

# Uninsured Children and Adolescents With Insured Parents

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**M**ORE THAN 9 MILLION children in the United States have no health insurance coverage.<sup>1,2</sup> When including those with a coverage gap at some point during the year, that number doubles.<sup>3-6</sup> It is estimated that almost three-quarters of them qualify for public insurance coverage.<sup>7-9</sup> Stable health insurance coverage allows for consistent access to health care services, which contributes to better health outcomes.<sup>10-14</sup> Discontinuities in children's health insurance coverage, even for only a few months, are associated with significant unmet health care needs.<sup>15,16</sup>

States seeking to maximize rates of continuous coverage for eligible children and adolescents have sought federal waivers to expand Medicaid coverage to low-income parents. When public health insurance is extended to parents, their children who are eligible for public insurance have more stable coverage.<sup>17-22</sup> Conversely, when state Medicaid programs have scaled back parental benefits for low-income families, their children's coverage has been adversely affected.<sup>16</sup>

The association between coverage for parents and their children has been widely reported.<sup>20,23,24</sup> In a recent Oregon study, children eligible for public insurance who had uninsured parents were 14 times more likely to

**Context** Millions of US children and adolescents lack health insurance coverage. Efforts to expand their insurance often focus on extending public coverage to uninsured parents. Less is known about the uninsured whose parents already have coverage.

**Objective** To identify predictors of uninsurance among US children and adolescents with insured parents.

**Design and Setting** Cross-sectional and full-year analyses of pooled 2002-2005 data from the nationally representative Medical Expenditure Panel Survey (MEPS).

**Participants** Children and adolescents younger than 19 years in 4 yearly MEPS files with positive full-year weights who had at least 1 parent residing in the same household. There were 39 588 in the unweighted cross-sectional analysis and 39 710 in the unweighted full-year analysis.

**Main Outcome Measure** Prevalence of uninsurance among children and adolescents with at least 1 insured parent; predictors of uninsurance among children with at least 1 insured parent.

**Results** In the cross-sectional study population, 1380 of 39 588 children and adolescents were uninsured with at least 1 insured parent (weighted prevalence, 3.3%; 95% confidence interval [CI], 3.0%-3.6%). In multivariate analyses of children and adolescents with at least 1 insured parent, those uninsured were more likely Hispanic (odds ratio [OR], 1.58; 95% CI, 1.23-2.03) than white, non-Hispanic; low income (OR, 2.02; 95% CI, 1.42-2.88) and middle income (OR, 1.48; 95% CI, 1.09-2.03) than high income; from single-parent homes (OR, 1.99; 95% CI, 1.59-2.49) than from homes with 2 married parents; and living with parents who had less than a high school education (OR, 1.44; 95% CI, 1.10-1.89) than those with at least 1 parent who had completed high school. Those whose parents had public coverage were less likely to be uninsured (OR, 0.64; 95% CI, 0.43-0.96) than were those whose parents reported private health insurance. These predictors remained significant in full-year analyses. Similar patterns of vulnerability were also found among a subset of uninsured children with privately covered parents.

**Conclusions** Among all US children, more than 3% were uninsured with at least 1 insured parent. Predictors of such uninsurance included having low and middle income. Having a parent covered by only public insurance was associated with better children's coverage rates.

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be uninsured than those with insured parents.<sup>16</sup> When entire families have access to health insurance, children and adolescents not only benefit from more consistent insurance coverage but also have improved access to a regular source of care and higher rates of preventive services.<sup>7,19,22,25,26</sup> If entire

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families cannot gain consistent coverage, it is most often their children who have insurance while the parents go uncovered, especially since the creation of the State Children's Health Insurance Program (SCHIP).<sup>27,28</sup> Less is known, however, about how commonly this pattern is reversed. How many children in families with covered parents are uninsured? And, what characteristics predispose children and adolescents to being left behind in these families who have managed to gain some coverage?

During the recent debates to reauthorize SCHIP, much of the spotlight has focused on the subset of families with child-only coverage who would benefit from expanding health insurance to low-income parents.<sup>29-31</sup> The primary objective of this article is to examine the other subset of families experiencing a breakdown in the parent-child health insurance link—those with uninsured children who have at least 1 insured parent. Using nationally representative pooled data spanning 4 years of the Medical Expenditure Panel Survey (MEPS), our study aimed to identify the demographic and socioeconomic characteristics of children more likely to be in families with parent-only coverage.

## METHODS

### Data

This study was a secondary analysis of data obtained from the Medical Expenditure Panel Survey-Household Component (MEPS-HC) files, made publicly available by the Agency for Health Care Research and Quality.<sup>32</sup> The MEPS-HC survey collects data from a subsample of the National Health Interview Survey and uses a stratified and clustered random sample with weights that produce nationally representative estimates for insurance coverage and a wide range of health-related demographic and socioeconomic characteristics for the civilian, noninstitutionalized US population.<sup>33-35</sup> The MEPS-HC collects data from households that are interviewed 5 times over a 2-year pe-

riod. Certain groups (eg, low income, racial minorities) are oversampled. At various interviews, MEPS-HC respondents are asked questions about insurance status month by month and as of December 31 of each year.

We combined data from the years 2002 through 2005 because these years have a common variance structure necessary to ensure compatibility and comparability among the specific variables that we analyzed and because the most recent available data are from 2005. We also found no significant difference between the prevalence of uninsured children with insured parents when comparing each of the 4 years. Although MEPS data are reported separately in yearly files, the overlapping panel design of the MEPS facilitates the combination of data from 2 overlapping panels for each year (eg, data for 2002 combines the overlapping panels of 2001-2002 and 2002-2003). Our analysis included all children and adolescents younger than 19 years in each of the yearly files with positive full-year weights and who had at least 1 parent residing in the same household (total unweighted number, 39 710; weighted average yearly population, >72 million). Although MEPS defines a child as being younger than 18 years, we included 18-year-olds because they remain eligible for Medicaid and SCHIP.

Children and adolescents were selected for inclusion in the analyses based on having at least 1 parent residing in the same household and having at least 1 insured parent. Overall, we found no statistically significant difference between the insurance status of children living with 1 parent compared with those living with 2 parents—the children's point-in-time uninsurance rate was approximately 12% for both. So we included all children and adolescents in determining parental insurance status and linked each child to 1 or both parents. We constructed parent insurance variables using one parent identifier or both parent identifiers (if both were available) from MEPS, which includes biological and adop-

tive parents and stepparents. MEPS does not include variables for linking foster parents or nonparent guardians. Although family composition included many different combinations, there were 3 main categories: 2 married parents (n=26 001); single parent with insurance information for a second linked parent (n=8278); and single parent without insurance information about the second parent (5431). We excluded 3012 children or adolescents with no linked parent identifier because the child was born after the data collection point (n=1490) or because the child was not living with either parent (n=1522). Of note, this excluded group had a significantly higher uninsurance rate overall; however, there was no way to link members of that group to reliable parent information or partial or full-year insurance data. This group was also disproportionately poor and nonwhite, non-Hispanic. Among those 34 279 who could be linked to 2 parents, 72.2% had both parents insured all year, 23.9% had both parents not insured all year, and 3.9% had 1 parent insured and the other uninsured. Noting less than a 4% discrepancy between the insurance status of 2 linked parents, we created a variable representing "at least one parent insured" for the most consistency overall.

Two analyses were performed: cross-sectional (point-in-time) and full-year models. The point-in-time parental insurance status was based on whether at least 1 linked parent was insured on December 31 of the given year; full-year insured parental insurance status was based on whether at least 1 linked parent was insured during every month of the given year. We followed detailed programming instructions in the online MEPS user handbook and consulted with experts at the Agency for Health Care Research and Quality to construct variables and link files.<sup>36</sup>

### Variables and Analyses

**Outcome Variables.** Among children and adolescents with at least 1 insured parent, the primary outcome

was health insurance status. In cross-sectional analyses, we selected only children with at least 1 parent covered on December 31 of the given year and then used the same point-in-time variable to determine whether each child or adolescent was uninsured or insured on December 31. For the full-year analyses, we selected children and adolescents with at least 1 parent covered for the full year of interest and then we assessed whether they had a health insurance coverage gap sometime during the given year. We created 4 coverage gap variables using MEPS monthly insurance reports: those with full-year coverage (or full coverage during all available months), those without insurance for anywhere between 1 and 12 months of the year, those without insurance for more than 6 months, and those without insurance coverage all year. Of note, these groups were not mutually exclusive, and coverage gaps were not necessarily continuous from one month to the next.

**Potential Predictor Variables.** The conceptual model for predicting access to health care designed by Aday and Andersen<sup>37</sup> was adapted to identify 13 variables in the MEPS-HC data set that might influence children and adolescents' access to health insurance coverage. We used 2-tailed,  $\chi^2$  bivariate analyses to test for significant associations between potential predictors and the outcomes. Ten independent variables were significantly associated with at least 1 of the outcomes ( $P < .10$ ): household income; language spoken at home; parental educational and employment status; family composition; region of residence; and child or adolescent's age, race/ethnicity, health status, and chronic limitations. We found strong correlations between language spoken at home and race/ethnicity and between health status and chronic limitations; therefore, we included only 8 of the 10 independently associated variables in the final bivariate and multivariate models.

Child's race/ethnicity was determined by parent respondents based

on standard options provided by MEPS interviewers. We used 1 combined race/ethnicity variable for children and adolescents. Taking into account income, household size, and composition, the household income groups were based on the MEPS-HC's constructed variable, which categorizes families into 5 income groups based on earnings as a percentage of the federal poverty level (FPL): poor, less than 100% of the FPL; near poor, from 100% to less than 125% of the FPL; low income, from 125% to less than 200% of the FPL; middle income, from 200% to less than 400% of the FPL; and high income, 400% or higher than the FPL. Noting similarities among those with a single parent and those with 2 unmarried parents, we created 2 family composition groups: those with a single parent (those who could be linked to 1 or both parents) and those with 2 married parents. In addition to the significantly associated covariates, we also kept type of parental coverage in the model because this variable has a strong conceptual relationship to family insurance patterns. We then conducted a series of multiple logistic regression analyses to assess the adjusted associations between demographic and socioeconomic characteristics and children and adolescents' uninsurance status among all those with at least 1 insured parent. After noting the vulnerability of children and adolescents with privately covered parents, we conducted a similar post hoc analysis on the subset of those whose parents had only private coverage.

We used SUDAAN version 9.0.1 (Research Triangle Institute, Research Triangle Park, North Carolina) for all statistical analyses to account for the complex sampling design of the MEPS. The  $\alpha$  level was set at .05 for all multivariate analyses. This study protocol was reviewed by the Oregon Health and Science University Institutional Review Board, which deemed the study exempt from institutional review because data are publicly available.

## RESULTS

In the study population, 27 528 of the 39 710 children and adolescents were insured with at least 1 insured parent (weighted prevalence, 77.4%; 95% CI, 76.2%-78.5%) and 4236 were uninsured with uninsured parents (weighted prevalence, 8.5%; 95% CI, 7.9%-9.1%). Those insured with uninsured parents represented 10.8% (95% CI, 10.1%-11.6%) of the population (unweighted, 6444), and 3.3% (95% CI, 3.0%-3.6%) were uninsured with at least 1 insured parent (unweighted, 1380). In full-year estimates, 4.1% (95% CI, 3.8%-4.5%) of all children and adolescents had a health insurance coverage gap with a parent insured all year (unweighted, 1716). An estimated 1.6% (95% CI, 1.4%-1.9%) of all children were uninsured for the entire year (unweighted, 653) with at least 1 parent fully covered. Among just the uninsured children, 27.9% (95% CI, 25.7%-30.1%) had an insured parent (TABLE 1).

### Predictors of Uninsurance Among Children and Adolescents With Insured Parents

Among the 28 908 children and adolescents in the cross-sectional analysis with an insured parent, the distribution of certain demographic and socioeconomic characteristics was different when comparing insured with uninsured (TABLE 2). Among the uninsured, 21.9% were from low-income families compared with 13.2% of those who were insured. In contrast, 21.7% of uninsured children were in high-income families compared with 33.9% of those who were insured. Nearly a quarter of uninsured children and adolescents were of Hispanic origin (24.7%) compared with 14.2% who were insured. Regionally, 39.5% of uninsured vs 32.6% of insured children and adolescents lived in the South and 27.9% uninsured vs 23.4% insured lived in the western part of the United States. Among uninsured children and adolescents, 39.9% lived with a single parent compared with 25.3% of insured children and adoles-

cents. Forty-nine percent of insured children and adolescents had an excellent health status, whereas 44.7% of those without insurance had an excellent health status, and 88.1% of insured children had at least 1 parent who had completed high school vs 80.3% of uninsured children. These patterns persisted when comparing insured vs uninsured children in the full-year analyses.

**Health Insurance Discordance: Uninsured Children With Covered Parents**

TABLE 3 shows the cross-sectional and full-year multivariate comparisons revealing several factors that were consistently associated with a higher likelihood that the child or adolescent was uninsured, despite having at least 1 parent in the household with coverage. Cross-sectionally, children experiencing this discordant pattern of family coverage were more likely Hispanic (odds ratio [OR], 1.58; 95% confidence interval [CI], 1.23-2.03) than white non-Hispanic; low (OR, 2.02; 95% CI, 1.42-2.88) and middle income (OR, 1.48; 95% CI, 1.09-2.03) than high income; from single-parent homes (OR, 1.99; 95% CI, 1.59-2.49) than living with 2 parents who were married to each other; and living with parents who had less than a high school education (OR, 1.44; 95% CI, 1.10-1.89) than living with at least 1 parent who had completed high school; and living in the South (OR, 1.70; 95% CI, 1.23-2.34) or in the West (OR, 1.52; 95% CI, 1.10-2.10) than in the Northeast. Children whose parents had public coverage were less likely to be uninsured (OR, 0.64; 95% CI, 0.43-0.96) than those whose parents reported private health insurance.

These patterns persisted in the full-year models. In particular, children from low- and middle-income families were more vulnerable than the poorest and the richest subgroups. For example, compared with those from high-income families, those from low-income families were more likely to

lack health insurance coverage for more than 6 months (OR, 1.73; 95% CI, 1.18-2.55). Those from middle-income families were also more likely than those from high-income families to have long coverage gaps (OR, 1.56; 95% CI, 1.11-2.19). Middle-income children and adolescents were the most likely to have gone all year without coverage (OR, 1.48; 95% CI, 1.00-

2.19). Although not evident at a point in time or all year, those from poor families (OR, 1.69; 95% CI, 1.11-2.59) and from near poor families (OR 2.15; 95% CI, 1.33 to 3.49) were more likely to experience a coverage gap than those living in high-income families.

Parental type of coverage was also associated with different rates of chil-

**Table 1.** Prevalence of Different Patterns of Family Health Insurance Coverage in the United States (2002-2005)<sup>a</sup>

Coverage Patterns	Unweighted No. of Children <sup>b</sup>	Weighted % (95% Confidence Interval) <sup>c</sup>
Cross-sectional (insurance status on December 31)		
Parent insured <sup>d</sup> Child uninsured	1380	3.3 (3.0-3.6)
Parent insured <sup>d</sup> Child insured	27 528	77.4 (76.2-78.5)
Parent uninsured <sup>e</sup> Child uninsured	4236	8.5 (7.9-9.1)
Parent uninsured <sup>e</sup> Child insured	6444	10.8 (10.1-11.6)
<b>Total</b>	<b>39 588</b>	<b>100</b>
Child insurance coverage gap vs no coverage gap		
Parent insured all year <sup>f</sup> Child not insured all year (gap)	1716	4.1 (3.8-4.5)
Parent insured all year <sup>f</sup> Child insured all year (no gap)	24 208	70.2 (68.8-71.5)
Parent not insured all year <sup>g</sup> Child not insured all year (gap)	6984	13.9 (13.1-14.8)
Parent not insured all year <sup>g</sup> Child insured all year (no gap)	6802	11.8 (11.0-12.5)
<b>Total</b>	<b>39 710</b>	<b>100</b>
Child uninsured all year vs not uninsured all year		
Parent insured all year <sup>f</sup> Child uninsured all year	653	1.6 (1.4-1.9)
Parent insured all year <sup>f</sup> Child not uninsured all year	25 271	72.7 (71.4-73.9)
Parent not insured all year <sup>g</sup> Child uninsured all year	2681	5.1 (4.7-5.6)
Parent not insured all year <sup>g</sup> Child not uninsured all year	11 105	20.6 (19.6-21.6)
<b>Total</b>	<b>39 710</b>	<b>100</b>

<sup>a</sup>Source: 2002-2005 Medical Expenditure Panel Survey (MEPS), Household Component.

<sup>b</sup>Unweighted counts represent the total number of children from Medical Expenditure Panel Survey (MEPS)-respondent households with a positive-person weight who could be linked to a parent within the household. The total cross-sectional and full-year counts do not include the 3012 children with no parent identified in the household. The cross-sectional total also excludes the 122 children for whom self or parental insurance status could not be ascertained on December 31. Full-year self or parental insurance coverage status could be ascertained for all 39 710 in the sample.

<sup>c</sup>To derive population estimates, each child record from the MEPS was weighted according to person-level weights provided by the data-collection agency.

<sup>d</sup>For children with 2 parents linked, 1 or both parents had insurance on December 31; for children with 1 parent linked, the parent had insurance on December 31.

<sup>e</sup>For children with 2 parents linked, neither parent had insurance on December 31; for children with 1 parent linked, the parent had no insurance on December 31.

<sup>f</sup>For children with 2 parents linked, 1 or both parents had insurance for 12 months; for children with 1 parent linked, the parent had insurance for all 12 months.

<sup>g</sup>For children with 2 parents linked, neither parent had insurance for all 12 months; for children with 1 parent linked, the parent had no insurance for all 12 months.

dren's coverage. Compared with children and adolescents whose parents had any private insurance, those whose parents had only public insurance were less likely to be uninsured at a point in time (OR, 0.64; 95% CI, 0.43-0.96), to have any length cover-

age gap (OR, 0.54; 95% CI, 0.37-0.78), and to have a coverage gap of more than 6 months of the year (OR, 0.59; 95% CI, 0.35-0.98). In the post hoc analyses focusing on children and adolescents whose parents reported only private coverage for the full 12

months of a given year, the predictors of children's uninsurance were similar (TABLE 4).

**COMMENT**

Although the weighted results of this survey indicated that the largest group

**Table 2.** Demographic Characteristics of US Children With at Least 1 Insured Parent, According to the Child's Health Insurance Status (2002-2005)<sup>a</sup>

Demographic and Other Characteristics	Cross-Sectional Parent Insured <sup>b</sup>		Parent Insured All Year <sup>c</sup>			All Families Including All Children
	Child Uninsured	Child Insured	Child Insured All Year	Child Uninsured Part or All Year (Coverage Gap)	Child Uninsured All Year	
No. of sampled respondents <sup>d</sup>	1380	27 528	24 208	1716	653	39 170
Family income groups <sup>e,f,g</sup>						
Poor	12.9	13.2	11.6	13.7	9.6	16.6
Near poor	5.2	4.0	3.4	5.7	3.7	5.4
Low	21.9	13.2	12.3	21.7	16.9	15.8
Middle	38.3	35.7	36.3	39.0	44.5	33.5
High	21.7	33.9	36.4	20.0	25.4	28.7
Child's age, y <sup>f,g</sup>						
0-4	18.7	22.6	21.8	22.8	19.2	22.7
5-9	25.0	26.8	26.8	23.4	22.6	26.9
10-14	27.5	28.6	28.9	26.8	32.6	28.3
15-18	28.8	22.1	22.5	27.0	25.6	22.1
Child's race/ethnicity <sup>f,g,h</sup>						
Hispanic, any race	24.7	14.2	13.2	24.3	24.9	19.0
White, non-Hispanic	54.3	64.3	65.8	53.6	56.7	59.6
Non-White, non-Hispanic	21.0	21.5	21.1	22.0	18.4	21.5
≥1 Parent completed high school <sup>f,g</sup>	80.3	88.1	89.3	79.2	80.1	83.6
≥1 Parent employed	84.8	81.7	82.4	82.7	85.8	79.3
Living with a single parent <sup>f,g,i</sup>	39.9	25.3	23.5	39.7	39.2	29.0
Geographical residence <sup>f,g</sup>						
Northeast	13.8	20.0	20.8	14.5	15.7	17.8
Midwest	18.8	24.0	24.3	20.3	23.5	22.2
South	39.5	32.6	31.8	38.7	32.7	35.8
West	27.9	23.4	23.2	26.5	28.1	24.3
Child health status excellent <sup>f,g</sup>	44.7	49.8	50.4	45.1	48.1	48.1
Parent health insurance type						
Any private	86.7	85.7	87.5	87.0	88.4	84.2
Public only	13.4	14.3	12.5	13.0	11.6	15.8

<sup>a</sup>Source: 2002-2005 Medical Expenditure Panel Survey (MEPS), Household Component. Data are weighted percentages unless otherwise indicated.  
<sup>b</sup>For children with 2 parents linked, 1 or both parents had insurance on December 31; for children with 1 parent linked, the parent had insurance coverage on December 31.  
<sup>c</sup>For children with 2 parents linked, 1 or both parents had insurance for 12 months; for children with 1 parent linked, the parent had insurance for 12 months.  
<sup>d</sup>Unweighted counts represent the total number of children from the Medical Expenditure Panel Survey (MEPS)-respondent households with a positive-person weight who could be linked to a parent within the household. Percentages may not sum to 100 due to rounding.  
<sup>e</sup>In 2005 the federal poverty level for a family of 4 was \$19 350. For a definition of income parameters, see the "Methods" section.  
<sup>f</sup>For the  $\chi^2$  test comparisons of overall differences between demographic subgroups in cross-sectional (insured vs uninsured children on December 31) and full-year analyses of coverage gaps (children with a coverage gap vs insured all year) analyses,  $P < .05$ .  
<sup>g</sup>For the  $\chi^2$  test comparisons of overall differences between demographic subgroups in cross-sectional vs all-year (uninsured part or all year vs insured all year) analyses,  $P < .05$ .  
<sup>h</sup>Child's race/ethnicity variable was created by combining a race variable—which included white only, black only, American Indian/Alaskan Native only, Asian only, native Hawaiian/Pacific Islander only, and multiple races—and an ethnicity variable—which included Hispanic, or not Hispanic.  
<sup>i</sup>The single-parent family composition variable combined children who could be linked to a second parent (n = 8278) and children who could not be linked to a second parent (n = 5431). The other category included children who could be linked with 2 married parents (n = 26 001).

of uninsured children and adolescents had uninsured parents, an estimated 27.9% of the uninsured children and adolescents had parents with health insurance. Some of the children and adolescents in this study who lacked insurance coverage at 1 point in time or for less than 6 months might have been transitioning between plans or wait-

**Table 3.** Predictors of Uninsurance Among Children in the United States With at Least 1 Parent Insured, Cross-sectional and Full Year (2002-2005)<sup>a</sup>

Demographic and Other Characteristics	Discordant Family Health Insurance Pattern, Adjusted Odds Ratio (95% CI)			
	Cross-Sectional: Parent Insured/Child Uninsured (on 12/31) <sup>b</sup>	Full Year <sup>c</sup>		
		Parent Insured All Year/Child Uninsured Part or All of the Year (Coverage Gap) <sup>d</sup>	Parent Insured All Year/Child Uninsured >6 Mo <sup>e</sup>	Parent Insured All Year/Child Uninsured All Year <sup>f</sup>
Household income groups <sup>g</sup>				
Poor	1.22 (0.78-1.92)	1.69 (1.11-2.59)	1.05 (0.59-1.86)	0.69 (0.38-1.25)
Near poor	1.41 (0.81-2.44)	2.15 (1.33-3.49)	1.12 (0.68-1.85)	0.76 (0.43-1.32)
Low income	2.02 (1.42-2.88)	2.44 (1.81-3.28)	1.73 (1.18-2.55)	1.28 (0.83-1.95)
Middle income	1.48 (1.09-2.03)	1.72 (1.31-2.27)	1.56 (1.11-2.19)	1.48 (1.00-2.19)
High income	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Child's age, y				
0-4	0.65 (0.51-0.83)	0.90 (0.71-1.12)	0.82 (0.59-1.13)	0.86 (0.59-1.26)
5-9	0.69 (0.55-0.87)	0.70 (0.56-0.88)	0.75 (0.56-0.99)	0.76 (0.55-1.06)
10-14	0.72 (0.59-0.87)	0.75 (0.62-0.91)	0.82 (0.63-1.05)	1.00 (0.75-1.34)
15-18	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Child's race/ethnicity <sup>h</sup>				
Hispanic, any race	1.58 (1.23-2.03)	1.65 (1.31-2.07)	1.80 (1.35-2.41)	1.72 (1.23-2.40)
Nonwhite, non-Hispanic	0.84 (0.62-1.15)	0.87 (0.68-1.12)	0.89 (0.63-1.25)	0.77 (0.51-1.17)
White, non-Hispanic	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
At least 1 parent completed high school				
No	1.44 (1.10-1.89)	1.59 (1.23-2.04)	1.87 (1.35-2.60)	1.80 (1.17-2.76)
Yes	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
At least 1 parent employed				
Not currently employed	0.81 (0.62-1.05)	0.94 (0.74-1.19)	0.74 (0.56-0.98)	0.82 (0.60-1.12)
Employed/self-employed	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Family composition <sup>i</sup>				
Living with a single parent	1.99 (1.59-2.49)	2.04 (1.63-2.55)	2.08 (1.57-2.75)	2.31 (1.70-3.13)
Living with 2 married parents	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Geographic residence				
Midwest	1.14 (0.80-1.61)	1.20 (0.89-1.62)	1.38 (0.95-1.99)	1.27 (0.80-2.02)
South	1.70 (1.23-2.34)	1.67 (1.27-2.20)	1.83 (1.30-2.57)	1.30 (0.84-2.01)
West	1.52 (1.10-2.10)	1.39 (1.04-1.86)	1.49 (1.03-2.14)	1.38 (0.85-2.22)
Northeast	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Child health status				
Not excellent	1.11 (0.93-1.32)	1.09 (0.94-1.26)	0.99 (0.81-1.21)	1.00 (0.77-1.29)
Excellent	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Parent(s) health insurance type				
Public only	0.64 (0.43-0.96)	0.54 (0.37-0.78)	0.59 (0.35-0.98)	0.74 (0.38-1.44)
Any private	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]

Abbreviation: CI, confidence interval.

<sup>a</sup>Source: 2002-2005 Medical Expenditure Panel Survey (MEPS), Household Component. The multivariate models included all variables listed in the table.

<sup>b</sup>For children with 2 parents linked, 1 or both parents had insurance on December 31; for children with 1 parent linked, the parent had insurance on December 31. Data are odds of a child being uninsured with at least 1 parent insured vs the child being insured with at least 1 parent insured on December 31.

<sup>c</sup>For children with 2 parents linked, 1 or both parents had insurance for 12 months; for children with 1 parent linked, the parent had insurance for all 12 months.

<sup>d</sup>Data are odds of a child being uninsured for part or all of the year with at least 1 parent insured all year vs the child being insured all year with at least 1 parent insured all year.

<sup>e</sup>Data are odds of a child being uninsured for more than 6 months with at least 1 parent insured all year vs the child being insured for at least 6 months with at least 1 parent insured all year.

<sup>f</sup>Data are odds of a child being uninsured all year with at least 1 parent insured all year vs the child being insured for part or all year with at least 1 parent insured all year.

<sup>g</sup>In 2005, the federal poverty level for a family of 4 was US \$19 350. For a definition of the income parameters, see the "Methods" section.

<sup>h</sup>For child's race categories, see footnote in Table 2.

<sup>i</sup>For the single-parent family composition variable, see footnote in Table 2.

ing to qualify for coverage. However, a child lacking coverage for more than 6 months of the year suggests a chronic problem. This study found similar pat-

terns of demographic and socioeconomic characteristics that predispose children to getting left behind in families with covered parents, whether ex-

amining a point in time, coverage gaps, or a full year without coverage. Low- and middle-income households, low parental educational attainment, His-

**Table 4.** Predictors of Uninsurance Among Children in the United States With at Least 1 Parent Privately Insured, Cross-sectional and Full Year (2002-2005)<sup>a</sup>

Demographic and Other Characteristics	Discordant Family Health Insurance Pattern, Adjusted Odds Ratio (95% CI) <sup>c</sup>			
	Cross-Sectional: Parent Privately Insured/ Child Uninsured (on December 31) <sup>b</sup>	Full Year <sup>c</sup>		
		Parent Privately Insured All Year/ Child Uninsured Part or All of the Year (Coverage Gap) <sup>d</sup>	Parent Privately Insured All Year/ Child Uninsured >6 Months of the Year <sup>e</sup>	Parent Privately Insured All Year/ Child Uninsured All Year <sup>f</sup>
Household income groups <sup>g</sup>				
Poor	1.39 (0.85-2.27)	2.48 (1.83-3.35)	1.96 (1.24-3.11)	0.96 (0.53-1.74)
Near poor	1.43 (0.74-2.73)	3.01 (2.17-4.16)	2.20 (1.44-3.36)	1.02 (0.53-1.96)
Low income	1.88 (1.30-2.73)	2.57 (2.06-3.21)	2.12 (1.54-2.93)	1.34 (0.88-2.03)
Middle income	1.41 (1.02-1.93)	1.77 (1.46-2.16)	1.55 (1.17-2.06)	1.40 (0.97-2.02)
High income	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Child's age, y				
0-4	0.81 (0.62-1.06)	1.06 (0.90-1.26)	0.87 (0.67-1.11)	0.90 (0.64-1.28)
5-9	0.78 (0.60-1.01)	0.91 (0.77-1.07)	0.79 (0.62-1.01)	0.82 (0.59-1.14)
10-14	0.81 (0.65-1.01)	0.92 (0.80-1.06)	0.81 (0.67-0.99)	1.02 (0.78-1.34)
15-18	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Child's race/ethnicity <sup>h</sup>				
Hispanic, any race	1.69 (1.27-2.25)	1.40 (1.16-1.69)	1.60 (1.24-2.06)	1.68 (1.21-2.34)
Nonwhite, non-Hispanic	0.94 (0.66-1.33)	0.98 (0.80-1.22)	1.00 (0.76-1.32)	0.91 (0.63-1.31)
White, non-Hispanic	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
At least 1 parent completed high school				
No	1.60 (1.14-2.26)	1.42 (1.16-1.73)	1.70 (1.27-2.27)	2.13 (1.39-3.29)
Yes	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
At least 1 parent employed				
Not currently employed	0.75 (0.52-1.08)	1.30 (1.13-1.51)	1.02 (0.83-1.26)	0.93 (0.69-1.26)
Employed/self-employed	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Family composition <sup>i</sup>				
Living with a single parent	2.28 (1.79-2.91)	1.71 (1.45-2.02)	1.72 (1.35-2.19)	2.23 (1.66-2.99)
Living with 2 married parents	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Geographic residence				
Midwest	1.00 (0.69-1.46)	1.09 (0.85-1.40)	1.08 (0.79-1.49)	1.05 (0.67-1.66)
South	1.45 (1.03-2.04)	1.48 (1.17-1.88)	1.57 (1.18-2.08)	1.19 (0.78-1.81)
West	1.32 (0.91-1.91)	1.38 (1.06-1.80)	1.38 (1.00-1.91)	1.22 (0.76-1.98)
Northeast	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Child health status				
Not excellent	1.06 (0.87-1.28)	1.04 (0.93-1.16)	0.89 (0.76-1.04)	0.90 (0.69-1.17)
Excellent	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]

Abbreviation: CI, confidence interval.

<sup>a</sup>Source: 2002-2005 Medical Expenditure Panel Survey (MEPS), Household Component. The multivariate models included all variables listed in the table.

<sup>b</sup>For children with 2 parents linked, 1 or both parents had private insurance on December 31; for children with 1 parent linked, the parent had private insurance on December 31. Private insurance included those parents with Medicare insurance. Data are odds of a child being uninsured vs insured with at least 1 parent with private insurance coverage on December 31.

<sup>c</sup>For children with 2 parents linked, 1 or both parents had private insurance coverage for 12 months; for children with 1 parent linked, the parent had private insurance coverage for 12 months. Private insurance coverage included those parents with Medicare insurance.

<sup>d</sup>Data are odds of a child being uninsured for part or all of the year vs insured all year with at least 1 parent with private insurance coverage all year.

<sup>e</sup>Data are odds of a child being uninsured for more than 6 months vs being insured for at least 6 months with at least 1 parent with private insurance coverage all year.

<sup>f</sup>Data are odds of a child being uninsured all year vs insured for part or all of the year with at least 1 parent with private insurance coverage all year.

<sup>g</sup>In 2005, the federal poverty level for a family of 4 was US \$19 350. For a definition of the income parameters, see the "Methods" section.

<sup>h</sup>For child's race categories, see footnote in Table 2.

<sup>i</sup>For the single-parent family composition variable, see footnote in Table 2.

panic ethnicity, single-parent households, geographic residence in the South or West, and having a parent with private insurance coverage were consistently associated with a higher likelihood of child or adolescent lack of insurance coverage. When weighted, these estimates represent 3 million children who had a coverage gap despite having at least 1 parent who had full-year coverage. More than a million of these children were without coverage for the entire year.

### Short-term Policy Implications

Although the primary approach to insuring families in the United States is still based on an employer-sponsored model complemented by public programs for the poorest families (eg, Medicaid, SCHIP), the disparities that persist in children's health insurance coverage associated with household income illustrate weaknesses within this current model. The vulnerability of children and adolescents from low- and middle-income families with insured parents reflects the income gap between public and private coverage. Although some of the children and adolescents who live in these circumstances likely qualify for public coverage, many of the families earning between 125% and 400% percent of the FPL fall into this gap—earning too much to qualify for public insurance but not enough to afford private insurance for the entire family.<sup>27,38</sup> In 2005, the average annual single-employee health insurance premium was \$3991 with workers paying approximately 18% of the cost (\$723 yearly). The average family premium was \$11 381 with workers required to pay more than 25% of the cost (\$2890). In firms with more than 50% low-wage workers, employees paid even more to cover their families (\$3089 yearly).<sup>39</sup> The working adults in these families may be able to afford private insurance for themselves but cannot afford to pay the premiums to cover their entire family. Further reliance on the current employer-sponsored private health insurance

system may not be realistic, especially when the cost of a family health insurance premium is projected to exceed the average US household income by 2025.<sup>40</sup>

Parents of uninsured children and adolescents who qualify for public insurance may not be aware of their children's eligibility or may be attempting to move away from receiving public benefits.<sup>7-9,41</sup> They may also have yearly income fluctuations that disqualify their children from continuous enrollment.<sup>7,8,42</sup> And, each state has different income eligibility requirements, so children in a family earning 200% of the FPL would qualify for SCHIP in one state but not another.<sup>6,9,43</sup> Another explanation unique to single parents stems from some state practices that aggressively track absent parents to recoup the costs of public insurance. Single parents who fear retaliation from an ex-partner whose wages are involuntarily garnered by the state may choose not to enroll their children. Therefore, short-term solutions to address the children's uninsurance problem may include increasing public outreach and retention efforts to keep eligible children enrolled in public insurance benefits, easing prohibitive barriers, and expanding the SCHIP, which has been successful at improving children's insurance rates.<sup>9,44</sup>

It has been difficult to implement these types of basic policy measures because of concerns about parents dropping their children from private insurance plans and migrating to public coverage unnecessarily (*crowd out*). However, the large number of children and adolescents from low- and middle-income families uninsured all year, despite their having at least 1 fully insured parent, is evidence that children are being crowded out by unaffordable private insurance and not by the availability of public coverage. If crowd out were simply due to the availability of SCHIP, children in this study who qualified for SCHIP would have been insured publicly and those who did not qualify would have maintained private cover-

age. Even children from the poorest families in this study—those most likely to qualify for continuous public insurance—were more likely than those coming from high-income families to be experiencing coverage gaps. Although they were not going uncovered for long periods as were the low- and middle-income children, there is still work to be done to reduce high-churning rates among the poor and near poor children in public insurance programs.<sup>6,45</sup>

### Longer-term Policy Implications

Evidence suggests that when family members are covered separately under different plans or when certain individuals have coverage and others do not, children's health declines.<sup>21,29,46</sup> Furthermore, if the assumption that insurance coverage is a "household good" is abandoned and the system shifts toward defining it as an "individual good," we add layers of complexity for vulnerable families who must simultaneously learn different systems for enrollment and utilization of multiple insurance plans.<sup>47</sup> Discordant patterns of family health insurance may become the norm rather than the exception; the current trend is certainly moving in that direction.<sup>48</sup> While a good short-term fix, it is unclear whether expansions in child-only public insurance programs that largely exclude parents will serve as the best longer-term solution. Among all children with an insured parent in this study, those whose parents had only public coverage were less likely to be uninsured confirming previous evidence that covering both parent and child in the same public program may lead to more stable children's coverage.<sup>16,19,20,23-25</sup> This approach may also be the most economical.<sup>49</sup>

If families are better off covered under 1 plan but US society rejects a public health insurance program for all members of the family, the question of whether the employer-based model is sustainable may need to be revisited. In this study, the private system did not do a good job of pro-

viding coverage for entire families. Among children and adolescents whose parents had only private coverage (Table 4), not only the low- and middle-income children and adolescents but all 4 groups below 400% of the FPL were more likely to be uninsured for more than 6 months when compared with children in the highest-income families. Some of these uninsured children qualify for public coverage but are not consistently enrolled for reasons that are only partially understood.<sup>6,25,45,48</sup> These families may benefit from being able to purchase public coverage on a sliding scale that would allow for fluidity of coverage with frequent fluctuations in family income and circumstances. Another possible policy intervention would be the expansion of partial assistance programs that help make private coverage more affordable for families who prefer coverage for everyone under 1 plan.<sup>25,48</sup> This approach, however, relies heavily on the current private insurance market. The bolder alternative requires replacing the current insurance paradigm with a new model.

### Study Considerations

Our results should be considered in the context of several limitations. First, secondary analyses rely on the methods used to gather information about households and the insurance status of each family member. For example, MEPS collects data on whether employers offer insurance without specific information about whether dependents are included in this offering, so we were unable to ascertain if the uninsured children were being offered employer-sponsored insurance. We also could not determine whether a child or adolescent had been denied individual coverage due to a preexisting condition. In addition, we were unable to determine the insurance status of the second parent for 5431 children in single-parent households, and we had no parental information on children living separately from both parents. While our findings show a significant prob-

lem even without including these data, our estimates do not account for some of the most vulnerable children, thus underestimating the problem. Second, as with all observational studies that rely on self-report, response bias remains a possibility. Third, although the MEPS-HC is representative of the civilian, noninstitutionalized US population, the format of our analyses limits causal inferences.

Incremental expansions in public insurance programs for children will continue to improve insurance rates in the short term. However, the longer-term solutions to keeping all children insured are likely to be more complicated. Unless health insurance coverage models are designed to keep entire families covered, some children will continue to get left behind. It is time to think beyond health insurance models to achieve a sustainable health care system and the best possible health outcomes for all families.

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**Study concept and design:** DeVoe, Wallace.

**Acquisition of data:** Tillotson.

**Analysis and interpretation of data:** DeVoe, Tillotson, Wallace.

**Drafting of the manuscript:** DeVoe.

**Critical revision of the manuscript for important intellectual content:** DeVoe, Tillotson, Wallace.

**Statistical analysis:** Tillotson.

**Obtained funding:** DeVoe.

**Administrative, technical, or material support:** DeVoe, Wallace.

**Study supervision:** DeVoe.

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