

## ORIGINAL RESEARCH



## Prevalence and Predictors of Underinsurance Among Low-Income Adults

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**BACKGROUND:** Millions of adults will gain Medicaid or private insurance in 2014 under the Affordable Care Act, and prior research shows that underinsurance is common among middle-income adults. Less is known about underinsurance among low-income adults, particularly those with public insurance.

**OBJECTIVE:** To compare rates of underinsurance among low-income adults with private versus public insurance, and to identify predictors of being underinsured.

**DESIGN:** Descriptive and multivariate analysis of data from the 2005–2008 Medical Expenditure Panel Survey.

**PARTICIPANTS:** Adults 19–64 years of age with family income less than 125 % of the Federal Poverty Level (FPL) and full-year continuous coverage in one of four mutually exclusive insurance categories ( $N=5,739$ ): private insurance, Medicaid, Medicare, and combined Medicaid/Medicare coverage.

**MAIN MEASURES:** Prevalence of underinsurance among low-income adults, defined as out-of-pocket expenditures greater than 5 % of household income, delays/failure to obtain necessary medical care due to cost, or delays/failure to obtain necessary prescription medications due to cost.

**KEY RESULTS:** Criteria for underinsurance were met by 34.5 % of low-income adults. Unadjusted rates of underinsurance were 37.7 % in private coverage, 26.0 % in Medicaid, 65.1 % in Medicare, and 45.1 % among Medicaid/Medicare dual enrollees. Among underinsured adults, household income averaged \$6,181 and out-of-pocket spending averaged \$1,115. Due to cost, 8.1 % and 12.8 % deferred or delayed obtaining medical care or prescription medications, respectively. Predictors of underinsurance included being White, unemployed, and in poor health. After multivariate adjustment, Medicaid recipients were significantly less likely to be underinsured than privately insured adults (OR 0.22, 95 % CI 0.17–0.28).

**CONCLUSIONS:** Greater than one-third of low-income adults nationally were underinsured. Medicaid recipients

were less likely to be underinsured than privately insured adults, indicating potential benefits of expanded Medicaid under health care reform. Nonetheless, more than one-quarter of Medicaid recipients were underinsured, highlighting the importance of addressing cost-related barriers to care even among those with public coverage.

**KEY WORDS:** underinsurance; health reform; Medicaid; low-income.

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### INTRODUCTION

One of the central aims of the Affordable Care Act (ACA) is the expansion of insurance coverage to over 30 million currently uninsured Americans.<sup>1</sup> However, expanding insurance coverage alone may not improve access to care if that coverage is inadequate.

Underinsurance, or having insurance that does not adequately meet an individual's needs, is a significant problem, affecting an estimated 25 million adults in the U.S.<sup>2</sup> Evidence suggests that underinsurance has similar adverse effects on health care utilization and health outcomes as lacking insurance.<sup>2</sup> Underinsurance among adults has primarily been studied in middle-income individuals and those with private coverage.<sup>3–5</sup> Increasing coverage for adults through Medicaid expansions is thought to be a way of improving adequacy of coverage.<sup>2</sup>

However, considerably less attention has been paid to underinsurance among low-income adults,<sup>2, 5–7</sup> especially those with public insurance. While underinsurance has been examined among children in public programs,<sup>8</sup> previous research has not explored the possibility that adults in Medicaid might be underinsured. In 2014, the ACA will expand Medicaid eligibility to citizens and qualified permanent residents with incomes at or below 138 % of the federal poverty level (FPL), in states that choose to

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participate.<sup>1</sup> Although the future of the ACA is uncertain, with some prominent politicians advocating a repeal of the law, numerous states have already turned to Medicaid expansions in order to cover uninsured adults,<sup>9</sup> suggesting that Medicaid will continue to play a key role in efforts to expand coverage regardless of the fate of the ACA.

Prior research indicates that Medicaid coverage increases health care access and financial protection for low-income adults.<sup>10, 11</sup> However, during the current economic recession, many state Medicaid programs are employing cost-cutting strategies such as increased cost-sharing,<sup>12</sup> and the benchmark coverage provided for new Medicaid enrollees under the ACA may be less generous than traditional Medicaid for many enrollees.<sup>13</sup> Thus, for several reasons, adequacy of coverage among the publicly insured may be compromised, thereby blunting the effect of improved coverage on access to care and health status. Therefore, a better understanding of underinsurance among low-income insured adults is warranted.

In this study, our primary objective was to examine underinsurance among low-income adults (< 125 % of FPL) who will become eligible for Medicaid under the ACA in 2014, in participating states. We examined characteristics of the underinsured with different types of insurance coverage, and identified predictors for underinsurance in this population.

## METHODS

### Data

Our data come from the Medical Expenditure Panel Survey-Household Component (MEPS-HC) files. The MEPS is a nationally representative survey administered by the Agency for Health Care Research and Quality that collects monthly data on health insurance, medical utilization, barriers to care, demographics, and socioeconomic data. Households are interviewed five times over a two-year time period using a panel design, with a response rate of approximately 65 %; full details are available elsewhere.<sup>14</sup> The MEPS is well-validated and has been used in numerous analyses of health insurance and spending.<sup>4, 15, 16</sup> We pooled data sets from 2005 to 2008 to increase our sample size for subgroup analyses. We used the most recently available data sets at the time of our analysis.

### Inclusion and Exclusion Criteria

Our study sample contained all adults 19 to 64 years of age with family incomes below 125 % of FPL who reported 12 months of continuous insurance coverage in one of the following categories: Medicaid, Medicare, private insurance, or dual Medicaid/Medicare coverage. This population was selected to exclude elderly individuals (who are enrolled in

Medicare based on age), and include individuals who will be eligible for Medicaid coverage in 2014 under the ACA. The MEPS reports family income in discrete increments, including thresholds at 100 %, 125 %, 200 %, and 400 % of FPL, but does not include a category at 138 % of FPL.

Individuals with multiple types of insurance coverage for any given month, as well as those with gaps in coverage, were excluded from our analysis in order to focus on individuals with continuously held insurance within one of four mutually exclusive categories. The final sample contained 5,884 adults.

### Primary Outcome

Our primary outcome measure was a binary variable for “underinsurance.” Underinsurance is a state in which individuals experience significant financial barriers to accessing health care despite holding insurance.<sup>3</sup> We followed previous research, which defines individuals as underinsured if they meet any one of the following criteria: out-of-pocket expenditures greater than 10 % of household income or 5 % of household income for those with incomes below 200 % of FPL (our entire sample has income below 125 % FPL); self-reported delays or failure to obtain necessary prescription medication due to cost; or self-reported delays or failure to receive necessary medical care or treatment due to cost.<sup>2, 5, 17–19</sup> Individuals reporting no income were included in our primary analysis, but sensitivity analyses were conducted in which they were excluded to determine the effect on our estimates, since *any* out-of-pocket spending by these individuals would classify them as underinsured.

### Statistical Analysis

Statistical analyses were conducted using SAS 9.2. All estimates accounted for the data’s complex survey design, and were weighted to produce national estimates. We first conducted descriptive analyses of our study population to estimate the percentage of adults who were underinsured within each insurance category. We then conducted bivariate analyses in which we compared underinsured and fully insured individuals by potential predictors of underinsurance. These variables were chosen based on a conceptual framework derived from the Anderson and Aday model for health care access,<sup>20</sup> and prior research.<sup>21</sup>

We then compared family income and out-of-pocket health care spending by underinsurance status, within each insurance category. Weighted means and design-adjusted confidence intervals were computed and tested between groups using dummy variables in linear regression analyses. Rao-Scott chi-square testing was performed for all categorical variables.

We conducted a multivariate logistic regression analysis to identify independent predictors of underinsurance. Two-tailed p values were computed and alpha was set at 0.05 to assess statistical significance.

This study protocol was reviewed by the Boston University Institutional Review Board, which deemed the study exempt from institutional review, due to the public availability of the data.

## RESULTS

Characteristics of our study sample by underinsurance status are shown in Table 1. 67.7 % of the total population was White, and 24.4 % was Black. 17.5 % reported Hispanic ethnicity. The majority of the population lived below 100 % FPL (76.1 %) and were unmarried (65.0 %). The majority also had a high school education (69.3 %). The distribution of insurance in our sample was 46.4 % Medicaid, 39.2 % private, 6.0 % Medicare, and 8.3 % Medicaid/Medicare.

Table 2 presents rates of underinsurance for our full sample, stratified by mutually exclusive insurance type. Overall, 34.5 % of the total study population met criteria for underinsurance. Among underinsured adults, mean household income was \$6,181 (95 % CI 5,772–6,589), with average out-of-pocket expenditures of \$1,115 (95 % CI 1,027–1,204). These values represented less than half the mean income of fully insured adults, and an almost 10-fold increase in out-of-pocket expenditures.

A sensitivity analysis was performed around the impact of excluding individuals from our sample who reported zero annual income. 512 individuals (8.9 % of the sample) had 0 income. When these individuals were excluded from the analyses, the frequency of underinsurance decreased from 34.5 % to 27.4 %. The distribution of the population by insurance type was similar to that shown in Table 1 (Appendix Table 5), and multivariate results were not affected. Therefore, those reporting an income equal to zero were kept in the study population for the remaining analyses reported below.

Among adults with 12 months of continuous private insurance, 37.7 % were underinsured. Among those with public insurance, 26.0 % of adults with Medicaid, 65.1 % of those with Medicare, and 45.1 % of those with dual Medicaid/Medicare coverage met criteria for underinsurance. The lowest income was reported among the underinsured with Medicaid (\$4,902 compared to \$12,510 in the fully insured), with mean out-of-pocket expenditures of \$641, compared to \$68 in the fully insured Medicaid population. The highest mean out-of-pocket expenditures reported among the underinsured was in those with Medicare coverage (\$1,873).

**Table 1. Characteristics Among Adults < 125 % Federal Poverty Level (FPL) with Continuous Insurance Coverage (N=5,739)\***

Demographic variable	Total <sup>†</sup>	Fully insured (n=4,031)	Underinsured (n=1,708)
Census region			
Midwest	1,060 (21.1)	700 (20.5)	360 (22.3)
South	1,968 (32.3)	1,296 (29.8)	672 (37.1)
West	1,615 (23.4)	1,230 (25.0)	385 (20.3)
Northeast	1,096 (23.1)	805 (24.7)	291 (20.3)
Race/ethnicity <sup>‡</sup>			
White	3,692 (67.7)	2,518 (64.5)	1,174 (74)
Black	1,668 (24.4)	1,250 (27.4)	418 (18.7)
Asian	175 (4.1)	131 (4.5)	44 (3.3)
American Indian/ Alaska native	56 (1.1)	35 (1.0)	21 (1.1)
Other	148 (2.7)	97 (2.6)	51 (2.8)
Hispanic ethnicity	1,656 (17.5)	1,305 (20.2)	351 (12.5)
Income			
100–124 % FPL	1,396 (23.9)	1,121 (28.3)	275 (15.5)
< 100 % FPL	4,343 (76.1)	2,910 (71.7)	1,433 (84.5)
Marital status			
Married	2,038 (35.0)	1,553 (38.5)	485 (28.3)
Unmarried	3,701 (65.0)	2,478 (61.5)	1,223 (71.7)
Education			
Less than high school	2,227 (30.7)	1,646 (33.2)	581 (26.1)
High school or greater	3,475 (69.3)	2,350 (66.8)	1,125 (73.9)
Employment			
Unemployed	3,306 (55.9)	1,990 (46.4)	1,316 (73.8)
Employed	2,426 (44.1)	2,034 (53.6)	392 (26.2)
Health status			
Poor	582 (9.5)	277 (6.3)	305 (15.4)
Fair	1213 (19.8)	745 (17.7)	468 (23.9)
Good	1738 (29.2)	1272 (30.2)	466 (27.1)
Very good	1308 (24.7)	1007 (25.8)	301 (22.8)
Excellent	896 (16.8)	728 (20.0)	168 (10.8)
Insurance type			
Full year private only	1,805 (39.2)	1,254 (37.4)	551 (42.8)
Full year medicaid only	3,121 (46.4)	2,380 (52.5)	741 (35.0)
Full year medicare only	320 (6.0)	115 (3.2)	205 (11.4)
Full year dual medicaid/medicare	493 (8.3)	282 (6.9)	211 (10.8)
Financial characteristics			
Mean household income (N=5,636)	\$11,015 (10,614–11,417)	\$13,541 (13,066–14,017)	\$6,181 (5,772–6,589)
Mean out-of-pocket spending on health care for self/family	\$464 (429–499)	\$121 (111–130)	\$1,115 (1,027–1,204)

\*Rao-Scott chi-square p value calculated for categorical variables and student's T-test p value calculated for continuous variables were all < 0.001

<sup>†</sup>Data are presented as unadjusted counts (weighted percentage) or mean (95 % confidence interval).

<sup>‡</sup>Two categories of the race variable provided through the Medical Expenditure Panel Survey database were collapsed due to low frequency; "Native Hawaiian/Pacific Islander" and "Multiple Races Reported" were reported as "Other"

Reasons for underinsurance are described in Table 3. Among all underinsured adults, 91.4 % reported out-of-pocket spending for self/family greater than 5 % of their household income. Cost-related deferrals or delays in medical care and prescription medications occurred for 8.1 % and 12.8 %, respectively.

**Table 2. Financial Characteristics among Adults <125 % Federal Poverty Level (FPL) with Continuous Insurance Coverage by Underinsurance Category\***

	Fully Insured†	Underinsured
Full sample (N=5,739)		
Number (%)	4,031 (65.5)	1,708 (34.5)
Mean household income (N=5,636)	\$13,541 (13,066–14,017)	\$6,181 (5,772–6,589)
Mean out-of-pocket spending on health care for self/family	\$121 (111–130)	\$1,115 (1,027–1,204)
Full year private insurance only (N=1,805)		
Number (%)	1,254 (62.3)	551 (37.7)
Mean household income (N=1,746)	\$15,711 (14,921–16,500)	\$7,105 (6,447–7,764)
Mean out-of-pocket spending on health care for self/family	\$186 (166–206)	\$1,360 (1203–1516)
Full year medicaid only (N=3,121)		
Number (%)	2,380 (74.0)	741 (26.0)
Mean household income (N=3,086)	\$12,510 (11,956–13,065)	\$4,902 (4,404–5,400)
Mean out-of-pocket spending on health care for self/family	\$68 (61–74)	\$614 (522–706)
Full Year Medicare Only (N=320)		
Number (%)	115 (34.9)	205 (65.1)
Mean household income (N=314)	\$14,064 (12,858–15,270)	\$6,880 (\$6,346–7,415)
Mean out-of-pocket spending on health care for self/family	\$176 (155–197)	\$1,873 (1,674–2,072)
Full Year Dual Medicaid/Medicare (N=493)		
Number (%)	282 (54.9)	211 (45.1)
Mean household income (N=490)	\$9,912 (9,425–10,399)	\$6,129 (5,716–6,543)
Mean out-of-pocket spending on health care for self/family	\$143 (130–155)	\$971 (888–1,054)

\*Rao-Scott chi-square *p* value calculated for categorical variables and student's *T*-test *p* value calculated for continuous variables were all < 0.001

†Data are presented as unadjusted counts (weighted percentage) or mean (95 % confidence interval)

Within each insurance type, a large majority of the underinsured met financial criteria for underinsurance (> 5 % of household income spent on out-of-pocket costs). However, cost barriers to obtaining necessary medical care and prescription drugs were more common among the publicly insured than those with private coverage. Among the privately insured, 5.3 % and 7.2 % delayed/deferred medical care and

prescription medications, respectively. By comparison, 10.7 % of those with Medicaid reported delayed/deferred medical care and 15.1 % reported delayed/deferred prescription drug utilization; both rates were significantly higher among those with Medicaid than those with private insurance ( $p < 0.001$ ).

Table 4 shows the results from our multivariate logistic regression model examining predictors of underinsurance. Significant predictors of underinsurance were: White race, non-Hispanic ethnicity, and income less than 100 % FPL. Additionally, those who were not married, had at least a high school education, or were unemployed were significantly more likely to be underinsured. Unemployed adults had 3.9 times the odds of underinsurance as employed adults (OR 3.9, 95 % CI 3.2–4.8). Individuals living in the South had a significantly higher risk of underinsurance than those in the Northeast (OR 1.4, 95 % CI 1.1–1.7). Perceived health status was a significant predictor of underinsurance, with adjusted odds ratios that increased as health status worsened. Those reporting poor health status had 3.9 times the odds of underinsurance as those with excellent health status (OR 3.9, 95 % CI 2.7–5.6).

Private insurance was a significant predictor of underinsurance. After multivariate adjustment, those with Medicaid had 78 % lower odds of being underinsured than those with private insurance (OR 0.22, 95 % CI 0.17–0.28), and those with dual Medicaid/Medicare coverage had 71 % lower odds of being underinsured than those with private coverage (OR 0.29, 95 % CI 0.20–0.41). After adjustment, rates of underinsurance did not differ significantly between those with private insurance and those with Medicare coverage.

## DISCUSSION

Our findings from a nationally representative survey indicate that underinsurance affects more than one-third of low-income adults with continuous coverage during the year, the majority of whom are insured through Medicaid. In the context of increased cost-sharing in state Medicaid programs, simultaneously paired with upcoming Medicaid

**Table 3. Breakdown of Underinsurance by Criteria\***

	Total underinsured (N=1,708)	Full year private insurance only (N=551)	Full year medicaid only (N=741)	Full year medicare only (N=205)	Full year dual medicaid/medicare (N=211)
Out of pocket spending for self/family >5 % of household income	1,523 (91.4)	511 (94.5)	636 (87.7)	192 (94.3)	184 (87.6)
Did not receive or delayed medical care due to cost	153 (8.1)	36 (5.3)	81 (10.7)	21 (12.5)	15 (6.1)
Did not receive or delayed prescription medication due to cost	242 (12.8)	47 (7.2)	117 (15.1)	36 (17.3)	42 (22.9)

\*Data are unadjusted counts and weighted percentages

**Table 4. Predictors of Underinsurance Among Continuously Insured Adults < 125 % Federal Poverty Level (FPL)\*, †**

Model variable	Adjusted odds ratio (95 % CI)	p value
Census region		
Midwest	1.2 (0.90–1.5)	0.23
South	1.4 (1.1–1.7)	0.003
West	1.2 (0.89–1.5)	0.29
Northeast	Reference	
Race‡		
Black	0.48 (0.40–0.58)	< 0.001
Asian	0.60 (0.35–1.02)	0.06
American Indian/Alaska Native	0.98 (0.40–2.4)	0.96
Other	0.99 (0.55–1.8)	0.99
White	Reference	
Ethnicity		
Hispanic ethnicity	0.68 (0.55–0.83)	< 0.001
Non-hispanic ethnicity	Reference	
Income		
100–124 % FPL	0.41 (0.33–0.51)	< 0.001
< 100 % FPL	Reference	
Marital status		
Married	0.54 (0.45–0.65)	< 0.001
Unmarried	Reference	
Education		
Less than high school	0.74 (0.62–0.88)	< 0.001
High school or greater	Reference	
Employment		
Unemployed	3.9 (3.2–4.8)	< 0.001
Employed	Reference	
Perceived health status		
Poor	3.9 (2.7–5.6)	< 0.001
Fair	2.4 (1.8–3.2)	< 0.001
Good	1.8 (1.4–2.5)	< 0.001
Very Good	1.6 (1.2–2.2)	< 0.001
Excellent	Reference	
Insurance type		
Full year medicaid only	0.22 (0.17–0.28)	< 0.001
Full year medicare only	0.92 (0.63–1.3)	0.66
Full year dual medicaid/ medicare insurance	0.29 (0.20–0.41)	< 0.001
Full year private insurance only	Reference	

\*N = 1,605 underinsurance=yes, N = 4,091 underinsurance=no

†Model p value = < 0.001, c statistic = 0.76

‡Two categories of the race variable provided through the MEPS database were collapsed due to low frequency; “Native Hawaiian/Pacific Islander” and “Multiple Races Reported” were reported as “Other”

expansions under the ACA, our findings have a number of policy implications directly applicable to this population.

Our first major finding was a high rate of underinsurance (34.5 %) among adults living at less than 125 % FPL, even higher than rates estimated in prior research examining low-income adults up to 200 % FPL.<sup>21</sup> This rate remained quite high even among those insured through Medicaid (26.0 %); to our knowledge, prior research has not examined the source of insurance among low-income underinsured adults. While Medicaid is often considered comprehensive coverage, our findings question this assumption for a marginalized population of low-income adults who reported substantial out-of-pocket medical expenditures. Of note, the majority of states require co-payments for adults in Medicaid, particularly for medications, emergency department visits, and hospitalizations; for some adults, depending on the state, these cost-sharing requirements can be as high as \$25 per office visit and a \$500 deductible for inpatient care.<sup>12</sup>

While the vast majority of underinsured individuals were categorized based on financial criteria (out-of-pocket spending for self/family greater than 5 % of household income), 15.1 % of the underinsured in Medicaid reported delaying or deferring necessary prescription medications, and 10.7 % reported delaying or deferring medical care due to cost. Although overall rates of underinsurance were lower among Medicaid recipients than the privately insured, these health care access criteria were considerably higher in Medicaid than among the privately insured, possibly relating to the lower income or greater health care needs of the Medicaid population. Furthermore, at this level of poverty, it is possible that other invisible costs and trade-offs to the underinsured exist that are not measured in our data set, such as food, housing, or energy insecurity.<sup>22</sup>

Our study also identified predictors of underinsurance. In multivariate analysis, White non-Hispanic adults had the highest risk of underinsurance. In part, these results may reflect that Hispanic ethnicity is associated with lower health care utilization in general,<sup>23</sup> which would make a utilization-based measure of underinsurance such as out-of-pocket spending appear lower among Hispanic adults compared to other groups. Being married was a protective factor in our study population, suggesting that the high rate of underinsurance among publicly insured adults was not due to out-of-pocket spending for uninsured or privately insured spouses. Furthermore, unemployed adults were significantly more likely to be underinsured, suggesting that underinsurance will remain a significant problem for low-income adults if unemployment rates remain high.

We found that adults with Medicaid were significantly less likely to be underinsured than those with private coverage. This finding has significant policy implications. This suggests that as many uninsured—and some privately insured—adults move into the Medicaid program under the ACA, rates of underinsurance will likely decline, with improvements in access to health care and financial protection.

However, while our results imply potentially significant benefits to those gaining Medicaid coverage, this could be somewhat mitigated by the current trend towards increasing cost-sharing in Medicaid programs across states. For instance, according to the Kaiser Commission on Medicaid and the Uninsured, 2012 saw a notable increase in the number of states with increased or newly imposed prescription drug co-payments.<sup>12</sup> Of note, we found that rates of underinsurance were highest in the South, where prior research has shown that Medicaid coverage tends to be less generous.<sup>24</sup>

Additionally, benchmark coverage in Medicaid under the ACA may be less generous than traditional Medicaid for many beneficiaries.<sup>13</sup> Ensuring adequacy of coverage in the design of state Medicaid expansions while grappling with historically difficult budget conditions will be critical to improving the health services and, potentially, health outcomes of this population.<sup>11, 25</sup>

When considering other public insurance, we found that the highest unadjusted rates of underinsurance occurred for those in Medicare. In part, this may reflect the higher cost-sharing requirements in Medicare—which include a coinsurance rate of 20 % on outpatient services and a Part A deductible of nearly \$1,200 for hospitalizations.<sup>26</sup> However, in multivariate analyses, this effect disappeared and Medicare was not associated with higher underinsurance rates than private coverage, suggesting that the unadjusted finding was primarily due to health differences between privately insured adults and the predominantly disabled population of non-elderly adults enrolled in Medicare.

Our results must be interpreted in the context of several limitations. First, our measure of underinsurance—as with prior research<sup>3, 21</sup>—relies on actual utilization. This means we were unable to measure how many individuals who, while currently healthy, have coverage that would inadequately protect them in the case of medical catastrophe. To estimate underinsurance among those who have not yet been exposed to significant health care costs would require detailed information on each person's insurance benefits, which to our knowledge is not available in any national survey data set. Thus, our approach likely underestimates true rates of underinsurance. Additionally, underinsurance has multiple definitions and may constitute more of a continuum than an ordinal variable status. To our knowledge, no validated scales or continuous definitions have yet been developed.

Second, using a secondary data set restricts the analysis to those variables provided. Out-of-pocket expenditures were assessed as spending for “self/family” in the MEPS database. Therefore, it is possible that a portion of the underinsured met criteria due to high out-of-pocket costs for uninsured or underinsured family members, and may not entirely reflect out-of-pocket expenditures related to their personal coverage type. However, we found that single adults were more likely to be underinsured than adults who were married, suggesting this explanation was not responsible for our findings. We also conducted a post-hoc sensitivity analysis examining the rate of underinsurance among unmarried adults, which showed that 38.0 % of single adults overall were underinsured, and 30.1 % of single adults with Medicaid were underinsured, again suggesting that cost-sharing for spouses was not the primary cause for underinsurance in our sample. Similarly, while it is possible that some of the out-of-pocket spending that led adults in Medicaid to be underinsured was in fact on behalf of their children, children generally experience more generous Medicaid coverage than parents and are less likely to experience cost-sharing to the same degree as adults.<sup>12</sup>

A final limitation is that state-level identifiers are not reported in the publicly available MEPS data for confidentiality reasons. Future analyses of state-level trends could be important for relating underinsurance to specific state Medicaid policies and cost-sharing mechanisms.

Our study has several strengths. To our knowledge, ours is the first comprehensive study to examine underinsurance among low-income adults stratified by insurance type, with particularly novel findings for the population of adults in Medicaid. Another important strength is our inclusion of health care access measures, in addition to financial criteria, in our definition of underinsurance.

Using multiple years of the MEPS data set allowed us to assess underinsurance among a relatively large, nationally representative study sample. We used multivariate methods to measure the association between insurance type and underinsurance, adjusting for numerous potential confounders including health status. Finally, focusing on the population that will be affected by upcoming Medicaid expansions under the ACA gives our findings timely policy relevance.

In conclusion, our results demonstrate high rates of underinsurance among low-income Americans. Medicaid provides significantly more risk protection to low-income adults than private insurance, but overall, underinsurance remains a problem even for those with Medicaid coverage—particularly for those in poor health. While expanding Medicaid has the potential to offer increased financial protection, policymakers must take steps to ensure that Medicaid coverage adequately meets the needs of its beneficiaries. Ensuring meaningful coverage without excessive financial barriers will be critical to improving access to care for millions of low-income Americans.

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**Conflict of Interest:** All authors have no conflicts of interest to declare.

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## APPENDIX

**Table 5. Insurance Characteristics Excluding Those Reporting Income Equal to Zero\* (n=5,227)**

Variable	Total	Fully insured (n=4,006)	Underinsured (n=1,221)
Insurance type			
Full year private only	1,685 (40.0)	1,230 (36.8)	455 (48.5)
Full year medicaid only	2,839 (46.4)	2,380 (52.9)	459 (29.2)
Full year medicare only	260 (5.3)	114 (3.2)	146 (10.9)
Full year dual medicaid/medicare	443 (8.2)	282 (7.0)	161 (11.3)
Underinsurance	1,221 (27.4)	0 (0)	1,221 (100)

\*Data are presented as unadjusted counts (weighted percentage). Rao Scott chi-square *p* value < 0.001