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Trends in Health Insurance and Access to Medical Care for Children Under Age 19 Years: United States, 1998–2003

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Abstract

Objective—The State Children's Health Insurance Program (SCHIP) was enacted in 1997 in order to improve health insurance coverage for children under 19 years of age in poor and near poor families. This report provides national estimates of trends in access to medical care by health insurance coverage and poverty status for these children since enactment of SCHIP. Data from the 1998–2003 National Health Interview Surveys (NHIS) are used. This report is a companion piece that complements estimates from the NHIS Early Release Program.

Methods—The NHIS is a multistage probability sample survey conducted annually by interviewers of the U.S. Census Bureau for the Centers for Disease Control and Prevention's National Center for Health Statistics and is representative of the civilian noninstitutionalized population of the United States. Information about children from approximately 14,000 interviews for each year from 1998 to 2003 is presented to examine trends in access to health care.

Results—The percent of poor and near poor children under 19 years of age who were uninsured decreased by approximately 25% from 1998 to 2003. The greatest increase in public health insurance coverage was among children who were near poor; that rate more than doubled from 22.5% in 1998 to 46.0% in 2003. Among near poor children, those who were uninsured were more likely to have unmet medical need (35.5%) than those with public (9.4%) or private coverage (14.4%). In 2003, 14.1% of poor children who had public coverage visited the emergency room (ER) two or more times in the previous year compared with 7.8% of poor children who were uninsured.

Keywords: Health insurance • poverty • uninsured • access to care • unmet medical needs • emergency room visits • usual place of care • National Health Interview Survey • SCHIP

Introduction

Access to health care is a key factor in the development and well-being of children. Numerous studies have emphasized the importance of having health insurance to ensure that children have access to health services (1–6). Children with health care coverage are more likely to have a usual place of medical care and to consistently obtain routine preventive services and medical advice (7,8). The inability to obtain these services can have far reaching, negative consequences for children's health, the ability to learn at school, or the development of healthy behaviors (9). Health insurance coverage also facilitates the appropriate use of medical services for acute care by providing access to the medical system through a regular provider, thereby limiting the high costs associated with the inappropriate utilization of the emergency room (2, 10–12).

Low income has a negative impact on a variety of health care access measures including a greater likelihood of having an unmet medical need, a lower likelihood of having a usual place of medical care, and inappropriate use

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of a hospital emergency room as a place for routine care (9, 13–15). It is also an impediment to the family's ability to provide private health insurance coverage, which may be the only insurance available to working poor families. Health insurance coverage for about two-thirds of all U.S. children is offered through their parents' employers (16). This coverage typically requires parents to share with employers the cost of premiums, copayments, and/or coinsurance for medical expenses. Lower income parents may be unable to afford the cost of participating in private insurance plans and yet be unable to qualify for public insurance. Other parents may be unemployed or may have part-time or hourly wage jobs with no health insurance benefits.

In 1997, the government enacted the State Children's Health Insurance Program (SCHIP), Title XXI of the Balanced Budget Act, in order to reduce the disparities in access to health care services and to improve the health outcomes for poor and near poor children (13). The SCHIP legislation provides all States with the option to either expand their existing Medicaid program by raising the income eligibility levels to cover children from near poor families or to create a new child health program with higher income eligibility limits than the existing Medicaid program, thus providing health insurance coverage for children of the working poor with incomes too high to qualify for Medicaid, but too low to afford private health insurance (17,18).

This report presents analyses of data on children under 19 years of age from 1998–2003, the years immediately following the passage of the SCHIP legislation. The age group, under 19 years, was selected to match the SCHIP legislation, which provides health insurance coverage for children under 19 years of age from working families with incomes too high to qualify for Medicaid, but too low to afford private health insurance. In this report, the term ''children'' is used to describe all persons under 19 years of age. It focuses on the usual place of medical care, unmet medical needs, and the use of an emergency room two or more times in the past year by health insurance coverage and poverty status. The health insurance variables in this report were created to match the health insurance variables developed for the NHIS Early Release Program. However, this report includes all children under 19 years of age, but the Early Release Program presents estimates for children under 18 years of age. Through the use of common insurance variables, this report complements data from the NHIS Early Release Program presented quarterly on the NCHS Web site http://www.cdc.gov/nchs/nhis.htm.

Methods

Data source

The statistics shown in this report are based on data from the Family, Sample Child, and Sample Adult components of the 1998–2003 National Health Interview Surveys (NHIS). The NHIS, one of the major data collection systems of the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics, is a multistage probability sample survey of the U.S. civilian noninstitutionalized population. It is a household survey conducted continuously throughout the year by interviewers from the U.S. Census Bureau. Basic health and demographic information is collected on all household members. Persons aged 18 years and over present at the time of the interview are asked to respond for themselves. Proxy responses are accepted for adults not present at the time of the interview and for children aged 17 years and under. Additional information is collected on one randomly selected adult (''The sample adult'') and one randomly selected child (''The sample child'') per family. Information on the sample adult is self-reported except in rare cases when the sample adult is physically or mentally incapable of responding, and information on the sample child is collected from an adult who is knowledgeable about the child's health, usually a parent.

This report is based on data from approximately 13,000 completed interviews about the sample child aged 17 years and under from the Sample Child File for each year from 1998–2003 and on data from approximately 1,400 completed interviews about the sample adult aged 18 years from the Sample Adult File for each year from 1998–2003. From 1998 to 2003, the response rates ranged from 78–82% for the Sample Child File and 70–74% for the Sample Adult File. See the ''Technical Notes'' for detailed response rates for each year and ''Appendix I'' of the NHIS Survey Description document of the NHIS data files for a detailed description of procedures used in calculating response rates (19). The Survey Description document and some of the other references cited in this report are also available on the NCHS Web site at: http://www.cdc.gov/nchs/nhis.htm.

Estimation procedures

Data analyzed in this report were collected in three different sections of the NHIS and were weighted according to source (Sample Child, Sample Adult, or Family Files) to provide national health estimates. The Sample Child Weight is used for all estimates from the Sample Child File, and the Sample Adult Weight is used for all estimates from the Sample Adult File. See definitions in the ''Technical Notes'' for more detail on the weights used for estimates and definition of variables.

For clarity of presentation, counts for children of unknown status with respect to each health characteristic of interest are not included in the calculation of percentages. The percent of unweighted unknowns ranges from 0.1% to 0.7% for all health measures in this report and is 0.9% for health insurance (table A). There is a higher item nonresponse rate for family income.

In 1998, there was no income information for about 5% of respondents, and about 15% of respondents stated that their combined family income was either below, at, or above $20,000 without providing additional detail. By 2003, about 6% of respondents did not report family income, and about 18% stated that they had a combined family income either below, at, or above $20,000 without

Table A. Percent of item nonresponse for poverty and health access items for children under 19 years of age: United States 1998–2003

Year	Poverty status	Insurance status	Having a usual source of medical care	Unmet medical needs	Two or more visits to the emergency room in the past year
1998	23.0	0.9	0.2	0.4	0.6
1999	25.9	0.8	0.2	0.7	0.7
2000	25.6	0.7	0.2	0.3	0.5
2001	25.7	0.9	0.1	0.3	0.3
2002	26.7	0.8	0.4	0.5	0.7
2003	28.7	0.9	0.2	0.3	0.6

NOTE: The percents in this table are unweighted.

DATA SOURCE: National Health Interview Surveys, 1998–2003.

providing additional detail. Poverty status, which is based on family income, also has a high nonresponse rate. Health estimates for children with unknown poverty status are presented in the tables, but readers should refer to the ''Technical Notes'' for more information on the quantities of cases in the unknown income and poverty status categories. Imputed values for unknown family income and poverty status have recently become available for data years 1997–2003 and can be found on the NCHS Web site at http://www.cdc.gov/nchs/about/major/nhis/2003imputedincome.htm.

The NHIS data used here have some limitations. Legislation for SCHIP was passed in 1997, and States began implementing the program in 1998. Each State had an approved SCHIP plan in place by September 30, 1999 (18). SCHIP was added to the NHIS flash card (a printed list of answer categories) list of types of insurance coverage for the 1999 survey year and later years, but was not included for the 1998 survey year. Although the survey instrument permitted the mention of a ''nonlisted plan,'' such as SCHIP, to be recorded in the ''other coverage'' category, it was incumbent upon the respondent to recall and identify the plan without seeing it on the list. Therefore, the responses for 1998 may differ from the responses for later years. An additional difference in the 1998 and 1999 data may be attributed to the variable implementation timeline of the SCHIP plan by each State.

Variance estimation and significance testing

The NHIS data are based on a sample of the population and are, therefore, subject to sampling error. Standard errors are reported to indicate the reliability of the estimates. Estimates and standard errors were calculated using SUDAAN software, which takes into account the complex sampling design of the NHIS. The Taylor series linearization method was used for variance estimation in SUDAAN (20). All estimates were weighted to reflect the U.S. civilian noninstitutionalized population under 19 years of age. Estimates for children under 18 years of age were weighted using the Sample Child Record Weight. Estimates for children aged 18 years were weighted using the Sample Adult Record Weight.

Standard errors are shown for all percents in the tables. Estimates presented in this report had a relative standard error of 30% or less and are considered to be statistically reliable. The statistical significance of differences between point estimates was evaluated using two-sided *t*-tests at the 0.05 level and assuming independence. Statistical tests specifically designed to test trends were not used in this report. Terms such as ''greater than,'' ''less than,'' ''more likely,'' ''less likely,'' ''compared with,'' or ''opposed to'' indicate a statistically significant difference between estimates, whereas ''similar,'' ''no difference,'' or ''comparable'' indicate that the estimates are not statistically different. A lack of commentary about any two estimates should not be interpreted to mean that a *t*-test was performed and the difference was found to be not significant. Furthermore, these tests did not take multiple comparisons into account.

All statistics presented in this report can be replicated using the NHIS public-use data files and accompanying documentation, which can be downloaded from the NCHS Web site at http://www.cdc.gov/nchs/nhis.htm. Replication of these statistics also requires the use of SUDAAN, the software package used by NCHS and the omission of the unknowns for each health characteristic of interest from the calculations.

Results

From 1998 to 2003, the percent of children who were uninsured decreased from 13.2% to 10.2% (table 1). Examination of health insurance coverage by poverty status in table 2 shows that the percent of poor children and near poor children under 19 years of age who were uninsured decreased by approximately 25% from 1998 to 2003 (23% to 16%). About 5% of children who were not poor lacked health insurance. This figure did not vary significantly during the 6-year period.

In 1998, about 1 in 5 U.S. children under 19 years of age had public health insurance coverage; by 2003, that rate increased to about 1 in 4 children (table 1). During the same time period, reliance on public health insurance coverage increased for children within all poverty groups. Among poor children, the rate of public coverage increased by about 15% from 1998 to 2003 (table 2). The most dramatic increase in public coverage, however, was found among children who were near poor, the rate more than doubling from 22.5% in 1998 to 46.0% in 2003. This increase in the percentage of children with public coverage may be attributable to SCHIP. Many of these children come from working families with incomes too high to qualify for Medicaid, but too low to afford private health insurance (16,18).

The percent of children covered by private health insurance plans decreased

slightly from 68.3% to 63.2% (table 1). Examination of health insurance coverage by poverty status (table 2) shows that the percent of poor children covered by private health insurance plans decreased from 19.5% to 15.6%. For children who were not poor, the percent with private health insurance declined slightly, from 89.6% to 86.3%, and the percent of near poor children who were covered by private health insurance decreased by almost 30%, from 55.9% to 39.5%.

Despite the overall increase in the percentage of children under 19 with health insurance coverage, there was no overall change in the percentage of children with a usual place of medical care from 1998 to 2002 (table 3). In 2003, however, there was a small but statistically significant increase in that percentage. Throughout the period 1998–2003, children with private health insurance coverage were more likely to have a usual place of care than children who had public coverage or who were uninsured. By 2003, 97.4% of children who had private coverage had a usual place of care compared with 95.7% of children with public coverage and 69.7% of uninsured children. The percent of poor, uninsured children who had a usual place of health care fluctuated between 55.7% and 68.0% in the 6 years from 1998 to 2003. In 2003, uninsured children who were poor or near poor were less likely to have a usual place of care than not poor uninsured children.

During 1998–2003, approximately 1 in 10 children under 19 years of age had unmet medical needs (table 4). In 2003, children who had private health insurance coverage (5.7%) were about two-thirds as likely to have unmet medical needs as children who had public coverage (9.0%), and only one-fifth as likely to have unmet medical needs as children who were uninsured (31.2%). Similar patterns were found in the preceding 5 years.

Among children with public coverage, the percent with unmet medical needs varied between 9.0% and 11.7% from 1998 to 2003. In 2003, the proportion of children with unmet medical needs did not differ by poverty status among children who had public health insurance (approximately 10%). However, near poor children with public coverage were less likely to have unmet medical needs (9.4%) than near poor children who had private coverage (14.4%) or who were uninsured (35.5%).

The percent of uninsured children with unmet medical needs increased from 25.3% in 2002 to 31.2% in 2003 (table 4). For children who had no health insurance coverage in 2003, poverty status had no impact on the proportion with unmet medical needs; approximately 3 in 10 poor, near poor, and not poor uninsured children had unmet medical needs.

During 1998–2003, 6–8% of children under 19 years of age had two or more visits to the emergency room in the previous year (table 5). In 2003, poor children with public coverage were about twice as likely to have high emergency room (ER) use as those who were uninsured; 14.1% of poor children with public coverage had two or more ER visits in the previous year compared with 7.8% of poor children who were uninsured. The percent of near poor children who had two or more visits to the emergency room in the previous year was the same (about 8%) for those with private insurance and those who were uninsured. Only 4.6% of not poor children with private coverage had two or more visits to the emergency room in the previous year.

Discussion

The NHIS is one of the largest health surveys conducted in the United States. It provides annual data to identify and monitor trends in the Nation's health and health care. This report combines data from the NHIS Sample Child File for children 17 years of age and under with data from the NHIS Sample Adult File for persons 18 years of age in order to examine the entire population of children under 19 years of age covered by SCHIP. Questions about health insurance and access to medical care are the same in the Sample Child and Sample Adult questionnaires.

Health insurance coverage facilitates the use of health services by providing financial access and is one of the strongest predictors of health service use (4). The enactment of SCHIP legislation in 1997 was designed to provide public insurance coverage for the working poor with incomes too high to qualify for Medicaid, but too low to afford private health insurance (16,18). Since 1997, there has been a dramatic increase in public health insurance coverage among near poor children. At the same time, there was a corresponding drop in the percentage of poor and near poor children who were uninsured. Higher proportions of children who have no health insurance coverage have unmet medical needs compared with other children. In 2003, 31.2% of uninsured children had unmet medical needs. This is triple the percentage of children with public insurance (9.0%) and quintuple the percent of children with private health insurance (5.7%). Other studies have shown that disparities in health care services and unmet medical needs is even higher for uninsured minority children (9,16,21). Among children with public coverage in 2003, near poor children were no more likely to have unmet medical needs than either poor or not poor children.

Poor children with public health insurance coverage are more likely to have had two or more visits to the emergency room than children who are uninsured. Although the appropriateness of emergency room usage cannot be assessed in the NHIS, these results highlight concerns about potential overuse of the ER. In a recent survey of hospital emergency departments, the expected source of payment for the ER visit was Medicaid or SCHIP for about 40% of children's visits (22). Inappropriate utilization of the ER has been shown to result in high medical costs and disruptive medical care for children (12).

Having a usual place of medical care is one indicator associated with obtaining care for illness and disability and for preventive care services for children (23–25). There has been an overall decrease in the percentage of poor uninsured children with a usual place of medical care. These children may not get timely immunizations or other routine services and may be

unable to avoid unnecessary emergency room visits. In addition, having a usual place of medical care can provide parental education, which may help facilitate appropriate use of medical resources (26).

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Table 1. Percent of children under 19 years of age (with standard errors), by health insurance coverage and poverty status: United States, 1998–2003

Health insurance coverage and poverty status	1998	1999	2000	2001	2002	2003
Insurance coverage[1]			Percent (standard error)			
Private	68.3 (0.55)	68.9 (0.54)	67.1 (0.52)	66.8 (0.56)	64.1 (0.59)	63.2 (0.59)
Public	19.7 (0.48)	20.2 (0.45)	21.5 (0.49)	22.9 (0.48)	26.2 (0.52)	27.8 (0.57)
Uninsured	13.2 (0.33)	12.2 (0.31)	12.7 (0.31)	11.4 (0.34)	11.1 (0.33)	10.2 (0.35)
Poverty status[2]						
Poor	13.9 (0.44)	12.7 (0.42)	12.3 (0.38)	12.5 (0.40)	11.8 (0.38)	12.3 (0.42)
Near poor	17.0 (0.43)	15.7 (0.39)	16.4 (0.39)	15.7 (0.40)	16.4 (0.42)	16.1 (0.44)
Not poor	47.4 (0.62)	47.0 (0.62)	45.8 (0.59)	46.7 (0.58)	46.1 (0.57)	43.8 (0.61)
Unknown poverty	21.7 (0.51)	24.6 (0.53)	25.5 (0.52)	25.1 (0.49)	25.7 (0.57)	27.9 (0.59)

[1]A small number of children were covered by both public and private insurance and are included in both categories. The category "uninsured" includes children who had no coverage as well as those who had only Indian Health Service coverage or had only a private plan that paid for one type of service such as accidents or dental service (see "Technical Notes").
[2]Poverty status is based on family income and family size using the U.S. Census Bureau poverty thresholds for 1997, 1998, 1999, 2000, 2001, and 2002.

NOTE: Denominator for each percent excludes children with unknown insurance coverage.

DATA SOURCE: Family Core component of the 1998–2003 National Health Interview Survey.

Table 2. Percent of children under 19 years of age with or without health insurance coverage (with standard errors), by poverty status and health insurance coverage: United States, 1998–2003

Poverty status and insurance coverage[1,2]	1998	1999	2000	2001	2002	2003
Poor			Percent (standard error)			
Private	19.5 (1.15)	21.0 (1.18)	19.8 (1.17)	18.9 (1.17)	18.5 (1.11)	15.6 (1.16)
Public	59.6 (1.30)	59.6 (1.37)	60.7 (1.45)	63.3 (1.50)	66.9 (1.36)	70.1 (1.41)
Uninsured	22.7 (1.02)	21.7 (1.10)	21.4 (1.02)	19.4 (1.23)	16.5 (0.96)	16.1 (1.07)
Near poor						
Private	55.9 (1.20)	51.7 (1.22)	48.7 (1.28)	47.8 (1.22)	44.7 (1.27)	39.5 (1.24)
Public	22.5 (0.92)	28.5 (1.14)	32.1 (1.13)	36.0 (1.23)	41.3 (1.15)	46.0 (1.23)
Uninsured	23.4 (0.96)	22.2 (0.95)	21.6 (0.96)	18.0 (0.87)	16.7 (0.87)	16.3 (0.91)
Not poor						
Private	89.6 (0.49)	90.3 (0.39)	87.9 (0.47)	88.3 (0.39)	86.5 (0.53)	86.3 (0.55)
Public	6.1 (0.39)	6.0 (0.33)	7.4 (0.40)	8.0 (0.38)	8.8 (0.43)	9.5 (0.47)
Uninsured	5.3 (0.30)	4.7 (0.28)	5.6 (0.70)	4.7 (0.25)	5.8 (0.35)	5.2 (0.34)
Unknown poverty						
Private	62.5 (1.10)	63.5 (0.97)	64.2 (0.96)	62.4 (1.15)	56.9 (1.17)	61.2 (1.04)
Public	21.7 (0.93)	21.8 (0.84)	21.2 (0.84)	22.3 (0.91)	29.3 (0.95)	27.6 (0.95)
Uninsured	16.6 (0.72)	15.5 (0.66)	15.7 (0.70)	16.0 (0.83)	14.7 (0.76)	11.9 (0.66)

[1]Poverty status is based on family income and family size using the U.S. Census Bureau poverty thresholds for 1997, 1998, 1999, 2000, 2001, and 2002.
[2]A small number of children were covered by both public and private insurance and are included in both categories. The category "uninsured" includes children who had no coverage as well as those who had only Indian Health Service coverage or had only a private plan that paid for one type of service such as accidents or dental service (see "Technical Notes").

NOTE: Denominator for each percent excludes children with unknown insurance coverage.

DATA SOURCE: Family Core component of the 1998–2003 National Health Interview Survey.

Table 3. Percent of children under 19 years of age with a usual place of care (with standard errors), by insurance coverage and poverty status: United States, 1998–2003

	1998	1999	2000	2001	2002	2003
	Percent (standard error)					
Total	92.9 (0.27)	92.5 (0.29)	92.6 (0.29)	92.9 (0.27)	93.3 (0.29)	94.2 (0.27)
Insurance coverage[1]						
Private	96.6 (0.24)	96.3 (0.25)	96.4 (0.26)	97.1 (0.25)	96.8 (0.25)	97.4 (0.24)
Public	94.5 (0.50)	93.7 (0.54)	95.0 (0.57)	94.7 (0.50)	94.5 (0.51)	95.7 (0.37)
Uninsured	70.8 (1.38)	69.2 (1.49)	68.8 (1.34)	69.7 (1.54)	69.3 (1.57)	69.7 (1.78)
Poverty status[2]						
Poor	87.7 (0.88)	85.8 (0.96)	87.5 (1.01)	87.2 (1.04)	88.3 (1.04)	88.8 (0.92)
Near poor	89.3 (0.73)	88.8 (0.80)	88.4 (0.78)	91.1 (0.68)	90.3 (0.77)	91.4 (0.72)
Not poor	96.0 (0.30)	96.1 (0.28)	95.8 (0.34)	97.0 (0.30)	96.2 (0.32)	97.0 (0.25)
Unknown poverty	92.4 (0.59)	91.3 (0.67)	91.6 (0.63)	91.6 (0.66)	92.3 (0.63)	93.3 (0.59)
Poverty status and insurance coverage						
Poor:						
Private	92.2 (1.55)	90.8 (1.70)	93.0 (1.73)	92.5 (1.78)	92.7 (2.39)	92.8 (2.06)
Public	93.9 (0.79)	93.0 (0.89)	94.0 (1.04)	94.6 (0.85)	94.8 (0.80)	94.4 (0.77)
Uninsured	68.0 (2.64)	61.4 (2.88)	65.6 (2.92)	57.6 (3.58)	55.7 (3.71)	61.2 (3.60)
Near poor:						
Private	94.9 (0.71)	94.7 (0.75)	94.0 (0.91)	95.5 (0.68)	94.8 (0.93)	95.5 (0.92)
Public	95.7 (0.82)	93.9 (1.11)	94.5 (0.90)	94.4 (0.91)	94.0 (0.96)	96.2 (0.66)
Uninsured	70.8 (2.42)	70.0 (2.40)	67.0 (2.36)	73.5 (2.50)	69.4 (2.75)	67.9 (2.96)
Not poor:						
Private	97.2 (0.26)	97.0 (0.27)	97.0 (0.31)	97.8 (0.27)	97.4 (0.31)	98.0 (0.23)
Public	95.0 (1.41)	96.1 (0.95)	96.4 (0.98)	97.1 (0.79)	95.5 (1.20)	96.8 (0.80)
Uninsured	76.4 (2.61)	78.2 (2.63)	77.3 (2.69)	80.5 (2.69)	79.3 (2.41)	80.8 (2.88)
Unknown poverty:						
Private	97.0 (0.53)	96.1 (0.63)	96.8 (0.49)	96.6 (0.59)	96.8 (0.56)	97.4 (0.44)
Public	94.1 (1.07)	93.3 (1.04)	96.1 (1.04)	93.2 (1.30)	94.2 (1.06)	96.0 (0.71)
Uninsured	69.1 (2.71)	68.5 (2.93)	66.7 (2.69)	67.9 (2.77)	68.8 (3.01)	68.3 (3.39)

[1]A small number of children were covered by both public and private insurance and are included in both categories. The category "uninsured" includes children who had no coverage as well as those who had only Indian Health Service coverage or had only a private plan that paid for one type of service such as accidents or dental service (see "Technical Notes").

[2]Poverty status is based on family income and family size using the U.S. Census Bureau poverty thresholds for 1997, 1998, 1999, 2000, 2001, and 2002.

NOTES: Usual place of care includes a walk-in clinic, doctor's office, clinic, health center, health maintenance organization, outpatient clinic, or military or Veterans' Administration health care facility. A usual place of care does not include a hospital emergency room.

Denominator for each percent excludes children with unknown insurance coverage and unknown usual place of care.

DATA SOURCE: Combined Family Core, Sample Adult, and Sample Child components of the 1998–2003 National Health Interview Survey.

Table 4. Percent of children under 19 years of age with unmet medical needs (with standard errors), by insurance coverage and poverty status: United States, 1998–2002

	1998	1999	2000	2001	2002	2003
			Percent (standard error)			
Total	8.9 (0.31)	9.6 (0.35)	9.3 (0.32)	10.1 (0.34)	9.1 (0.31)	9.2 (0.30)
Insurance coverage[1]						
Private	5.8 (0.30)	5.7 (0.32)	5.5 (0.31)	6.6 (0.34)	5.8 (0.35)	5.7 (0.30)
Public	9.5 (0.68)	11.0 (0.74)	9.9 (0.67)	11.7 (0.66)	10.5 (0.64)	9.0 (0.59)
Uninsured	25.0 (1.30)	30.2 (1.49)	29.0 (1.28)	29.1 (1.54)	25.3 (1.34)	31.2 (1.57)
Poverty status[2]						
Poor	14.2 (1.05)	19.5 (1.15)	15.6 (1.13)	17.6 (1.14)	14.3 (1.12)	13.7 (1.02)
Near poor	15.9 (0.92)	16.3 (1.16)	16.5 (0.94)	17.2 (1.04)	15.8 (0.93)	15.5 (0.95)
Not poor	5.3 (0.31)	5.7 (0.36)	5.7 (0.39)	7.0 (0.39)	5.9 (0.35)	6.4 (0.38)
Unknown poverty	7.4 (0.56)	7.2 (0.63)	8.1 (0.59)	7.4 (0.52)	8.0 (0.59)	7.4 (0.58)
Poverty status and insurance coverage						
Poor:						
Private	11.2 (1.93)	12.8 (2.06)	11.4 (2.39)	16.6 (2.70)	13.9 (2.87)	9.0 (2.41)
Public	10.4 (1.11)	15.4 (1.44)	10.4 (1.31)	12.8 (1.19)	10.8 (1.20)	9.6 (1.01)
Uninsured	26.7 (2.67)	37.2 (3.07)	32.6 (2.71)	34.1 (2.95)	30.1 (3.14)	35.1 (3.60)
Near poor:						
Private	12.8 (1.18)	12.5 (1.46)	12.0 (1.24)	12.7 (1.43)	12.2 (1.50)	14.4 (1.43)
Public	10.7 (1.57)	10.3 (1.43)	13.4 (1.48)	14.2 (1.27)	14.8 (1.42)	9.4 (1.04)
Uninsured	27.9 (2.19)	31.6 (2.74)	31.1 (2.44)	34.7 (2.93)	27.4 (2.36)	35.5 (3.24)
Not poor:						
Private	4.4 (0.30)	4.5 (0.34)	4.0 (0.34)	5.6 (0.39)	4.2 (0.34)	4.7 (0.35)
Public	6.7 (1.36)	5.8 (1.34)	9.2 (1.57)	10.7 (1.52)	8.1 (1.32)	8.5 (1.55)
Uninsured	20.9 (2.51)	26.9 (2.81)	27.8 (2.78)	28.0 (3.35)	27.2 (2.80)	31.0 (3.25)
Unknown poverty:						
Private	3.8 (0.58)	3.6 (0.54)	4.9 (0.56)	4.4 (0.57)	6.1 (0.78)	3.9 (0.49)
Public	8.3 (1.32)	7.0 (1.14)	5.4 (1.04)	7.5 (1.16)	7.3 (0.93)	7.9 (1.11)
Uninsured	22.0 (2.34)	23.8 (2.85)	24.6 (2.65)	20.6 (2.57)	18.4 (2.21)	24.5 (2.74)

[1]A small number of children were covered by both public and private insurance and are included in both categories. The category "uninsured" includes children who had no coverage as well as those who had only Indian Health Service coverage or had only a private plan that paid for one type of service such as accidents or dental service (see "Technical Notes").
[2]Poverty status is based on family income and family size using the U.S. Census Bureau poverty thresholds for 1997, 1998, 1999, 2000, 2001, and 2002.

NOTE: Denominator for each percent excludes children with unknown insurance coverage and unknown unmet medical needs.

DATA SOURCE: Combined Family Core, Sample Adult, and Sample Child components of the 1998–2003 National Health Interview Survey.

Table 5. Percent of children under 19 years of age with with two or more visits to the emergency room in the past year (with standard errors), by insurance coverage and poverty status: United States, 1998–2003

Insurance coverage and poverty status	1998	1999	2000	2001	2002	2003
	Percent (standard error)					
Total	7.0 (0.28)	5.6 (0.26)	6.9 (0.28)	6.8 (0.27)	7.5 (0.29)	7.0 (0.28)
Insurance coverage[1]						
Private	5.2 (0.27)	3.9 (0.25)	5.2 (0.28)	5.4 (0.31)	5.6 (0.30)	5.1 (0.31)
Public	13.5 (0.78)	12.3 (0.80)	12.5 (0.77)	11.5 (0.64)	12.5 (0.72)	12.2 (0.68)
Uninsured	7.5 (0.74)	4.9 (0.66)	6.5 (0.62)	6.3 (0.79)	7.1 (0.84)	6.6 (0.78)
Poverty status[2]						
Poor	11.8 (0.93)	11.2 (0.96)	12.3 (1.01)	10.6 (0.92)	13.5 (1.06)	12.6 (1.04)
Near poor	9.2 (0.75)	7.6 (0.68)	8.4 (0.69)	8.7 (0.66)	9.2 (0.75)	8.9 (0.71)
Not poor	4.8 (0.30)	3.9 (0.28)	5.4 (0.31)	5.5 (0.35)	5.7 (0.35)	5.4 (0.34)
Unknown poverty	7.1 (0.66)	4.1 (0.50)	5.6 (0.54)	6.0 (0.53)	6.8 (0.60)	5.7 (0.49)
Poverty status and insurance coverage						
Poor:						
Private	8.6 (1.92)	9.7 (1.61)	7.4 (1.61)	8.9 (1.94)	6.5 (1.57)	13.1 (2.97)
Public	14.1 (1.27)	14.4 (1.44)	15.6 (1.36)	12.9 (1.19)	16.4 (1.39)	14.1 (1.27)
Uninsured	8.8 (1.42)	4.8 (1.16)	8.3 (1.59)	5.9 (1.27)	9.1 (2.62)	7.8 (1.83)
Near poor:						
Private	8.3 (0.93)	4.7 (0.81)	7.1 (0.95)	6.5 (0.87)	7.6 (1.08)	8.4 (1.16)
Public	13.5 (1.92)	14.8 (1.68)	11.5 (1.26)	12.1 (1.22)	12.1 (1.27)	10.9 (1.14)
Uninsured	7.7 (1.27)	5.5 (1.46)	7.1 (1.21)	8.2 (2.08)	7.9 (1.58)	7.3 (1.51)
Not poor:						
Private	4.4 (0.29)	3.6 (0.29)	5.0 (0.32)	5.0 (0.35)	5.2 (0.36)	4.6 (0.35)
Public	10.3 (1.65)	10.4 (1.57)	10.0 (1.72)	11.4 (1.44)	9.3 (1.30)	13.1 (1.72)
Uninsured	6.6 (1.61)	4.6 (1.22)	6.5 (1.39)	5.2 (1.17)	6.9 (1.59)	6.8 (1.55)
Unknown poverty:						
Private	5.1 (0.70)	3.3 (0.59)	4.3 (0.58)	5.4 (0.66)	5.5 (0.72)	3.8 (0.50)
Public	14.4 (1.76)	7.2 (1.19)	10.7 (1.57)	8.6 (1.30)	10.1 (1.32)	10.5 (1.26)
Uninsured	6.5 (1.42)	4.2 (1.01)	4.1 (0.94)	5.5 (1.24)	5.3 (1.25)	5.0 (1.33)

[1]A small number of children were covered by both public and private insurance and are included in both categories. The category "uninsured" includes children who had no coverage as well as those who had only Indian Health Service coverage or had only a private plan that paid for one type of service such as accidents or dental service (see "Technical Notes").
[2]Poverty status is based on family income and family size using the U.S. Census Bureau poverty thresholds for 1997, 1998, 1999, 2000, 2001, and 2002.

NOTE: Denominator for each percent excludes children with unknown insurance coverage and unknown number of visits to the emergency room in the past year.

DATA SOURCE: Combined Family Core, Sample Adult, and Sample Child components of the 1998–2003 National Health Interview Survey.

Technical Notes

Sample design

The National Health Interview Survey (NHIS) is a cross-sectional household interview survey of the U.S. civilian noninstitutionalized population. Data are collected continuously throughout the year in all 50 States and the District of Columbia. The NHIS uses a multistage, clustered sample design to produce national estimates for a variety of health indicators. Information on basic health topics is collected for all household members, by proxy from one family member for adults not present at the time of interview and for children. Additional information is collected for one randomly sampled adult and one randomly sampled child in each family. Self-response is required for the Sample Adult questionnaire except in the case of sample adults who are physically or mentally incapable of responding for themselves. An adult family member who is knowledgeable about the sample child's health (usually a parent) provides information for the child component. Interviews are conducted in the home using a computer-assisted personal interview (CAPI) questionnaire. Telephone followup is permitted after an initial face-to-face visit if subsequent in-home interviews cannot be conducted.

Response rates

Table I shows the number of households, families, and children interviewed as well as the response rates for the Household, Sample Child, and the Sample Adult files from 1998–2003. The calculation of the response rates are described in detail in ''Appendix I'' of the Survey Description document that accompanies the NHIS data files (19).

Item nonresponse

Item nonresponse for sociodemographic indicators in the NHIS is generally less than 1%, with the exception of the poverty status, which is based on detailed family income asked for in the family component of the questionnaire. Estimates for respondents with unknown poverty status ranged from 23% in 1998 to 29% in 2003 (table I). Item nonresponse for the health access items in this report was less than 1%. The denominators for statistics shown in the tables exclude children with unknown access characteristics or unknown health insurance status for a given table.

Tests of significance

Statistical tests performed to assess significance of differences in the estimates were two-tailed with no adjustments for multiple comparisons. The test statistic used to determine the statistical significance of differences between two percents was:

$$Z = \frac{|X_a - X_b|}{\sqrt{S_a^2 + S_b^2}}$$

Here X_a and X_b are the two percents being compared, and S_a and S_b are the standard errors of the percents. The critical value used for two-sided tests at the 0.05 level of significance was 1.96.

Relative standard error

Estimates with a relative standard error greater than 30% are considered statistically unreliable and are indicated with an asterisk. The relative standard errors are calculated as follows:

$$\text{Relative standard error (as a percent)} = (SE/Est)100,$$

where SE is the standard error of the estimate, and Est is the estimate (percent, rate, mean, or frequency).

Definitions of selected terms

Sociodemographic terms

Age—The age recorded for each child is the age at the last birthday. Age is recorded in single years.

Family income—Each member of a family is classified according to the total income of all family members. Family members are all persons within the household related to each other by blood, marriage, cohabitation, or adoption. The income recorded is the total income received by all family members in the previous calendar year. Income from all sources, including wages, salaries, pensions, government payments, child support/alimony, dividends, and help from relatives is included. Unrelated individuals living in the same household (e.g., roommates) are considered to be separate families and are classified according to their own incomes.

Health insurance coverage—A child was defined as uninsured if he or she did not have any private health insurance, Medicaid, State Children's

Table I. Number of interviews and response rates for the National Health Interview Survey, 1998–2003

Year	Number				Percent		
	Households interviewed	Families interviewed	Children 0–17 years of age	Children[1] 18 years of age	Household response	Sample child response	Sample adult response
1998	38,209	38,773	13,645	1,347	90.0	82.4	73.9
1999	37,573	38,171	12,910	1,433	87.6	78.2	69.6
2000	38,633	39,264	13,376	1,438	88.9	79.4	72.1
2001	38,932	39,633	13,579	1,416	88.9	80.6	73.8
2002	36,161	36,831	12,524	1,286	89.6	81.3	74.3
2003	35,921	36,573	11,330	1,307	89.2	81.1	74.2

[1]Data for children 18 years old are collected from the sample adult questionnaire.

NOTE: The frequencies in this table are unweighted.

DATA SOURCE: National Health Interview Surveys, 1998–2003.

Health Insurance Program (SCHIP), Medicare (disability), State-sponsored or other government-sponsored health plan or military plan at the time of the interview. A child was also defined as uninsured if he or she had only Indian Health Service coverage or had only a private plan that paid for one type of service such as accidents or dental care. The category ''private health insurance'' excludes plans that paid for only one type of service such as accidents or dental care. The category ''public health plan coverage'' includes Medicaid, SCHIP, Medicare (disability), State-sponsored or other government-sponsored health plan and military plans (table II). A small number of children (less than 2%) were covered by both public and private insurance. This double coverage would occur if: a) the child had certain conditions, illnesses, or disabilities specifically covered by Medicaid or Medicare that were not covered by the child's private health insurance; b) the child had certain conditions, illnesses, or disabilities specifically covered by Medicaid or Medicare that provided coverage when the maximum limit of reimbursement from the child's private insurance had been reached; or c) the child had one parent with military coverage and another with private coverage. To reflect this double coverage, these children are included in both categories. The analysis excluded children with unknown health insurance status (about 1% of respondents).

Poverty status—Poverty status is based on the ratio of the family's income in the previous calendar year to the appropriate poverty threshold (given the family's size and number of children) defined by the U.S. Census Bureau for that year (27–32). Children who are categorized as ''poor'' had a family income below the poverty threshold (ratio less than 1.0). The ''near poor'' category includes children in families with incomes of 100% to less than 200% of the poverty threshold. The ''not poor'' children had a family income that was 200% or more of the poverty threshold or higher. The remaining group of respondents are coded as ''unknown'' with respect to poverty status. Unknown poverty status was 23.0% in 1998, 25.9% in 1999, 25.6% in 2000, 25.7% in 2001, 26.7% in 2002, and 28.7% in 2003. The estimates for those respondents with unknown poverty status are shown in the tables. Please visit the NHIS Web site for more information on the unknown income and poverty status categories.

Access measure terms

Two or more visits to the emergency room in the past year—Number of visits is based on the following question: ''DURING THE PAST 12 MONTHS, how many times has [child's name] gone to a hospital emergency room about [his/her] health? (This includes emergency room visits that resulted in a hospital admission.).'' Visits for emergency care received at a health maintenance organization, outpatient clinic, or urgent care center are not included.

Unmet medical need—This category is based on a positive response for a particular child 2–17 years of age or a child 18 years of age to any of the following questions: ''DURING THE PAST 12 MONTHS was there any time when [you/someone in the family] needed medical care, but did not get it because [you/the family] could not afford it?'' ''DURING THE PAST 12 MONTHS, [have/has] [you/anyone in the family] delayed seeking medical care because of worry about the cost.'' ''DURING THE PAST 12 MONTHS, was there any time when [child's name] [you] needed any of the following, but didn't get it because you couldn't afford it: prescription medicines, mental health care or counseling, or dental care?''

A limitation of this report is found in the definition of the unmet need variable for children under 2 years of age. For this age group unmet medical need is based on a positive response to any of the following questions: ''DURING THE PAST 12 MONTHS was there any time when [you/someone in the family] needed medical care, but did not get it because [you/the family] could not afford it?'' ''DURING THE PAST 12 MONTHS, [have/has] [you/anyone in the family] delayed seeking medical care because of worry about the cost.'' ''DURING THE PAST 12 MONTHS, was there any time when [child's name] needed any of the following, but didn't get it because you couldn't afford it: prescription medicines?'' The unmet need questions on mental health/counseling and on dental care were not asked for children under 2 years of age because of the extremely limited use of these services by children in this age group. Thus, the unmet need variable has a slightly different meaning for those under 2 years of age.

Usual place of medical care—Usual place of medical care is based on the following question: ''Is there a place that [child's name] [you] USUALLY [goes/go] when [he/she] [you] [is/are] sick or you need advice about [his/her] [your] health?'' A followup question specifies these places as a walk-in clinic, doctor's office, clinic, health center, health maintenance organization (HMO), outpatient clinic, or military or Veterans' Administration health care facility. A usual place of care does not include a hospital emergency room.

Table II. Percent of children under 19 years of age with public health insurance, by the type of public insurance from 1998–2003

Year	Medicaid	State Children's Health Insurance Program	Military health care	Medicare	Other State programs	Other government programs
1998	79.0	§	11.0	2.1	5.9	3.2
1999	78.2	5.0	9.8	1.7	4.9	1.5
2000	74.4	8.5	9.7	1.6	5.6	0.7
2001	66.1	16.0	8.2	1.1	8.6	0.7
2002	68.2	16.4	7.5	0.7	7.3	0.7
2003	66.2	18.9	7.3	0.8	7.0	0.7

§ Information on the State Children's Health Insurance Program was not collected separately in 1998.

NOTE: A child can be counted in more than one type of public coverage in 1 year.

DATA SOURCE: National Health Interview Surveys, 1998–2003.

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