

Trends in Private and Public Health Insurance for Adolescents

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ACCESS TO HEALTH CARE IS critical to the health of adolescents and the well-being of their families. Insurance can play a crucial role in ensuring that adolescents have access to the health care they need. Analyses have shown that insured children and adolescents as a group are more likely to receive recommended preventive visits, have fewer unmet health needs, and have a relationship with a primary care physician than their uninsured counterparts.¹⁻⁷ Insured children and adolescents are also less likely to go without medical attention when they have symptoms of a variety of illnesses for which office visits are warranted.^{5,7-9}

The availability of health insurance for children and adolescents has changed dramatically during the last 2 decades. While there has been a decline in the availability of private health insurance, public insurance coverage has grown rapidly, largely through 2 Congressional initiatives. First, beginning in the mid-1980s, Congress enacted a series of Medicaid expansions mandating states to gradually raise income eligibility thresholds to the federal poverty level (FPL) for children and adolescents. Second, in 1997, Congress established the State Children's Health Insurance Program (SCHIP), which provides federal funding for states to extend coverage to children and adolescents from low-income fami-

Context Previous studies (1984-1995) of adolescent health insurance have shown little change in the proportion with coverage. Federally mandated expansions in Medicaid were offset by declines in private coverage. Further expansions of Medicaid and implementation of the State Children's Health Insurance Program (SCHIP) have opened new avenues for increasing coverage rates.

Objectives To assess the current health insurance status of adolescents, the demographic and socioeconomic correlates of insurance coverage, and document recent changes in public and private coverage rates.

Design, Setting, and Participants We analyzed data on 12 995 adolescents aged 10 to 18 years, who had been included in the 2002 National Health Interview Survey. We conducted multivariate analyses to assess the independent association of age, sex, race, poverty status, family structure, family size, and region on the likelihood of having insurance coverage. Results are compared with previously published findings on adolescent health insurance coverage spanning 1984 to 1995.

Main Outcome Measure Insurance coverage for adolescents.

Results An estimated 12.2% of adolescents were uninsured in 2002, which is a decrease from 14.1% in 1995 ($P < .003$). The decrease occurred entirely because of an expansion of public coverage and is concentrated among children in poor (<100% of the federal poverty level) and near-poor (100%-199% of the federal poverty level) families. A substantial decrease in the differences between poor and higher-income groups occurred between 1995 and 2002 due to gains in coverage for adolescents in poor and near-poor families and losses in coverage among those in middle- and upper-income families ($\geq 200\%$ of the federal poverty level). Specifically, the proportion of adolescents in poor families without coverage declined from 27.4% in 1995 to 19.7% in 2002 ($P < .001$). The proportion of adolescents in near-poor families without coverage declined from 24.8% in 1995 to 19.2% in 2002 ($P < .002$). In contrast, the proportion of adolescents in middle- and higher-income families without insurance increased from 4.1% in 1995 to 6.3% in 2002 because availability of insurance through the private market declined ($P < .001$).

Conclusions A modest but significant reduction in the percentage of adolescents without insurance has occurred since 1995, largely as a result of expansions in public coverage. An even larger reduction in the proportion of adolescents without coverage would have occurred, if not for a reduction in private coverage for adolescents in middle- and higher-income families.

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lies through Medicaid or other insurance programs.¹⁰

The Medicaid expansions have affected eligibility for adolescents more slowly than for younger children. The early expansions exclusively benefited infants and younger children. The federal law enacted in 1990 required

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states to phase in Medicaid coverage for poor children born after September 30, 1983, so it was not until October 1, 2001, that all adolescents through age 18 years with family incomes up to 100% of the FPL were eligible.¹⁰⁻¹² However, many states opted to extend coverage for adolescents sooner than required. With the final phase-in of the Medicaid expansions and implementation of SCHIP in the late 1990s, adolescents' eligibility thresholds for public insurance programs increased substantially. By October 2001, when federal law required states to extend Medicaid eligibility to all adolescents up to 100% of the FPL and 4 years after SCHIP was enacted, 38 states had extended SCHIP or Medicaid eligibility to adolescents with family incomes up to at least 200% of the FPL.¹³

These salutary developments in public insurance have occurred alongside reductions in the availability of private insurance.¹⁴ The erosion of private coverage appears to be the result of several trends including large-scale changes in the economy and employer benefit policies. Questions also remain about the extent to which public insurance expansions discourage employer offerings of private coverage. The consequence is that even if public insurance enrollment efforts are successful, reductions in the overall size of the uninsured adolescent population may be small.¹⁵⁻²⁰ In fact, by the mid-1990s, expansions in public coverage had succeeded only in offsetting a decline in private coverage, resulting in no net change in the percentage of uninsured adolescents aged 10 to 18 years between 1984 and 1995.⁵

In this article, we present new data on the health insurance coverage characteristics of adolescents aged 10 to 18 years from the 2002 National Health Interview Survey (NHIS). In the first section, we assess the health insurance status of adolescents and the demographic and socioeconomic correlates of insurance coverage. We then examine trends in adolescent health care coverage between 1984 and 2002 by comparing our new findings with those from previ-

ously published studies using the same data source. Together, the results provide a current and comprehensive profile of adolescent health insurance coverage. The results also provide an initial assessment of the effects of expanded offerings of public insurance through SCHIP as well as an assessment of the extent to which declines in private coverage have offset gains in public coverage.

METHODS

Data Source

The NHIS is a continuing household survey of the civilian noninstitutionalized population of the United States.²¹ The survey is sponsored by the National Center for Health Statistics and field operations are conducted by trained personnel from the US Bureau of the Census. We use results from our previously published work based on the 1984,²² 1989,²³ and 1995⁵ NHIS data sets along with new analysis of data from the 2002 NHIS.

The 2002 NHIS survey instrument consisted of a core family questionnaire and supplemental questionnaires. We used data generated from the family questionnaire for our analysis. During 2002, the NHIS conducted field interviews of 36831 families. Data were collected for 13 118 adolescents aged 10 to 18 years from 8604 families. A knowledgeable adult member of the family served as the respondent for adolescents younger than age 17 years. Although adolescents aged 17 or 18 years were permitted to respond for themselves, only 229 did so. The household response rate for the 2002 NHIS was 89.6%.

Description of Variables Used

Insurance Coverage. We used the questions on health insurance contained in the family questionnaire to determine insurance status for adolescents. Adolescents in the sample were classified as insured if they were reported to be covered by Tricare (for active-duty military personnel and their dependents), Medicare, Medicaid, SCHIP, the Indian Health Service, other public assis-

tance programs, or private health insurance date. Adolescents with no coverage from these sources were classified as uninsured. Adolescents with unknown insurance status ($n=123$) were excluded from the insurance comparisons. It should be noted that by defining insurance status based on coverage at the time of the interview, a somewhat higher proportion of adolescents are classified as insured in the NHIS compared with surveys in which a full year of coverage is used as the criterion for establishing insurance status. Although the wording of the NHIS insurance questions has changed over time, in part to accommodate new programs like SCHIP and Tricare, the basic concepts and approach remain the same.

Poverty Status. Poverty status was categorized into 3 groups: poor ($<100\%$ of the FPL), near poor (100% - 199% of the FPL), and middle and higher income ($\geq 200\%$ of the FPL). Adolescents with unknown poverty status ($n=3564$) were excluded from the insurance comparisons that included poverty status as a covariate.

Statistical Analysis

Data analyses and statistical tests were conducted using SUDAAN, a statistical analysis program that incorporates the complex survey design used in the NHIS, including household and intrafamilial clustering of sample observations.²⁴ Estimates presented in the text and tables have been statistically weighted to reflect national population totals. The weights, provided by the data collection agency,²¹ are equal to the inverse of each sample person's sampling probability, adjusted for nonresponse. Cases with missing item information were deleted from our analyses. Most of our results are presented in the form of simple bivariate comparisons of insured and uninsured children and adolescents. All comparisons between groups in 2002 were conducted using χ^2 tests of significance; comparisons between years were conducted using z tests for differences in proportions. However, we also conducted multivar-

iate logistic regression analyses to assess the independent association of age, sex, race, poverty status, family structure, family size, and region of residence with the likelihood of insurance coverage. Unless otherwise noted, only differences significant at the .05 level (2-tailed test) are discussed in the text.

RESULTS

Health Insurance Status of Adolescents

Data from the NHIS indicate that 87.9% of adolescents aged 10 through 18 years had some kind of health insurance coverage in 2002 (TABLE 1). Most of these youth (65.1%) were covered by private health insurance but a substantial minority (21.5%) were covered through

public insurance plans such as Medicaid or SCHIP. A much smaller proportion of adolescents (1.3%) had both private and public insurance coverage. The remaining 12.2% of adolescents had no health insurance coverage at all.

Characteristics of Insured and Uninsured Adolescents

Substantial differences in coverage were found according to demographic and socioeconomic characteristics of adolescents and their families (Table 1). Older adolescents (15-18 years) were more likely to be uninsured than younger adolescents (10-14 years) (13.7% vs 11.0%; $P<.003$), a difference primarily attributable to the higher prevalence of public health insurance

among younger adolescents. Although there was little difference in health insurance coverage by sex, there were significant differences according to race and ethnicity. Black adolescents were more likely than white adolescents to have public coverage (39.1% vs 15.1%; $P<.001$) and also more likely than white adolescents to be uninsured (12.0% vs 8.4%; $P<.001$). Hispanic adolescents faced the greatest disadvantage; they were more than twice as likely as blacks (27.7% vs 12.0%; $P<.001$) and more than 3 times more likely than whites to be uninsured (27.7% vs 8.4%; $P<.001$).

There were large differences in coverage related to poverty status of adolescents (Table 1). Adolescents in families

Table 1. Sociodemographic Characteristics of Adolescents by Type of Health Insurance Coverage: United States, 2002*

Sociodemographic Characteristic	Estimated Population Distribution, in Millions†	Adolescents With Coverage, %				Adolescents Without Coverage, %
		Total Covered	Private Only	Public Only	Private and Public	
Age, y						
10-14	20.8	89.1	63.9	23.9	1.3	11.0
15-18	16.2	86.2	66.7	18.3	1.2	13.7
All adolescents	37.0	87.9	65.1	21.5	1.3	12.2
Sex						
Male	18.9	87.6	65.2	21.0	1.4	12.5
Female	18.1	88.2	65.1	22.0	1.1	11.9
Race and ethnicity						
White, non-Hispanic	24.0	91.6	75.3	15.1	1.2	8.4
Black, non-Hispanic	5.6	88.0	47.3	39.1	1.6	12.0
Hispanic	5.7	72.4	40.8	30.6	1.0	27.7
Other	1.8	86.1	61.7	22.5	1.9	13.9
Poverty status, by federal poverty level						
<100%	4.2	80.4	20.7	58.3	1.4	19.7
100%-199%	5.6	80.7	43.8	35.2	1.7	19.2
≥200%	17.3	93.8	85.9	6.5	1.4	6.3
Education of family reference person						
<High school	4.8	76.7	30.1	46.0	0.6	23.3
High school graduate	9.3	89.0	63.0	24.8	1.2	11.1
>High school	16.8	93.0	79.5	12.1	1.4	7.0
Living arrangement						
Both parents	24.9	89.5	74.7	13.7	1.1	10.6
1 or 0 Parent	12.1	84.7	45.7	37.5	1.5	15.3
Family size						
1-4 Persons	22.4	88.8	68.9	18.4	1.5	11.2
2-5 Persons	14.6	86.4	59.3	26.2	0.9	13.6
Region of residence						
Northeast	7.1	91.0	69.7	20.4	0.9	9.1
Midwest	8.9	92.6	73.3	17.9	1.4	7.4
South	13.2	84.8	59.6	23.6	1.6	15.1
West	7.9	84.7	61.1	22.8	0.8	15.3

*Data are from the National Health Interview Survey.²¹ The original tabulations are from public use data sets.

†Estimates are weighted to reflect national population totals.

with incomes at or above 200% of the FPL were 4 times more likely than poor adolescents to have private health insurance (85.9% vs 20.7%; $P < .001$), while adolescents living below the FPL were 9 times more likely to have public health insurance (58.3% vs 6.5%; $P < .001$). However, the greater likelihood of public health insurance coverage was not sufficient to offset the large gap in private health insurance coverage, with the result that poor adolescents were 3 times more likely than their counterparts above 200% of the FPL to be uninsured (19.7% vs 6.3%; $P < .001$). The proportion of adolescents in near-poor families without insurance was similar with that of adolescents in poor families.

Substantial differences in adolescents' insurance status were found by

educational attainment of the family reference person (generally the father or mother) and living arrangement (Table 1). Adolescents in families in which the reference person had attained less than a high school education were about 3 times more likely to be uninsured than adolescents in families where the reference person had completed at least some college level education (23.3% vs 7.0%; $P < .001$). Adolescents living with 1 or neither parent were about half as likely to be uninsured as adolescents living with both parents (15.3% vs 10.6%; $P < .001$). Those living with both parents were far more likely to have private health insurance coverage than adolescents living with 1 or neither parent (74.7% vs 45.7%; $P < .001$), but much less likely to have public health

insurance coverage (13.7% vs 37.5%; $P < .001$).

There were some differences in coverage by region of the country. Adolescents living in the South were more likely (15.1%) than adolescents living in the Northeast (9.1%) or Midwest (7.4%) to be without health insurance coverage in 2002 ($P < .001$ for both comparisons). Adolescents living in the West were also more likely (15.3%) than adolescents in the Northeast (9.1%) and Midwest (7.4%) to be uninsured ($P < .001$ for both comparisons).

Multivariate Analysis of Predictors of Insurance Coverage

Many of the demographic and socioeconomic variables presented in Table 1 are correlated, especially the socioeconomic status indicators such as poverty status and educational attainment. In addition, there are less obvious correlations between some of the socioeconomic and demographic variables. For example, incomes of 2-parent families are generally higher than those in single-parent families; consequently, some of the differences shown in Table 1 by family structure may be explained by differences in family income. To adjust for such confounding, we conducted a multivariate analysis of predictors of insurance coverage among adolescents (TABLE 2).

A substantial degree of confounding appears to be present as indicated by the attenuated effect sizes in comparison with the bivariate findings presented in Table 1. Two significant differences in our bivariate analysis, the black vs white difference and the living arrangement difference, became statistically insignificant. However, the key findings from the bivariate analysis remain intact: there are substantial and statistically significant differences in health insurance coverage of adolescents according to ethnicity, poverty status, region of residence, and educational attainment.

Differences in Multivariate Findings Between 1995 and 2002

Comparing these results to our previous analysis of data from the 1995

Table 2. Odds of Being Without Health Insurance: United States, 1995 and 2002*

Characteristic	Adjusted OR (95% CI)†	
	1995	2002
Age, y		
15-18	1.42 (1.22-1.66)	1.21 (1.03-1.42)
10-14	1.00	1.00
Sex		
Female	1.03 (0.89-1.18)	0.97 (0.83-1.13)
Male	1.00	1.00
Race and ethnicity		
Black	0.75 (0.58-0.96)	1.38 (0.97-1.95)
Other	0.93 (0.59-1.48)	1.43 (0.87-2.37)
Hispanic	1.87 (1.48-2.37)	2.79 (2.17-3.58)
White	1.00	1.00
Poverty status, by federal poverty level		
<100%	6.84 (5.08-9.20)	2.26 (1.64-3.11)
100%-199%	6.48 (5.14-8.18)	2.49 (1.89-3.28)
≥200%	1.00	1.00
Education of family reference person		
<High school	2.12 (1.67-2.70)	1.89 (1.44-2.49)
High school graduate	1.54 (1.24-1.91)	1.43 (1.10-1.87)
>High school	1.00	1.00
Living arrangement		
1 or 0 parent	0.86 (0.70-1.05)	0.97 (0.76-1.24)
Both parents	1.00	1.00
Family size		
≥5 persons	0.88 (0.73-1.05)	0.90 (0.70-1.14)
1-4 persons	1.00	1.00
Region of residence		
Midwest	1.10 (0.76-1.58)	0.99 (0.69-1.43)
South	2.06 (1.53-2.76)	1.58 (1.15-2.16)
West	1.16 (0.82-1.65)	1.49 (1.07-2.07)
Northeast	1.00	1.00

Abbreviations: CI, confidence interval; OR, odds ratio.

*Data from the National Health Interview Survey.²¹ The 2002 data are from original tabulations from public use data sets and the 1995 data are from Newacheck et al.⁵

†Adjusted for the variables included in the table.

NHIS,⁵ the largest changes between 1995 and 2002 are in the odds ratios by poverty status. Relative to adolescents in middle- and upper-income families, the odds ratio for being uninsured declined from 6.84 to 2.26 for adolescents in poor families and from 6.48 to 2.49 in near-poor families between 1995 and 2002. Hence, although adolescents in poor and near-poor families remain at substantially increased risk of being uninsured (Table 1), the relative risk of being uninsured has been reduced since 1995 (Table 2). The decrease in risk is due to 2 factors: the decrease in the percentage of poor and near-poor adolescents who were uninsured and the increase in the percentage of middle- and higher-income adolescents who were uninsured. Specifically, the proportion of adolescents in poor families without coverage declined from 27.4% in 1995 to 19.7% in 2002 ($P < .001$). The proportion of near-poor families without coverage also declined (from 24.8% in 1995⁵ to 19.2% in 2002; $P < .002$). In contrast, the proportion of adolescents in middle- and higher-income families without insurance increased between 1995⁵ and 2002 from 4.1% to 6.3% ($P < .001$), as availability of insurance through the private market declined. As a point of reference, the proportion of all adolescents (including those with unknown poverty status) without coverage declined from 14.1% to 12.2% between 1995 and 2002 ($P < .003$).⁵

Trends in Adolescent Health Insurance Coverage: 1984-2002

Trend data on adolescent health insurance for 1984,²² 1989,²³ 1995,⁵ and 2002 indicate that despite some intermediate movement, the proportion of adolescents without some type of coverage remained essentially unchanged between 1984 and 1995 (TABLE 3). By 2002, however, the proportion with no insurance decreased to 12.2% from a peak of 15.5% in 1989. Underlying this decline are substantial changes in the composition of insurance coverage. Over the 18-year

period, the proportion of adolescents with private insurance declined from 75.9% to 66.4% (including those with dual private and public coverage), while the proportion of those with public coverage increased from 11.9% to 22.8% (including those with dual coverage). Hence, the substantial decline in private insurance was more than offset by an even larger increase in public insurance, resulting in a modest but significant decline in the overall proportion of adolescents without insurance between 1984 and 2002. Finally, while both younger and older adolescents were subject to losses of private health insurance coverage, younger adolescents have disproportionately benefited from expanded public coverage.

COMMENT

Our results provide new information on trends in health insurance coverage among adolescents. Substantial progress in expanding health insurance coverage among adolescents has occurred, leading to an increase in the proportion of the overall adolescent population covered by insurance after a dozen years of virtually no change. These gains in coverage came about entirely through

expansions of public coverage and are concentrated among adolescents in low-income families.

However, substantial numbers of adolescents from middle- and higher-income families have lost coverage due to a continued erosion of private insurance coverage. Experts have offered a number of explanations for the decline in availability of private insurance coverage. First, some portion of the decline appears to be attributable to *crowd out* or the substitution of newly available public coverage for existing employer-based private coverage.²⁵⁻²⁷ However, the extent to which crowd out explains the decline in private coverage remains unclear and controversial. A recent review of literature indicates crowd-out estimates range from 11% to 40% varying by data source, methods, and definition of the control group.²⁷ Additional explanations for the decline include the long-term shift of jobs from manufacturing to the service sector in which health insurance is less likely to be offered as a fringe benefit to employees and their dependents; a shift on the part of employers toward covering only employees and not their dependents; a growing contingency work force of temporary and

Table 3. Changes in Health Insurance Coverage of Adolescents Aged 10 to 18 Years: United States, 1984-2002*

Population Group	Adolescents With Coverage, %				Adolescents Without Coverage, %
	Total Covered	Private Only	Public Only	Private and Public	
All adolescents					
1984	85.9	74.0	10.0	1.9	14.1
1989	84.5	72.7	9.9	2.0	15.5
1995	85.9	69.1	14.8	2.1	14.1
2002	87.9	65.1	21.5	1.3	12.2
10- to 14-year-olds					
1984	86.5	73.7	11.0	1.8	13.5
1989	85.1	72.3	11.0	1.8	14.9
1995	87.2	68.4	16.8	2.0	12.8
2002	89.1	63.9	23.9	1.3	11.0
15- to 18-year-olds					
1984	85.1	74.3	8.9	1.9	14.9
1989	83.9	73.1	8.5	2.2	16.1
1995	84.3	70.0	12.1	2.2	15.7
2002	86.2	66.7	18.3	1.2	13.7

*Data from the National Health Interview Survey.²¹ The original tabulations are from public use data sets for the 2002 data. Data for 1984 from Newacheck and McManus²²; 1992 data, Newacheck et al²³; and 1995 data, Newacheck et al.⁵

contract workers who do not receive employer-based coverage; and higher premiums due to increased medical care costs.^{25,26,28-30} The current tepid economy, combined with higher premiums, is likely to result in a continuation of the downward trend in the provision of private health insurance.

Our findings showing significant improvements in coverage of adolescents in low-income families are tempered by the fact that these adolescents continue to be at increased risk of being uninsured relative to their counterparts in middle- and higher-income families. For example, adolescents living in families with incomes below twice the FPL were about 3 times more likely to be uninsured than adolescents in families with incomes above twice the FPL in 2002. Hence, even with full implementation of the federally mandated Medicaid expansions and with SCHIP programs operating in every state, large numbers of adolescents from low-income families continue to be uninsured. In fact, although adolescents in poor and near-poor families represented about one third of the adolescent population, they accounted for nearly two thirds of uninsured adolescents in 2002.

Most of these uninsured adolescents from low-income families are eligible for either Medicaid or SCHIP.^{13,17} Aggressive enrollment and retention efforts are required to fully realize the potential of these programs. Adolescents are a particularly challenging population to attract, enroll, and retain.³¹ Newly eligible adolescents also may be difficult to enroll because they traditionally have fewer contacts with health care clinicians than younger children. Moreover, SCHIP is still a relatively new program. Even in a well-established program like Medicaid, large numbers of eligible children and adolescents fail to enroll.³²

Our findings indicate that sizable regional differences exist in adolescent health insurance coverage, with the Western and Southern regions lagging behind the Northeastern and Midwestern regions of the country.

Although the regional differences have shifted somewhat since 1995, they demonstrate continuing problems of insurance access for adolescents residing in the South and West. The NHIS sample is not large enough to examine state-level differences as average, so we are limited in making further comment.

There are 3 aspects of our data that limit the precision of our estimates. First, as indicated previously, 17- and 18-year-olds are permitted to respond for themselves in the NHIS. Those self-respondents may be less knowledgeable about their health insurance status than the adult respondents (principally parents) who respond on behalf of adolescents younger than age 17 years. However, any biases attributable to self-reports are likely to be small because the proportion of the sample used in our study that responded for themselves was less than 1.7%. Second, although the NHIS is designed to provide nationally representative estimates, adolescents living outside of households, including incarcerated, homeless, and institutionalized adolescents, are excluded from the survey. Undocumented persons are treated no differently than others, although their response rates are likely to be lower than for documented persons because this is a government-sponsored survey. Third, about 28% of NHIS respondents had missing values for poverty status in the survey. For this reason, we have not reported estimated numbers of poor and nonpoor adolescents with insurance coverage, but focused instead on reporting proportions within each poverty category with coverage.

In conclusion, this study has demonstrated an overall reduction in the size of the uninsured adolescent population, with the gains being concentrated within the low-income population. These improvements may not persist if state and federal deficits continue to increase. Currently, some states are cutting back their Medicaid and SCHIP programs as state budgets tighten due to increasing deficits.³³ President Bush's proposal to give states greater power in setting rules for

Medicaid and SCHIP eligibility, if implemented, could lead to decrements in coverage. Given that the SCHIP and Medicaid expansions have accomplished one of their primary goals—increasing coverage for families in need—careful longitudinal monitoring of the effects of changing policies is needed.

Author Contributions: Dr Newacheck, as principal investigator, had full access to the data and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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When any opinion leads to absurdities, it is certainly false; but it is not certain that an opinion is false, because it is of dangerous consequences.

—David Hume (1711-1776)