TRENDS

How Many Are Underinsured? Trends Among U.S. Adults, 2003 And 2007

Growing numbers of adults with insurance find that they are not adequately protected from the rising cost of health care.

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ABSTRACT: With health insurance moving toward greater patient cost sharing, this study finds a sharp increase in the number of underinsured people. Based on indicators of cost exposure relative to income, as of 2007 an estimated twenty-five million insured people ages 19–64 were underinsured—a 60 percent increase since 2003. The rate of increase was steepest among those with incomes above 200 percent of poverty, where underinsurance rates nearly tripled. In total, 42 percent of U.S. adults were underinsured or uninsured. The underinsured report high levels of access problems and financial stress. The findings underscore the need for policy attention to benefit design, to assure care and affordability. [*Health Affairs* 27, no. 4 (2008): w298–w309 (published online 10 June 2008; 10.1377/hlthaff.27.4.w298)]

As HEALTH CARE costs continue to rise faster than incomes, efforts to moderate premium increases have led to a shift toward higher deductibles and cost sharing for the population under age sixty-five.[1] Some plans also have restricted benefits or have eliminated core benefits altogether, such as prescription drug coverage. Faced with premiums rising far faster than average wages from 2000 to 2007 (91 percent cumulative increase in premiums, compared to 24 percent increase in wages), both the employer-sponsored group and the individual insurance markets have seen these design shifts.[2] Small businesses, in particular, have moved to plans with ever higher front-end deductibles; average deductibles tripled between 2000 and 2007.[3]

The United States already stands out internationally for high per person out-of-pocket spending.[4] Yet federal tax policy and benefit consultants have advocated such changes in benefit design, subscribing to the theory that exposing families to a greater share of costs will lead to more cost-conscious comparisons of quality and cost. However, private insurance benefit designs rarely take income into account. Also, public programs are typically not available for lower-income working adults.[5] Where increased cost sharing for low- and moderate-income adults and their families is high compared to income, these households will face cost burdens (in addition to premiums) in the event of an illness.

Although previous research indicates cost sharing's potential adverse effects on care as well as finances, existing federal surveys primarily track whether or not a person is unin-

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sured and for how long; they fail to assess whether those with insurance are at risk as "underinsured." To fill this gap and establish a baseline, we published a study based on 2003 data that estimated the number of adults who were insured all year but deemed "underinsured."[6] We identified those underinsured based on exposure to out-of-pocket costs relative to income, building on earlier studies that used financial risk to define *the underinsured*.[7]

Using the same methodology, this paper updates the earlier estimate using 2007 survey data. Overall, we find that the number of underinsured adults under age sixty-five rose sharply between 2003 and 2007 as coverage eroded for middle-income families. The analysis presents trends, examines access to care and financial stress, and concludes with a discussion of policy implications.

Study Data And Methods

■ **Data.** Study data come from the Commonwealth Fund 2007 Biennial Health Insurance Survey, a nationally representative telephone survey of 3,501 adults age nineteen and older living in the continental United States, conducted by Princeton Survey Research Associates International. Interviews took place from 6 June through 24 October 2007. We restricted the analysis to the sample of 2,616 people ages 19–64 who participated in the survey.

The survey consisted of twenty-five-minute telephone interviews administered in English or Spanish, according to the respondent's preference. Using the same methods as in 2003, the survey oversampled adults from telephone exchanges in areas with a high density of low-income households. The final sample weights correct for the disproportionate sample design and weight the adult population by age, sex, race/ethnicity, education, region, and household size, using the 2006 Annual Social and Economic Supplement of the U.S. census. The resulting sample is representative of the 177 million adults ages 19–64 living in the continental United States. The overall survey response rate was 45 percent.[8]

■ **Key study variables and methods.** The survey included an array of questions about access and health care experiences, out-of-pocket medical care spending, insurance, income, family size, health status, and other demographic characteristics. Respondents reported their current insurance status and also whether they had been uninsured at any time during the past year. We used these responses to categorize adults as insured all year or uninsured during the year.

Defining "underinsured." Following the methodology used in the 2003 study, we assessed indicators of financial risk compared to family income to define *underinsured*. Among those insured all year, we used respondents' estimates of out-of-pocket medical care spending, plan deductibles, and annual income (total household income) to classify them as underinsured if they experienced at least one of three indicators of financial exposure relative to income: (1) out-of-pocket medical expenses for care amounted to 10 percent of income or more; (2) among low-income adults (below 200 percent of the federal poverty level), medical expenses amounted to at least 5 percent of income; or (3) deductibles equaled or exceeded 5 percent of income.

We selected the 10 percent threshold for costs because it is the level most commonly used in studies of financial stress and studies of the underinsured.[9] We included the 5 percent threshold for those with low incomes based on national policy in the State Children's Health Insurance Program (SCHIP) and the earlier use of this threshold in the RAND Health Insurance Experiment.

The deductible indicator measures potential risk. We selected the 5 percent threshold based on analysis that found that most households meeting this threshold were families with two or more people and thus could be exposed to spending 10 percent or more of their income. Those added to the composite by this indicator were predominantly families (69 percent) with low or moderate incomes (74 percent had incomes below $60,000 a year).

Analysis. We used this composite indicator to divide continuously insured adults into two groups: underinsured and not underinsured. The latter group includes adults who did not

provide sufficient income or expense information to assess financial risk.[10]

The analysis compared experiences of underinsured adults with those having more adequate insurance and with uninsured adults. By construction, the "underinsured" category includes only adults who were insured all year, which allows us to associate out-of-pocket cost and access experiences during the year to the quality of insurance. We contrasted experiences by insurance groups and indicated where differences were significant at the 5 percent level or better, using "insured all year, not underinsured" as the referent group. All analyses were conducted using Stata version 9.2, using the weighted survey estimator to adjust standard errors for clustering and the stratified sampling design.

To estimate the independent effects of insurance status on care experiences, we used logit multivariate models to predict access and care experiences as a function of insurance status, controlling for income, health status, age, and race/ethnicity. For each outcome we computed predicted probabilities for each insurance category, holding all else constant. In reporting our findings, we express the probabilities as "adjusted percentages" to enable easy interpretation of the multivariate results.[11]

Study Results

■ **Trends in uninsured and underinsured adults, 2003–2007.** As of 2007, 72 percent of adults ages 19–64 were insured all year, a slight decline from that observed in 2003 (Exhibit 1). Among the 28 percent uninsured during the year, 18 percent were uninsured when surveyed, and another 10 percent had had a time uninsured during the past twelve months.[12]

Measured by the three indicators of underinsurance, 20 percent of those insured all year, or twenty-five million people, were underinsured—a 60 percent increase from the number underinsured in 2003. Exhibit 1 shows the percentage meeting each threshold and the marginal and cumulative effects as we added indicators sequentially. Rates were up for all three indicators, with the largest increases in the 10 percent of income and deductible indicators. By 2007 the percentage meeting only the costs at or above the 10 percent of income threshold exceeded the share meeting the three-indicator composite in 2003.

About twenty-two million continuously insured adults incurred high costs relative to their incomes (10 percent, and 5 percent if low-income). The deductible indicator added 3.4 million to estimates of the uninsured—double the marginal effect observed in 2003.

Including those uninsured during the year, the share of nonelderly adults with adequate health insurance declined from 65 percent to 58 percent between 2003 and 2007 (Exhibit 1). An estimated 14 percent of all nonelderly adults were underinsured in 2007, and more than one in four adults (49.5 million) were uninsured all or part of the year. Adding uninsured and underinsured adults together, an estimated seventy-five million adults—42 percent of the under-sixty-five adult population—had either no or inadequate insurance in 2007, up from 35 percent in 2003.

By 2007, 72 percent of adults in households with incomes below 200 percent of poverty were either uninsured or underinsured, compared to 27 percent of higher-income adults. As was the case in 2003, adults with low incomes were uninsured at three times the rate of those with higher incomes. Insured low-income adults were also more likely than their higher-income peers to be underinsured in both time periods. Yet underinsurance rates increased the most rapidly among higher-income adults. The share underinsured nearly tripled among adults with incomes of 200 percent of poverty or more (Exhibit 1). As a result, the percentage insured all year and not underinsured dropped by ten percentage points, as rising numbers were exposed to out-of-pocket medical spending that was high relative to their incomes or lost coverage. The increase in the percentage underinsured was significant overall and for those with incomes above 200 percent of poverty.

■ **Risks of being uninsured and underinsured.** Although adults with very low incomes (below poverty, or $20,000 annual income) were at the highest risk of being unin-

EXHIBIT 1
Indicators Of Underinsurance And Insurance Distribution Among Adults Ages 19–64, 2003 And 2007

	Percent		Millions	
Indicators of underinsurance among adults insured all year	**2003**	**2007**	**2003**	**2007**
Base: adults insured all year	100	100	126.5	127.5
Out-of-pocket medical expenses equal 10% or more of family annual income				
Percent/millions indicator alone	7.1	13.5	8.9	17.2
Medical expenses equal 5% or more of income if low income[a]				
Percent/millions indicator alone	7.8	9.2	9.8	11.8
Cumulative percent/millions, using two indicators above	10.9	17.1	13.8	21.8
Deductible equals 5% or more of income				
Percent/millions indicator alone	2.9	4.9	3.7	6.2
Cumulative percent/millions, using all three indicators	**12.3**	**19.8**	**15.6**	**25.2**
Distribution of insurance				
Base: all adults	100	100	172.0	177.0
Total				
Insured all year, not underinsured[a]	65	58	110.9	102.3
Underinsured[a]	9	14	15.6	25.2
Uninsured during year	26	28	45.5	49.5
Income below 200% of poverty				
Insured all year, not underinsured	32	28	18.8	16.3
Underinsured	19	24	11.4	13.8
Uninsured during year	49	48	29.2	28.0
Income 200% of poverty or more				
Insured all year, not underinsured[a]	83	73	82.2	73.9
Underinsured[a]	4	11	4.2	11.4
Uninsured during year	13	16	12.5	16.6

SOURCE: Commonwealth Fund Biennial Health Insurance Surveys, 2003 and 2007.

[a] Denotes significant difference between 2003 and 2007 using chi-square test for trend ($p < 0.05$).

sured or underinsured in both time periods, insurance erosion has spread up the income distribution well into the middle-income range (Exhibit 2). The percentage underinsured reached double digits for those with annual incomes of $40,000–$59,999. The proportion insured, not underinsured dropped ten percentage points for adults earning $40,000–$59,999 and $60,000–$99,999.

By 2007 barely half of those with incomes of 200–299 percent of poverty were insured all year with adequate coverage. Nearly one-third had a time uninsured, and 16 percent were underinsured. The double-digit underinsurance rates in this group and the 300–399 percent of poverty range are notable, because the composite indicator depends on the 10 percent of income threshold.

Compared to older age groups, adults ages 19–29 continue to be most at risk of being uninsured: only 41 percent were insured all year and not underinsured in 2007. Adults ages 50–64 were more likely than young adults to be insured all year but also more likely to be underinsured, reflecting higher rates of chronic disease and poor health as adults near the age of Medicare. Compared to 2003, the share of underinsured older adults increased by 60 per-

EXHIBIT 2
Adults Ages 19–64 Who Were Uninsured And Underinsured, By Various Characteristics, 2003 And 2007

	2007			2003		
Characteristic	**Insured all year, not underinsured (n = 1,535)**	**Underinsured (n = 334)**	**Uninsured during the year (n = 747)**	**Insured all year, not underinsured (n = 2,031)**	**Underinsured (n = 310)**	**Uninsured during the year (n = 952)**
All adults, millions	102.3	25.2	49.5	110.9	15.6	45.5
All adults, percent	58%	14%	28%	65%	9%	26%
Age (years)						
19–29	41%	13%	46%	51%	9%	40%
30–49	61	12	27	66	8	26
50–64	65	18	17	74	11	15
Sex						
Male	61	13	27	67	6	27
Female	55	16	29	62	12	26
Race						
White, non-Hispanic	60	16	24	70	9	21
Black, non-Hispanic	51	17	31	54	9	37
Hispanic	49	6	45	44	9	47
Income[a]						
Less than $20,000	24	26	50	31	17	53
$20,000–$39,999	41	19	41	47	17	35
$40,000–$59,999	69	13	18	79	5	16
$60,000–$99,999	82	9	9	91	4	6
$100,000 or more	87	7	6	96	1	2
Poverty status (percent of poverty)						
Under 100%	21	31	49	28	17	55
100%–199%	33	19	48	35	21	44
200% or more	73	11	16	83	4	13
200%–299%	53	16	31	–[b]	–[b]	–[b]
300%–399%	70	13	16	–[b]	–[b]	–[b]
400% or more	84	8	9	–[b]	–[b]	–[b]
Health status						
Healthier	64	11	25	69	7	24
Sicker[c]	50	18	32	57	13	30

SOURCE: Commonwealth Fund Biennial Health Insurance Surveys, 2003 and 2007.

[a] In 2003 the categories were "less than $20,000"; "$20,000–$34,999"; "$35,000–$59,999"; and "$60,000 or more."

[b] The 2003 survey did not collect income data that were detailed enough to report these poverty groups.

[c] Includes adults in fair/poor health, any one of five conditions (high blood pressure, heart disease, lung disease, diabetes, or asthma), or disability. (In 2003 it also included cancer, arthritis, and high cholesterol but not lung disease or asthma.)

cent ($p < 0.01$). As a result, an estimated one-third of older adults were either underinsured or uninsured as of 2007.

Reflecting their higher incomes, whites were more likely than either African Americans or Hispanics in both time periods to be insured all year and not underinsured. However, the share of white, non-Hispanic adults with adequate coverage declined since 2003 as a result of the increase in the percentage underinsured ($p < 0.001$). Although Hispanics continue to be the most at risk of being uninsured, followed by African Americans, the erosion in coverage among whites has narrowed the race-ethnicity gap.

Among sicker adults, half were either underinsured or uninsured as of 2007. Reflecting indicators based on medical care expenses,

underinsurance rates were higher among adults with health problems than among healthier adults.

■ **Demographics.** In 2007, both the uninsured and the underinsured were much more likely to have low or moderate incomes than those insured all year with no indicators of underinsurance (Exhibit 3). About seven in ten underinsured adults had annual incomes below $40,000 or below 300 percent of poverty—similar to the income distribution of the uninsured. In contrast, nearly two-thirds of those with more adequate insurance had incomes above $40,000. Underinsured adults were more likely than either of the other two groups to have health problems.

To examine access and care experiences by insurance group, controlling for demographic differences, we conducted a series of multivariate analyses. Exhibit 4 displays the results by insurance group with adjusted percentages predicted from the regression models.

■ **Access and care experiences by insurance group.** Differences in patient care ex-

EXHIBIT 3
Demographics Of U.S. Adults (Ages 19–64), By Insurance Status, 2007

Characteristic	All adults (n = 2,616)	Insured all year, not underinsured (n = 1,535)	Underinsured (n = 334)	Uninsured during the year (n = 747)
All adults, millions	177.0	102.3	25.2	49.5
All adults, percent	100%	58%	14%	28%
Age (years)				
19–29	22%	16%	20%	37%
30–49	48	50	41	45
50–64	30	34	39	18
Sex				
Male	48	51	43	46
Female	52	49	57	54
Race				
White, non-Hispanic	67	70	76	58
Black, non-Hispanic	12	10	14	13
Hispanic	14	12	6	23
Other	6	7	4	5
Don't know/refused	1	1	0	1
Income				
Less than $20,000	22	9	41	39
$20,000–$39,999	21	15	28	31
$40,000–$59,999	16	19	15	10
$60,000–$99,999	17	24	10	5
$100,000 or more	13	19	6	3
Don't know/refused	11	14	0	11
Poverty status (percent of poverty)				
Under 100%	14	5	30	24
100%–199%	19	11	25	32
200%–299%	15	13	16	16
300%–399%	15	19	14	9
400% or more	28	40	15	8
Undesignated	10	12	0	10
Health status				
Healthier	56	62	44	51
Sicker[a]	44	38	56	49

SOURCE: Commonwealth Fund Biennial Health Insurance Survey, 2007.

[a] Includes adults in fair/poor health, any one of five conditions (high blood pressure, heart disease, lung disease, diabetes, or asthma), or disability.

EXHIBIT 4
Problems With Access, Preventive Care, Care Coordination, And Medical Bills, And Quality-Related Concerns, By Insurance Status, Among Adults Ages 19–64, 2007

		Insured all year		
	All adults	Insured, not underinsured	Underinsured	Uninsured during year
All adults, millions	177.0	102.3	25.2	49.5
Access problems: went without care because of costs in past year				
Did not fill prescription	31%	21%	41%**	46%**
Skipped test, treatment, or follow-up care recommended by a doctor	25	14	30**	43**
Had a medical problem but did not visit doctor	31	17	35**	55**
Did not get needed specialist care	20	11	20**	35**
At least one access problem	45	31	53**	68**
Preventive care				
Delayed preventive care screening because of cost	18	9	17**	38**
Received recommended preventive care				
Dental exam in past year	63	69	66	45**
Cholesterol checked in past 5 years	67	75	75	57**
Mammogram, past 2 years (female age 50+)	74	83	75	51**
Pap test: 3 years age 30+; 1 year ages 19–29	78	84	79	66**
Colon cancer screening in past 5 years, age 50+	51	55	53	33**
Adults with chronic disease[a]				
Skipped doses or did not fill a prescription for a chronic condition because of cost	33	19	39**	55**
Care coordination problems				
Test results not available at time of scheduled doctor's appointment	19	16	25**	24**
Doctor ordered a test that had already been done	15	9	20**	23**
Delays in being notified about abnormal results of a lab or diagnostic test	17	13	24**	22**
At least one coordination problem	34	27	46**	44**
Medical bill problems				
Had problems paying medical bills	27	15	36**	45**
Changed way of life to pay medical bills	18	10	27**	30**
Contacted by collection agency for bills	16	10	17**	24**
Any bill problem	33	21	45**	51**
Rating of quality of care in past year				
Excellent/very good	43	52	44	33**
Fair/poor	19	13	19	33**
Confident will get high-quality and safe medical care when needed				
Very confident	39	46	35**	24**
Not too/not at all confident	19	11	25**	38**

SOURCE: Commonwealth Fund Biennial Health Insurance Survey, 2007.

NOTES: Percentages are adjusted for income, age, race, and chronic disease. Statistical significance denotes significant difference compared with "Insured, not underinsured."

[a] Includes high blood pressure, heart disease, lung disease, diabetes, or asthma.

**$p < 0.05$

periences and financial problems between the three insurance groups underscore the importance of adequate insurance for both access and economic security (Exhibit 4). Controlling for income, health status, and other characteristics, underinsured and uninsured adults

were significantly more likely to go without care because of costs than were those with more protective insurance and no time uninsured. Rates of forgone care, including not filling a prescription or following up on recommended diagnostic tests or treatment, were two to three times higher than among those with more adequate insurance in both at-risk groups.

Based on a composite access indicator that included going without at least one of four needed medical care services, more than half of the underinsured and two-thirds of the uninsured reported cost-related access problems during the year. Among adults with at least one chronic health problem, half of uninsured adults and two in five underinsured adults said that they skipped doses of or did not fill a prescription for their condition because of cost—double to triple the rate reported by those insured all year, not underinsured.

Compared to either group insured all year, the uninsured were significantly less likely to receive recommended preventive care. Although in bivariate analyses underinsured adults had lower rates of preventive care than those insured and not underinsured, differences were not statistically significant after income, health, and other characteristics were controlled for.

Both underinsured and uninsured adults were more likely than those with more adequate insurance to encounter coordination and communication problems. Nearly half of each group reported a time when test results or medical records were not available during an appointment, a doctor ordered a medical test that had already been done, or they had experienced delays in being notified about abnormal test results. Among those uninsured, these findings likely reflect disrupted care and lack of care continuity. For the underinsured, the coordination findings may reflect more frequent contacts with multiple sources of care.

Medical bill burdens by insurance group. Underinsured and uninsured adults reported high rates of financial stress related to medical bills. The adjusted percentages for each group were remarkably similar, given that underinsured adults had coverage all year (Exhibit 4). About half of uninsured and nearly half of underinsured adults reported difficulty paying bills, being contacted by collection agencies for unpaid bills, or changing their way of life to pay their medical bills. Many of those reporting bill problems also stated that they took on a loan, a mortgage against their home, or credit card debt to pay their bills, which suggests that that these financial difficulties had the potential to linger into the future (data not shown in exhibits).

Quality care rating and confidence in care. Compared to adults with more adequate insurance, adults who were underinsured or uninsured were significantly less confident in their access to high-quality care when needed (Exhibit 4). Both groups were also less likely to rate the quality of care they had received positively. However, quality-rating differences were not statistically significant for the underinsured after demographics were controlled for.

■ **Insurance characteristics.** Compared to adults with no underinsurance indicators, adults classified as underinsured were more likely to report benefit limits, including limits on the total dollar amount a plan would pay for medical care and on the number of yearly visits to doctors, and were less likely to report dental or prescription drug benefits (Exhibit 5). As expected, given the composite indicator, underinsured adults were also far more likely to report high deductibles: one-quarter reported per person annual deductibles of $1,000 or higher.

Despite reports of benefit limits and higher deductibles, underinsured adults often incurred high annual premium costs, with levels similar to premiums reported by more adequately insured adults.[13] Reflecting their lower incomes, underinsured adults allocate much higher shares of their incomes to premiums. An estimated two in five underinsured adults spent 5 percent or more, and one-fifth spent 10 percent or more, of family income on premiums—more than three times the premium-to-income pattern in the comparison group.

In line with financial exposure, access experiences, and benefit restrictions, underin-

EXHIBIT 5
Characteristics Of Insurance, By Insurance Adequacy, Among Insured Adults Ages 19–64, 2007

Characteristic	All insured adults	Insured, not underinsured	Underinsured
Scope of benefits			
Prescription coverage	93%	94%	91%**
Dental	74	78	59**
Health plan limits			
Number of yearly visits to doctors, other than mental health providers	13	11	19**
Total dollar amount it will pay for medical care each year	40	36	48**
Annual deductible per person			
No deductible	33	36	23**
$1–$499	28	28	25
$500–$999	11	11	12
$1,000 or more	12	8	26**
Annual share of premium costs			
None or public insurance	28	27	30
$1–$499	6	6	6
$500–$1,499	16	17	11**
$1,500 or more	33	32	39**
Premium is 5% or more of family income[a]	20	14	41**
Premium is 10% or more of family income	8	5	19**
Rating of insurance plan			
Excellent or very good	54	57	41**
Good	28	27	30
Fair or poor	17	15	27**
Insurance source			
Employer-sponsored	77	80	65**
Individual purchase	8	7	12**
Public	11	9	20**
Medicaid	6	6	9
Medicare	5	4	11**
Other	4	4	4
Base: employer-sponsored plan			
Firm size:			
Small firm (<100 workers)	30	28	39
Mid-size firm (100–499 workers)	17	18	10
Large firm (500+ workers)	50	50	51
Wage level			
Less than $15 per hour	26	21	51**
$15–$20 per hour	20	20	20
More than $20 per hour	40	43	22**

SOURCE: Commonwealth Fund Biennial Health Insurance Survey, 2007.

NOTE: Statistical significance denotes significant difference compared with "Insured, not underinsured."

[a] Based on people who do not have public insurance.

**$p < 0.05$

sured adults rated their insurance more negatively than did more adequately insured adults. Lower ratings also correlate with less confidence in receiving high-quality care when it is needed.

Sources of insurance coverage varied between the two groups. Underinsured adults were less likely to have employer-sponsored insurance and more likely to buy coverage through the individual market or receive it

through public insurance, including Medicare.[14] Where underinsured adults reported job-based coverage, they were more likely than those reporting more adequate insurance to work in low-wage jobs and small firms.

Discussion And Policy Implications

This study indicates that the trend toward greater cost sharing in benefit design in recent years is putting millions of insured adults under age sixty-five at risk of spending large shares of their incomes on health care. The number of adults who are underinsured increased by 60 percent from 2003 to 2007, based on cost relative to income indicators. Risks of being underinsured have moved up the income ladder: adults with incomes above 200 percent of poverty accounted for 75 percent of the increase in the number underinsured—rates underinsured nearly tripled in this group. Including those without coverage during the year, an estimated seventy-five million adults under age sixty-five (42 percent) were either underinsured or uninsured during 2007.

The findings highlight the importance of insurance benefit design for care and financial protection. The upward trends point to the need for policy attention to the content of insurance as well as premium levels when considering reforms to address care and affordability concerns.

■ **Benefit design matters.** This study indicates that having a policy with substantial cost sharing relative to incomes, including benefit limits, can undermine access to care and erode family finances in ways similar to having no insurance. In fact, underinsured and uninsured adults report access and medical bill problems at remarkably similar rates.

Patients' reports of going without needed care include not following up on recommended care and forgoing medications and care for chronic conditions. These experiences are consistent with other studies that have found that patients faced with deductibles and cost sharing—especially patients with low or moderate incomes—are likely to reduce essential as well as more elective or discretionary care, with some evidence pointing to adverse clinical outcomes.[15] A recent study of the Medicare population, for example, found that caps on pharmacy benefits led to reduced adherence to essential medications and consequently poorer control of blood pressure, cholesterol, and diabetes, and ultimately increased costs from higher hospital and emergency room use.[16] Conversely, efforts by some employers to reduce copayments to provide incentives for high-value medications and care have found positive clinical and cost results.[17] With efforts to hold physicians and other providers accountable for providing patients with care according to evidence-based guidelines, achieving clinical goals will require aligning patient incentives with physician incentives.

■ **Affordability, medical debt, and economic security.** This study highlights the need to consider income for benefit design as well as premiums for affordability. Trends toward higher cost sharing inflict financial stress on families with low and moderate incomes coping with sudden illness, injuries, or long-term chronic conditions.

Health care costs are highly concentrated among the sickest patients each year, with 10 percent of patients accounting for 64 percent of all spending. The healthiest half of the population accounts for only 3 percent of total spending.[18] To the extent that higher cost sharing, particularly deductibles, is intended to create more prudent care decisions, the skewed distribution suggests that such a strategy will have little overall impact on spending.

The clear impact will be to increase the share of families at risk for medical debt and loss of savings for retirement, college, or other long-term needs. Indeed, handling medical debt appears to be a new growth industry based on recent business news reports of major companies expanding into the market to finance unpaid bills.[19]

To the extent that the private insurance market evolves in a tiered direction in which those with higher incomes have lower deductibles and more comprehensive policies, market trends could further exacerbate income inequality and debt faced by middle- and low-income families. The concerns may be particu-

larly acute for those working for small firms or for industries with low-wage workforces.

■ **Study limitations and strengths.** Estimates of the underinsured will vary depending on thresholds and indicators used to identify those with inadequate coverage. By relying primarily on out-of-pocket spending experiences (except for deductibles), we will miss healthier adults who have inadequate coverage but have not needed care recently. Yet the financial indicator method has the advantage of providing a relatively easy way to assess the adequacy of insurance without the need to obtain more detailed information about insurance and to track the impact of coverage changes over time.

The deductible indicator offers a partial measure of potential risk. Although, in theory, adults with employer-sponsored plans could receive employer contributions to health savings accounts (HSAs) to offset deductibles, recent studies find that most employers do not contribute.[20]

The study is limited by the extent to which adults can provide accurate estimates of out-of-pocket health spending, deductibles, and annual incomes in a cross-section survey. Those with more frequent use of their health plan may be better able to describe characteristics such as deductibles or plan limits. Regarding expenses, federal surveys such the Medical Expenditure Panel Survey (MEPS) are likely to be more precise because they use shorter recall periods. MEPS, however, does not ask about deductibles or other insurance characteristics to enable estimates of potential risk, and its results are available only with a lag. Moreover, despite different methods, this survey appears to be near the MEPS range for the 10 percent/5 percent expense threshold.[21]

The telephone survey and response rate may also bias results in some unknown direction. To the extent that the study missed households without phones or reliant on cell phones, or those speaking languages other than English or Spanish, the estimates may undercount adults with more restricted insurance or gaps in coverage.

■ **The need for public policy.** The study profile of worsening trends among those insured all year underscores the need for private insurance and public policies to take benefits as well as premiums into account for care and affordability. Discussion of insurance expansions through mandates, in particular, require decisions regarding the scope of benefits and cost-sharing provisions, and they raise the question of how designs should vary depending on household incomes. The Massachusetts reform, for example, included graduated cost sharing as well as premium subsidies for those with incomes up to 300 percent of poverty. Above this level, middle-income families can face quite high deductibles relative to incomes as a result of efforts to lower premiums. Such trade-offs may weaken support for mandates or raise care concerns, especially for preventive services and chronic care.

This study captures the result of two distinct trends since the turn of the century: declining income growth among low- and moderate-income families, and health care premium and cost growth that continues to exceed economic growth. The emerging health care affordability divide by income attests to the importance of universal coverage as well as ensuring that that coverage assures timely access to effective care. The coverage erosion for adults with incomes of 200–299 percent of poverty is now putting middle- as well as low-income families at risk. Designs that reduce cost sharing for those with low and moderate incomes and for high-value effective care will be necessary if the goal is care and improved outcomes—not just coverage.

Looking forward, the nation faces the challenge of extending affordable, well-designed coverage to all and improving the quality and cost performance of the health system. As health costs continue to grow faster than income and evidence accumulates regarding variable quality and inefficient resource use, there is growing recognition of the need for coherent strategies that combine coverage with payment and other policies to change directions and move toward a more inclusive and higher performing, high-value health system.

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NOTES

1. J. Banthin, P. Cunningham, and D. Bernard, "Financial Burden of Health Care, 2001–2004," *Health Affairs* 27, no. 1 (2008): 188–195.
2. Authors' calculations based on data in G. Claxton et al., *Employer Health Benefits, 2007 Annual Survey* (Washington: Henry J. Kaiser Family Foundation and HRET, 2007).
3. Authors' analysis of data from the Henry J. Kaiser Family Foundation/Health Research and Educational Trust Employer Health Benefits Surveys, 2000 and 2007.
4. J. Cylus and G.F. Anderson, *Multinational Comparisons of Health Systems Data, 2006* (New York: Commonwealth Fund, May 2007).
5. See D.C. Ross, A. Horn, and C. Marks, *Health Coverage for Children and Families in Medicaid and SCHIP, 2008* (Washington: Kaiser Family Foundation, January 2008).
6. C. Schoen et al., "Insured but Not Protected: How Many Adults Are Underinsured?" *Health Affairs* 24 (2005): w289–w302 (published online 14 June 2005; 10.1377/hlthaff.w5.289).
7. P.F. Short and J.S. Banthin, "New Estimates of the Underinsured Younger than Sixty-five Years," *Journal of the American Medical Association* 274, no. 16 (1995): 1302–1306. For range of concepts, see R. Bashshur, D.G. Smith, and R. Stiles, "Defining Underinsurance: A Conceptual Framework for Policy and Empirical Analysis," *Medicare Care Review* 50, no. 2 (1993): 199–218; and L.A. Blewett, A. Ward, and T.J. Beebe, "How Much Health Insurance Is Enough? Revisiting the Concept of Underinsurance," *Medical Care Research and Review* 63, no. 6 (2006): 663–700.
8. Calculated according to the American Association for Public Opinion Research Definition 1, which includes the percentage of households never reached and participation rates. Surveyers made at least twenty attempts to contact each randomly selected number during different times of the day and week over several weeks.
9. Short and Banthin, "New Estimates"; and Banthin et al., "Financial Burden."
10. Among adults insured all year, 11 percent were missing data on income.
11. Regression results are available from the authors; send e-mail to cs@cmwf.org.
12. The uninsurance rate is similar to 2005 Medical Expenditure Panel Survey (MEPS) estimates that 30 percent of adults ages 19–64 were uninsured either all year or part of the year. Estimate provided by Peter Cunningham, Center for Studying Health System Change.
13. We calculated annual premium based on reports of weekly, biweekly, or monthly premium shares.
14. Analysis of data from the 2005 MEPS confirms the survey finding that nonelderly adults with Medicare or Medicaid can face medical care expenses that are high relative to incomes. In 2005, 25 percent of such adults spent more than 10 percent or 5 percent of their income for medical care, based on an analysis by Peter Cunningham using a slightly higher threshold. For Medicare, this likely reflects gaps in benefits for those eligible because of disability. For Medicaid, it reflects benefit limits, very low incomes, and family medical expenses.
15. R. Hirth et al., "Out-of-Pocket Spending and Medication Adherence among Dialysis Patients in Twelve Countries," *Health Affairs* 27, no. 1 (2008): 89–102. For earlier studies, see Schoen et al., "Insured but Not Protected."
16. J. Hsu et al., "Unintended Consequences of Caps on Medicare Drug Benefits," *New England Journal of Medicine* 354, no. 22 (2006): 2349–2359.
17. M.E. Chernew et al., "Impact of Decreasing Copayments on Medication Adherence within a Disease Management Environment," *Health Affairs* 27, no. 1 (2008): 103–112.
18. S.H. Zuvekas and J. Cohen, "Prescription Drugs and the Changing Concentration of Health Care Expenditures," *Health Affairs* 20, no. 1 (2007): 249–267.
19. B. Grow and R. Berner, "Fresh Pain for the Uninsured: As Doctors and Hospitals Turn to GE, Citigroup and Smaller Rivals to Finance Patient Care, the Sick Pay Much More," *Business Week*, 21 November 2007.
20. G. Claxton et al. "Health Benefits in 2007: Premium Increases Fall to an Eight-Year Low, While Offer Rates and Enrollment Remain Stable," *Health Affairs* 26, no. 5 (2007): 1407–1416.
21. Using a somewhat higher threshold of expenses of above 10 percent or 5 percent of income if low income, analysis of data from MEPS 2005 finds that 9 percent of adults insured all year met a two-indicator composite and that 7 percent met above 10 percent threshold—near rates in 2003 and 2005 Commonwealth Fund biennial surveys.