THE MILBANK QUARTERLY A MULTIDISCIPLINARY JOURNAL OF POPULATION HEALTH AND HEALTH POLICY

Original Investigation

Trends in Health Care Financial Burdens, 2001 to 2009

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Context: Over the past decade, health care spending increased faster than GDP and income, and decreasing affordability is cited as contributing to personal bankruptcies and as a reason that some of the nonelderly population is uninsured. We examined the trends in health care affordability over the past decade, measuring the financial burdens associated with health insurance premiums and out-of-pocket costs and highlighting implications of the Affordable Care Act for the future financial burdens of particular populations.

Methods: We used cross sections of the Medical Expenditure Panel Survey Household Component (MEPS-HC) from 2001 to 2009. We defined financial burden at the health insurance unit (HIU) level and calculated it as the ratio of expenditures on health care—employer-sponsored insurance coverage (ESI) and private nongroup premiums and out-of-pocket payments—to modified adjusted gross income.

Findings: The median health care financial burden grew on average by 2.7% annually and by 21.9% over the period. Using a range of definitions, the fraction of households facing high financial burdens increased significantly. For example, the share of HIUs with health care expenses exceeding 10% of income increased from 35.9% to 44.8%, a 24.8% relative increase. The share of the population in HIUs with health care financial burdens between 2% and 10% fell, and the share with burdens between 10% and 44% rose.

Conclusions: We found a clear trend over the past decade toward an increasing share of household income devoted to health care. The ACA will affect health care spending for subgroups of the population differently. Several groups' burdens will likely decrease, including those becoming eligible for Medicaid or subsidized private insurance and those with expensive medical conditions.

The Milbank Quarterly, Vol. 92, No. 1, 2014 (pp. 88-113)

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Those newly obtaining coverage might increase their health spending relative to income, but they will gain access to care and the ability to spread their expenditures over time, both of which have demonstrable economic value.

Keywords: health insurance, affordability, Affordable Care Act.

VER THE PAST DECADE, HEALTH CARE SPENDING HAS increased faster than GDP and income, and the decreasing affordability of health care is often cited as contributing to personal bankruptcies in the United States^{1,2} and as a reason that some of the nonelderly population is uninsured.³ Using the 2001 to 2009 Medical Expenditure Panel Surveys (MEPS), we examined the trend in health care affordability over the past decade, measuring the financial burdens associated with health insurance premiums and out-of-pocket costs. We define health care financial burden as the ratio of aggregate family expenditures on health care (total employer and nongroup premiums as well as out-of-pocket payments for health services) relative to family income. As low- and modest-income individuals obtain subsidized coverage through Medicaid and the newly created health insurance exchanges under the Patient Protection and Affordable Care Act (ACA) in 2014, the direct out-of-pocket costs for adequate health care coverage and services for most households should fall. In addition, the broader sharing of health care risks through ACA insurance reforms should reduce financial burdens for those with high medical needs, although analysts need a clear picture of trends in financial burdens prior to the ACA's full implementation before they can quantify the impact of the reforms once they are in place. In addition, these trends provide insights into the levels of financial burdens that could be expected in the absence of reform.

The ACA has significantly different financial implications for different subpopulations, including groups defined by income, prior insurance coverage, health status, age, and family status. The effects of the reforms thus will differ over an individual's lifetime and changing circumstances, implying that simple depictions of the law's financial implications for the population as a whole, or for an average or "typical" individual, are generally misleading and not useful for future evaluations of the law's actual effects.

ACA Provisions That Will Affect Affordability

The ACA uses several strategies to make health-related costs (premiums and out-of-pocket spending) more affordable. First, starting in 2014, the law expands eligibility for Medicaid to all nonelderly citizens with incomes below 138% of the federal poverty level (FPL), although the June 2012 Supreme Court decision regarding the ACA made this expansion voluntary for states. Comprehensive Medicaid benefits, provided to eligible individuals and families at little or no cost, will make health care substantially more affordable for this lowest-income population. This change will be especially pronounced for low-income adults without children, as they are the least likely to be eligible for Medicaid according to the Pre-ACA rules, and it will also make health care significantly more affordable for parents in those states in which they currently are not eligible, but only if those states take up the expansion option.

Second, the law provides premium and cost-sharing subsidies to lowand moderate-income individuals and families with incomes up to 400%of the FPL who purchase coverage in the nongroup health insurance exchanges and who do not have affordable access to employer-sponsored insurance coverage (ESI). Employees of firms that offer coverage are not eligible for subsidized coverage in the exchange unless the employee's share of the single premium exceeds 9.5% of the employee's family income or if the actuarial value (ie, the average share of covered services reimbursed) of the employer's plan is below 60%. Legal immigrants who have been in the United States for less than 5 years and who have incomes below 138% of the FPL will not be eligible for the expanded Medicaid program, but they will be eligible for subsidies through the nongroup exchanges if they do not have an affordable offer of ESI. Eligible individuals with incomes below 138% of the FPL will pay no more than 2% of their income for exchange-based coverage, with a sliding scale reaching 9.5% for those with incomes between 300% and 400% of the FPL. Those with incomes below 250% of the FPL also will be eligible for cost-sharing subsidies to lower the out-of-pocket costs associated with silver-level coverage purchased in the exchange.

The insurance market reforms, also to be implemented in 2014, will have further affordability ramifications, particularly for those with the greatest medical needs. Under the ACA, small-group and nongroup insurance market premiums will no longer be permitted to vary by health status or past claims experience, and insurers will be prohibited from denying coverage to any individual. Premiums will be allowed to vary by age, with a premium charged to a 64-year-old no more than 3 times higher than that for the youngest adult, and with a premium charged to a tobacco user no more than 1.5 times higher than that for a nonuser. As a result, the variation in premiums between the healthiest and the least healthy individuals will be significantly reduced compared with that in prior years in the vast majority of states. In addition, subsidies through the exchanges will likely be concentrated most heavily among young and healthy individuals, as they are the most likely to have low incomes. This new financial assistance will offset age rating-related premium increases for many.⁴ Because of the distributional effects of the insurance reforms, insurance for some people will be less affordable, but for others it will be more affordable.

While these reforms will make comprehensive health insurance coverage more affordable for many, the law also requires most citizens to obtain at least a minimum level of coverage or pay a penalty. Persons who do not have access to affordable insurance coverage (ie, if the direct premium for the lowest-cost plan available to the individual exceeds 8% of family income) will be exempt from both the requirement and the penalty. Exemptions also will be granted to incarcerated persons, members of Native American tribes, those with financial hardships, those with religious objections, those without coverage for less than 3 months, undocumented immigrants, and those with incomes below the tax-filing threshold. As a result, some individuals without health insurance in 2013 will pay at least some amount toward coverage that they did not pay before, increasing their spending but helping them obtain affordable health care services when needed. Because of financial constraints, those without insurance coverage pre-2014 may also have used less care than was medically appropriate.⁵ Consequently, obtaining insurance coverage may increase their consumption of services once the direct costs of obtaining care decrease.

Similarly, the small-group and nongroup markets will be required to cover minimum levels of essential health benefits and satisfy certain actuarial value requirements. As a result, some individuals and families will purchase insurance that is more comprehensive than their previous level of coverage. Premiums may rise for them (depending on their prior underwriting situation and the premium-rating rules in their state before the ACA), but they may be partially offset by lower outof-pocket costs for services that previously were not covered by their policies.

Beginning in 2018, the law imposes an excise tax on insurers of employer-based plans, with aggregate values exceeding \$10,200 for individual coverage and \$27,500 for family coverage. These thresholds will go up with growth in the consumer price index for urban consumers, and higher thresholds will be used for retirees not yet eligible for Medicare and for employees in designated high-risk professions. This tax, commonly referred to as the "Cadillac plan" tax, amounts to 40% of the difference between the plan's aggregate value (premium plus the value of any associated health savings account, health reimbursement account, or medical flexible savings account) and the threshold level just described. The purpose of the tax is to discourage the overconsumption of health insurance that might result from the preferential tax treatment of employer-provided health insurance, something that some analysts believe is a significant contributor to the high costs of medical care. Congressional Budget Office and Joint Committee on Taxation analysts predict that the vast majority of revenue (at least 80%) generated by the tax will come from employers shifting compensation away from untaxable health insurance benefits toward taxable wages, a change that they believe will be made in order to avoid the new excise tax. This change will affect affordability in at least two ways. First, the premiums for those affected will fall as the employers purchase plans with greater cost-sharing responsibilities and/or fewer benefits, but wages or other benefits will rise. Second, those who use medical care will tend to face higher out-of-pocket costs as a result of the plan changes, and thus some workers and their families will face higher direct costs when medical care is needed, since fewer of those costs will be shared broadly across all the firm's employees through the insurance package.

Background on Measuring Affordability

"Affordable" health insurance is a subjective concept based on a value judgment and can be defined in various ways.⁶ Highlighting the extent of this subjectivity, Muennig and colleagues⁷ convened a panel of 18 social policy experts and asked them to assess the affordability of coverage for a series of hypothetical vignettes that vary by household

sociodemographic characteristics. They found considerable disagreement over how to define affordability, what should be included in the standard, and the affordability scores. But data-driven measures of affordability have differed considerably across the literature as well.

For instance, Bundorf and Pauly⁸ defined insurance as affordable if the majority of people in similar circumstances (eg, similar levels of health care risk and income) purchase coverage at a minimally acceptable level. Using the 2000 MEPS, they found that coverage was affordable for 25% to 50% of the uninsured, depending on the magnitude of the model's affordability threshold.

Consistent with other related studies, we did not define coverage as affordable or not affordable but instead focused on how financial burdens defined as total premiums and out-of-pocket health expenditures as a fraction of a health insurance unit's (HIU's) before-tax income—have changed over the past decade. Trends in out-of-pocket spending should not be considered independently of premium trends. Cost-sharing requirements are often increased as a mechanism to control premium growth. For example, between 2002 (the first year for which the MEPS Insurance Component reported these data) and 2009, the share of employer plans including a deductible grew from 48% to 78% while the average single deductible for plans with a deductible rose by 106%. Over the same period, the average single employer premium rose by 46%,⁹ so we analyzed trends taking into account both premiums and out-of-pocket spending.

Several other studies also used the MEPS to analyze financial burdens and affordability based on people's actual spending on health insurance premiums and out-of-pocket expenses at different income levels. Using pooled 2001 to 2003 national MEPS data, Blumberg and colleagues⁶ used premiums and out-of-pocket medical costs as a percentage of income to define affordability standards for insurance reforms in Massachusetts. Looking at various cost-to-income ratio percentiles, they found that low-income individuals with private insurance spent a larger share of their income on medical care than did their higher-income counterparts and that those with nongroup coverage had greater financial burdens than did those with ESI coverage. The authors concluded that the typical health care expenses for families with incomes below 300% of the FPL are likely to be unaffordable and that the typical spending of a higher-income group (eg, those at 300% to 499% of the FPL) might be preferable as a basis for setting an affordability standard for lower-income groups.

Also using the MEPS, Banthin, Cunningham, and Bernard¹⁰ showed that financial burdens increased from 2001 to 2004, even for the privately insured. Between 2001 and 2004, the percentage of the nonelderly population living in families with high out-of-pocket health care burdens grew from 15.9% to 17.7%, representing an increase of almost 6 million people. High out-of-pocket burdens are defined as combined out-ofpocket expenses for services and premiums greater than 10% of after-tax family income. Banthin and colleagues¹⁰ also found that high out-ofpocket burdens significantly increased for those with ESI and private nongroup coverage but did not significantly change for the uninsured and those with Medicaid/CHIP. In an earlier MEPS study, Banthin and Bernard¹¹ used similar methods to examine changes in financial burdens from 1996 to 2003 by insurance status, poverty status, demographic characteristics, health status, and medical conditions. During this period of analysis, they discovered that financial burdens rose across the population as a whole, with larger increases for low-income persons and those with employment-related and public coverage.

Gabel and colleagues¹² used a simulated bill-paying approach from a sample of adults with employer health benefits and actual ESI plan provisions offered by employers in 2004 and 2007. They found that the share of people at 200% of the FPL spending more than 10% of their income on health expenses rose from 13% in 2004 to 18% in 2007. This compares with an increase from 2% to 4% for those with an income at 400% of the FPL.

Finally, Cunningham¹³ used the 2001 and 2006 through 2009 MEPS to examine changes in the share of nonelderly individuals with direct out-of-pocket spending on premiums and services with financial burdens at or above 10% of gross family income. He found that the share of nonelderly individuals with health care financial burdens exceeding 10% of income did not change significantly between 2006 and 2009, even though the recession decreased incomes over that period. He also found that lower spending on prescription drugs, particularly a switch between brand-name and generic drugs during this period, led to sufficiently less spending on total health care services to keep relatively constant the share with high burdens, as he defined them, although the share had risen since 2001.

Our article contributes to the literature by analyzing recent trends in financial burdens (2001 to 2009) immediately preceding passage of the ACA. Unlike Cunningham, we took into account not only out-ofpocket spending on premiums and services but also contributions to employer-sponsored insurance made on a worker's behalf, as these payments constitute a trade-off with wages and thus are ultimately paid for by the worker.^{14,15} We also looked at the full distribution of financial burdens, as opposed to focusing on a particular level of burden, thereby providing a more comprehensive picture of shifting financial burdens across the nonelderly population. In addition, our measure of family income is modified adjusted gross income (MAGI), the measure that will be used to determine public insurance and subsidy eligibility under the ACA. We also examined financial burden by socioeconomic characteristics, finding that financial burdens continued to increase throughout the decade. This finding persisted across a wide range of affordability measures and individual characteristics, including health status, income, and health insurance type.

Data and Methods

We used 2001 to 2009 cross sections of the MEPS Household Component (MEPS-HC) as our core data set to track changes in financial burdens over time among the nonelderly population. The unit of analysis is the HIU, a family unit used to determine eligibility for private or public insurance coverage that includes spouses and dependent children 18 years of age or younger plus full-time student dependents up to age 23 (children not reported as members of the household cannot be included). Accordingly, we defined financial burden at the HIU level and calculated it as the ratio of expenditures on health care-total ESI and private nongroup premiums, as well as out-of-pocket payments for health services-to MAGI, the income measure relevant to calculations of eligibility for Medicaid and exchange subsidies under the ACA. HIU income is bottom-coded at \$100 to deal with heavily skewed ratios, negative ratios, and denominators with zero values. Health insurance also is partially financed through the tax system (eg, Medicare and Medicaid), but we did not take these expenses into account for this analysis because we were focusing here on the costs facing individuals and families to obtain their own coverage, as opposed to financing the coverage of others. Given our focus on the populations for whom insurance coverage will be most affected by the ACA, our final sample includes only HIUs without elderly individuals (our results are insensitive to this exclusion).

The MEPS-HC is a nationally representative survey of individual household members drawn from the pool of the previous year's National Health Interview Survey respondents. MEPS-HC provides detailed information on income, sociodemographic characteristics, monthly health insurance status, chronic conditions, spending by public and private programs, and out-of-pocket spending on health care services used during the year. Given that the survey years 1998 to 2000 were marked by large sampling variation due to the small sample sizes and fewer primary sampling units, we analyzed the trends between 2001 and 2009, the latter being the most recent year of data available. All tests of statistical significance incorporate the influence of the MEPS-HC multistage sampling design.

All variables in our analysis, except for ESI premiums, were obtained or derived from data provided by MEPS-HC respondents.

Income and Insurance Status

To construct an adjusted version of MAGI on the MEPS-HC appropriate to the ACA, we deducted public assistance income, Supplemental Security Income, child support, veterans benefits, and workers' compensation from total income. We did not deduct Social Security benefits from total income, in order to be consistent with the most recent legislation. We also created a full-year HIU health insurance hierarchy using monthly information on health insurance type: all members of the HIU with ESI for the full year, all members of the HIU uninsured for the full year, and all other HIUs. The units with full-year ESI represent those with the most stable private insurance situations, while the units uninsured for the full year represent those most financially vulnerable to a large unexpected health care expense. The two groups bound the extremes of family coverage situations.

Direct Out-of-Pocket Spending for Medical Care

The MEPS-HC collects data directly from respondents on out-of-pocket spending for medical services. This spending includes expenditures for

services not covered by insurance as well as for cost sharing (eg, deductibles, copayments, coinsurance) associated with services covered by an insurance policy held by the respondent. We used these data as reported in the public use file.

Private Nongroup Premiums

To construct private nongroup premiums, we used the data available on the MEPS Person Round Plan (PRPL) public use files, matched to HIUs reporting any nongroup health insurance coverage on the MEPS-HC. The PRPL is a hierarchical person-round-policyholder-establishmentlevel file of privately insured individuals from the MEPS that provides information on their actual monthly health insurance status and out-ofpocket premium expenditures.

We linked the PRPL premiums for nongroup coverage to approximately 70% of HIUs in the MEPS-HC that had at least one individual with nongroup coverage at some point during the year. We imputed the premiums for the remaining HIUs with missing or zero-dollar premiums reported on the PRPL. For these cases, we predicted premiums on the MEPS-HC by estimating a one-stage generalized linear model at the HIU level among those with nonzero nongroup premiums, where the dependent variable is the average monthly nongroup premium from the PRPL, defined as the sum of nongroup premiums in the HIU divided by the number of person-months of nongroup coverage in the HIU. This model controls for an array of HIU-level demographic, health, and economic indicators of nongroup enrollees, such as age, gender, self-reported health status, number of chronic conditions, income, metropolitan statistical area and region, HIU size, and the presence of other coverage types in the HIU. We then created an annualized final nongroup premium for each HIU that reflects the proportion of personmonths in which HIUs report enrollment in nongroup insurance.

ESI Premiums

We assigned ESI premiums to each HIU reporting employer-based coverage in at least one month of the MEPS-HC, using annual estimates of average total employer-sponsored insurance premiums from the MEPS Insurance Component (MEPS-IC). We used the breakouts of single (eg, for HIUs with one person reporting ESI coverage) and family premiums for private-sector employers, differentiating firms by industry and firm size. The industry categories are agriculture, fishing, and forestry; mining and manufacturing; construction; a weighted average of wholesale and retail trade; utilities and transportation; professional services; financial services and real estate; and other services. The firm-size categories are firms with fewer than 50 employees and firms with 50 or more employees. For families with more than one worker who reported being an ESI policyholder, we assigned a family premium consistent with the worker with the largest firm size. To account for the tax exclusion of ESI premiums, we adjusted ESI premiums by the HIU's tax price of ESI:¹⁶

$$TP = \frac{1 - \tau_f - \tau_s - \tau_{ss} - \tau_{mc}}{1 + \tau_{ss} + \tau_{mc}}$$

where τ_f is the federal income tax marginal rate, τ_s is the state income tax marginal rate, τ_{ss} is the marginal payroll tax rate for the OASDI program (the 6.2% tax rate that is levied equally on employees and employers), and τ_{mc} is the marginal payroll tax rate for Medicare. We estimated all tax rates in the MEPS-HC using TAXSIM.¹⁷ Premiums were adjusted by the percentage of months in the survey year in which members of the HIU reported ESI coverage. We used the total ESI premium—employer contribution plus worker contribution—in our calculations of financial burden, assuming that all employer contributions to workers' health insurance were passed back to the workers through lower wages or other benefits for which they otherwise would have been paid.^{14,15} We then added the appropriate value of employer contributions for each HIU to both the numerator and the denominator of the financial burden calculation; the workers' direct premium contributions are only in the numerator.

Results

Table 1 shows the trend in HIU health care spending (directly paid premiums plus out-of-pocket costs) relative to HIU income between 2001 and 2009. In 2001, median HIU health care spending was 7.3% of income, increasing to 8.9% of income in 2009. On average, the median financial burden associated with health expenses grew 2.7% per year and 21.9% from 2001 to 2009. Over this period, median HIU income rose 1.5% per year on average, compared with 7.1% average

	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average Annual Growth (2001-2009)
Total premiums and OOP	7.3%	7.8%	8.0%	8.4%	8.7%	8.7%	N/A	8.7%	8.9%	2.7%
spending as a share of MAGI (median)										
Annual change in median HIU MAGI	N/A	2.5%	1.4%	-0.4%	3.6%	2.7%	2.0%	0.8%	~0.0%	1.5%
Annual change in median total	N/A	10.6%	10.7%	2.9%	7.4%	5.5%	N/A	N/A	4.9%	7.1%
premiums Annual change in median OOP spending	N/A	7.1%	12.2%	-4.7%	8.2%	-0.9%	-2.5%	-4.3%	-4.5%	1.2%
1. The sample excludes HIUs with any i	members	65 or olde	er. 11	-			-	זע מע שע	-	

TABLE 1

2. ESI premiums are matched from the MEPS-IC summary tables, and nongroup premiums come from the MEPS PRPL public use files. See the text for details.
 3. MEPS-IC summary tables are not available for 2007.

	2001	2009	Difference (percent change)
Share of total population with	affordability rat	ios	
Above 10% of MAGI	35.9%	44.8%	24.8%***
Above 15% of MAGI	19.8%	27.6%	39.3%***
Above 20% of MAGI	11.7%	17.3%	48.0%***
Above 25% of MAGI	8.0%	11.3%	40.9%***
Above 30% of MAGI	6.2%	8.2%	33.5%***
116010 5070 01 111101	0.270	0.270	55.570

TABLE 2 Distribution of Total Premiums and OOP Spending as a Share of Before-Tax HIU MAGI for Nonelderly HIUs (based on 2001-2009 MEPS-HC)

1. The sample excludes HIUs with any members 65 or older.

2. ESI premiums are matched from the MEPS-IC summary tables, and nongroup premiums come from the MEPS PRPL public use files. See the text for details.

3. MEPS-IC summary tables are not available for 2007.

4. *p-value < .10; **p-value < .05; ***p-value < .01.

annual growth in median payments for health insurance premiums and 1.2% average annual growth in out-of-pocket spending. Thus, larger growth in premiums relative to income decreased affordability for the population as a whole. Appendix Table 1 also shows the change in mean health care spending, income, premiums, and out-of-pocket costs, with HIU health care spending top-coded relative to HIU income at 100%.

Table 2 shows the share of nonelderly HIUs with high financial burdens for health care in 2001 and 2009. Because the definition of high financial burden is subjective, we offer several different threshold levels of health care spending relative to income. The analysis shows that whatever threshold is used, the fraction of households facing high financial burdens rose significantly. The share of HIUs with health care expenses exceeding 10% of income climbed from 35.9% in 2001 to 44.8% in 2009, a 24.8% relative increase. When using higher-burden thresholds, even larger relative changes become evident. For example, the share of HIUs spending more than 15% of their income on health care rose from 19.8% to 27.6%, a 39.3% relative increase. The likelihood of an HIU spending more than 20% of its income on health care increased from 11.7% to 17.3% over the same period, a relative increase of 48.0%.

Table 3 compares 2001 to 2009 changes in health care financial burdens for HIUs with different characteristics. We found that the largest relative increases in financial burden over this time were for HIUs whose oldest member was between 35 and 54. HIUs in this age

Total ESI and Nongroup Premiums and C Population (medi	DOP Spending a an and 75th per	TABLE 3 as a Fraction ccentile, base	of Before-Tax HII d on 2001-2009 1	J MAGI for MEPS-HC)	the Entire D	Vonelderly
		Mediar	_		75th Percei	ntile
	2001	2009	Percent change	2001	2009	Percent change
All	7.3%	8.9%	21.9%***	13.1%	15.9%	$21.4\%^{***}$
Age of the oldest HIU member						
19 to 34	6.7%	7.6%	$14.1\%^{**}$	13.0%	15.7%	$21.2\%^{***}$
35 to 54	7.2%	9.1%	26.5%***	12.5%	15.5%	$24.0\%^{***}$
55 to 64	9.1%	10.0%	$10.7\%^{**}$	15.8%	17.0%	8.1%
Family type						
Two parents with children	8.5%	10.9%	28.9%***	13.4%	16.9%	$26.0\%^{***}$
Single parent with children	9.8%	9.7%	-1.2%	18.4%	21.4%	$16.6\%^{***}$
Married couple, no children	8.1%	11.5%	42.6%***	13.3%	18.1%	35.7%***
Single individual, no children	5.4%	6.5%	22.0% ***	10.3%	12.3%	18.7% ***
Family income						
Less than 138% FPL	12.9%	5.6%	-57.0%***	32.5%	31.0%	-4.7%
Any Medicaid coverage in the HIU	4.6%	1.6%	-64.4%***	16.5%	14.1%	-14.1%
No Medicaid coverage in the HIU	18.2%	13.1%	$-28.0\%^{***}$	40.0%	39.9%	-0.1%
138% to 250% FPL	11.8%	13.3%	$13.2\%^{***}$	17.0%	20.5%	$20.4\%^{***}$
250% to 400 % FPL	9.2%	11.5%	24.9%***	13.1%	16.9%	28.8%***
Above 400% FPL	5.4%	7.1%	29.8%***	7.8%	10.3%	33.2%***
						Continued

		Median			75th Percent	ile
	2001	2009	Percent change	2001	2009	Percent change
Region						
Northeast	7.1%	8.2%	$16.7\%^{***}$	12.5%	15.0%	$19.9\%^{***}$
Midwest	7.8%	9.6%	$28.1\%^{***}$	13.6%	16.5%	$21.4\%^{***}$
South	7.6%	9.4%	22.8%***	13.8%	17.1%	23.3%***
West	6.7%	7.8%	$16.0\%^{***}$	12.1%	14.5%	19.7% ***
Chronic conditions						
No one in the HIU with ≥ 1	6.8%	8.1%	$19.1\%^{***}$	12.3%	15.0%	21.7%***
chronic condition						
Any one in the HIU with ≥ 1	8.6%	10.2%	$18.9\%^{***}$	14.8%	17.4%	17.4% ***
chronic condition						
 The sample excludes HIUs with any member FSI memiums are marched from the MFPS.I. 	ers 65 or older. IC summary rables a	חפזת תווסדסתסת למ	iums come from the N	אולויה דם אם אסרו	anse files. See the	text for de

MEPS-IC summary tables are not available for 2007.
 4. *p-value <.10; **p-value <.05; ***p-value <.01.

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group had median financial burdens of 7.2% in 2001, rising to 9.1% in 2009, a relative increase of 26.5%. Younger HIUs in which the oldest member was 19 to 34 also experienced a significant increase in financial burdens, with median burdens growing 14.1% (from 6.7% in 2001 to 7.6% in 2009). We discovered that the increase in financial burdens among the younger age groups could be attributed to a combination of relatively slow growth in income and high growth in health expenses: From 2001 to 2009, median income for 19- to 34-year-olds and 35-to 54-year-olds grew by 7% and 9%, respectively, compared with 15% among 55- to 64-year-olds. Median health expenses increased by 50% for 19- to 34-year-olds, from \$2,100 to \$3,200, compared with 19% (from \$5,400 to \$6,400) for the oldest age group (author's calculations based on the MEPS-HC).

Married couples with no children had a 42.6% relative increase in health care financial burdens between 2001 and 2009. Two-parent families with children living at home and single individuals without children also experienced significant relative increases in burden, 28.9% and 22.0%, respectively. Only single parents with children did not see a significant change in financial burden, as many of those units included at least one member enrolled in Medicaid or CHIP.

For HIUs with MAGI of less than 138% of the FPL, median financial burdens due to health expenses fell significantly over the period. In 2009, the median financial burden was 5.6% of income for HIUs in this income group, compared with 12.9% in 2001, perhaps due to larger relative demands on their income for other necessities or increases in public coverage during the analysis period. The share of HIUs with full-year public coverage rose approximately one percentage point from 2001 to 2009. The financial burdens increased for all other income groups analyzed. Those with incomes between 138% and 250% and 250% and 400% of the FPL saw 13.2% and 24.9% relative increases in their median financial burdens between 2001 and 2009, respectively, while those above 400% of the FPL faced an increase in median burden of 29.8%.

HIUs in the Midwest had the largest relative increase (28.1%) in health care financial burdens over the 2001 to 2009 period, but there were significant increases in financial burden in the Northeast, South, and West as well. HIUs with at least one individual with a chronic condition tend to have higher financial burdens than do those with no

	2001	2009	Percent Change
HIU coverage distribution			
Full year ESI only	56.3%	52.4%	-6.9%***
Full year nongroup only	2.1%	1.8%	-12.7%
Full year public only	2.4%	3.4%	41.6%***
Full year uninsured only	12.8%	15.8%	23.6%***
All others	26.5%	26.7%	0.6%
Median of affordability ratio			
Full year ESI only	8.4%	11.5%	36.1%***
Full year nongroup only	9.6%	13.5%	41.1%**
Full year public only	1.6%	0.4%	-73.5%***
Full year uninsured only	0.4%	0.1%	-76.2%***
All others	7.4%	8.4%	13.1%***
75th percentile of affordability ratio			
Full year ESI only	13.6%	17.6%	29.1%***
Full year nongroup only	17.0%	25.7%	51.1%***
Full year public only	9.8%	2.9%	-70.5%***
Full year uninsured only	2.7%	2.0%	-24.6%***
All others	14.1%	17.1%	21.6%***

1. The sample excludes HIUs with any members 65 or older.

2 ESI premiums are matched from the MEPS-IC summary tables, and nongroup premiums come from the MEPS PRPL public use files. See the text for details.

3 MEPS-IC summary tables are not available for 2007.

4. *p-value < .10; **p-value < .05; ***p-value < .01.

individuals with chronic conditions; however, the relative increases in their financial burdens over this period were similar.

Table 3 also shows changes in financial burden for those in the top quarter of burdens (the 75th percentile) in 2001 and 2009. Relative increases for those with the highest burden tend to be larger or similar in magnitude to increases for those at the median. Similar information contained in Table 3 is provided in Appendix Table 2 for those with health care financial burdens exceeding 10%, 20%, and 30% of income.

Table 4 provides information on affordability in 2001 and 2009 for HIUs with all members having full-year employer-sponsored insurance, all members having nongroup insurance for the full year, all members having public insurance for the full year, all members being uninsured for the full year, and all others. The share of HIUs with all members having full-year employer coverage fell from 56.3% in 2001 to 52.4% in 2009, a relative decline of about 7%. During that same time, the likelihood of being in an HIU with all members uninsured for the full year rose from 12.8% to 15.8%, a relative increase of about 24%.

The second section of Table 4 shows that median financial burdens went up for those units fully covered by employer insurance, from 8.4%in 2001 to 11.5% in 2009. Median financial burdens were higher for those with full-year nongroup coverage than for those with ESI, but the relative increase in their financial burdens was comparable over the period (41.1% and 36.1%, respectively, for nongroup and ESI enrollees). The financial burdens for those HIUs with full-year public coverage declined from 1.6% to 0.4% of income, and those completely without coverage did not experience a significant change in median burden, even though their health care costs rose, probably reflecting some inability to shift resources from other needs to health. As a result, some of these HIUs likely limited their use of health care services to a greater extent over the period, owing to the rising prices per unit of care. The median financial burdens for HIUs with full-year public coverage and full-year uninsurance were low because these units did not pay premiums and many had zero out-of-pocket expenses. Table 4 also shows, however, that burdens at the 75th percentile for HIUs with full-year public coverage were higher relative to burdens defined at the median, declining from 9.8% to 2.9% from 2001 to 2009. HIUs with other sources of insurance coverage-those with members having different sources of coverage from one another and those with part-year coverage—saw their median health care financial burdens go up significantly from 7.4% in 2001 to 8.4% in 2009.

Figure 1 shows the distribution of financial burdens for nonelderly HIUs in 2001 and 2009. This figure contains an estimated probability density for financial burden in 2001 (the solid line) and 2009 (the dashed line). The height of each line shows the concentration of families with each level of burden that year, with the burdens rising when moving to the right along the horizontal axis. Here we truncated the axis of financial burdens at 50% of income. Because the solid line is higher than the dashed line at the far left of the graph beginning at a financial burden of 2%, we see that in the earlier period there was a higher concentration of families with low financial burdens than was the case in the later period. As the dashed line rises above the solid line farther to



FIGURE 1. Distribution of Health Care Financial Burdens, 2001 and 2009.

1. The sample excludes HIUs with any members 65 or older.

2. ESI premiums are matched from the MEPS-IC summary tables, and nongroup premiums come from the MEPS PRPL public use files. See the text for details.

the right of the graph, the likelihood of having higher financial burdens went up from 2001 to 2009. The share of the population in HIUs whose health care spending accounted for between 2% and 10% of income fell, and the share in which health care spending accounted for 10% to 44% of income rose. This change shifted the distribution of financial burdens from low to moderate and heavy for a significant share of the population.

Conclusions

Our analyses detected a clear trend over the past decade toward an increasing share of household income devoted to health care. We found rises in both the median levels of financial burdens and the proportion with very high burdens. These increases were felt to varying degrees by households of all ages, incomes, and health status and in every geographic region of the United States. Behind these trends is the growth in premiums that exceeded the growth in household incomes. The last decade included two recessions, one early in the decade and one in the latter part of the decade. At the same time, during the decade, premiums for employer-sponsored insurance outstripped income growth, and there were pronounced changes in employer-offer and employee take-up behavior.^{18,19} While premium trends must be considered in conjunction with trends in out-of-pocket spending, we found that it was premium growth that exceeded income growth over this decade, leading to higher financial burdens.

Recent trends in financial burden varied by subgroup characteristics such as income and insurance status, in some cases moderating differences in levels of financial burden across the subpopulations. Identifying differentials in levels and trends by health status, income, insurance status, and family status allowed us to isolate those in vulnerable financial circumstances and will be critical to measuring the effects of the ACA, as the law's various components are directed at alleviating the financial burdens for those in different circumstances.

In relative terms, the increases were most apparent for families in the middle- and upper-income ranges, for families with middle-aged adults, and for those with some form of health insurance. The decline in financial burdens for those with the lowest incomes (less than 138% of the FPL) suggests at least two possible mechanisms may be at work. First, Medicaid and CHIP may effectively buffer the lowest-income families against marketwide shifts in the costs of care and the changing expectations of cost sharing for those with private coverage. Second, as suggested by the flat or even decreasing share of income that the uninsured spent on health care, low-income families without health insurance may have difficulty being able to obtain even necessary care, either because of lack of access or because housing, food, and other competing demands on income take precedence.

Some caution is necessary in interpreting the data on premium payments. Because there is no single nationally representative source of information at the household level that includes the cost of all health insurance premiums to families (employer and employee portions of jobbased coverage and direct premium payments made by households for nongroup coverage), we relied on a combination of household-reported data and imputations based on the characteristics observable in the data. For those with employer-sponsored insurance, these imputations are based on national aggregates at the level of firm size and industry of the person holding the policy, plus the number of persons covered by the plan. For those with nongroup plans, we used a combination of information reported by household respondents and imputations for those reporting nongroup coverage but not reporting premiums. We based our imputations on individuals with similar demographics and self-reported health status who did report premiums. While these imputations may tend to overstate or understate the levels of premiums, we have no reason to suspect that our estimates of trends over time will be biased in one direction or the other.

While these findings on trends are interesting on their own, they also suggest the potential effects of the ACA on affordability. Because the ACA has different mechanisms affecting health care for subgroups of the population, it is important to examine the pre-reform trends for these subgroups separately. Several groups' burdens will likely decline once the ACA is implemented. For previously uninsured or privately insured low-income families, the expansion of Medicaid eligibility will lower out-of-pocket costs and premiums for those residing in states choosing to participate in the expansion. For those above the Medicaid eligibility threshold (138% of the FPL), the subsidies for purchasing insurance in the exchanges could bring relief by lowering their burden. For those with expensive medical conditions, many of whom have probably been in the high-burden portions of the distribution, the market reforms will lower premiums and cost sharing.

Others, however, may see an increase in the share of their income going toward health care. For the previously uninsured who did not spend much on care, the coverage mandate will likely increase their gross burden in a particular year, though those receiving subsidies will find their burden lighter. The full premium of the mandated insurance coverage, however, would overstate the cost imposed. In return for coverage, the previously uninsured will gain access to care and the ability to spread expenditures over time, both of which have demonstrable economic value. Taking into account the costs of health care over the life cycle, as opposed to one particular point in time, is a more appropriate metric, given that higher costs in one year can be offset by lower costs in other years. To the extent that the uninsured forgo needed care, the value of insurance is even higher. Similarly, for those previously purchasing insurance that offered minimal benefits from the nongroup market, the requirement of a minimum level of coverage may increase the amount spent on premiums, but the shift from individual to community rating and the elimination of preexisting condition exclusions will likely reduce the net cost.

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Acknowledgments: This research was sponsored by a grant from the Robert Wood Johnson Foundation. The authors are grateful for helpful comments and suggestions from John Holahan, Stephen Zuckerman, and Kyle Caswell.

APPENDIX TABLE 1	Total Premiums and OOP Spending as a Fraction of Before-Tax HIU MAGI for the Entire Nonelderly Population (mean, based on 2001-2009 MEPS-HC)		
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	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average Annual Growth (2001-2009)
Total premiums and OOP spending as a share of MAGI (mean, top-coded at 100%)	11.2%	11.7%	12.5%	12.3%	12.6%	12.7%	N/A	12.2%	12.9%	1.9%
Annual change in mean HIU MAGI	N/A	2.9%	0.4%	2.2%	3.2%	3.7%	2.2%	-0.1%	-2.6%	1.5%
Annual change in mean total premiums	N/A	10.6%	8.8%	4.8%	7.3%	5.2%	N/A	N/A	4.8%	7.0%
Annual change in mean OOP spending	N/A	9.2%	9.3%	2.3%	5.9%	6.4%	-7.4%	1.5%	-2.5%	3.3%
 The sample excludes HIUs with any 2. ESI premiums are matched from the. 3. MEPS-IC summary tables are not ava 	members (MEPS-IC ulable for 2	55 or older. summary ti 2007.	ables, and r	l dnorgroup I	oremiums c	ome from t	he MEPS I	sRPL publ	ic use files	See the text for details.

Total ESI Premiums, Tot Nonelderly Population (sh	tal Nongro nare of HIL	up Premiu Js with bur	AP 1ms, and OOI rden above 109	PENDIX ' P Spendin %, 20%, a	TABLE 2 g as a Fra nd 30% of	ction of Befor MAGI, based	re-Tax HI on 2001-	U MAGI 2009 MEF	for the Entire S-HC)
	SI	nare Above	e 10%	Sł	are Above	: 20%	0,	hare Abov	e 30%
	2001	2009	Percent Change	2001	2009	Percent Change	2001	2009	Percent Change
All	35.9%	44.8%	24.8%***	11.7%	17.3%	48%***	6.2%	8.2%	33.5%***
Age of the oldest HIU member									
19 to 34	34.4%	41.3%	20%***	12.4%	18.6%	50.5%***	7.0%	9.7%	38.8%***
35 to 54	34.2%	45.2%	32.4%***	9.0%	15.2%	68.9%***	4.0%	6.5%	62.7%***
55 to 64	45.3%	50.3%	$10.9\%^{**}$	18.8%	19.7%	4.4%	11.3%	9.6%	$-15.4\%^{***}$
Family type									
Two parents with children	40.9%	54.3%	32.5%***	8.2%	15.7%	92.2%***	3.1%	5.5%	75.3%***
Single parent with children	49.1%	49.1%	0.1%	21.0%	28.4%	35.5%***	10.1%	12.7%	25.5%***
Married couple, no children	39.7%	56.0%	41.2%***	12.5%	21.6%	73%***	6.1%	9.4%	53.9%***
Single individual, no children	26.3%	33.3%	26.6%***	9.6%	12.4%	28.2%***	5.9%	7.3%	22.5%***
									(Continued)

			APPENI	JIX TABI	.E 2-Con	tinued			
		share Abov	ve 10%	S	hare Abov	e 20%	SI	hare Abov	e 30%
	2001	2009	Percent Change	2001	2009	Percent Change	2001	2009	Percent Change
Family income Lass than 138% FDI	200 12	12 606		38 10%	2/ 00%	×%0≤ ∞	20 5 CC	75 20%	*** 208 9
138% to 250% FPL	57.0%	58.3%	2.3%	16.5%	26.6%	60.8%***	3.7%	4.7% 8.7%	$133.7\%^{***}$
250% to 400 % FPL	43.4%	61.7%	42.3% ***	3.8%	14.7%	283.9%***	0.5%	1.4%	202.1% ***
Above 400% FPL	11.9%	26.6%	$124.4\%^{***}$	0.3%	0.9%	$174.9\%^{**}$	0.0%	0.0%	$148.7\%^{***}$
Region	22 002	700 OV	*** 70° 0°	209 0	14.002	*** 207 >>	5 202	70C F	21 007 ***
INOTTICAST	%6.CC	40.8%	20.2%	9.0%	14.9%)).4%**** /	0.0% 	%7·/	······································
Midwest	38.0%	49.5%	30.3%***	12.3%	18.2%	47.5%***	5.6%	8.6%	53.9%***
South	38.0%	47.0%	23.7%***	13.4%	19.6%	46.2%***	7.3%	9.4%	29.3%***
West	32.2%	40.3%	25.3%***	10.0%	14.7%	46.3%***	5.7%	6.8%	$19.5\%^{***}$
Chronic conditions									
No one in the HIU	33.0%	41.2%	24.6%***	10.0%	15.4%	53.9%***	5.1%	7.0%	37%***
with ≥ 1 chronic									
condition									
Any one in the HIU	42.7%	51.0%	19.3%***	15.7%	20.5%	30.6%***	8.8%	10.4%	$18.6\%^{***}$
with \leq 1 chronic condition									
1. The sample excludes HIUs wi	ith any memb	pers 65 or old	ler.		(-	-	

ESI premiums are matched from the MEPS-IC summary tables, and nongroup premiums come from the MEPS PRPL public use files. See the text for details.
 MEPS-IC summary tables are not available for 2007.
 p*-value < .10, ***p*-value < .05, *p*-value < .01.