5] Based on persons answering yes to question 29a.
[6] Includes persons answering yes to question 26a and no or don't know to questions 27 and 33.
[7] Based on yes answers to question 33. See footnote 6.
[8] Persons answering no or don't know to questions 26a, 27, and 33.
[9] Based on persons answering yes to question 33; excludes persons answering yes to question 26a.
[10] Based on persons answering yes to question 41.
[11] Based on persons answering high or medium to question 46.
[12] Based on persons answering no or don't know to question 52.
[13] Based on persons answering no or don't know to question 54.
[14] Based on persons not answering yes to question 58.

Technical notes

The National Health Interview Survey (NHIS) is a continuous, cross-sectional household interview survey. Each week, a probability sample of the civilian noninstitutionalized population 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. Information on special health topics is collected for all or a sample of household members. The 1989 National Health Interview Survey of AIDS Knowledge and Attitudes is asked of one randomly chosen adult 18 years of age or over in each family. The estimates in this report are based on completed interviews with 11,007 persons, or about 87 percent of eligible respondents.

Table I contains the estimated population size of each of the demographic subgroups included in table 1 to allow readers to derive provisional estimates of the number of people in the United States with a given characteristic, for example, the number of men who have had their blood tested for HIV. The population figures in table I are based on 1988 data from the NHIS; they are not official population estimates. Table II shows approximate standard errors of estimates presented in table 1. Both the estimates in table 1 and the standard errors in table II are provisional. They may differ slightly from estimates made using the final data file because they were calculated using a simplified weighting procedure that does not adjust for all the factors used in weighting the final data file. A final data file covering the entire data collection period for 1989 will be available at the end of 1990.

Table I. Sample sizes for the 1989 National Health Interview Survey of AIDS Knowledge and Attitudes and estimated adult population 18 years of age and over, by selected characteristics: United States, October–December 1989

Characteristics	Sample size	Estimated population in thousands
All adults	11,007	177,321
Age		
18–29 years	2,586	46,957
30–49 years	4,434	68,986
50 years and over	3,987	61,377
Sex		
Male	4,683	84,131
Female	6,324	93,190
Race		
White	9,095	149,510
Black	1,485	19,457
Education		
Less than 12 years	2,347	39,502
12 years	4,032	68,301
More than 12 years	4,577	67,872

Table II. Standard errors, expressed in percentage points, of estimated percents from the National Health Interview Survey of AIDS Knowledge and Attitudes, by selected characteristics: United States, October–December 1989

		Age			Sex		Race		Education		
Estimated percent	Total	18–29 years	30–49 years	50 years and over	Male	Female	White	Black	Less than 12 years	12 years	More than 12 years
5 or 95	0.3	0.5	0.4	0.4	0.4	0.3	0.3	0.7	0.6	0.4	0.4
10 or 90	0.4	0.7	0.6	0.6	0.5	0.5	0.4	1.0	0.8	0.6	0.5
15 or 85	0.4	0.9	0.7	0.7	0.6	0.6	0.5	1.1	0.9	0.7	0.7
20 or 80	0.5	1.0	0.7	0.8	0.7	0.6	0.5	1.3	1.0	0.8	0.7
25 or 75	0.5	1.1	0.8	0.8	0.8	0.7	0.6	1.4	1.1	0.8	0.8
30 or 70	0.5	1.1	0.9	0.9	0.8	0.7	0.6	1.5	1.2	0.9	0.8
35 or 65	0.6	1.2	0.9	0.9	0.9	0.7	0.6	1.5	1.2	0.9	0.9
40 or 60	0.6	1.2	0.9	1.0	0.9	0.8	0.6	1.6	1.3	1.0	0.9
45 or 55	0.6	1.2	0.9	1.0	0.9	0.8	0.6	1.6	1.3	1.0	0.9
50	0.6	1.2	0.9	1.0	0.9	0.8	0.6	1.6	1.3	1.0	0.9

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Advance Data

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

Child Care Arrangements

Health of Our Nation's Children, United States, 1988

by Deborah A. Dawson, Ph.D., Division of Health Interview Statistics, and Virginia S. Cain, Ph.D., National Institute of Child Health and Human Development

Introduction

Increasingly, the care of children in our society is a major concern for both parents and policymakers. The changing composition of families in the United States means that many children live in single-parent families in which the mother is the primary source of economic support. Even in families with two parents, frequently the mother is in the labor force. With 60 percent of the women with children 5 years of age and under being in the labor force, the number of children who spend a significant amount of time in a care arrangement while their mothers work is substantial (1). However, not only families in which the mother is employed arrange for care for their young children. Many families with mothers who are not in the labor force arrange for the care of their children, either to provide enrichment in the child's life or to provide care while the mother participates in school, volunteer work, leisure activities, or household work.

Given the basic need or desire for child care, the choices that parents make regarding the provider, the location, and the quality of care can differ greatly. Most child care research has examined the choice of child care arrangements for the children of employed mothers. This research indicates that the choice of care arrangement varies with characteristics of the mother, the family, the child, and the care situation itself. Research showing a relationship between the mother's education, race, and ethnicity and the parent's choice of child care arrangement treats the maternal variables as proxies for underlying preferences (2). The ability to pay for care limits the types of care the family may choose. Family income and mother's earnings have been shown to relate to choice of child care arrangements (3). The geographic location of the family may affect the availability of certain care arrangements (4,5).

The characteristic of the child most likely to influence choice of care arrangement is age (2). Parents of an infant or toddler may believe that the most appropriate care is care in their own home, where the child receives individual attention and is not exposed to the variety of infectious diseases found within groups of children (6–8). Further constraining factors on the placement of very young children in group care situations are age restrictions adopted by the provider or regulated by licensing agencies. For the older preschool child, the social interactions and educational programs available in nursery schools and day care centers may be viewed as beneficial (6).

Characteristics of the type of care have been related to the choices that parents make regarding child care and to child outcome measures. High-quality child care is generally regarded as care that is stable, that has a low child-to-staff ratio, and in which the provider has had training in child development and/or early childhood education (6).

This report examines child care arrangements for preschool children with respect to characteristics of the

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children and their families. Data on child care use have been collected not only about the children of employed women but also about children in families in which the mother is not employed. Several aspects of the quality of these child care arrangements are also examined.

Data and methods

This report is based on the National Health Interview Survey on Child Health (NHIS–CH), conducted in 1988 by the National Center for Health Statistics. The National Institute of Child Health and Human Development and the U.S. Health Resources and Services Administration cosponsored this study. Information was collected on a nationally representative sample of children 17 years of age and under. Details of the sample design and data collection procedures are presented in the technical notes.

Interviewers administered the NHIS–CH questionnaire to the adult household member who knew the most about the sample child's health. For 80 percent of the sample children, the respondent was the child's mother; for 10 percent, the child's father was the respondent. The questionnaire addressed a broad range of health-related topics, including child care arrangements; marital history of the child's mother; accidents, injuries, and medical conditions; birth weight and prenatal care; exposure to cigarette smoke; bedtime and sleeping arrangements; school attendance; developmental, learning, emotional, and behavioral problems; and sources of medical care.

Questions on child care arrangements were asked for all children 5 years of age and under, of whom there were 6,209 in the NHIS–CH sample. For this analysis, current use of child care was determined on the basis of a series of questions that varied according to the child's age and whether he or she attended regular school (kindergarten or first grade):

1. Children ages 4–5 years who attended first grade were counted as receiving child care if the respondent answered affirmatively to the question, "Other than [kindergarten/first grade/nursery school/preschool], in the past four weeks, has _____ been cared for in ANY kind of regular child care arrangement such as a day care center, playgroup, by a babysitter, relative, or some other regular arrangement?" If the interviewer had determined that the child's mother worked during hours other than when the child was in school, this question was coded "yes" automatically without asking it. The questions used to establish mother's work were, "[Have you/has _____'s mother] worked at a job or business for pay in the last 4 weeks?" and "[Do you/does she] work only while _____ is in (school level) or [do you/does she] work other hours?" Additional questions were asked to determine the types of child care arrangement used.
2. Children ages 4–5 years who attended kindergarten were counted as currently receiving child care if they met the conditions specified above or if they were reported as attending a kindergarten extended day care program.
3. Children ages 4–5 years who did not attend kindergarten or first grade and all children ages 2–3 years were counted as currently receiving child care if they met the conditions specified in item 1 above or if they were reported to attend nursery school or preschool. Nursery or preschool attendance was not asked for children in regular school.
4. Children under 2 years of age were counted as currently receiving child care if the respondent replied affirmatively to the question, "In the past four weeks, has _____ been cared for in ANY kind of regular child care arrangement such as a day care center, playgroup, by a babysitter, relative, or some other regular arrangement?" If the interviewer determined that the child's mother worked, this question was automatically coded "yes" without asking it. Additional questions were asked about the types of child care arrangement used. Nursery or preschool attendance was not asked for children under 2 years of age.

In summary, children were coded as currently receiving child care if they attended a kindergarten extended day care program, if they attended nursery school or preschool, if they were reported to have another form of regular child care arrangement, or if they were assumed to have such an arrangement because the mother worked during hours other than when the child was in school. Regular school attendance in kindergarten or first grade was *not* counted as a form of child care.

The questions used to determine whether the mother worked during nonschool hours (listed above) were asked as part of the series of questions concerning child care arrangements. Maternal employment status as determined through these questions was inconsistent with maternal employment status as reported in the basic health questionnaire (on the person record for the individual later identified as the mother figure) for 7 percent of the children 5 years of age and under. For these inconsistent cases, the independent variable for mother's employment was set to unknown, but the coding of current child care use was left as determined through the questions in NHIS–CH. This high level of inconsistency may reflect respondent confusion in some households as to who the mother figure was or to errors in selecting the correct wording of the question based on the alternate choices listed on the questionnaire ("Do you/did _____'s mother . . .").

For this analysis, children who currently received child care were automatically counted as having ever received child care. For children not counted as currently receiving child

care, having ever received child care was determined using the question, "Was _____ ever cared for in any regular child care arrangement?" Whether a child had ever received child care (ever use) may have been more narrowly interpreted than current use. There were no questions on whether the child ever attended nursery school, preschool, or a kindergarten extended day care program, nor were there questions on whether the mother ever worked during nonschool hours. It is impossible to determine how broadly respondents interpreted the question on having ever received child care.

The NHIS–CH interviewers asked the number of hours spent in each type of child care arrangement reported, including nursery school, preschool, and kindergarten extended day care. The main source of child care was defined as the arrangement in which the child spent the greatest number of hours per week. When multiple child care arrangements were reported but the number of hours spent in any of these arrangements was unknown, the main source of care could not be determined.

The codes for whether the child's main source of care was outside the home and whether the main care provider was related to the child were based on the main source of care, as shown in table 1. For the purposes of this analysis, all care by the father was assumed to have been in the child's home.

Children were coded as having multiple sources of care if they were reported as having more than one form of regular child care arrangement, including kindergarten extended day care, nursery school, and preschool. Changes in child care arrangements were ascertained using the question, "How many times has _____'s main child care arrangement changed in the past year?"

The number of children sharing care was measured using the question, "Including _____, how many children are usually cared for together, in the same group, at the same time? Do not include children in the entire school or program." The ratio of children to providers was calculated using this question and another: "How many adults usually supervise the children in the same group as _____?" This ratio could not be ascertained for one-fourth of all children because of missing data in either the numerator (number of children sharing care) or the denominator (number of supervisory adults). Although the responses provided look reasonable in relation to type of child care arrangement, the issue of potential nonresponse bias must be considered in interpreting these data.

An even larger item nonresponse rate was obtained for questions concerning special training received by the main child care provider. Approximately one-third of the respondents to whom these questions should have been addressed did not provide an answer, either because they did not know or because of interviewer error. Although provider training is a useful measure of child care quality, these data were not included in this analysis because of the high nonresponse rate.

Table 1. Basis for coding selected attributes of child care arrangement, by main source of care: United States, 1988

Main source of care	Main source of care outside home?	Main care provider related to child?
Day care center	Yes	No
Unrelated provider in child's home	No	No
Unrelated provider in provider's home	Yes	No
Father cares for child	No	Yes
Mother cares for child while working at home	No	Yes
Mother cares for child while working outside of home	Yes	Yes
Day camp	Yes	No
Relative,[1] at child's home	No	Yes
Relative,[1] somewhere else	Yes	Yes
Relative,[1] site unknown	Unknown	Yes
Nursery or preschool	Yes	No
Kindergarten extended day care	Yes	No
Other	Unknown	No
Unknown	Unknown	Unknown

[1]Sibling, grandparent, or other or unspecified relative.

Findings

Use of child care

Data from the 1988 NHIS–CH revealed that two-thirds (68 percent) of U.S. children 5 years of age and under had been in a child care arrangement at some point in their lives (table 2). The proportion who had ever received care increased with age, from 56 percent of children under 2 years of age to 80 percent of those ages 4–5 years who were not in school. Receipt of child care was strongly associated with socioeconomic status. Children with annual family incomes of $40,000 or more were far more likely than children with family incomes of less than $10,000 to ever have received care, 79 percent compared with 48 percent. The percent of children ever cared for in a regular child care arrangement increased with mother's education as well, from 47 percent of those whose mothers did not complete high school to 78 percent of those whose mothers had attended college. Although mother's employment is clearly an important factor in the use of child care, even among children of mothers not currently employed, more than one-third had been in a child care arrangement at some time.

In 1988, 60 percent of children 5 years of age and under were currently being cared for in a regular child care arrangement; that is, they had received care in the 4 weeks preceding the NHIS–CH interview. Child care was commonly reported for even the youngest children, 50 percent of those under 2 years of age. As with those who ever had received child care, current users of care were not

Table 2. Number of children 5 years of age and under and percent ever and currently cared for in a regular child care arrangement, by selected social and demographic characteristics: United States, 1988

[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 the technical notes]

Characteristic	Number of children in thousands	Child care status: Ever cared for, Percent	Ever cared for, Standard error	Currently cared for, Percent	Currently cared for, Standard error
All children[1]	22,107	67.7	0.8	60.0	0.8
Age and school status					
Under 2 years	7,535	55.6	1.3	50.1	1.3
2–3 years	7,389	69.5	1.2	62.4	1.2
4–5 years, not in school	4,709	80.4	1.5	72.7	1.7
4–5 years, in school	2,304	74.3	2.2	57.4	2.6
Race					
White	17,828	68.5	0.8	60.9	0.8
Black	3,336	63.5	1.9	54.9	2.0
Hispanic origin					
Hispanic	2,537	59.8	2.2	53.3	2.4
Non-Hispanic	18,644	68.8	0.8	60.8	0.8
Family income					
Less than $10,000	3,046	47.6	2.1	36.7	2.0
$10,000–$24,999	6,279	66.4	1.4	57.9	1.4
$25,000–$39,999	5,550	73.3	1.3	65.5	1.5
$40,000 or more	4,905	79.2	1.3	73.7	1.4
Geographic region					
Northeast	4,055	60.6	2.1	55.3	1.9
Midwest	5,675	70.5	1.4	61.8	1.7
South	7,642	69.3	1.3	60.1	1.3
West	4,735	67.8	1.4	61.5	1.5
Place of residence					
MSA:					
Central city	7,038	65.1	1.4	57.3	1.4
Not central city	9,886	69.5	1.0	62.5	1.0
Not MSA	5,183	67.8	1.5	58.7	1.6
Mother's education					
Less than 12 years	3,959	47.4	2.1	37.6	2.0
12 years	9,071	66.3	1.2	58.5	1.2
More than 12 years	9,078	77.8	1.0	71.0	1.1
Mother's employment status					
Employed[2]	10,174	99.6	0.1	98.9	0.3
Not employed	10,136	34.9	1.2	20.1	1.0

[1] Includes races other than white or black and unknown origin, income, education, and employment.
[2] Includes looking for work and not in the labor force.

NOTES: Care arrangement includes nursery school, preschool, and kindergarten extended day care. Percents exclude unknown values for ever and current care from numerator and denominator; numbers of children include those with unknown values. MSA is metropolitan statistical area.

restricted to the children of employed women. One-fifth of the children of mothers who were not employed currently received some form of child care.

Main source of care

As shown in table 3, the most commonly used child care arrangements for children 5 years of age and under were nursery schools or preschools (used by 23 percent of the children receiving care), care provided by a nonrelative in a home other than the child's own home (21 percent), and care provided by the child's father (13 percent). Eight percent of the children were cared for in their own homes by unrelated providers; other sources of care provided within the child's home were grandparents (6 percent) and other relatives (3 percent). Grandparents and other relatives also provided care in homes other than the child's home—9 percent and 3 percent, respectively. Five percent of the children receiving care were cared for by their mothers while they worked. In addition to the large proportion of children receiving group care in nursery or preschools, 8 percent attended day care centers, including kindergarten extended day care programs and day camp. Thus, the proportions of children cared for in group settings, in their own homes, and in other homes were about one-third each.

The children's main source of care varied according to their age. For children under 2 years of age, the most common source of care was a nonrelative in a private home other than that of the child—family day care. For children ages 2–3 years and those ages 4–5 years who were not in school, the most common source of care was a nursery or preschool. For children ages 4–5 years who were in school, the most common form of care was a day care center. In general, the proportion of children cared for in their own homes decreased with the age of child; however, home care also was common for children ages 4–5 years who were in school and presumably required only before- or after-school care.

Sources of child care differed sharply for children of employed and unemployed mothers. The latter strongly favored nursery schools or preschools, which together accounted for 63 percent of all care for this group. The distribution of care arrangements used by employed mothers was far more dispersed.

Two-thirds of all children who received some form of child care in 1988 were cared for outside their homes, either in another home or in an institutional group care setting (table 4). Children ages 4–5 years who were not in school were the most likely to receive care outside their homes (77 percent); least likely were children ages 4–5 years who did attend school (56 percent) and children under 2 years of age (57 percent).

Of the children who received care, 38 percent were related to their main care providers. The proportion of

Table 3. Number of children 5 years of age and under currently cared for in a regular child care arrangement and percent distribution by main source of care, according to selected social and demographic characteristics: United States, 1988

[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 the technical notes]

Characteristic	Number of children in thousands	Care in child's home				Care in another home			Group care		Mother, while working	Other
		Total	Father	Grandparent	Other relative	Nonrelative	Grandparent	Other relative	Nonrelative	Nursery or preschool	Day care center[1]		
		Percent distribution[2]											
All children[3]	13,259	100.0	12.9	6.0	2.6	7.6	8.7	2.6	21.3	23.4	7.8	4.8	2.5
Age and school status													
Under 2 years	3,772	100.0	15.4	8.8	2.5	10.2	9.7	3.7	28.1	–	11.8	6.6	3.0
2–3 years	4,609	100.0	12.5	4.7	2.3	7.5	9.3	2.8	21.1	28.8	3.8	4.5	2.6
4–5 years, not in school	3,421	100.0	9.6	3.1	*2.6	4.5	7.0	1.3	14.7	49.7	2.7	3.6	*1.2
4–5 years, in school	1,323	100.0	16.4	9.5	*3.8	8.7	7.6	*1.5	19.1	–	25.7	*3.3	4.3
Race													
White	10,854	100.0	13.2	4.7	2.1	8.2	7.6	2.3	22.9	23.6	7.6	5.4	2.5
Black	1,830	100.0	9.2	11.0	5.8	*3.3	16.2	4.3	15.2	21.4	10.5	*1.4	*1.7
Hispanic origin													
Hispanic	1,352	100.0	10.1	8.0	8.1	6.7	10.2	4.9	22.7	21.1	5.1	*1.9	*1.2
Non-Hispanic	11,331	100.0	12.8	5.6	2.0	7.7	8.6	2.3	21.2	23.8	8.1	5.2	2.7
Family income													
Less than $10,000	1,119	100.0	12.6	6.7	*5.5	5.5	13.0	*3.4	13.1	25.1	6.5	5.5	*3.1
$10,000–$24,999	3,635	100.0	17.9	5.7	3.6	5,5	10.2	2.9	21.9	18.2	6.0	6.1	2.1
$25,000–$39,999	3,635	100.0	13.4	4.7	*1.5	6.4	9.3	2.6	23.7	22.7	9.0	4.6	2.0
$40,000 or more	3,613	100.0	8.5	4.8	*1.8	10.7	6.2	1.6	22.1	28.7	8.5	3.5	3.6
Geographic region													
Northeast	2,242	100.0	17.0	8.3	1.8	10.5	9.8	*2.0	17.5	20.0	6.9	4.5	1.7
Midwest	3,492	100.0	14.7	5.1	*2.3	7.8	7.2	2.0	26.5	20.1	6.1	5.5	2.6
South	4,596	100.0	10.0	5.8	2.7	6.2	10.8	3.3	19.1	25.8	10.2	3.8	2.3
West	2,913	100.0	12.1	5.5	3.4	7.1	6.1	*2.5	21.3	26.2	6.9	5.6	*3.3
Place of residence													
MSA:													
Central city	4,035	100.0	10.9	8.9	4.2	7.5	9.9	2.3	18.9	24.1	7.3	3.4	2.6
Not central city	6,182	100.0	13.5	4.9	1.5	7.6	6.9	2.6	21.4	25.3	9.0	5.0	2.4
Not MSA	3,042	100.0	14.3	4.1	2.7	7.6	10.6	2.8	24.1	18.7	6.3	6.1	*2.6
Mother's education													
Less than 12 years	1,488	100.0	16.5	6.8	9.4	6.6	10.3	*3.6	15.3	19.7	3.7	4.2	*3.9
12 years	5,308	100.0	13.3	7.7	2.5	6.5	9.8	3.5	21.5	21.4	7.2	4.1	2.6
More than 12 years	6,446	100.0	11.7	4.4	1.1	8.7	7.4	1.6	22.4	25.9	9.3	5.4	2.1
Mother's employment status													
Employed	10,060	100.0	15.6	6.2	2.6	7.5	9.8	2.8	24.2	16.0	8.4	5.6	1.3
Not employed[4]	2,033	100.0	*0.9	3.2	*0.7	6.4	4.0	0.9	8.8	62.7	5.2	*0.1	7.1

[1] Includes kindergarten extended day care and day camp.
[2] Percents exclude unknown values for main source of care from numerator and denominator; numbers of children include those with missing values.
[3] Includes other races and unknown origin, income, education, and employment status.
[4] Includes looking for work and not in the labor force.

NOTE: MSA is metropolitan statistical area.

children related to the main care provider was far greater for black than for white children (48 percent compared with 35 percent) and somewhat greater for non-Hispanic than for Hispanic children (44 percent versus 37 percent). The probability of a child's being related to his or her main care provider was inversely related to the child's socioeconomic status.

Children whose mothers were employed were four times as likely to be related to their main care providers as children whose mothers were not employed—43 percent compared with 10 percent. Children ages 4–5 years who were not in school were the least likely to have a relative as their main care provider.

Stability of child care arrangements

The 1988 NHIS–CH addressed two aspects of stability in child care arrangements—use of multiple sources of child care and changes in source of care. Multiple sources of care may be as permanent as a single source; in fact, children cared for in multiple arrangements were only

Table 4. Number of children 5 years of age and under currently cared for in a regular child care arrangement, percent whose main source of care is outside the home, and percent whose main care provider is a relative, by selected social and demographic characteristics: United States, 1988

[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 the technical notes]

Characteristic	Number of children in thousands	Main source of care is outside the home		Main care provider is a relative	
		Percent	Standard error	Percent	Standard error
All children[1]	13,259	66.4	0.9	37.5	0.9
Age and school status					
Under 2 years	3,772	56.8	1.6	46.9	1.8
2–3 years	4,609	68.8	1.6	36.3	1.8
4–5 years, not in school	3,421	77.1	1.7	27.2	1.6
4–5 years, in school	1,323	56.0	3.5	42.3	3.2
Race					
White	10,854	66.8	1.0	35.3	1.0
Black	1,830	69.3	2.6	47.9	2.9
Hispanic origin					
Hispanic	1,352	65.6	2.9	43.5	3.4
Non-Hispanic	11,331	66.7	1.0	36.6	1.0
Family income					
Less than $10,000	1,119	63.4	3.4	46.8	3.6
$10,000–$24,999	3,635	62.3	1.8	46.5	1.7
$25,000–$39,999	3,635	69.6	1.6	36.3	1.7
$40,000 or more	3,613	70.2	1.6	26.4	1.6
Geographic region					
Northeast	2,242	58.2	1.8	43.5	2.0
Midwest	3,508	64.6	1.8	36.9	1.7
South	4,596	72.2	1.7	36.5	1.5
West	2,913	65.9	2.3	35.4	2.4
Place of residence					
MSA:					
Central city	4,035	64.7	1.7	39.6	1.6
Not central city	6,182	68.1	1.2	34.5	1.2
Not MSA	3,042	65.5	1.8	40.7	2.0
Mother's education					
Less than 12 years	1,488	55.2	3.3	51.0	3.2
12 years	5,308	66.3	1.6	41.0	1.4
More than 12 years	6,446	69.1	1.4	31.6	1.2
Mother's employment status					
Employed	10,060	63.3	1.0	42.7	1.0
Not employed[2]	2,033	87.7	1.7	9.9	1.6

[1] Includes races other than white or black and unknown origin, income, education, and employment status.
[2] Includes looking for work and not in the labor force.

NOTES: Care arrangement includes nursery school, preschool, and kindergarten extended day care. Percents exclude unknown values for location and relationship of main source of care from numerator and denominator; numbers of children include those with unknown values. MSA is metropolitan statistical area.

slightly more likely than those with a single source of care to have changed caretakers in the preceding year (28 percent compared with 22 percent).

Overall, 28 percent of the children receiving child care in 1988 had multiple sources of care (table 5). The children most likely to have more than a single source of care were those ages 4–5 years who were not in school (38 percent). Children whose mothers were not employed were the least likely to use multiple sources of child care.

One-fourth of the children receiving child care in 1988 had changed child care arrangements at least once in the 12 months preceding the NHIS–CH interview. Children 4–5 years of age who were in school were the most likely to have changed arrangements, 31 percent. Changes in child care arrangements were far more common among children whose mothers were employed (27 percent) than among those whose mothers were not employed (16 percent).

Use of multiple child care arrangements and changes in child care arrangements appeared to vary according to main source of care (table 6), but a larger sample is needed to confirm any differences. Because of the numerous categories for main source of care and the relatively large standard errors associated with each estimate, very few of the differences shown in table 5 are statistically significant.

The NHIS–CH data suggest that children cared for by their fathers or in nursery schools or preschools were the most likely to use more than a single source of care and that those cared for by grandparents or relatives in the child's own home were the least likely to do so. Children cared for primarily by their mothers appeared to be the least likely to have experienced a change in care, 10 percent. The children who appeared to be most likely to have changed child care arrangements in the preceding year were those cared for by nonrelatives, in either the child's or another home, and those attending day care centers. For children cared for in group care situations, such as day care centers or nursery schools, these estimates of change are somewhat low in that they do not reflect staff changes within a specific setting.

Number of children sharing care

One measure of child care quality is the number of children cared for by the same provider. Not only is the child-to-provider ratio indicative of the level of supervision, but the actual number of other children to whom a child is exposed on a regular basis influences the likelihood of infection with communicable diseases. According to the NHIS–CH data, 23 percent of the children receiving care in 1988 were cared for alone (table 7). Thirty-five percent were

Table 5. Number of children 5 years of age and under currently cared for in a regular child care arrangement, percent with multiple child care arrangements, and percent whose main source of care changed in last year, by selected social and demographic characteristics: United States, 1988

[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 the technical notes]

Characteristic	Number of children in thousands	Multiple child care arrangements		Main source of care changed in last year	
		Percent	Standard error	Percent	Standard error
All children[1]	13,259	27.7	0.8	24.7	0.8
Age and school status					
Under 2 years	3,772	19.4	1.2	22.3	1.5
2–3 years	4,609	28.2	1.5	26.9	1.6
4–5 years, not in school	3,421	38.0	1.7	22.1	1.5
4–5 years, in school	1,323	21.4	2.4	30.6	2.8
Race					
White	10,854	29.1	0.9	25.5	0.9
Black	1,830	20.9	2.1	20.1	2.1
Hispanic origin					
Hispanic	1,352	23.0	2.5	22.1	2.5
Non-Hispanic	11,331	28.3	0.9	24.8	1.0
Family income					
Less than $10,000	1,119	23.3	3.1	24.9	3.0
$10,000–$24,999	3,635	26.6	1.6	26.1	1.8
$25,000–$39,999	3,635	29.5	1.7	24.8	1.7
$40,000 or more	3,613	28.5	1.5	25.4	1.7
Geographic region					
Northeast	2,242	30.9	2.1	19.7	1.3
Midwest	3,508	28.2	1.4	24.6	1.7
South	4,596	25.4	1.6	26.0	1.4
West	2,913	28.0	1.5	26.6	1.9
Place of residence					
MSA:					
Central city	4,035	26.5	1.4	24.2	1.6
Not central city	6,182	28.6	1.2	25.1	1.3
Not MSA	3,042	27.3	2.1	24.8	1.6
Mother's education					
Less than 12 years	1,488	20.4	2.4	20.7	2.7
12 years	5,308	28.0	1.5	24.8	1.4
More than 12 years	6,446	29.0	1.2	25.5	1.0
Mother's employment status					
Employed	10,060	30.9	1.0	26.6	1.0
Not employed[2]	2,033	13.6	1.6	15.8	2.2

[1] Includes other races and unknown origin, income, education, and employment status.
[2] Includes looking for work and not in the labor force.

NOTES: Care arrangement includes nursery school, preschool, and kindergarten extended day care. Percents exclude unknown values for number of and changes in child care arrangements from numerator and denominator; numbers of children include those with unknown values. MSA is metropolitan statistical area.

reported to be cared for in a group of 2–3 children; 20 percent were in a group of 4–6 children. Overall, then, more than three-fourths of the children in formal child care arrangements were reported to be cared for in a group of a half dozen or fewer children. Twelve percent were cared for in a group of 7–12 children, and 11 percent were cared for in a group of 13 or more children. These group sizes do not represent the full enrollment of a group care facility; they include only the children actually cared for together, for example, within a single group at a day care center.

The mean ratio of children to child care providers was 3.5 to 1. This ratio increased with age of the child and was primarily a function of the type of child care arrangement selected (table 8). The child-to-provider ratio was highest in group care settings—nursery schools or preschools (7.1 to 1) and day care centers (6.4 to 1). The lowest child-to-provider ratios were observed for care arrangements in the child's home and those provided by relatives in a home other than that of the child. In these settings, the mean ratio ranged from 2.0 to 2.7 to 1. For children in family day care, that is, cared for by unrelated providers in the providers' homes, the mean ratio of children to providers was 3.3 to 1.

Summary

In 1988, 13.3 million children 5 years of age and under were reported to be in some type of child care arrangement. Of these, approximately 83 percent were children in families in which the mother was employed. The other 17 percent were in families in which the mother was not employed. In general, the younger children tended to be in less formal care arrangements and the older children were more likely to be in formal, organized group care situations. The data on the stability of care show that a substantial proportion of the children had experienced a change in their child care arrangements during the course of the preceding year. There is surprisingly little variation with age of the child in the stability of child care arrangements.

In addition to variation by age of the child and mother's employment, characteristics of child care arrangements varied according to a number of socioeconomic and demographic characteristics. These included race and ethnicity, region and place of residence, family income, and mother's education. Further analysis of these differentials, employing a multivariate approach, will add to our knowledge of the factors that influence choices about types of child care arrangements.

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Table 6. Number of children 5 years of age and under currently cared for in a regular child care arrangement, percent with multiple child care arrangements, and percent whose main source of care changed in last year, by main source of care: United States, 1988

[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 the technical notes]

Main source of care	Number of children in thousands	Multiple child care arrangements		Main source of care changed in last year	
		Percent	Standard error	Percent	Standard error
All sources	13,259	27.7	0.8	24.7	0.8
Care in child's home					
Father	1,709	33.4	2.6	20.8	2.2
Grandparent	789	13.5	2.6	15.8	3.0
Other relative	344	15.7	5.6	20.5	5.8
Nonrelative	1,001	23.9	2.8	31.0	3.2
Care in another home					
Grandparent	1,149	28.4	2.5	18.4	2.5
Another relative	338	17.5	4.4	21.2	4.5
Nonrelative	2,822	24.6	1.6	32.3	1.8
Group care					
Nursery or preschool	3,104	31.2	1.8	21.5	1.5
Day care center[1]	1,037	29.8	3.5	34.8	2.7
Mother, while working	633	21.4	3.6	9.8	2.5
Other	332	23.2	5.2	27.6	9.3

[1] Includes day camp and kindergarten extended day care.

NOTES: Care arrangement includes nursery school, preschool, and kindergarten extended day care. Percents exclude unknown values for number of and changes in child care arrangements from numerator and denominator; numbers of children include those with unknown values.

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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 standards of reliability or precision

Table 7. Number of children 5 years of age and under currently cared for in a regular child care arrangement, percent distribution by number of children cared for in arrangement, and mean ratio of children to providers, according to selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	Number of children in thousands	Number of children cared for						Mean ratio of children to providers	
		Total	1	2–3	4–6	7–12	13 or more	Ratio	Standard error
		Percent distribution							
All children[1]	13,259	100.0	22.7	34.7	19.9	11.7	11.0	3.5	0.1
Age and school status									
Under 2 years	3,772	100.0	29.7	35.9	21.2	9.5	3.6	2.7	0.1
2–3 years	4,609	100.0	22.2	34.1	23.8	11.3	8.5	3.5	0.1
4–5 years, not in school	3,421	100.0	15.4	33.7	14.2	16.3	20.4	4.3	0.2
4–5 years, in school	1,323	100.0	15.1	34.6	14.6	11.6	24.1	4.9	0.3
Race									
White	10,854	100.0	21.7	34.6	20.8	12.4	10.5	3.6	0.1
Black	1,830	100.0	25.0	35.4	17.6	8.9	13.1	3.4	0.2
Hispanic origin									
Hispanic	1,352	100.0	27.2	40.3	16.9	6.6	9.1	3.2	0.2
Non-Hispanic	11,331	100.0	22.0	33.7	20.5	12.4	11.3	3.6	0.1
Family income									
Less than $10,000	1,119	100.0	29.6	30.7	21.1	10.7	7.9	3.3	0.4
$10,000–$24,999	3,635	100.0	24.2	40.1	17.6	9.1	9.0	3.2	0.1
$25,000–$39,999	3,635	100.0	21.7	34.0	18.8	14.2	11.2	3.7	0.2
$40,000 or more	3,613	100.0	19.9	31.7	22.9	13.0	12.5	3.7	0.1
Geographic region									
Northeast	2,242	100.0	27.8	34.8	18.6	7.2	11.7	3.1	0.2
Midwest	3,508	100.0	18.8	34.2	24.8	13.5	8.6	3.4	0.1
South	4,596	100.0	24.2	35.4	15.5	12.4	12.5	3.7	0.1
West	2,913	100.0	21.5	34.2	21.6	11.6	11.1	3.7	0.2
Place of residence									
MSA:									
Central city	4,035	100.0	22.0	35.6	19.7	11.7	11.1	3.4	0.1
Not central city	6,182	100.0	21.1	35.7	19.4	11.9	12.0	3.6	0.1
Not MSA	3,042	100.0	26.7	31.8	21.0	11.5	9.0	3.6	0.2
Mother's education									
Less than 12 years	1,488	100.0	23.3	47.3	17.0	6.2	*6.2	2.8	0.2
12 years	5,308	100.0	24.4	35.3	19.0	11.2	10.1	3.5	0.1
More than 12 years	6,446	100.0	21.1	31.6	21.2	13.3	12.8	3.7	0.1
Mother's employment status									
Employed	10,060	100.0	22.5	35.3	20.1	11.4	10.8	3.6	0.1
Not employed[2]	2,033	100.0	22.4	27.8	19.6	17.2	13.0	3.6	0.2

[1] Includes other races and unknown origin, income, education, and employment status.
[2] Includes looking for work and not in the labor force.

NOTES: Care arrangement includes nursery school, preschool, and kindergarten extended day care. Percents exclude unknown values for number of children sharing care from numerator and denominator; numbers of children include those with unknown values. MSA is metropolitan statistical area.

Table 8. Number of children 5 years of age and under currently cared for in a regular child care arrangement, percent distribution by number of children cared for in arrangement, and mean ratio of children to providers, according to main source of care: United States, 1988

[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 the technical notes]

Main source of care	Number of children in thousands	Number of children cared for						Mean ratio of children to providers	
		Total	1	2–3	4–6	7–12	13 or more	Ratio	Standard error
		Percent distribution							
All sources	13,259	100.0	22.7	34.7	19.9	11.7	11.0	3.5	0.1
Care in child's home									
Father	1,709	100.0	27.7	50.2	*9.1	*6.8	*6.2	2.7	0.3
Grandparent	789	100.0	44.4	45.0	*4.9	*1.1	*4.6	2.2	0.3
Other relative	344	100.0	32.0	47.5	*18.9	*1.6	–	2.2	0.2
Nonrelative	1,001	100.0	26.5	59.2	8.2	*4.7	*1.3	2.3	0.1
Care in another home									
Grandparent	1,149	100.0	48.9	37.8	5.5	*3.1	4.7	2.0	0.1
Another relative	338	100.0	33.5	43.8	17.7	*4.2	*0.7	2.4	0.2
Nonrelative	2,822	100.0	15.6	38.2	36.5	7.8	2.0	3.3	0.1
Group care									
Nursery or preschool	3,104	100.0	*2.4	*5.3	9.0	38.1	45.3	7.1	0.3
Day care center[1]	1,037	100.0	*0.9	5.6	21.9	30.6	40.9	6.4	0.3
Mother, while working	633	100.0	*50.6	*44.7	–	–	*4.7	3.1	1.4
Other	332	100.0	*27.0	*12.2	30.0	24.0	*6.8	3.8	0.6

[1]Including day camp and kindergarten extended day care.

NOTES: Care arrangement includes nursery school, preschool, and kindergarten extended day care. Percents exclude unknown values for number of children sharing care from numerator and denominator; numbers of children include those with missing values.

Technical notes

The estimates presented in this report are based on data from the National Health Interview Survey (NHIS), an ongoing survey of U.S. households conducted by the National Center for Health Statistics. 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. Interviewers obtain information about the health and other characteristics of each member of the households included in the NHIS sample.

NHIS consists of two parts: (a) a basic health questionnaire that remains the same each year and is completed for each household member and (b) special topics questionnaires that vary from year to year and usually are asked of just one person in each family. In 1988, the special topics included acquired immunodeficiency syndrome (AIDS) knowledge and attitudes, medical device implants, occupational health, alcohol, and child health.

The total sample interviewed for 1988 for the basic health questionnaire consisted of 47,485 households containing 122,310 individuals. The total response rate was 95 percent. For the National Health Interview Survey on Child Health (NHIS–CH), one sample child 17 years of age and under was selected from each family with children in that age range. Interviews were completed for 17,110 children 17 years of age and under, 95 percent of those identified as eligible on the basis of the basic health questionnaire. The overall response rate for NHIS–CH was 91 percent, the product of the response rates for the basic and the child health questionnaires.

Because the estimates presented in this report are based on a sample of the population, they are subject to sampling errors. Standard errors of most estimates have been included in the tables. In a few tables where lack of space prohibited inclusion of individual standard errors, estimates were asterisked whose relative standard errors (the standard error divided by the estimate itself) exceeded 30 percent. The standard errors for this report were calculated using SESUDAAN, a SAS-based software package designed to produce standard errors for estimates based on complex, multistage sample designs (9). Standard errors based on such survey designs are typically about 20 percent larger than those that would be obtained with a simple random sample of the same size.

In this report, persons for whom valid responses were not available for certain items were excluded from both the denominators and the numerators of percents and percent distributions. This exclusion of unknowns implicitly assumes that the response distribution for these persons is the same as that for those for whom valid responses were provided. Item nonresponse on the child care variables considered in this report was fairly high, generally 5–8 percent, because of the complex skip instructions and because many of the measures used were derived from a large number of independent questions.

All differences cited in this report are statistically significant at the 0.05 level. The *t*-test, with a critical value determined by the number of response categories for an individual variable (10), was used to test all pairwise comparisons. Lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found not to be statistically significant.

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Advance Data

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

Health Insurance and Medical Care

Health of Our Nation's Children, United States, 1988

by Barbara Bloom, M.P.A., Division of Health Interview Statistics

Introduction

This report on health insurance and sources of medical care for children is based on data from the National Health Interview Survey on Child Health (NHIS–CH), conducted in 1988 by the National Center for Health Statistics. The National Institute of Child Health and Human Development and the Health Resources and Services Administration cosponsored this study. Through NHIS–CH, information was collected on a nationally representative sample of children 17 years of age and under. Questions on health insurance and sources of medical care were asked for all 17,110 children in the NHIS–CH sample. Basic details of the sample design and data collection procedures are presented in the technical notes. Further information on the National Health Interview Survey sample design and estimating procedures, definitions of terms, and a complete copy of the 1988 questionnaires can be found in the 1988 edition of the annual report *Current Estimates From the National Health Interview Survey* (1).

Interviewers administered the NHIS–CH questionnaire to the adult household member who knew the most about the sample child's health. For 80 percent of the sample children, the respondent was the child's mother; for 10 percent, the child's father was the respondent. The questionnaire addressed a broad range of health-related topics, including child care arrangements; marital history of the child's mother; accidents, injuries, and medical conditions; birth weight and prenatal care; exposure to cigarette smoke; bedtime and sleeping arrangements; school attendance; developmental, learning, emotional, and behavioral problems; health insurance; and sources of medical care.

This report is one of four reports, subtitled *Health of Our Nation's Children*, which present findings from the 1988 NHIS–CH. Included in this group are reports on child care arrangements; developmental, learning, and emotional problems; and exposure to environmental cigarette smoke.

Results

Health insurance

In 1988, 83 percent of our Nation's children ages 17 years and under were covered by a health insurance plan, either a private-pay plan or Medicaid (table 1). Overall, the proportion of white children covered by a health insurance plan, 84 percent, was greater than the proportion of black children covered, 81 percent. For infants under 1 year of age, however, there was no difference in health insurance coverage by race. For toddlers (1–4 years of age) and for older children, there was no clear trend in the health insurance coverage of white and black children.

For all ages, 70 percent of Hispanic children, compared with 85 percent of non-Hispanic children, were enrolled in a health insurance plan. The proportion of Hispanic

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics
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Table 1. Percent of children 17 years of age and under covered by a health insurance plan or Medicaid, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages	Under 1 year	1–4 years	5–7 years	8–11 years	12–14 years	15–17 years
				Percent			
All children[1]	83.1	80.1	83.7	83.3	83.8	83.0	82.3
Sex							
Male	83.5	80.4	83.5	83.7	83.8	84.3	83.1
Female	82.7	79.7	84.0	83.0	83.8	81.4	81.3
Race							
White	83.7	80.7	84.4	84.3	83.6	83.7	83.5
Black	80.9	81.2	80.5	79.7	84.1	81.7	77.6
Hispanic origin							
Hispanic	70.0	62.2	75.2	76.3	65.0	68.1	68.3
Non-Hispanic	84.9	82.8	85.2	84.3	86.3	85.1	83.8
Family structure							
Biological mother and father	85.5	81.6	85.4	84.7	85.9	86.4	86.9
Biological mother and stepfather	79.7	0.0	80.1	78.6	81.5	74.4	82.6
Biological mother and other[2]	80.9	76.9	82.4	83.2	80.6	80.8	78.5
All other	77.1	75.3	76.6	79.0	80.2	78.6	72.8
Family income							
Less than $10,000	71.8	74.0	75.3	73.9	71.0	69.7	64.4
$10,000–$24,999	76.1	75.1	76.9	78.2	75.3	73.5	76.6
$25,000–$39,999	89.8	85.6	90.5	89.4	92.1	90.2	87.4
$40,000 or more	92.4	93.3	93.2	91.7	92.0	93.2	91.6
Place of residence							
MSA	83.5	80.5	84.1	84.3	83.4	83.9	82.8
Central city	81.5	81.8	83.4	81.5	81.3	81.3	78.6
Not central city	84.9	79.5	84.5	86.1	84.8	85.6	85.2
Not MSA	81.7	78.5	82.5	80.3	84.9	80.0	80.6
Assessed health status							
Excellent, very good, or good	83.3	80.1	84.2	83.3	84.0	83.0	82.8
Fair or poor	78.0	85.7	74.2	82.2	83.6	82.0	70.2

[1] Includes other races and unknown family income.
[2] Includes families with mother only.

NOTE: MSA is metropolitan statistical area.

children who were covered by a health insurance plan ranged from 62 percent for infants under 1 year of age to 76 percent for children 5–7 years of age. Within every age group, the percent of Hispanic children covered was significantly lower than the figure for non-Hispanic children.

Moderate and higher incomes are usually associated with employment that provides free or low-cost health insurance as an employee benefit. Therefore, it is not surprising that enrollment in a health insurance plan was strongly associated with family income. Children in families with an annual income of $40,000 or more were much more likely than children in families with an annual income of less than $10,000 to have had insurance coverage—92 percent compared with 72 percent. Health insurance coverage was relatively uniform across all age groups within each family income category.

To a large extent, family structure may be a proxy for income, because two-parent families generally have higher incomes than families of other compositions have (2). Therefore, family structure may be an important factor in health insurance coverage. For this analysis, families were coded into four categories: (a) both biological parents present is coded as "both parents," (b) biological mother and stepfather present is coded as "mother and stepfather," (c) biological mother only or biological mother and another unrelated person present is coded as "mother and other," and (d) "all other" includes all other families.

Eighty-six percent of children in families with both parents present were covered by health insurance plans, more than in families with mother and other (81 percent), mother and stepfather (80 percent), or other family structure (77 percent). This basic pattern was found for all age groups.

Routine doctor visits

In 1988, 64 percent of children 17 years of age and under had visited a doctor for routine health care during the past year (table 2). Routine visits, that is, visits for routine checkups and immunizations when nothing is wrong, were most common among infants under 1 year of age (94 percent), followed by toddlers 1–4 years of age (82 percent), children 5–7 years of age (66 percent), children 12–14 years of age (55 percent), and teenagers 15–17 years of age (54 percent). Children 8–11 years of age were the least likely to have had a routine doctor visit during the past year, 50 percent. This decline in routine visits may be expected, because infancy and early childhood are the times of the most rapid growth and development, requiring closer monitoring of health status than in later years. In addition, virtually all routine immunizations are given by the time children enter kindergarten (3).

There were no differences between the percent of boys and of girls under age 12 years with a routine visit in the past year. Of 12- to 14-year-old children, more boys than girls had had a recent routine visit, 58 percent versus 52 percent. This may be due to the routine physical examinations required for boys playing contact sports (4). For 15- to 17-year-old teenagers, there was no difference by sex between the percents with a routine visit.

The same percent of black children as of white children of all

Table 2. Percent of children 17 years of age and under who had visited a doctor for routine health care during the past 12 months, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages	Under 1 year	1–4 years	5–7 years	8–11 years	12–14 years	15–17 years
				Percent			
All children[1]	63.9	93.8	81.5	66.0	49.6	54.8	53.9
Sex							
Male	64.1	94.4	81.3	65.9	49.4	57.6	52.5
Female	63.7	93.1	81.7	66.0	49.9	51.6	55.3
Race							
White	63.7	95.1	81.4	65.7	47.9	56.0	54.0
Black	65.0	87.6	82.6	66.6	55.7	51.7	55.7
Hispanic origin							
Hispanic	63.4	93.5	82.3	70.4	49.5	51.9	45.5
Non-Hispanic	63.6	93.5	81.1	65.2	49.5	55.0	54.8
Family structure							
Biological mother and father	65.2	95.5	81.8	64.1	49.1	55.5	53.7
Biological mother and stepfather	54.5	0.0	78.6	69.2	44.4	47.3	56.6
Biological mother and other[2]	62.9	93.7	78.5	68.2	51.2	55.9	57.1
All other	64.3	86.3	83.8	70.4	53.7	55.7	49.1
Family income							
Less than $10,000	62.9	87.4	78.9	65.6	49.5	53.5	45.9
$10,000–$24,999	61.6	96.1	80.4	62.8	43.7	47.9	52.6
$25,000–$39,999	64.3	94.9	82.5	67.7	47.1	54.3	56.9
$40,000 or more	68.0	97.2	85.8	70.0	56.3	62.5	58.4
Place of residence							
MSA	65.9	93.7	82.8	69.3	52.3	57.0	54.5
Central city	67.3	92.1	84.8	70.0	55.8	54.0	54.5
Not central city	65.0	95.0	81.4	68.9	50.1	58.9	54.5
Not MSA	57.7	94.3	77.2	55.7	41.5	48.0	52.2
Assessed health status							
Excellent, very good, or good	63.7	93.6	81.6	65.5	49.4	54.5	53.8
Fair or poor	70.7	97.8	77.5	78.0	58.2	66.8	61.7
Health insurance							
Yes	66.8	96.1	83.4	68.6	52.6	58.6	57.7
No	56.9	91.8	79.3	58.9	39.0	42.1	44.3

[1] Includes other races and unknown family income.
[2] Includes families with mother only.

NOTE: MSA is metropolitan statistical area.

ages had visited a doctor for routine care in the past year. However, among children under 1 year of age, 95 percent of white infants, compared with 88 percent of black infants, had had a recent routine doctor visit (significant at the 0.1 level). Among children 1–7 years of age, the visit rates were similar for black and for white children. Among older children, there was no clear difference by race in routine visits.

The percents of all children who had had a routine visit in the past year did not differ by Hispanic origin. This was true for infants and toddlers, as well. Among 15- to 17-year-olds, non-Hispanic teens were more likely to have had a recent routine visit (55 percent) than were Hispanic teens (46 percent).

As expected, family income and enrollment in a health insurance plan were important factors in the decision to make a routine doctor visit (5,6). At all ages, children in the highest income families were more likely to have had a recent routine visit than were children in the lowest income families. Similarly, children of all ages whose families were enrolled in a health insurance plan were more likely than others to have had a recent routine doctor visit.

Regular source of health care

In 1988, the great majority of children had a regular source of routine medical care, that is, a particular clinic, health center, hospital, doctor's office, or other place where they went for routine health care. The proportion with a regular source of care ranged from 83 percent for teens ages 15–17 years to 92 percent for toddlers (table 3). There was no difference in source of routine care between boys and girls at any age.

Twelve percent of our Nation's children did not have a regular source of care; 20 percent of black infants, compared with 8 percent of white infants, had no regular source of routine care in 1988. At 8 years of age and over, the same proportions of white and black children had a regular source of care.

In contrast, there was no difference in the proportions of Hispanic and non-Hispanic infants and toddlers with a regular source of routine care. However, at 5 years of age and over, Hispanic children were significantly less likely to have a regular source of care than were non-Hispanic children.

Having a regular source of routine health care was also a function of economic status. More children in families with incomes of $40,000 or more than children in families with incomes of less than $10,000 had a regular source of care, 92 versus 84 percent. More children in two-parent families than children in other families had a regular source of care, 90 percent versus 83 percent. Finally, more children in families with health insurance coverage than children with no insurance had a source of routine care, 92 percent versus 79 percent.

For children of all ages, the location of the child's residence had a slight effect on whether the child had a regular source of routine health care. Eighty-seven percent of inner-city children, 88 percent of rural

Table 3. Percent of children 17 years of age and under who had a regular source of routine health care, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages	Under 1 year	1–4 years	5–7 years	8–11 years	12–14 years	15–17 years
				Percent			
All children[1]	88.0	89.9	92.3	90.8	86.9	85.0	82.9
Sex							
Male	87.6	90.1	92.0	89.9	86.0	85.1	82.6
Female	88.5	89.6	92.6	91.7	87.9	84.9	83.3
Race							
White	88.6	92.1	93.0	91.3	87.2	85.1	83.4
Black	86.5	79.8	90.3	87.9	86.4	86.2	82.9
Hispanic origin							
Hispanic	81.1	88.2	89.2	82.1	81.6	72.6	72.2
Non-Hispanic	88.9	89.8	92.9	91.9	87.6	86.6	84.2
Family structure							
Biological mother and father	90.4	92.5	93.3	91.8	89.4	87.5	86.5
Biological mother and stepfather	82.6	0.0	84.7	88.7	82.4	78.8	81.9
Biological mother and other[2]	86.1	85.1	93.0	89.9	83.2	83.8	81.9
All other	82.8	81.3	87.7	87.9	84.5	81.5	74.2
Family income							
Less than $10,000	83.8	82.4	88.3	88.8	80.8	83.2	74.8
$10,000–$24,999	86.0	92.7	92.5	88.3	83.7	77.4	81.1
$25,000–$39,999	91.1	91.3	94.6	94.6	89.4	89.3	86.1
$40,000 or more	92.4	94.4	96.5	94.7	93.0	90.5	87.0
Place of residence							
MSA	88.1	90.1	92.4	90.9	87.5	85.2	82.1
Central city	87.3	88.8	92.6	87.1	86.9	85.2	81.4
Not central city	88.6	91.2	92.3	93.3	87.9	85.2	82.5
Not MSA	87.8	89.1	92.1	90.4	85.1	84.5	85.4
Assessed health status							
Excellent, very good, or good	88.1	89.6	92.5	90.7	87.1	85.0	82.9
Fair or poor	87.9	97.8	90.2	90.9	83.6	86.7	84.3
Health insurance							
Yes	91.9	93.0	94.9	94.0	90.9	90.0	88.2
No	79.0	85.7	88.5	83.4	75.6	70.3	70.7

[1] Includes other races and unknown family income.
[2] Includes families with mother only.

NOTE: MSA is metropolitan statistical area.

children, and 89 percent of suburban children had a regular source of care in 1988. Eighty-nine percent of infants who lived in either a central city of a metropolitan statistical area (MSA) or a rural area (not MSA) had a regular source of care, compared with 91 percent of infants who lived in the suburbs. The percents of children 1–4 years of age with a regular source of care were similar for all places of residence.

Private care and clinic care

Most children with a regular source of care visited a doctor's office, private clinic, health maintenance organization (HMO), or prepaid group practice for their routine health needs. In this report the term "private care" refers to medical care received from these types of providers.

The remaining 8.7 million children, or 16 percent of all children with a regular source of care, went to other types of providers (table 4). These children visited hospital outpatient clinics, hospital emergency rooms, walk-in or emergency care centers, and other clinics or health centers for their routine health care. In this report, the term "clinic care" refers to medical care received from these types of facilities.

Among children with a regular source of care, black children were three times as likely as white children to receive routine care in a clinic setting. Thirty-five percent of all black children, compared with 11 percent of all white children, received routine clinic care. Nearly one-half of black infants under 1 year of age, 47 percent, received routine care in a clinic setting, compared with 16 percent of white infants.

A clinic was the source of routine care for about twice the proportion of Hispanic as of non-Hispanic children, 26 versus 14 percent. This difference was most pronounced for infants, with 48 percent of Hispanic infants and 19 percent of non-Hispanic infants receiving their well-baby care in a clinic setting.

Whether a child received private care or clinic care was highly dependent on economic factors. Thirty-seven percent of children in families with annual incomes of less than $10,000 received clinic care, compared with 22 percent of children in families with incomes of $10,000–$24,999, 9 percent of children in families with incomes of $25,000–$39,999, and 6 percent of children in families with incomes of $40,000 or more. Children in families with both biological parents present received clinic care less often (11 percent) than did children in families with the biological mother and other present (27 percent) or other family structures (23 percent). Finally, children with health insurance coverage used clinic care less than children with no insurance coverage, 13 percent versus 32 percent.

Inner-city children of all ages were more likely (23 percent) to have received clinic care than were suburban children (11 percent) or rural children (16 percent). Infants in the inner city were more likely (33 percent) to have received clinic care than suburban infants (16 percent) or rural infants (16 percent). The percents of rural children who received clinic care more closely resembled those of suburban children than of inner-city children, with the one exception of

Table 4. Percent of children 17 years of age and under with regular source of care whose regular source of care was not a private physician or health maintenance organization (HMO), by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages	Under 1 year	1–4 years	5–7 years	8–11 years	12–14 years	15–17 years
				Percent			
All children[1]	15.5	22.0	18.6	14.8	13.1	14.3	13.3
Sex							
Male	15.1	23.9	17.9	13.6	13.4	13.2	12.9
Female	15.9	19.8	19.3	16.0	12.8	15.6	13.7
Race							
White	11.2	16.0	14.1	9.9	9.8	10.1	9.1
Black	35.2	46.5	40.8	37.0	29.3	33.5	30.3
Hispanic origin							
Hispanic	26.2	47.6	27.8	21.1	23.2	25.2	23.6
Non-Hispanic	14.2	18.7	17.3	14.1	11.9	13.0	12.3
Family structure							
Biological mother and father	11.1	15.5	14.0	10.2	9.1	9.4	8.9
Biological mother and stepfather	13.1	0.0	16.2	12.2	13.8	13.2	11.7
Biological mother and other[2]	26.8	30.6	34.3	27.3	23.7	25.7	22.1
All other	22.8	48.8	27.2	22.3	16.6	19.2	17.9
Family income							
Less than $10,000	36.5	35.9	39.5	34.9	36.7	35.9	33.0
$10,000–$24,999	22.4	32.2	27.9	20.0	20.0	19.6	16.1
$25,000–$39,999	9.2	11.9	9.8	9.1	7.3	8.8	10.2
$40,000 or more	5.7	4.2	6.6	4.4	3.3	5.7	8.9
Place of residence							
MSA	15.5	23.6	16.7	14.5	14.3	14.8	13.8
Central city	23.3	33.4	23.1	20.0	22.8	23.3	22.8
Not central city	10.6	15.7	12.2	11.3	9.1	9.5	8.6
Not MSA	15.5	16.1	25.2	15.7	9.3	12.6	12.0
Assessed health status							
Excellent, very good, or good	15.2	22.3	18.4	14.3	13.2	13.9	12.8
Fair or poor	23.2	16.9	22.6	25.6	12.5	24.8	30.7
Health insurance							
Yes	13.0	18.1	16.2	12.0	10.5	11.7	11.6
No	32.3	40.2	32.7	32.9	32.1	33.3	25.7

[1] Includes other races and unknown family income.
[2] Includes families with mother only.

NOTE: MSA is metropolitan statistical area.

children 1–4 years of age. Rural toddlers (25 percent) and inner-city toddlers (23 percent) received clinic care more often than did suburban toddlers (12 percent).

Summary

The findings in this report show that black newborns and infants were two to three times more likely to have lacked a routine visit for a checkup or any immunization during the crucial first year of life than were white newborns and infants. Hispanic children were twice as likely to have lacked public or private health insurance coverage as were non-Hispanic children. Poor children with a regular source of care were six times more likely to have received routine care in a clinic or hospital emergency room than were children from more affluent families. Inner-city children were twice as likely to have received their routine care in a clinic or emergency room as were suburban children.

Insurance coverage for and health services received by our Nation's children vary greatly among racial, ethnic, and socioeconomic groups. Black children, Hispanic children, poor children, or inner-city children do not receive the same medical services as do their white, non-Hispanic, affluent, suburban counterparts. The health care needs of all our children continue to be an issue of great concern.

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Technical notes

The estimates presented in this report are based on data from the National Health Interview Survey (NHIS), an ongoing survey of households in the United States conducted by the National Center for Health Statistics. 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. Interviewers obtain information about the health and other characteristics of each member of the households included in the NHIS sample.

NHIS consists of two parts: (a) a basic health questionnaire that remains the same each year and is completed for each household member and (b) special topics questionnaires that vary from year to year and usually are asked of just one person in each family. In 1988, the special topics included acquired immunodeficiency syndrome (AIDS) knowledge and attitudes, medical device implants, occupational health, alcohol, and child health. These data sets can be linked to provide additional sources for analysis.

The total sample interviewed for 1988 for the basic health questionnaire consisted of 47,485 households containing 122,310 individuals. The total response rate was 95 percent. For the National Health Interview Survey on Child Health (NHIS–CH), one sample child 17 years of age and under was selected from each family with children in that age range. Information about the sample child was collected by face-to-face interview with the adult member of the family present who knew most about the sample child's health, in most cases the child's mother. Interviews were completed for 17,110 children 17 years of age and under, 95 percent of those identified as eligible on the basis of the basic health questionnaire. The overall response rate for NHIS–CH was 91 percent, the product of the response rates for the basic and the child health questionnaires. Item nonresponse for the variables used in this report was low, ranging from less than 1 to 4 percent.

Because the estimates shown in this report are based on a sample, they are subject to sampling error. The standard error is a measure of the sampling error. Approximate standard errors for estimated percents in this report are determined using the formula

$$SE = \sqrt{\frac{8{,}307\,p\,(1-p)}{y}}$$

where SE is the standard error, p is the estimated percent, and y is the estimated base of the percent. The bases of the percents for tables 1, 2, and 3 are presented in table I; the bases of the percents shown in table 4 are presented in table II.

The approximate standard error of a difference between percents is given by the formula

$$SE(x_1 - x_2) = \sqrt{SE(x_1)^2 + SE(x_2)^2}$$

where x_1 and x_2 are the two percents being compared, $x_1 - x_2$ is the difference between them, and $SE(x_1)$ and $SE(x_2)$ are the standard errors of the two percents.

Table I. Number of children 17 years of age and under, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages	Under 1 year	1–4 years	5–7 years	8–11 years	12–14 years	15–17 years
	Number in thousands						
All children[1]	63,569	3,850	14,536	11,037	13,635	9,872	10,639
Sex							
Male	32,526	2,030	7,380	5,597	6,862	5,224	5,433
Female	31,043	1,820	7,156	5,439	6,774	4,648	5,206
Race							
White	51,380	3,017	11,809	8,910	11,071	7,930	8,644
Black	9,820	644	2,138	1,738	2,079	1,557	1,663
Hispanic origin							
Hispanic	7,239	510	1,671	1,216	1,655	1,120	1,067
Non-Hispanic	55,031	3,148	12,202	9,642	11,886	8,646	9,507
Family structure							
Biological mother and father	38,999	2,788	10,242	7,007	8,040	5,513	5,408
Biological mother and stepfather	4,477	0	327	682	1,302	999	1,168
Biological mother and other[2]	11,356	442	2,130	1,987	2,640	1,942	2,215
All other	8,736	620	1,837	1,360	1,654	1,418	1,848
Family income							
Less than $10,000	7,924	619	1,965	1,496	1,722	1,062	1,060
$10,000–$24,999	16,708	1,108	4,134	2,967	3,568	2,470	2,462
$25,000–$39,999	15,737	864	3,649	2,822	3,419	2,457	2,525
$40,000 or more	16,071	774	3,306	2,576	3,484	2,735	3,196
Place of residence							
MSA	48,314	2,989	11,191	8,316	10,307	7,461	8,049
Central city	18,972	1,367	4,589	3,193	3,963	2,887	2,974
Not central city	29,342	1,622	6,603	5,122	6,344	4,575	5,076
Not MSA	15,255	860	3,344	2,721	3,329	2,411	2,590
Assessed health status							
Excellent, very good, or good	61,173	3,686	13,926	10,647	13,189	9,558	10,167
Fair or poor	1,788	91	481	309	287	256	363
Health insurance							
Yes	52,812	3,082	12,170	9,197	11,424	8,189	8,751
No	8,962	673	2,053	1,522	1,861	1,386	1,466

[1] Includes other races and unknown family income.
[2] Includes families with mother only.

NOTE: MSA is metropolitan statistical area.

Table II. Number of children 17 years of age and under with a regular source of care, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages	Under 1 year	1–4 years	5–7 years	8–11 years	12–14 years	15–17 years
			Number in thousands				
All children[1]	55,970	3,460	13,422	10,018	11,853	8,394	8,823
Sex							
Male	28,489	1,829	6,793	5,030	5,902	4,448	4,488
Female	27,481	1,631	6,630	4,988	5,951	3,946	4,335
Race							
White	45,502	2,779	10,977	8,136	9,656	6,749	7,205
Black	8,490	514	1,931	1,528	1,796	1,342	1,379
Hispanic origin							
Hispanic	5,871	450	1,491	998	1,350	813	770
Non-Hispanic	48,922	2,828	11,332	8,857	10,418	7,485	8,002
Family structure							
Biological mother and father	35,253	2,580	9,554	6,431	7,185	4,826	4,679
Biological mother and stepfather	3,699	0	277	605	1,073	787	957
Biological mother and other[2]	9,783	376	1,981	1,787	2,197	1,627	1,815
All other	7,235	504	1,611	1,195	1,398	1,155	1,372
Family income							
Less than $10,000	6,640	510	1,735	1,329	1,391	884	793
$10,000–$24,999	14,368	1,027	3,825	2,619	2,987	1,913	1,997
$25,000–$39,999	14,336	789	3,452	2,670	3,056	2,194	2,174
$40,000 or more	14,856	731	3,189	2,439	3,240	2,476	2,782
Place of residence							
MSA	42,582	2,694	10,343	7,558	9,020	6,357	6,609
Central city	16,571	1,214	4,249	2,781	3,445	2,460	2,422
Not central city	26,011	1,480	6,093	4,778	5,575	3,898	4,187
Not MSA	13,388	766	3,079	2,460	2,833	2,037	2,213
Assessed health status							
Excellent, very good, or good	53,889	3,303	12,876	9,662	11,491	8,126	8,431
Fair or poor	1,571	89	434	281	240	222	306
Health insurance							
Yes	48,532	2,867	11,551	8,648	10,380	7,367	7,720
No	7,081	577	1,817	1,269	1,406	974	1,037

[1] Includes other races and unknown family income.
[2] Includes families with mother only.

NOTE: MSA is metropolitan statistical area.

All differences cited in this report are statistically significant at the 0.05 level unless otherwise noted. The *t*-test, with a critical value of 1.96, was used to test all comparisons that are discussed. Lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found not to be statistically significant.

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Advance Data

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

Wanted and Unwanted Childbearing in the United States: 1973–88

Data from the National Survey of Family Growth

by Linda B. Williams, Ph.D., and William F. Pratt, Ph.D., Division of Vital Statistics

Introduction

Of the nearly 16.5 million births to ever-married women that occurred from 1983 through 1988, approximately 5.8 million, or 35 percent, were unintended. Of those, about 30 percent were unwanted, and the other 70 percent were mistimed (wanted at a later time). Statistics from the most recent National Survey of Family Growth (NSFG) reveal an apparent increase in unwanted births for the first time since the widespread acceptance of the most effective methods of contraception. Between surveys conducted in 1973 and 1982, the proportion of recent births to ever-married women that were unwanted at the time of conception was cut almost in half, from 14.3 percent to 7.7 percent. More recent data suggest, however, that the proportion of unwanted births to that group of women has once again risen to over 10 percent. Although many of the percentage increases in unwanted conceptions observed from 1982 to 1988 fail to meet the tests of statistical significance, the pattern of increasing proportions of unintended and unwanted births is remarkably consistent across subgroups of age, race, marital status, and level of income.

The findings presented in this report are based on data from Cycle IV of the NSFG, conducted by the National Center for Health Statistics. Data were collected from January through August 1988 using a multistage area probability sample of women ages 15–44 years. Interviews were conducted with 8,450 women of all marital statuses, 2,771 of whom were black, 5,354 of whom were white, and 325 of whom reported identification with another racial group. All belonged to the noninstitutionalized population of the United States.

Comparative data from Cycle I of the NSFG, conducted in 1973, and Cycle III, conducted in 1982, are also analyzed. Like Cycle IV, the previous cycles were based on multistage probability samples of women ages 15–44 years. Trends for never-married women are examined only for 1982 and 1988, because most never-married women were excluded from the sample in 1973 (1). Estimates discussed in this report are derived from samples and are subject to sampling variability. Information about sampling variability, the survey design, and the definitions of most of the terms utilized in this report can be found in the technical notes.

Concept of wantedness

The terms "wanted" and "unwanted" are used in this report to describe pregnancies that ended in a live birth within 5 years of the survey date, and they refer to the mother's attitude toward the pregnancy at the time of conception. It should be noted that births that were unwanted at conception do not necessarily become unwanted children. Mothers who report a pregnancy as unwanted at the time of conception nonetheless may cherish the child born as the result of that pregnancy.

Whether a birth was "wanted" was determined from a series of questions about the respondent's use or nonuse

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of contraception at the time of conception and about her attitude toward her pregnancy once she found that she was pregnant. If contraception had not been used or had been discontinued before the respondent became pregnant, she was asked, "Was the reason you (had stopped/were not) using any methods because you yourself wanted to become pregnant?" Women who answered "no" to that question were then asked, "It is sometimes difficult to recall these things but, just before that pregnancy began, would you say you probably wanted a(nother) baby at *some* time or probably not?" Women who said they had not used or had discontinued using contraception prior to a pregnancy because they had wanted to become pregnant and women who said they had probably wanted to have a(nother) baby at some time were then asked, "Did you become pregnant sooner than you wanted, later than you wanted, or at about the right time?"

Pregnancies that occurred at a time when a respondent had not been using or had discontinued contraception because she wanted to become pregnant were classified as "wanted," as were those that occurred when a respondent was using contraception but still felt that she wanted (or probably wanted) to have a(nother) baby at some time. Births that were wanted but occurred sooner than the respondent would have preferred were classified as "mistimed." Those that occurred later than the respondent would have preferred are not considered mistimed for this report, because, in most cases, the delay was not the result of a failure of planning or choice. A birth was classified as "unwanted" if the respondent reported that she had not wanted (or probably had not wanted) a(nother) child at the time of conception or at any point in the future. "Unintended" births are those that were either mistimed or unwanted.

If the respondent said she did not know whether she wanted to have a(nother) child then or in the future, the "wantedness" status of the pregnancy was categorized as "undetermined." That happened only rarely, however. Of the births that had occurred during the 5 years immediately preceding each survey, only 0.1 percent in 1973 and 1982 and 0.2 percent in 1988 were classified as undetermined. Births categorized as wanted or unwanted, therefore, are basically complementary.

Trend in wantedness of births to ever-married women

As has been noted, among ever-married women, the proportion of recent births that were unwanted at the time of conception decreased sharply, from over 14 percent to under 8 percent, from 1973 to 1982 (table 1). During the same time period, the proportion of births that were mistimed remained constant. Although the proportion of mistimed births has remained essentially unchanged since 1982, the data suggest that the proportion of recent births that were unwanted at conception has risen again to over 10 percent.

As in 1973 and 1982, the 1988 data show that the proportions of births that were unwanted at conception increased with age among ever-married women. Although the differences between contiguous age groups were not all statistically significant in 1988, all differences

Table 1. Number of children born in the last 5 years to ever-married women 15–44 years of age and percent distribution by wantedness status, according to age and race of mother: United States, 1973, 1982, and 1988

[Statistics are based on samples of the female population of the United States; see technical notes for estimates of sampling variability and definitions of terms. Because of rounding of estimates, figures may not add to totals]

Age and race	Births in the last 5 years			All births	Wanted at conception						Unwanted at conception		
					Total			Mistimed					
	1988	1982	1973		1988	1982	1973	1988	1982	1973	1988	1982	1973
All races[1]	Number in thousands[2]			Percent distribution									
All ages	16,466	16,300	15,901	100.0	89.5	92.1	85.6	25.0	24.0	24.0	10.3	7.7	14.3
15–24 years	2,982	4,133	5,028	100.0	91.1	94.3	91.8	42.6	43.8	39.4	8.6	*5.7	8.0
25–34 years	10,794	10,176	9,105	100.0	90.8	93.1	86.3	23.3	18.5	18.3	9.0	6.7	13.5
35–44 years	2,690	1,991	1,768	100.0	82.2	82.7	64.2	12.2	*11.3	9.5	17.6	17.1	35.6
White													
All ages	13,962	14,296	13,978	100.0	91.0	93.2	87.6	25.6	23.6	23.4	8.8	6.7	12.3
15–24 years	2,599	3,666	4,297	100.0	92.3	95.2	93.3	43.4	44.1	38.3	7.4	*4.8	6.5
25–34 years	9,131	8,862	8,164	100.0	92.0	94.1	88.3	23.6	17.6	18.0	7.8	5.8	11.6
35–44 years	2,231	1,767	1,517	100.0	85.1	84.4	67.6	12.7	*11.2	9.8	14.6	15.6	32.2
Black													
All ages	1,472	1,598	1,724	100.0	76 8	83.7	69.5	26.2	28.1	28.9	22.8	15.9	30.5
15–24 years	302	410	702	100.0	84.4	85.3	82.5	36.3	40.2	45.9	*15.6	*14.8	17.5
25–34 years	909	1,020	820	100.0	80.2	84.2	66.5	26.4	25.2	20.1	19.1	15.6	33.4
35–44 years	262	167	202	100.0	55.9	77.5	36.6	*13.5	*16.6	*5.6	44.1	*20.4	63.4

[1] Includes white, black, and other races
[2] Includes births of unknown wantedness status

between the age groups 15–24 years and 35–44 years were significant, as were differences between the age groups 25–34 years and 35–44 years. The same general pattern has been observed among ever-married women at all three survey dates covered in this report, and the association between age and unwanted childbearing thus appears clear.

Conversely, the proportion of births that were mistimed consistently decreased with age among all ever-married women over time. Again, although some of the differences between adjacent age groups were not statistically significant, all of the differences between the women in the youngest and the oldest age categories were significant.

Among ever-married women, births that are reported as mistimed continue to outnumber those that were unwanted at the time of conception. Although mistimed births in the 5 years leading up to the 1973 survey were 1.7 times as prevalent as unwanted births, by 1982 they outnumbered births that were unwanted by more than 3 to 1. Even with the apparent recent increase in unwanted childbearing, mistimed births were more than twice as common as unwanted births in 1988.

Earlier authors have intimated that growing numbers of mistimed births, especially among younger ever-married women, might accompany shifts in contraceptive use away from more effective methods and toward barrier methods (2), such as the diaphragm, cervical cap, condom, or foam. Although that explanation may have been plausible during the 1970's, more recent evidence suggests that the current trend in contraception favors more effective methods such as the pill and sterilization, and many of the less effective methods have become less popular (3).

Births in the 5 years before the survey that were considered unwanted at the time of conception were almost twice as common among formerly married women as they were among currently married women in 1973 and more than twice as common among formerly married women as among currently married women in both 1982 and 1988 (table 2). Although the pattern of differences between those currently and formerly married was the same among both white and black women, only the differences among white women were statistically significant.

In previous research, a possible link has been noted between the occurrence of out-of-wedlock births, many of which are unwanted at conception, and the likelihood that couples who later marry will eventually separate or divorce (4). Because formerly married women tend to be older and to have borne more children than currently married women and because increases in both age and parity are associated with increases in unwanted childbearing (2), it has also been argued that the associations between these variables warrant further study.

Although the proportion of unwanted births to both currently married white women and currently married black women decreased significantly from 1973 to 1982, there has been no statistically significant change since that time. In addition, the gap appears to have narrowed somewhat between levels of unwanted childbearing among formerly married white women and formerly married black women. Although differences between the two groups were statistically significant through 1982, that was not the case in 1988.

Currently married black women, on the other hand, have consistently reported higher proportions of unwanted births than have currently married white women at all three survey dates. As of 1988, unwanted births were more than twice as prevalent (as a percentage) among currently married black women as among currently married white women.

Table 2. Number of children born in the last 5 years to ever-married women 15–44 years of age and percent distribution by wantedness status, according to marital status and race of mother: United States, 1973, 1982, and 1988

[Statistics are based on samples of the female population of the United States; see technical notes for estimates of sampling variability and definitions of terms. Because of rounding of estimates, figures may not add to totals]

Marital status and race	Births in the last 5 years			All births	Wanted at conception: Total			Wanted at conception: Mistimed			Unwanted at conception		
	1988	1982	1973		1988	1982	1973	1988	1982	1973	1988	1982	1973
	Number in thousands[1]			Percent distribution									
All races[2]	16,466	16,300	15,901	100.0	89.5	92.1	85.6	25.0	24.0	24.0	10.3	7.7	14.3
Currently married	14,427	14,442	14,248	100.0	91.1	93.2	86.9	24.4	22.5	23.4	8.7	6.7	13.0
Formerly married	2,039	1,858	1,653	100.0	77.8	84.5	74.4	28.8	36.4	29.0	21.9	15.4	25.2
White	13,962	14,296	13,978	100.0	91.0	93.2	87.6	25.6	23.6	23.4	8.8	6.7	12.3
Currently married	12,489	12,921	12,854	100.0	92.1	93.7	88.2	25.1	22.1	22.8	7.7	6.1	11.7
Formerly married	1,473	1,374	1,124	100.0	81.4	87.6	80.3	29.4	37.4	29.9	18.6	*12.3	19.2
Black	1,472	1,598	1,724	100.0	76.8	83.7	69.5	26.2	28.1	28.9	22.8	15.9	30.5
Currently married	1,010	1,173	1,195	100.0	80.5	88.0	72.8	25.2	27.3	29.7	19.5	11.7	27.2
Formerly married	462	425	529	100.0	68.5	72.0	62.1	28.1	30.5	27.3	30.1	27 3	37.9

[1] Includes births of unknown wantedness status.
[2] Includes white, black, and other races.

Among all ever-married women, the gap between the level of unwanted childbearing among black women and white women diminished from 1973 to 1982, then widened considerably from 1982 to 1988. In 1973, unwanted births were more prevalent among black women than among white women by 18 percentage points. By 1982, that difference had narrowed to 9 percentage points, but the size of the difference between the two groups has since risen to 14 percentage points.

There are several reasons why large differences remain between the proportions of unwanted births to white women and to black women. Black teens initiate sexual activity before white teens do, and therefore they are exposed to the risk of childbearing at an earlier age and generally reach their desired family size earlier. In addition, black teens are less likely than white teens to use contraception, and their pregnancies are less apt to end in abortion (4). Although black teens are more likely than white teens to have had a family planning visit in the past year (5), such visits among either group may occur as the result of an unintended pregnancy rather than as an attempt to prevent one. Why the gap between the two racial groups has widened since 1982 is not known, however.

Data illustrating the pattern of change in unintended childbearing among ever-married women having different levels of income relative to poverty are presented in table 3. Although it appears that the unwanted portion of unintended childbearing has increased among all ever-married women since 1982, recent percentage point increases have been most pronounced among women living below the poverty level. From 1982 to 1988, the proportion of unwanted births among women in poverty rose by almost 75 percent.

At the time of the first NSFG, differences in unwanted childbearing by race were observed across income categories. In 1973, ever-married black women reported more unwanted pregnancies than did white women at every level of income. By 1982, differences by race within income groups were no longer statistically significant, except among women with incomes below the poverty level, and the differences that remained between black women and white women in that category were significant only at the 0.10 level. According to data from 1988, however, the levels of unwanted childbearing among ever-married black women and white women in poverty have again diverged; the percentage among poor black women is once again more than double that observed among poor white women (35 and 17 percent, respectively).

Trend in wantedness of births to never-married woman

The data suggest that, since 1982, unwanted births to never-married black women 20–24 years of age have also increased (table 4). No statistically significant changes have taken place in the proportions of mistimed births to never-married women in any age category.

Notably, however, unintended childbearing among never-married white women over the age of 24 has declined. Although the percentage-point decrease in mistimed births to women in that age group was not statistically significant, unwanted

Table 3. Number of children born in the last 5 years to ever-married women 15–44 years of age and percent distribution by wantedness status, according to poverty status and race of mother: United States, 1973, 1982, and 1988

[Statistics are based on samples of the female population of the United States; see technical notes for estimates of sampling variability and definitions of terms. Because of rounding of estimates, figures may not add to totals]

Poverty level income and race	Births in the last 5 years			All births	Wanted at conception						Unwanted at conception		
					Total			Mistimed					
	1988	1982	1973		1988	1982	1973	1988	1982	1973	1988	1982	1973
All races[1]	Number in thousands[2]			Percent distribution									
All levels	16,466	16,300	15,901	100.0	89.5	92.1	85.6	25.0	24.0	24.0	10.3	7.7	14.3
Below poverty	2,489	2,790	2,271	100.0	78.9	88.1	73.6	34.3	31.5	25.3	20.7	11.9	26.1
100–149 percent	1,763	2,007	2,010	100.0	85.8	86.9	82.7	32.3	33.7	27.6	14.1	12.4	17.3
150–199 percent	2,173	2,291	2,403	100.0	91.6	94.4	85.6	22.9	22.1	24.8	8.3	*5.5	14.2
200 percent or more	10,042	9,212	9,217	100.0	92.2	94.0	89.2	21.8	20.2	22.7	7.5	6.0	10.7
White													
All levels	13,962	14,296	13,978	100.0	91.0	93.2	87.6	25.6	23.6	23.4	8.8	6.7	12.3
Below poverty	1,901	2,226	1,619	100.0	82.2	89.8	80.5	37.3	31.0	27.5	17.4	*10.2	19.1
100–149 percent	1,417	1,699	1,637	100.0	67.5	88.0	84.5	32.4	33.3	25.1	12.4	*11.2	15.5
150–199 percent	1,890	2,037	2,165	100.0	92.8	95.3	87.1	24.0	21.5	24.9	7.2	*4.7	12.6
200 percent or more	8,753	8,334	8,558	100.0	93.1	94.7	89.6	22.3	20.2	21.8	6.7	5.4	10.2
Black													
All levels	1,472	1,598	1,724	100.0	76.8	83.7	69.5	26.2	28.1	28.9	22.8	15.9	30.5
Below poverty	422	494	637	100.0	63.8	78.4	56.2	27.1	31.5	20.3	35.3	21.0	43.8
100–149 percent	223	257	326	100.0	75.0	77.0	72.3	*35.7	32.0	38.1	*24.0	*23.0	27.6
150–199 percent	162	212	214	100.0	75.5	85.1	73.1	*27.9	*26.2	26.7	*24.3	*14.0	26.8
200 percent or more	666	634	547	100.0	85.9	90.1	81.9	22.0	24.5	34.3	*14.1	*9.6	18.0

[1] Includes white, black, and other races
[2] Includes births of unknown wantedness status.

Table 4. Number of children born in the last 5 years to never-married women 15–44 years of age and percent distribution by wantedness status, according to age and race of mother: United States, 1982 and 1988

[Statistics are based on samples of the female population of the United States; see technical notes for estimates of sampling variability and definitions of terms. Because of rounding of estimates, figures may not add to totals]

Age and race	Births in the last 5 years		All births	Wanted at conception				Unwanted at conception	
				Total		Mistimed			
	1988	1982		1988	1982	1988	1982	1988	1982
All races[1]	Number in thousands[2]		Percent distribution						
All ages	2,481	2,141	100.0	74.5	74.6	39.8	47.1	25.4	25.3
15–19 years	428	473	100.0	76.8	75.5	63.5	54.7	*23.2	24.5
20–24 years	1,162	1,022	100.0	73.9	83.9	42.6	51.4	26.1	16.1
25–44 years	891	646	100.0	74.0	59.1	24.6	34.8	25.7	40.6
White									
All ages	991	953	100.0	85.5	79.7	45.7	54.9	14.5	20.3
15–19 years	122	218	100.0	89.7	85.1	70.6	61.3	*10.3	*14.9
20–24 years	505	424	100.0	83.6	91.5	49.5	59.6	16.5	*8.5
25–44 years	364	311	100.0	86.8	59.9	32.0	44.1	13.2	40.1
Black									
All ages	1,363	1,117	100.0	64.0	69.1	34.5	39.9	35.7	30.8
15–19 years	269	245	100.0	67.9	68.2	57.5	49.2	*32.1	31.8
20–24 years	588	537	100.0	62.5	76.1	36.3	44.1	37.5	23.9
25–44 years	505	335	100.0	63.8	58.4	*20.3	26.2	35.6	41.1

[1] Includes white, black, and other races.
[2] Includes births of unknown wantedness status.

births to women in that group decreased by about 27 percentage points, or 67 percent. If there has been a real increase in the proportion of wanted births among these women, it raises the possibility that the rising rates of births among unmarried women reflect deliberate choices to accept single parenthood. Among unmarried women ages 25–29 years, the birth rate rose from 26.8 births per 1,000 women in 1976 to 44.3 per 1,000 women in 1987. Among unmarried women ages 35–39 years, the birth rates rose from 9.0 to 13.5 per 1,000 in the same years (6).

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Technical notes

The National Survey of Family Growth (NSFG) is a periodic survey conducted by the National Center for Health Statistics (NCHS). During the survey, data are collected on factors affecting childbearing, contraception, infertility, and related aspects of maternal and infant health. The survey is jointly planned and funded by the National Center for Health Statistics, the National Institute for Child Health and Human Development, and the Office of Population Affairs. All are part of the U.S. Department of Health and Human Services. Fieldwork was conducted under contract by Westat, Inc., in 1982 and 1988, and by the National Opinion Research Center in 1973.

Cycle IV interviews were conducted with a national sample of women who were 15–44 years of age as of March 15, 1988. The interviews took place from January through August of the same year. In 1973 and 1982, the population represented was women 15–44 years of age in the civilian noninstitutionalized population of the conterminous United States. In 1988, Alaska and Hawaii were included, so the population represented was the civilian noninstitutionalized population of the entire United States. Interviews were completed with 9,797 women in 1973, 7,969 women in 1982, and 8,450 women in 1988.

Households selected for Cycle IV of the survey had been interviewed in the National Health Interview Survey (NHIS), conducted from October 1985 through March 1987. (NHIS is also conducted by NCHS.) As in previous cycles of the NSFG, black women were oversampled. Interviews were conducted in person, generally in the respondents' homes, by trained female interviewers. Interviews lasted an average of 70 minutes and focused on the woman's pregnancy history; past and current use of contraception; ability to bear children (fecundity and infertility); use of medical services for family planning, infertility, and prenatal care; marital history, occupation, and labor force participation; and a wide range of social, economic, and demographic characteristics.

Reliability of estimates

Because the statistics presented in this report are based on a sample, they may differ by chance variations from the statistics that would result if all 57.9 million women represented by the NSFG had been interviewed. The standard error (SE) of an estimate is a measure of such differences. The SE of an estimated number or percent is calculated by using the appropriate values of A and B from table I in the equations

$$SE(N) = \sqrt{(A + B/N)\,N}$$

and

$$SE(P) = \sqrt{\frac{B\,P\,(100-P)}{X}}$$

where N = the number of women
P = the percent
X = the number of women in the denominator of the percent.

Table I. Preliminary estimates of the parameters A and B for estimating standard errors for women, by race

Race	Parameter A	Parameter B
Total or white	−0.00018	10,738
Black	−0.000626	5,181

The parameters shown in table I were used to generate table II, which shows preliminary estimates of standard errors for percents of births to total or white women, and table III, which shows preliminary estimates of standard errors for percents of black women. A similar table for Cycle III (1982) is included in (2).

The chances are about 68 out of 100 that a sample estimate would fall within one standard error of a statistic based on a complete count of the population represented by the NSFG. The chances are about 95 in 100 that a sample estimate would fall within two standard errors of the same measure if all people in the population were interviewed. Differences among percents discussed in this report were found to be statistically significant at the 5-percent level using a two-tailed normal deviate test. This means that in repeated samples of the same type and size, a difference as large as the one observed would occur in only 5 percent of samples if there were, in fact, no difference between the percents in the population.

In the text, terms such as "greater," "less," "increase," or "decrease" indicate that the observed differences are statistically significant at the 0.05 level using a two-tailed normal deviate test. Statements using the phrase "the data suggest" indicate that the difference is significant at the 0.10 level (or 10-percent level), but not the 0.05 level (or 5-percent level). Lack of comment in the text about any

Table II. Preliminary estimates of standard errors for percents of pregnancies of total or white women: 1988 National Survey of Family Growth

Base of percent	Estimated percent: 2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100,000	5.1	7.9	10.9	14.5	16.7	17.8	18.2
250,000	3.2	5.0	6.9	9.2	10.5	11.3	11.5
500,000	2.3	3.5	4.9	6.5	7.5	8.0	8.1
1,000,000	1.6	2.5	3.4	4.6	5.3	5.6	5.7
5,000,000	0.7	1.1	1.5	2.1	2.4	2.5	2.6
10,000,000	0.5	0.8	1.1	1.5	1.7	1.8	1.8
20,000,000	0.4	0.6	0.8	1.0	1.2	1.3	1.3
30,000,000	0.3	0.5	0.6	0.8	1.0	1.0	1.0
50,000,000	0.2	0.4	0.5	0.7	0.7	0.8	0.8
75,000,000	0.2	0.3	0.4	0.5	0.6	0.7	0.7
100,000,000	0.2	0.3	0.3	0.5	0.5	0.6	0.6

Table III. Preliminary estimates of standard errors for percents of pregnancies of black women: 1988 National Survey of Family Growth

Base of percent	Estimated percent						
	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100,000	2.9	4.6	6.3	8.4	9.6	10.3	10.5
250,000	1.9	2.9	4.0	5.3	6.1	6.5	6.6
500,000	1.3	2.0	2.8	3.8	4.3	4.6	4.7
1,000,000	0.9	1.4	2.0	2.7	3.0	3.3	3.3
5,000,000	0.4	0.6	0.9	1.2	1.4	1.5	1.5
10,000,000	0.3	0.5	0.6	0.8	1.0	1.0	1.0
25,000,000	0.2	0.4	0.5	0.7	0.8	0.8	0.9

two statistics does not mean that the difference was tested and found not to be statistically significant.

The relative standard error (or coefficient of variation) of a statistic is the ratio of the standard error to the statistic and usually is expressed as a percent of the estimate. In this report, statistics with a relative standard error of 30 percent or more are indicated with an asterisk (*). These estimates may be viewed as unreliable by themselves, but they may be combined with other estimates to make comparisons of greater precision.

Statistics in this report also may be subject to nonsampling error, that is, errors or omissions in responding to the interview, recording answers, and processing data. The data have been adjusted for nonresponse by means of adjustments to the sample weights assigned to each case. Other types of nonsampling error were minimized by a series of quality control measures, as described in reports on Cycle III (such as (1)).

Definitions of terms

Wantedness—For this report, pregnancies that ended in a live birth within 5 years of the survey date have been classified as either "wanted" or "unwanted." A pregnancy was classified as wanted at conception if the woman had stopped, or had not used, contraception because she wanted a pregnancy, or if she had become pregnant while using contraception but nonetheless had wanted, or probably wanted, a(nother) baby at some time. Similarly, a pregnancy was classified as unwanted at conception if the woman had stopped, or had not used, contraception for reasons other than seeking pregnancy, or if she had become pregnant while using contraception and had not wanted, or probably had not wanted, a(nother) baby at some time. Births that were wanted but occurred sooner than desired have been subclassified as "mistimed." If the woman had become pregnant later than desired, the pregnancy was not classified as mistimed because it did not represent a failure in family planning and was not subject to contraceptive control. Births that were either unwanted or mistimed have been classified as "unintended." If the respondent said she did not know whether she wanted to have a(nother) child then or in the future, the wantedness status of the pregnancy was categorized as undetermined. Pregnancies that ended in multiple births have been counted only once because only the pregnancy was subject to contraceptive control.

Births within 5 years of the survey—In Cycle IV, interviews were conducted from January through August 1988. Births that occurred within 5 years of the exact date on which the woman was interviewed were considered "births in the past 5 years" for the sake of this analysis. For the 1988 survey, the births counted in this way occurred during the period January 1983 through August 1988, which is just over 5 1/2 years. However, because the births to each woman interviewed were counted over only 5 years, not all births from January through August of either 1983 or 1988 are included. Thus, the estimated numbers of births in this report are equivalent to the births that occurred from May 1, 1983, through May 1, 1988. The same definition was used to define births that occurred within 5 years of the survey date both in 1982 and in 1973.

Age—Age was classified by the age of the respondent in completed years as of March 15, 1988, the approximate midpoint of the interviewing.

Race—Race refers to the race of the woman interviewed and is reported as black, white, or other. In Cycles III (1982) and IV (1988), race was classified according to the woman's report of the race that best described her. In Cycle I, race was classified by the observation of the interviewer. Data from Cycles III and IV indicate that results using the two methods of classification are very similar.

Marital status—Women were classified by marital status as married, widowed, divorced, separated, or never married. In the three cycles analyzed in this report—Cycle I (1973), Cycle III (1982), and Cycle IV (1988)—informally married or cohabiting women, who reported that they were not married but were living with their sexual partner, were classified by their legal marital status. Women who were married but separated from their spouse were classified as separated if the reason for the separation was marital discord; otherwise they were classified as currently married.

Poverty status—The poverty index ratio was calculated by dividing the total family income by the weighted average poverty threshold income of nonfarm residents in households headed by persons under age 65. For Cycle I, the ratio was based on the poverty levels defined by the U.S. Bureau of the Census in *Current Population Reports,* Series P-60, No. 98 (7), as discussed in a previous NCHS report (8). The definition of poverty status took into account the sex of the family head and the number of persons in the family. Total family income includes income from all

sources for all members of the respondent's family. For Cycle III, the ratio was expressed as a percent of poverty levels defined by the U.S. Bureau of the Census in *Current Population Reports,* Series P-60, No. 140 (9), as discussed in a previous NCHS report (10). In Cycle IV, the ratio was based on the poverty levels shown in *Current Population Reports,* Series P-60, No. 163 (11).

Cooperating agencies

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Symbols

---	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision
#	Figure suppressed to comply with confidentiality standards

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Advance Data

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

Developmental, Learning, and Emotional Problems

Health of Our Nation's Children, United States, 1988

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Introduction

As many of the infectious diseases that affected children in the past are conquered or ameliorated, a growing share of pediatric practice involves developmental delays, learning difficulties, and emotional and behavioral problems. These conditions, and others such as allergies, asthma, and eating disorders, have been labeled the "new morbidity of childhood" (1). All of these conditions have a substantial psychological component, and none fits easily into the physical disease paradigms with which medicine is used to dealing. There are several reasons why these conditions should be of concern to public health professionals and policymakers.

To begin with, these kinds of conditions appear to be quite prevalent and may be becoming more so (2; 3, pp. 32–34). Increases in childhood psychological disorders have been attributed to the growing proportions of children who experience parental divorce, were born outside of marriage (4), or are raised in conflict-filled families or low-income, low-education, single-parent households. Childhood learning and behavior problems may also be multiplying because of the increased survival rate of extremely low-birthweight babies (5), the possible effects of environmental contamination (6), and the rising numbers of babies born to crack-addicted mothers (7).

The fact that many young people are affected by developmental delays, learning disabilities, or emotional problems does not mean that such disorders are transient or inconsequential; some have profound and lasting effects on family functioning and children's life chances. These conditions often interfere with a child's academic success and peer relationships and put a strain on parental resources and equanimity. Developmental disorders and mental illness in children are also costly and burdensome to society, requiring special services in schools and other institutions and sometimes necessitating long-term care at State expense (8).

Another area of concern is that the medical care system is not yet well equipped to handle these kinds of childhood problems. The etiology of most developmental and behavioral disorders is not well understood. Although there is evidence that counseling and treatment can help (9,10), there is uncertainty and sometimes lack of consensus about appropriate modes of treatment for specific disorders—for example, disputes over the use of the drug Ritalin in treating hyperactive youngsters (11). Many family physicians have not been adequately trained to recognize and deal with these types of problems, and procedures for referring children for psychological diagnosis and treatment are not standardized. There is believed to be a substantial group of young people with developmental or behavioral disorders whose problems go untreated and perhaps even unrecognized (12, pp. 24–27). There is also concern that, although conduct problems of middle-class white youths are handled within the mental health system, the same sorts of problems among lower class black or Hispanic youths often go untreated, only to be dealt with eventually by the criminal justice system.

Reliable national data on the incidence and prevalence of developmental and behavioral

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Centers for Disease Control
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conditions in childhood have been hard to come by, partly because of definitional ambiguities and changes in medical and educational terminology (12, chapter 2). Prevalence estimates based on small and unrepresentative samples have tended to vary over an implausibly wide range—for instance, from 6 percent to 37 percent in one review of studies of emotional and behavioral problems in children (2). In addition, earlier estimates have often been ambiguous with respect to the time period involved.

In this report, data from the 1988 National Health Interview Survey of Child Health (NHIS–CH), conducted by the National Center for Health Statistics (NCHS), are presented. Statistics are given on the proportions of young people 17 years of age and under who were reported by their parents to have ever had (a) a delay in growth or development, (b) a learning disability, or (c) an emotional or behavioral problem that lasted 3 months or more or required psychological treatment. Information is presented on when the condition was first noticed and whether treatment, counseling, or special educational services were received for it. Survey-based prevalence estimates are compared with estimates based on clinical studies, U.S. Department of Education data on the receipt of special education services, and earlier health survey data on the receipt of psychological help by children and adolescents. Variations in prevalence by age, sex, family income, mother's education, race, Hispanic origin, and family structure are examined. Alternative explanations for observed group differences and for changes over time in the receipt of counseling and educational services for these conditions are discussed.

Data and methods

Survey procedures

The source of the data reported here is the 1988 National Health Interview Survey of Child Health. This was a survey of 17,110 children 17 years of age and under that was cosponsored by the Office of Maternal and Child Health, the National Institute of Child Health and Human Development, and NCHS (13, pp. 224–250). NCHS conducts the National Health Interview Survey to collect data on the health status and medical care use of the U.S. population, using a probability sample, drawn by the U.S. Bureau of the Census, of persons living in households in the United States (14,15). For NHIS–CH, there was a further random selection of one child per family in any family with children 17 years of age and under at the time of the survey.

The data collection method consisted of in-person interviews by trained U.S. Bureau of the Census interviewers with an informed adult member of the family, usually the mother. In about 95 percent of cases, the respondent was a parent of the sample child, and in this report, the respondent is often referred to as the parent. The overall completion rate for the child portion of the survey was 91 percent. The interviewers obtained a considerable amount of background information on the family and measures of the child's physical health, behavioral and emotional adjustment, school performance, and receipt of medical and psychological care. All data are based on reports by the adult respondent. The survey questionnaire has been published (13, pp. 224–250), and a public use data tape is available through the Division of Health Interview Statistics of NCHS. A similar National Health Interview Survey of Child Health was conducted in 1981 (16,17).

Questions on developmental conditions

Parent respondents to the 1988 NHIS–CH were asked the following questions:

- "Has _____ ever had a delay in _____'s growth or development?"
- "Has _____ ever had a learning disability?"
- "Has _____ ever had an emotional or behavioral problem that lasted 3 months or more?"

The first question was put to parents of children of all ages, but the latter two were put only to those whose children were ages 3 years and over.

If the respondent answered affirmatively to any of the questions, she or he was asked a series of followup questions on when each condition was first noticed, whether the child was treated for the condition (ever and in the last 12 months), the effects of the condition on school attendance and need for special education, and whether any medication was taken for the condition.

Parents of children ages 3–17 years who had not reported that their child had a developmental, learning, or behavioral problem were asked, "Has _____ ever seen a psychiatrist, psychologist, doctor, or counselor about any emotional, mental, or behavioral problem?" Those who responded negatively to this question were asked, "During the past 12 months, have you felt, or has anyone suggested, that _____ needed help for any emotional, mental, or behavioral problem?" If the parent answered affirmatively to either question, the child was counted as having had an emotional or behavioral condition, even if the parent had answered the initial question about such conditions in the negative.

This report focuses on the reported lifetime prevalence of developmental, learning, and behavioral problems in the overall child population and in selected demographic and social groups. Only limited information from the followup questions is presented.

Before reporting the prevalence figures, it might be well to mention some of the specific conditions that the survey designers thought would be elicited by each question. It was expected that respondents who answered the question on delay in growth and development in the affirmative would consist partly of parents whose children had limited or temporary deficits in growth or development, perhaps associated with premature birth or an early illness or injury, and partly of parents whose

children had severe and long-lasting deficits, such as those produced by Down syndrome or other chromosomal abnormalities, hereditary factors, prenatal infection, birth injury, or childhood diseases.

Ideally, the item on learning disability would be answered affirmatively for children who had exceptional difficulty learning to read, write, or do arithmetic but whose learning problems did not stem from mental retardation, impairment of sight or hearing, emotional problems, or lack of cultural and educational opportunities. That is the technical definition of learning disability (18, p. 395). It is likely, however, that parents applied the term not only to children with specific incapacities, such as dyslexia, but also to some children with deficits in general intelligence or behavioral problems that interfered with their learning.

The reader may wonder why the interviewers did not specifically ask about mental retardation. The reason is that there was such a question in the 1981 NHIS–CH, and it produced only a handful of positive responses. Nowadays the term "mentally retarded" is apparently seen as limiting or stigmatizing by parents of children with developmental disorders, and many are reluctant to use it (19). Clinicians have also become hesitant about applying the term, especially to minority children. It was hoped that the "developmental delay" and "learning disability" questions would result in more of these children being identified in the 1988 survey, and this seems to have been the case.

The question on emotional or behavioral problems was meant to identify children with common psychological syndromes (20), such as aggressive or antisocial conduct (21,22), attention-deficit hyperactivity disorder (23), phobias and anxiety disorders (24), childhood depression (25), and adjustment reactions to traumatic events such as parental divorce (26). More severe conditions such as autism and schizophrenia would also be picked up, but in very small numbers, given the rarity of these conditions (18, chapter 12).

Originally, in an open-ended followup question, parents were asked to describe the specific emotional or behavioral disorders their children had. This question was deleted in pretesting when many of the responses turned out to be vague or to refer to the situation that led to the emotional reaction rather than to the reaction itself. Analysis of responses to related questions in NHIS–CH, such as a 28-item Behavior Problems Index and items in the core NHIS questionnaire, should help to clarify the kinds of conditions that were identified by these questions.

Prevalence of problems

According to their parents, 4.0 percent of U.S. children ages 17 years and under have had a delay in their growth or development (table 1). This means that an estimated 2.5 million children have developmental delays. In addition, 6.5 percent of children ages 3–17 years, or 3.4 million, have had a learning disability (table 2). Also, 13.4 percent of children ages 3–17 years, or 7 million, have had an emotional or behavioral problem that lasted 3 months or more or required psychological treatment (table 3). When the items are combined, the result is that a total of 19.5 percent of children ages 3–17 years, or nearly 10.2 million, have had one or more developmental, learning, or emotional disorders (table 4). When the 488,000 children ages 2 years and under who had developmental delays are added in, the total number affected by one or more of these conditions comes to almost 10.7 million.

By way of comparison, here are the estimated numbers of American young people having some of the chronic physical conditions that are common in childhood: chronic bronchitis, 3.5 million; asthma, 3.2 million; dermatitis, 2.2 million; orthopedic impairments, 1.8 million; heart murmurs, 1.1 million (13, table 62). Clearly, the psychological disorders rank among the most prevalent health conditions of modern childhood.

Another indication of the importance of these conditions in the overall child health picture is that 35 percent of children ages 3–17 years who were currently described as being in fair or poor health had a developmental, learning, or behavioral problem (table 4).

Treatment

Parents who reported that their child had a delay in development, a learning disability, or an emotional or behavioral problem were asked whether the child "has ever received treatment or counseling" for the condition (table 5). Two percent of all children ages 17 years and under had received treatment or counseling for a delay in growth or development. This amounted to 49 percent of those reported to have had such a delay. One percent of all children were reported to have received treatment for developmental delays within the previous 12 months.

About 5 percent of all children ages 3–17 years, or more than three-quarters of those with learning disabilities, had received treatment or counseling for their disabilities. More than 3 percent of children ages 3–17 years were reported to have received treatment for learning disabilities within the previous 12 months.

Ten percent of all children ages 3–17 years, or about three-quarters of those with emotional or behavioral problems, had received treatment or counseling for these problems. Five percent were reported to have received this help within the previous 12 months.

Receipt of special educational services

Parents who reported that their child had one of the subject conditions were also asked whether the condition made it necessary for the child "to attend special classes, or

a special school, or get special help at school" during the past 12 months. Less than 1 percent of children ages 6–17 years had received special educational services because of delays in growth or development. This amounted to about 23 percent of those reported to have had such delays.

About 5½ percent of all school-aged children, or about 70 percent of those reported to have learning disabilities, received special educational assistance for their disabilities. Approximately 1.7 percent of school-aged children, or one-quarter of those reported to have emotional or behavioral problems that had lasted 3 months or more, received special educational help because of these problems. (The question about special educational services was asked only of parents who reported that their child had an emotional or behavioral problem that had lasted 3 months or more.)

Comparisons with other data sources

Questions about children's psychological disorders have rarely been asked of parents in large national sample surveys of children. Consequently, there are few earlier data points that are precisely comparable with those from the National Health Interview Survey of Child Health. Prevalence estimates based on parental reports in NHIS–CH can be compared with estimates based on other sources of information, such as clinical studies or school-based data on children receiving special educational services for specific types of handicaps. In addition, there are earlier survey data on the receipt of psychological help by children. Some of this comparative information is summarized in the following sections.

Developmental delays

As mentioned in the introduction, it was expected that the question about delays in growth or development would identify children with mental retardation and other profound developmental disorders, as well as some with less devastating abnormalities. Before the term "mentally retarded" became unfashionable, it was common to see estimates that the retarded constituted 3–4 percent of the overall population (27). In recent years, the term has been restricted to more severe cases, and prevalence estimates of 1–2 percent are now given (20, p. 189). Autism and other pervasive developmental disorders are comparatively rare, with estimates of their prevalence ranging from around 10 to 15 cases per 10,000 population (20, p. 189).

Data from the U.S. Department of Education show that the proportion of students receiving special educational services for the mentally retarded was 1.6 percent of total public school enrollment in 1987, down from 2.2 percent in 1977 (28, table 61). In contrast, the proportion of children in NHIS–CH who were reported to have developmental delays and to have received special educational services for them was just 0.9 percent. Thus, there would appear to have been some underidentification or underreporting of retardation in NHIS–CH. It is also possible that some parents with retarded youngsters described their children as having learning disabilities. As described below, the under-identification of retardation is likely to have been concentrated among black and Hispanic children.

Learning disabilities

In contrast to the apparent underreporting of retardation, the proportion of children who were reported in NHIS–CH to have learning disabilities was higher than the proportion known to be receiving special educational services according to school-records data. Of total public school children, 4.8 percent were recorded as receiving special educational services for learning disabilities in 1987, more than double the 1.8 percent recorded in 1977 (28, table 61). As noted above, however, 6.5 percent of all children ages 3–17 years were reported in the 1988 NHIS–CH to have learning disabilities, and 5.5 percent of those ages 6–17 years were reported to have attended special classes or a special school because of such disabilities.

The relatively small discrepancies between the survey estimates and the school-records figures may represent children who were in the process of being qualified for special education services or inaccuracies in school records. They may also represent misunderstanding by some parents as to the types of help their children were getting in school. Figures are not available from the U.S. Department of Education on the number of children who were in need of special educational services but did not receive them. Despite the apparent excess of learning disabilities in the survey data, there is evidence (discussed below) that learning disabilities were underidentified by minority parents.

Emotional and behavioral problems

The Institute of Medicine, the Office of Technology Assessment, and other groups have estimated that 12–15 percent of U.S. children suffer from mental disorders (3; 12, chapter 2). These estimates would appear to be in close agreement with the figure of 13.4 percent of children with emotional or behavioral problems found in NHIS–CH. However, the clinical estimates are ambiguous with respect to the conditions they include and the time period to which they refer. Does the figure of 12–15 percent refer to children who have ever had a mental disorder, to those who have had one within the last year, or to those who have one right now? A close look at the clinical studies on which the estimates are based also shows a good deal of unexplained variation from study to study. NHIS–CH and clinical studies agree, though, in finding behavioral disorders to be among the most prevalent chronic conditions of childhood.

An earlier survey of child health, the 1981 National Health Interview Survey, included a question about the receipt of psychological help by children and youths. In that survey, it was found that 6.5 percent of children ages 3–17 years had seen a psychologist or psychiatrist at some point about an emotional, mental, or behavioral problem (29). The comparable proportion in the 1988 NHIS–CH was 10 percent, indicating that the use of psychological assistance for children had increased by more than 50 percent between the two surveys. (Part of the increase may have been due to differences in the questions used in the two surveys, but it is unlikely that this is the full explanation for the rise in the use of psychological help.)

Although serious emotional and behavioral problems appear to be widespread among today's youth, relatively few receive special educational assistance for these problems. According to U.S. Department of Education data, only about 1.0 percent of public school students were recorded as receiving special education for the seriously emotionally disturbed in 1987 (28, table 61). This was less than the 1.7 percent of children ages 6–17 years who were reported in NHIS–CH to have attended special classes for emotional or behavioral problems (table 5). Again, the discrepancy may have been due to the processing of children for special education, to inaccuracies in school records, or to misunderstanding by parents as to what kinds of help their children were getting in school. There are also conditions, such as the attention deficit-hyperactivity syndrome, that straddle the boundary between behavioral problems and learning disabilities.

Age trends

Developmental delays

It was expected that almost all of the delays in growth and development would have occurred or been evident in early childhood. Therefore, little or no increase in the prevalence of delays after the first years of life was anticipated. Except for minor sampling fluctuations, this is what was found. The proportion of children with developmental delays was 4.3 percent for 2 years of age and under, 4.4 percent at ages 3–5 years, 4.1 percent at ages 6–11 years, and 3.6 percent in the adolescent years, ages 12–17 (table 1).

When parents were asked the child's age at the time they first noticed the developmental delays, 25 percent of those who reported delays said they had been apparent since birth (table 6). Forty-five percent of delays were noticed before the child's first birthday. The median age at which delays in growth or development were noticed was 1 year 2 months (table 7).

Learning disabilities

In contrast to developmental delays, most learning disabilities are not fully apparent until the child gets to school and starts trying to read, write, and calculate. Therefore, a substantial rise in the prevalence of learning disabilities as children reached school age was expected. This is what was found. The proportion of children with learning disabilities jumped from 1.6 percent at ages 3–5 years to 6.8 percent in the elementary school ages, 6–11 years. There was a further increase, to 8.8 percent, in the junior high and high school ages, 12–17 years (table 2).

When parents were asked at what age their children's learning disabilities were first noticed, only about 6 percent of those who reported learning problems said they had been apparent since birth or before the child's first birthday (table 6). One-quarter of the learning disabilities became apparent during the nursery school or kindergarten years (ages 3–5 years), and another 45 percent were first noticed in early elementary school (ages 6–8 years). The median age at which learning disabilities were noticed was 6 years 7 months (table 7). Learning disabilities were not picked up until late elementary or secondary school for about 16 percent of the children.

Emotional and behavioral problems

The most severe and pervasive disorders of childhood tend to appear before the age of 2½ years, as with autism, or after the age of 12 years, as with schizophrenia (18, p. 420; 30). Less drastic emotional and behavioral problems may occur in children of any age, depending on the timing of stressful life events and the unfolding of developmental processes that are not well understood. Some of these problems are resolved within a few months, perhaps to reemerge at a later age. Others continue for years or indefinitely.

Thus, the cumulative proportion of children who have ever had emotional or behavioral problems should increase fairly steadily with age. Continued increases were found in NHIS–CH, although the rate of increase was found to decline after the early elementary years. The proportion of children who had ever had an emotional or behavioral problem rose from 5.3 percent at ages 3–5 years, to 12.7 percent at ages 6–11 years, to 18.5 percent at ages 12–17 years (table 3).

Parents who reported that their children had emotional or behavioral problems that had lasted 3 months or more were asked at what age the emotional or behavioral problems were first noticed. Only 5 percent said it was before the child's first birthday (table 6). Less than 15 percent of the emotional problems were noticed during the first 3 years of life. One-quarter emerged during the preschool years (3–5) and another quarter, during the early elementary years (6–8). The rate of problem emergence tapered off in the late elementary years, with 15 percent of the conditions appearing during ages 9–11 years. Twenty-two percent became evident during the adolescent years (12–17). The median age at which persistent emotional or behavioral problems were noticed was 7 years 2 months (table 7).

Based on evidence from the National Survey of Children (31) and other earlier surveys, it seems possible that the increase in the lifetime prevalence of behavioral problems with age would be more pronounced were it not for parental forgetting. When responding to surveys, parents sometimes do not recall emotional problems that their children had several years earlier. even when those problems were severe enough to require professional assistance.

Combined problems

As would be expected from the above findings, the combined lifetime prevalence of developmental. learning, and emotional problems increased substantially with age, more than doubling from ages 3–5 years (9.5 percent) to 12–17 years (25.2 percent), as shown in table 4. One teenager in four was reported to have had a developmental delay, learning disability, or emotional or behavioral problem.

Sex differences

Previous research has shown that males are more vulnerable than females to a variety of developmental disorders. Sex differences are especially pronounced for learning disabilities, with boys outnumbering girls in special education classes by more than 2 to 1. Male pupils also outnumber females in classes for the mentally retarded, but by smaller margins (32, table 6). Sex differences in emotional and behavioral problems depend on the type of problem involved, with males predominating among youths who show aggressive or hyperactive conduct, but with sex ratios being more nearly equal or girls predominating for problems such as depression and anxiety (33). Overall, the prevalence of emotional and behavioral problems tends to be higher among boys (18.34).

The results of the 1988 NHIS–CH were generally consistent with these earlier findings. Differences were relatively slight for developmental delays. however. with males exceeding females by only 11 percent overall—4.2 percent of males versus 3.8 percent of females were reported to have had delays in growth or development—and some age groups showing minimal differences or even reversals (table 1).

In contrast, the rate of learning disabilities was almost twice as high among males as among females, 8.6 percent versus 4.4 percent for ages 3–17 years. By adolescence, more than twice as many males as females—12.1 percent versus 5.2 percent—were described as having learning disabilities (table 2).

For emotional and behavioral problems, the overall prevalence was 36 percent higher among males: 15.4 percent versus 11.3 percent for females. Sex differences were most pronounced for children of elementary school age (6–11 years), with 15.6 percent of the boys versus 9.8 percent of the girls in this age range experiencing such problems (table 3).

For all three types of problems combined, the prevalence for males exceeded that for females by 43 percent: 22.9 percent compared with 16.0 percent. Among adolescents (ages 12–17 years), the male rate exceeded the female rate by 40 percent: 29.2 versus 20.8 percent (table 4). Nearly 3 teenage boys in 10 had had a developmental delay, learning disability, or emotional or behavioral problem.

Differences related to parental education and family income

There are several reasons for expecting learning difficulties and emotional and behavioral problems to be more common among children from families with low parental education and income levels than among those with more educated and affluent parents. Children in the former group are less likely to receive intellectual stimulation at home (35.36) and more likely to be exposed to a variety of environmental hazards (37–39). In addition, it could be argued that. because of a tendency to downward social mobility, parents with low intelligence or emotional disorders are more likely to be found among lower education and income groups (40).

Education- and income-related differences in achievement indicators such as grade repetition, cognitive test scores, remedial instruction and special education placement, and high school completion have consistently been found (32,41–43). Similar differences in children's emotional and behavioral problems have been observed, although the findings are not as extensive and consistent (32,34,44). The evidence for class-related differences in developmental delays is even less clear cut. Chromosomal abnormalities, prenatal infections, and birth complications can occur among infants of any class, and some developmental disabilities, such as autism, are actually more common among middle and upper class families (18, pp. 425–426).

One phenomenon that complicates the measurement of class-related differences in child development through household surveys is that better educated parents tend to be more "productive" survey respondents than do less educated parents (45). If developmental problems are more common among children of less educated parents, differences in comprehension and recall will tend to reduce class-related differences, because better educated parents report proportionately more of their children's problems to survey interviewers than do less educated parents. As a consequence, income- and education-related differences are usually more pronounced when problem indicators are based on test scores, teacher reports, or official records than when they are based on survey reports of parents.

Developmental delays

Differences across parental education and income groups in the proportion of children who had delays in growth or development were relatively small and, for the most part, not statistically significant

(table 1). Among family income groups, only the contrast between the lowest category—less than $10,000 per year—and the highest—$40,000 or more per year—was statistically reliable. Of children in the former group, 5.4 percent had developmental delays, but of those in the latter group, 3.9 percent had delays.

Learning disabilities

Of the three types of childhood problems discussed here, learning disabilities showed the strongest relationships with parental education and family income: The prevalence of learning problems decreased with increasing years of education or increasing income. Thus, the proportion of youngsters reported to have learning disabilities was 8.7 percent for children of mothers with less than 12 years of schooling, 6.8 percent for those whose mothers had 12 years of education, and 4.9 percent for children whose mothers had more than 12 years of schooling. Similar patterns were observed in all age groups (table 2).

The prevalence of learning disabilities was 8.4 percent among children from families with incomes less than $10,000 per year and decreased as income rose, reaching 5.8 percent among children in families with incomes of $40,000 or more. Except for a few nonsignificant fluctuations, similar patterns were found for all age groups (table 2).

Emotional and behavioral problems

The prevalence of childhood emotional and behavioral problems showed significant variation across family income groups, with children from less advantaged backgrounds standing a somewhat greater chance of exhibiting such problems. The prevalence declined from 15.8 percent among children from families with incomes less than $10,000 per year to 12.8 percent among those with family incomes of $40,000 or more. Income-related differences were more pronounced among elementary school children and adolescents than among preschoolers (table 3).

The total proportion of emotional or behavioral problems did not vary meaningfully with parental education. However, when those problems that had persisted for 3 months or more were examined, some significant differences were found across maternal education groups. The prevalence of persistent problems was 7.2 percent among children whose mothers had not completed high school, 6.1 percent among children of high school graduates, and 5.5 percent among children whose mothers had more than 12 years of schooling. Similar patterns were observed within specific age groups, although with some fluctuations.

Combined problems

Significant variation by family income, but not by parental education, was found when all three types of conditions were combined. The proportion of children ages 3–17 years with one or more of these problems fell from 22.8 percent among children in families with incomes below $10,000 to 18.6 percent among those with family incomes of $40,000 or more (table 4). The proportion was 20.3 percent among children of mothers with less than 12 years of education and 19.3 percent among those whose mothers had more than 12 years of schooling.

It seems likely that differences in childhood learning and behavioral problems across education and income groups were understated because of the association between these variables and minority ethnic status. As described in the next section, there was an apparent underreporting of children's learning and behavioral problems by black and Hispanic parents.

Differences by race and Hispanic origin

In the 1988 National Health Interview Survey of Child Health, black parents were less likely than white parents to report that their children had developmental delays or emotional problems and about equally likely to report learning disabilities. Hispanic parents also reported slightly fewer developmental problems in their children than did non-Hispanic parents. Thus, the overall prevalence of developmental delays was 2.1 percent among black and 4.4 percent among white children; 3.4 percent among Hispanic and 4.2 percent among non-Hispanic children (table 1).

The proportion ages 3–17 years with learning disabilities was 6.2 percent among black and 6.7 percent among white children; 5.8 percent among Hispanic and 6.6 percent among non-Hispanic children (table 2). The proportion ages 3–17 years reported to have had emotional or behavioral problems was 10.3 percent among black and 14.2 percent among white children; 12.0 percent among Hispanic and 13.6 percent among non-Hispanic children (table 3). When all three types of childhood conditions were combined, the proportion of children with one or more conditions was 14.9 percent among black and 20.7 percent among white children; 17.2 percent among Hispanic and 19.9 percent among non-Hispanic children (table 4).

On the average, black and Hispanic families have lower parental education and income levels than white non-Hispanic families (28). In addition, black children are known to be overrepresented among low-birth-weight babies, children in single-parent and foster-care families, reported abuse and neglect cases, special education and remedial instruction classes, and pupils who are suspended or expelled from school for conduct problems (28,32). For these reasons, one would expect black and Hispanic children to show a higher than average prevalence of learning and emotional problems and at least an average prevalence of developmental delays.

One explanation for the observed results is that black and Hispanic parents were less familiar than nonminority parents with the terms

used in the three questions listed above and so were apt to answer them in the negative. Such lack of familiarity could be a product of lower literacy levels, lower quality pediatric care and educational counseling, or both. Differential recall of past events may also have played a role.

Differences in reporting by race or ethnic group have been found in other areas of child health. For example, black parents typically report fewer acute illnesses, injuries, and restricted-activity days for their children than white parents do, even though black parents are more likely to rate their children as being in poor or fair health (46).

Differences by family structure

Previous research has shown that children in single-parent families are at greater risk of emotional problems and academic difficulties than those in intact, two-parent families (26,47). The differences are partly due to the stress of family conflict and disruption and the deprivations of a single-parent upbringing. Single-parent families also tend to have lower parental education and income levels than two-parent families. Children in stepfamilies show an elevated risk of maladjustment and school failure, even though the income levels of these families are more like those of families in which both biological parents are present (29).

Based on previous findings, it was expected that there would be significant differences in the prevalence of emotional and behavioral problems across family types and that learning disabilities would show similar but less pronounced differences. It was not expected that developmental delays would show significant variation by family structure, although there was the possibility that couples whose children had developmental difficulties would be more likely to get divorced than those with normal children.

Developmental delays

The prevalence of developmental delays showed little significant variation across family types (table 1). The prevalence of developmental delays was 3.8 percent among children from mother-father families, 4.5 percent among children in mother-only families, 3.7 percent in mother-stepfather families, and 4.8 percent in all other family situations (children living with fathers only or fathers and stepmothers, with grandparents or other relatives, or in adoptive or foster families).

Learning disabilities

There was significant variation across family types in the prevalence of learning disability, with children in disrupted or reconstituted families showing higher rates of learning problems than those in mother-father families. Children in mother-stepfather families appeared to show slightly higher rates of learning problems than those in mother-only families, but this may be attributable to the fact that black and Hispanic persons, with their lower rates of problem reporting, were overrepresented in the mother-only group but not in the mother-stepfather group. The prevalence of learning disabilities was 5.5 percent among children in mother-father families, 7.5 percent in mother-only families, 9.1 percent in mother-stepfather families, and 8.3 percent in other family situations (table 2).

Emotional and behavioral problems

As expected, the frequency of emotional and behavioral problems showed the greatest variation across family types, with children in single-parent families and stepfamilies showing higher problem rates than those in mother-father families. Children in other types of families also showed elevated rates. The prevalence of emotional and behavioral problems was 8.3 percent in mother-father families, 19.1 percent in mother-only families, 23.6 percent in mother-stepfather families, and 22.2 percent in other family situations (table 3). Again, the frequency of problems among children in mother-only families may have been understated because of the large proportions of black and Hispanic persons in this group.

Combined problems

Children in disrupted families were nearly twice as likely as those in mother-father families to have had a developmental, learning, or behavioral problem. The prevalences for children ages 3–17 years were 14.6 percent in mother-father families, 24.8 percent in mother-only families, 29.6 percent in mother-stepfather families, and 28.2 percent in other family types (table 4).

Summary and conclusions

The data presented in this report show that developmental, learning, and behavioral disorders are among the most prevalent chronic conditions of childhood and adolescence. Overall, nearly 20 percent of young people ages 3–17 years were found to have had one or more of these conditions. By the time they reached ages 12–17 years, 1 in 4 adolescents, and nearly 3 in 10 male adolescents, had experienced one of these disorders. When very young children with developmental delays were included, the total number of U.S. children affected came to about 10.7 million.

As high as these figures may seem, it is altogether possible that they are underestimates of the true prevalence of the conditions. The only childhood disorders counted in NHIS–CH were those that had been recognized by parents or identified by physicians, psychologists, or teachers and communicated to parents with sufficient clarity that the parents were able to report them to survey interviewers. There is reason to believe that some developmental, learning, and emotional disorders of children are not recognized as such,

or the assessments of teachers or health professionals are not understood or not accepted by parents. Confusion over changing diagnostic terminology and simple forgetting of problems that occurred in the past probably work to reduce the reporting of these conditions as well.

Despite the limitations of parental reporting, it is useful to have data on the prevalence of psychological disorders in young people based on standard survey questions put to the parents of a large and nationally representative sample of children. Estimates derived from NHIS–CH provide national benchmarks on the overall frequency of recognized psychological disorders in children and on the relative frequency of such problems in different population groups. The findings with regard to overall prevalence were that 4.0 percent of all children 17 years of age and under had delays in growth or development, 6.5 percent of children ages 3–17 years had learning disabilities, and 13.4 percent had significant emotional or behavioral problems. The proportions of all children ages 3–17 years who had ever received treatment or counseling for the conditions were about 2 percent for developmental delays, just over 5 percent for learning disabilities, and more than 10 percent for emotional or behavioral problems.

These proportions fall within the range of prevalence estimates that have appeared in the literature. However, comparisons with an earlier NHIS–CH indicate that the proportion of young people who have received treatment or counseling for emotional or behavioral problems increased by more than 50 percent from 1981 to 1988, rising from 6.5 percent to 10 percent of all children ages 3–17 years. It is not clear whether the increase was due to an expansion of the underlying need for psychological help, to greater availability and acceptability of mental health services, or both. It is clear that the proportion of U.S. children not living with both parents has grown over time and that the prevalence of emotional problems and the rate of use of psychological services are higher for these children than for those living with both biological parents.

Survey findings with regard to variations in prevalence across demographic groups were generally in agreement with what was expected based on developmental theory and the results of previous research. Thus, the prevalence of a delay in growth and development was found to vary little with age, and most delays were detected within the first 2 years of life. In contrast, the prevalence of learning disabilities increased markedly as children reached school age, indicating that most of these conditions were detected in school. The lifetime prevalence of emotional or behavioral problems also rose with age, with significant increases continuing into the adolescent years.

Learning disabilities were nearly twice as common among males as among females, and the frequency of emotional or behavioral problems among males exceeded that among females by 36 percent. In contrast, developmental delay showed no significant gender differences. A similar pattern prevailed with respect to family income and parental education groups. Learning disabilities showed the greatest variation across these groups; emotional or behavioral problems showed significant but smaller fluctuations; and developmental delays showed practically no socioeconomic variation. Learning and behavioral problems were somewhat more common among children from low-income and low-education families than among those from more advantaged families. Even the largest differences were relatively modest, however. It is possible that a greater awareness of childhood problems among more educated parents and fuller survey reporting by these parents worked to artificially lessen the size of socioeconomic disparities in problem prevalence.

Black and Hispanic parents reported fewer developmental, learning, and behavioral problems in their children than did nonminority parents. However, teacher reports and school records suggest that psychological problems are more common among minority children. The disparity between parent- and school-based data may be due to cultural divergences in the awareness and acceptance of childhood psychological disorders or to differences in survey recall and reporting.

Young people from single-parent families or stepfamilies were 2 to 3 times more likely to have had emotional or behavioral problems than those who had both of their biological parents present in the home. Learning disabilities showed similar but less pronounced differences; delays in development varied little by family type.

The alarmingly high prevalence of emotional and behavioral problems among today's children and the observed relationship between family disruption and youthful problem behavior reinforce public concerns about the increasing number of U.S. children who are being raised in something other than harmonious two-parent families. The survey findings also underscore concerns about minority youth and the extent to which their learning and behavioral problems go unrecognized and untreated. Further research is needed to understand the apparent under-reporting of childhood learning and emotional problems by black and Hispanic parents and the extent to which it reflects inadequacies in the medical care and educational counseling that they and their children receive.

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Table 1. Percent of children 17 years of age and under who ever had a delay in growth or development, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	*All ages 17 years and under*	*2 years and under*	*3–5 years*	*6–11 years*	*12–17 years*
			Percent		
All children[1]	4 0	4.3	4.4	4.1	3.6
Sex					
Male	4.2	4.0	4.6	4.0	4.4
Female	3.8	4.6	4.2	4.2	2.7
Race					
White	4.4	4.5	4.7	4.5	4.0
Black	2.1	2.5	1.4	2.3	2.0
Hispanic origin					
Hispanic	3.4	1.8	4.2	3.7	3.7
Non-Hispanic	4.2	4.7	4.5	4.2	3.6
Family income					
Less than $10,000	5.4	6.9	5.8	5.4	3.8
$10,000–$24,999	4.0	4.4	4.1	3.3	4.4
$25,000–$39,999	4.0	2.6	6.1	4.5	3.3
$40,000 or more	3.9	5.0	2.5	4.3	3.6
Place of residence					
MSA	3.8	3.7	3.5	4.2	3.6
Central city	3.1	2 8	3.1	3.6	2.9
Not central city	4.2	4.4	3.8	4.6	4.0
Not MSA	4.7	6.1	7.1	3.7	3.8
Assessed health status					
Excellent, very good, or good	3.7	3.7	3.7	3.8	3.5
Fair or poor	15.2	21 0	24 5	14.0	8.5
Mother's education					
Less than 12 years	3.3	4.2	4.3	3.2	2.6
12 years	4.2	4.8	5.4	3.8	3.8
More than 12 years	4.2	3.8	3.4	5.0	4.2
Family structure					
Biological mother and father	3.8	3.4	4.4	3.6	3.9
Biological mother and stepfather	3.7	10.1	3.6	4.5	2.6
Biological mother only[2]	4.5	5.5	3.8	4.6	4.2
All other	4.8	9.5	6.5	5.4	2.6

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative.

NOTE: MSA is metropolitan statistical area.

Table 2. Percent of children 3–17 years of age who ever had a learning disability, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages 3–17 years	3–5 years	6–11 years	12–17 years
		Percent		
All children[1]	6.5	1.6	6.8	8.8
Sex				
Male	8.6	1.7	8.4	12.1
Female	4.4	1.6	5.1	5.2
Race				
White	6.7	1.6	7.0	9.2
Black	6.2	2.0	6.6	7.8
Hispanic origin				
Hispanic	5.8	2.1	6.8	6.7
Non-Hispanic	6.6	1.6	6.8	8.9
Family income				
Less than $10,000	8.4	3.8	9.1	10.3
$10,000–$24,999	7.2	1.4	7.3	10.6
$25,000–$39,999	6.2	1.7	5.5	9.4
$40,000 or more	5.8	1.2	6.5	7.2
Place of residence				
MSA	6.5	1.6	7.1	8.6
Central city	5.9	1.8	6.5	7.6
Not central city	6.9	1.5	7.4	9.1
Not MSA	6.5	1.8	5.9	9.5
Assessed health status				
Excellent, very good, or good	6.3	1.4	6.5	8.6
Fair or poor	15.1	9.3	17.7	15.6
Mother's education				
Less than 12 years	8.7	2.8	8.0	11.7
12 years	6.8	1.9	7.5	8.5
More than 12 years	4.9	0.9	5.2	7.1
Family structure				
Biological mother and father	5.5	1.2	5.7	8.2
Biological mother and stepfather	9.1	3.1	9.2	10.1
Biological mother only[2]	7.5	3.0	7.2	9.8
All other	8.3	1.1	10.6	8.6

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative.

NOTE: MSA is metropolitan statistical area.

Table 3. Percent of children 3–17 years of age who ever had an emotional or behavioral problem that lasted 3 months or more or required psychological help, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages 3–17 years	3–5 years	6–11 years	12–17 years
		Percent		
All children[1]	13.4	5.3	12.7	18.5
Sex				
Male	15.4	6.1	15.6	20.4
Female	11.3	4.5	9.8	16.5
Race				
White	14.2	5.6	13.6	19.5
Black	10.3	2.4	9.2	15.1
Hispanic origin				
Hispanic	12 0	4.5	13.4	14.8
Non-Hispanic	13.6	5.4	12.7	18.9
Family income				
Less than $10,000	15.8	4.7	16.2	22.5
$10,000–$24,999	14.5	6.0	15.0	19.3
$25,000–$39,999	13.4	5.9	11.5	19.6
$40,000 or more	12.8	4.8	11.4	17.6
Place of residence				
MSA	13.7	5.2	12.9	19.1
Central city	13.6	4.7	13.1	19.1
Not central city	13.8	5.5	12.8	19.1
Not MSA	12.4	5.5	12.0	16.5
Assessed health status				
Excellent, very good, or good	13.1	5.0	12.5	18.1
Fair or poor	23.3	8.4	20.4	31.8
Mother's education				
Less than 12 years	13.6	5.2	12.3	18.5
12 years	12.5	6.2	11.8	16.7
More than 12 years	13.7	4.2	13.3	20.1
Family structure				
Biological mother and father	8.3	4.0	8.0	11.6
Biological mother and stepfather	23.6	12.0	19.6	29.1
Biological mother only[2]	19.1	6.6	18.9	25.5
All other	22.2	10.0	22.6	25.8

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative.

NOTE: MSA is metropolitan statistical area.

Table 4. Percent of children 3–17 years of age who ever had a delay in growth or development, a learning disability, or an emotional problem that lasted 3 months or more or required psychological help, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages 3–17 years	3–5 years	6–11 years	12–17 years
		Percent		
All children[1]	19.5	9.5	19.1	25.2
Sex				
Male	22.9	10.5	22.8	29.2
Female	16.0	8.5	15.4	20.8
Race				
White	20.7	10.0	20.3	26.7
Black	14.9	5.0	14.8	19.5
Hispanic origin				
Hispanic	17.2	8.5	19.6	19.2
Non-Hispanic	19.9	9.7	19.1	25.8
Family income				
Less than $10,000	22.8	11.5	23.8	28.6
$10,000–$24,999	21.0	10.1	21.3	27.3
$25,000–$39,999	19.5	11.3	17.6	26.0
$40,000 or more	18.6	6.8	18.0	24.1
Place of residence				
MSA	19.6	8.5	19.5	25.4
Central city	18.7	8.0	19.2	24.1
Not central city	20.1	8.9	19.6	26.1
Not MSA	19.4	12.3	17.9	24.6
Assessed health status				
Excellent, very good, or good	19.1	8.9	18.7	24.8
Fair or poor	35.3	25.7	35.7	39.3
Mother's education				
Less than 12 years	20.3	10.2	18.4	26.2
12 years	19.0	11.2	18.8	23.2
More than 12 years	19.3	7.3	19.4	26.3
Family structure				
Biological mother and father	14.6	8.1	14.4	19.2
Biological mother and stepfather	29.6	14.4	27.0	34.5
Biological mother only[2]	24.8	11.7	24.5	31.4
All other	28.2	13.5	29.7	31.4

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative.

NOTE: MSA is metropolitan statistical area.

Table 5. Proportion of children ever treated and proportion receiving special education for delays in growth or development, learning disabilities, and emotional or behavioral problems: United States, 1988

[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 the technical notes]

Treatment and special education status	Delays in growth or development: Percent of all children	Delays in growth or development: Percent distribution of all children with condition	Learning disabilities: Percent of all children	Learning disabilities: Percent distribution of all children with condition	Emotional or behavioral problems: Percent of all children	Emotional or behavioral problems: Percent distribution of all children with condition
Ever received treatment or counseling for condition	Ages 0–17 years		Ages 3–17 years		Ages 3–17 years	Ages 3–17 years[1]
Total	4.0	100.0	6 5	100.0	13.4	100.0
Yes	2.0	49.4	5 1	77.7	10.0	74.5
Within last 12 months	1.1	26.1	3.3	50.3	5.1	38.0
More than 12 months ago	0.9	23 3	1 8	27.4	4.7	35.3
No	2.0	50.6	1.5	22.3	3.4	25.5
Attended special classes or special school in past 12 months because of condition	Ages 6–17 years		Ages 6–17 years		Ages 6–17 years[2]	Ages 6–17 years
Total	3.9	100.0	7.8	100.0	6.9	100.0
Yes	0.9	22.7	5.5	69.9	1.7	24.9
No	3.0	77.3	2.3	30.1	5.2	75.1

[1] Includes unknown when treated; excludes unknown whether treated.
[2] Question about receipt of special educational services asked only of those who reported an emotional or behavioral problem that lasted 3 months or longer.

NOTE. Numbers may not add to totals because of rounding

Table 6. Percent distribution and cumulative distribution of children 3–17 years of age with developmental, learning, and emotional problems by age at which condition was first noticed, according to type of problem: United States, 1988

[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 the technical notes]

Age at which condition was first noticed	Delays in growth or development[1]: Percent distribution	Delays in growth or development[1]: Cumulative percent distribution	Learning disabilities: Percent distribution	Learning disabilities: Cumulative percent distribution	Emotional or behavioral problems[2]: Percent distribution	Emotional or behavioral problems[2]: Cumulative percent distribution
At birth	25	25	4	4	3	3
Before 1 year	20	45	2	6	2	5
1–2 years	26	71	8	14	9	14
3–5 years	12	83	25	39	25	39
6–8 years	9	92	45	84	24	63
9–11 years	5	97	11	95	15	78
12–17 years	3	100	5	100	22	100

[1] Ages 0–17 years.
[2] Question about age when noticed asked only of those who reported an emotional or behavioral problem that lasted 3 months or longer.

Table 7. Selected statistics on children 3–17 years of age with developmental, learning, and emotional problems, by type of problem: United States, 1988

[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 the technical notes]

Item	Delays in growth or development[1]	Learning disabilities	Emotional or behavioral problems[2]
Median age at first notice	1 year 2 months	6 years 7 months	7 years 2 months
Unweighted *N*	630	862	833
Population estimate	2,542,800	3,393,600	3,184,700

[1] Ages 0–17 years
[2] These statistics include only those who were reported to have had an emotional or behavioral problem that lasted 3 months or longer.

Technical notes

The estimates presented in this report are based on data from the National Health Interview Survey (NHIS), an ongoing survey of households in the United States conducted by the National Center for Health Statistics. 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. Interviewers obtain information about the health and other characteristics of each member of the households included in the NHIS sample.

NHIS consists of two parts: (a) a basic health questionnaire that remains the same each year and is completed for each household member and (b) special topics questionnaires that vary from year to year and usually are asked of just one person in each family. In 1988, the special topics included acquired immunodeficiency syndrome (AIDS) knowledge and attitudes, medical device implants, occupational health, alcohol, and child health. These data sets can be linked to provide additional sources for analysis.

The total sample interviewed for 1988 for the basic health questionnaire consisted of 47,485 households containing 122,310 individuals. The total response rate was 95 percent. For the National Health Interview Survey on Child Health (NHIS–CH), one sample child under the age of 18 years was selected from each family with children in that age range. Information about the sample child was collected by face-to-face interview with the adult member of the family present who knew most about the sample child's health, in most cases the mother. Interviews were completed for 17,110 children 17 years of age and under, 95 percent of those identified as eligible on the basis of the basic health questionnaire. The overall response rate for NHIS–CH was 91 percent, the product of the response rates for the basic and the child health questionnaires. Item nonresponse was 2–4 percent for the questions discussed in this report.

Because the estimates shown in this report are based on a sample, they are subject to sampling error. The standard error is a measure of the sampling error. Approximate standard errors for estimated percents in this report are determined using the formula

$$SE = \sqrt{\frac{(8{,}307\,p)(1-p)}{y}}$$

where SE is the standard error, p is the estimated percent, and y is the estimated base of the percent. The bases of the percents are shown in table I.

The approximate standard error of a difference between percents is given by the formula

$$SE\,(x_1 - x_2) = \sqrt{SE(x_1)^2 + SE(x_2)^2}$$

where x_1 and x_2 are the two percents being compared, $x_1 - x_2$ is the difference between them, and $SE(x_1)$ and $SE(x_2)$ are the standard errors of the two percents.

All differences cited in this report are statistically significant at the 0.05 level. The t-test, with a critical value of 1.96, was used to test all comparisons that are discussed. Lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found not to be statistically significant.

Table I. Number of children 17 years of age and under, by age and selected characteristics: United States, 1988

[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 the technical notes]

Characteristic	All ages 17 years and under	2 years and under	3–17 years	3–5 years	6–11 years	12–17 years
			Number in thousands			
All children[1]	63,569	11,360	52,209	10,748	20,966	20,495
Sex						
Male	32,526	5,905	26,621	5,428	10,522	10,642
Female	31,043	5,455	25,588	5,320	10,414	9,854
Race						
White	51,380	9,066	42,314	8,762	16,986	16,566
Black	9,820	1,810	8,009	1,526	3,267	3,217
Hispanic origin						
Hispanic	7,239	1,274	5,965	1,263	2,519	2,182
Non-Hispanic	55,031	9,512	45,519	9,132	18,242	18,145
Family income						
Less than $10,000	7,924	1,705	6,219	1,342	2,760	2,118
$10,000–$24,999	16,708	3,274	13,435	3,006	5,526	4,903
$25,000–$39,999	15,737	2,750	12,986	2,800	5,207	4,979
$40,000 or more	16,071	2,432	13,638	2,473	5,234	5,931
Place of residence						
MSA	48,314	8,793	39,521	8,132	15,886	15,504
Central city	18,972	3,763	15,210	3,275	6,102	5,833
Not central city	29,342	5,030	24,311	4,856	9,784	9,671
Not MSA	15,255	2,567	12,688	2,616	5,080	4,992
Assessed health status						
Excellent, very good, or good	61,173	10,866	50,307	10,332	20,263	19,713
Fair or poor	1,788	375	1,413	290	509	615
Mother's education						
Less than 12 years	12,479	2,118	10,362	1,841	4,104	4,419
12 years	26,791	4,475	22,315	4,596	9,105	8,615
More than 12 years	22,899	4,484	18,416	4,120	7,422	6,874
Family structure						
Biological mother and father	38,999	8,143	30,856	7,327	12,643	10,887
Biological mother and stepfather	4,477	109	4,369	396	1,789	2,184
Biological mother only[2]	13,716	2,392	11,323	2,196	4,573	4,555
All other	6,377	716	5,661	829	1,962	2,871

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative

NOTE: MSA is metropolitan statistical area.

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