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# Unlike Medical Spending, Medical Bills In Collections Decrease With Patients' Age

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**ABSTRACT** Health policy is often designed to help protect patients' financial security. However, there is limited understanding of the role medical debt plays in household finances. We used credit report data on more than four million Americans to study the age profile of people whose medical bills were sent to a US collections agency in 2016. We found that, unlike health care use and spending, medical collections decreased substantially with age. The average size of medical debt decreased nearly 40 percent from patients age twenty-seven to sixty-four, with increases in health insurance coverage and incomes likely playing important mediating roles. However, the frequency of medical collections—that is, the proportion of people with a collection by age—was less closely tied to insurance coverage rates. A potential explanation is that most medical collections were relatively modest in size, with more than half of them less than \$600 annually. As a result, medical collections could still occur under typical insurance plans. We discuss how these results could inform policies targeting medical debt and insurance regulation, such as restrictions on age rating.

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**H**ealth care spending has risen markedly in the United States, and so has its impact on personal finance. In 2016 roughly 16 percent of consumers' credit reports included medical debt (which we define as unpaid medical bills in collections), with more than \$81 billion owed.<sup>1</sup> However, existing research about medical debt in the US leaves many questions unanswered, in part because data are lacking. In particular, there is limited understanding of which consumers incur the most debt and what factors drive the prevalence of debt across the population. Understanding these issues is important for policy makers who aim to reduce medical debt.

Many current policies, such as the guaranteed issue requirement and limited age rating in the Affordable Care Act (ACA), implicitly focus on protecting people who have high use of health

care and are seen as being most vulnerable to the adverse financial consequences of health shocks. However, these might not be the consumers who accumulate the most debt. Mitigating factors, such as income and insurance coverage, can systematically vary with health care spending levels. Furthermore, while most insurance plans would cover the very large bills that can quickly accumulate from costly health care use, the more modest amounts—for which patients are responsible, under common forms of coinsurance—may still be unaffordable to many people. In this study we asked, Does the age profile of people with medical bills in collections mirror that of health care use, and, if not, what factors may mitigate these expenses? While some prior work has hypothesized that health-related financial strain is likely to increase with age,<sup>2</sup> mitigating factors may reverse the relationship.

Using deidentified credit report data on more

than four million people, we found that the frequency (proportion of people with a medical collection by age) and size of medical collections peak in the late twenties and decline as age increases. This pattern is similar to that of the percentage of people without health insurance by age, but it differs markedly from the sharp rise in medical spending by age.

Furthermore, while the average size of medical collections exhibits a close relationship with uninsurance rates by age, the portion of people who actually incur any medical debt within a given year does not decline as much at older ages as uninsurance rates do. We augment these findings by showing that many annual medical collections are relatively modest in size (more than half under \$600). Insurance typically reduces what patients are asked to pay, but if it includes nontrivial cost sharing, patients may still face bills they cannot afford or do not pay. This may both limit consumers' demand for insurance<sup>3</sup> and temper expectations for how much all but very generous forms of universal coverage would reduce the medical debt we observed.

This work complements prior research that has used surveys to study medical debt and related fiscal strain, such as the 2003–16 Biennial Health Insurance Surveys from the Commonwealth Foundation,<sup>4</sup> National Health Interview Surveys,<sup>5</sup> and Kaiser Family Foundation/New York Times Medical Bills Survey.<sup>6</sup> These surveys asked consumers about difficulty paying bills and found that many Americans view medical bills as an important contributor to financial hardship. Our study extends this work by using credit reporting agency data to provide a more detailed view of medical debt across ages and, in turn, improve our understanding of how policies that alter insurance regulation or other financial protections may affect financial outcomes.

### Study Data And Methods

Our primary data came from the Consumer Financial Protection Bureau's Consumer Credit Panel. The panel is a 1-in-48 random sample of deidentified credit reports from one of the three major nationwide credit reporting agencies. It contains account-level information about various forms of credit. Critically, its use allowed us to identify medical debt that had been sent to third-party debt collectors. However, to maintain anonymity, the data do not contain any information about the type of service provided or the identity of the provider. Importantly for this study, we also observed the year of birth for each person. Our primary analysis used data first reported in 2016 (accessed December 2017), though we found similar results for the period

2012–15 (see online appendix B for the age profile of medical debts for additional years).<sup>7</sup> To facilitate regression analysis, we merged these data with county-level information on income and insurance that are not available in the Consumer Credit Panel. County-level household income data came from the Census Bureau's 2015 Small Area Income and Poverty Estimates. County-level insurance coverage statistics for people ages 18–64 came from the Census Bureau's 2015 Small Area Health Insurance Estimates. As of this writing, 2015 was the most recent year for which both were available.

We conducted supporting analyses that related medical collections to data on household assets and income, insurance coverage, and health care spending from several other sources described below. Data on household income and wealth come from the Survey of Consumer Finances, which is a triennial survey conducted by the Federal Reserve Board.<sup>8</sup> The 2016 survey covered slightly more than 6,000 households. Insurance coverage statistics by age came from the 2016 American Community Survey one-year Public Use Microdata Sample. We included all respondents ages 18–80, which resulted in a sample of just over two million people. The Medical Expenditure Panel Survey is a nationally representative survey that captures various measures of health care use and spending. We used data from the most recent five years available—2011–15—and included respondents ages 18–80, which resulted in a sample of more than 125,000 person-year observations (results were similar when we used data from 2015 only).

**EMPIRICAL ANALYSIS** Our primary analysis involved constructing age-specific statistics for our outcomes of interest. In the Consumer Credit Panel, medical collections consist of cases where a patient did not pay a bill for an unspecified period but one long enough that the provider sends it to a collection agency (often six to twelve months later).<sup>9</sup> We refer to this interchangeably as “medical debt” or “medical collections.”

We observed the opening date, opening balance, and current balance for each medical bill in collections (in appendix A we describe our process for excluding collections reported in error).<sup>7</sup> For each person, we calculated the gross annual flow of new medical debt in 2016 as the sum of the opening balances of medical debt first reported that year (that is, the dollar value of new medical debt reported in 2016). We focused on the flow because it coincides with the failure to pay, whereas the balance reflects past bills and payments and may decline sharply after each medical collection reaches the seven-year maximum that it can remain on a credit report as specified by the Fair Credit Reporting Act of

1970. (Trends in total balances are similar; see appendix B.)<sup>7</sup> At every age we calculated the mean annual flow, percentage of consumers with any new medical debt, and median annual amount conditional on having a new medical debt in collection.

We compared the age profile of medical debt with that of three likely related factors: income, insurance coverage, and health care spending. We calculated median household income by the age of the head of household, using the Survey of Consumer Finances. We used sample weights to correct for the oversampling of wealthy households in the survey design. We used data from the American Community Survey to plot uninsurance rates by age. Respondents were defined as uninsured if they reported having no health insurance coverage at the time of the interview (we included the 15 percent of cases in which the American Community Survey applied logical edits to inconsistent responses across insurance questions). We calculated median total health care expenditures by age from the Medical Expenditure Panel Survey. Expenditures incurred by minors in a household were assigned to each parent equally to reflect the fact that any resulting collections would likely be assigned to parents (though this had a relatively small effect on the overall age profile). Summary statistics produced using data from these two surveys used appropriate individual population weights.

We examined the relationship between medical collections, insurance coverage, and financial resources through regression to show the extent to which insurance coverage and financial resources were independently related to medical debt. Specifically, we regressed medical debt on county-level insurance coverage and household income, while controlling for urban/rural status and age. We ran the same regression on nonmedical collections for comparison.

Finally, we plotted a histogram of the annual flow of medical collections (using \$200 bins) to better understand the size distribution of medical debt. All amounts over \$5,000 were grouped together. We produced this distribution for counties in the highest and lowest quartiles of uninsurance rates.

**LIMITATIONS** Our analysis had several limitations. First, our data included only medical debt once it became delinquent enough to be sent to a third-party collection agency. While this captured a key measure of medical debt that directly affects consumers' financial outcomes,<sup>10</sup> it is not a comprehensive measure of all unpaid health care bills. Uncompensated care is composed of charity care and bad debt, with the difference being that charity care is theoretically provided without the expectation of payment. In theory,

most medical collections that make up bad debt should appear in the Consumer Credit Panel data, but there could be meaningful omissions, such as when a provider or debt collector does not report information to a national credit reporting agency. Our study did not cover bills forgiven through charity care.<sup>11,12</sup>

Second, we could not observe cases where a medical bill was financed with a credit card or personal loan and the balance was never repaid, or when patients could not pay other bills following a medical expenditure.

Third, our study did not speak to instances in which patients did not obtain care because they expected they would be unable to pay, or other nonpecuniary costs of medical debt. To this end, evidence from surveys provides an important complement to our analysis.

Fourth, our analysis was cross-sectional, which means that we could not explicitly distinguish between age and cohort effects. However, to show that these findings were not specific to 2016, we repeated our main analysis for each available year—2012–16 (see appendix B).<sup>7</sup>

Fifth, because our data did not contain non-credit consumer characteristics aside from age, our measures of insurance coverage and income were based on county-level averages, which may differ from the actual coverage and income of the people in our sample—especially for those who changed counties during the year.

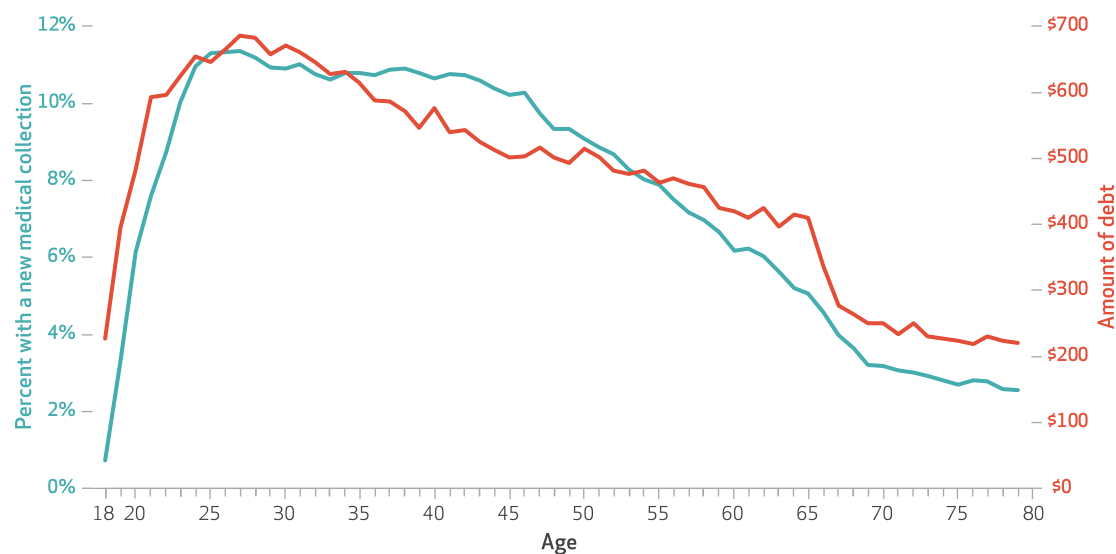
Finally, when a person incurs a medical collection that is reported to a nationwide credit reporting agency, it results in the update or creation of a credit record. However, because some adults have no credit accounts or collections, not all adults have a credit record. Thus, our estimates of the frequency of medical collections will be too large for those most likely to be “credit invisible,” primarily lower-income or very young consumers. Following the work of Kenneth Brevoort and coauthors,<sup>13</sup> we also calculated frequency estimates assuming that all unobserved adults had no medical collections, and we found trends similar to the unadjusted rates (results not shown).

## Study Results

The share of people with at least one new medical bill in collection in 2016 (frequency) reached its maximum—11.3 percent—at the relatively young age of twenty-seven (exhibit 1). The frequency remained near that level until around age forty-six, after which it decreased steadily with age. The median size of debt also reached its maximum—\$684—at age twenty-seven and decreased steadily thereafter. From age twenty-seven to age sixty-four, median debt size

## EXHIBIT 1

Percent of consumers with any new medical collections and the median size of their debt, by age, 2016



**SOURCE** Authors' analysis of data for 2016 from the Consumer Financial Protection Bureau's Consumer Credit Panel. **NOTE** Medical collections are defined as outstanding bills that have been reported to a nationwide credit reporting agency as a collection, with an original creditor classification code for medical or health care.

dropped by 39 percent, while the frequency of medical debt fell by nearly 54 percent.<sup>14</sup> After age sixty-five there was a steeper decline in the median dollar value of debt but little change, if any, in the downward trend in the share of people who incurred such debt. In appendix B,<sup>7</sup> we show that these trends were similar across sexes, if we looked only at people with large debts (over \$1,000), and across the four prior years in the Consumer Credit Panel.

The observed reduction in medical debt with age contrasts with the marked increase in medical spending with age, even when adults' spending on behalf of their children was accounted for. Exhibit 2 combines the frequency and size results shown in exhibit 1 into a single metric: the overall mean dollar value of medical collections by age. For example, the unconditional mean dollar value of medical debt peaked at age twenty-eight and then fell by more than 80 percent at ages in the late sixties, whereas medical spending increased by a factor of five over the same age range. Uninsurance rates, however, tracked closely with medical debt (exhibit 3). Meanwhile, household income increased gradually during most of adulthood, while medical debt fell (appendix exhibit C3).<sup>7</sup> Household net worth also increased in the working years and then stayed roughly level in retirement, while income fell (appendix exhibit C4).<sup>7</sup>

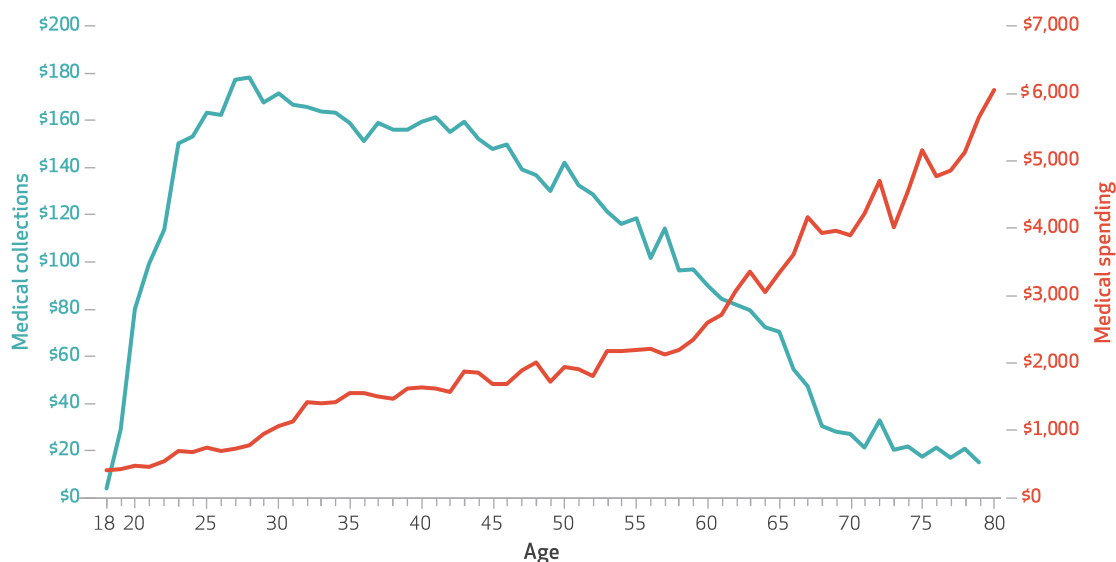
We also examined how the county-level uninsurance rate related to medical and nonmedi-

cal collections when median household income was controlled for (appendix exhibit C5).<sup>7</sup> While lower insurance rates were associated with both higher medical and nonmedical collections, the relationship with medical debt was more than twice as strong. All else equal, a decrease of one standard deviation (or 6.26 percentage points) in a county's insurance rate was associated with an annual per capita increase of \$53 in medical collections—roughly double the increase of \$26 in nonmedical collections. In contrast, median household income predicted a similar decrease in both types of collections: An increase of 1 percent was associated with a per capita decrease in annual collections of \$89–\$94.

Next, we examined the distribution of medical debt across all ages, by counties in the highest and lowest uninsurance quartiles. As expected, consumers accrued more debt in counties with higher uninsurance rates (exhibit 4). For reference, average uninsurance rates were 22.7 percent in counties in the highest quartile and 7.2 percent in counties in the lowest quartile (data not shown). However, the difference between quartiles was most evident at the largest debt amounts. For example, the share of consumers with medical debt of less than \$200 was nearly 40 percent lower in counties with the lowest uninsurance rates, compared to those with the highest, but this jumped to more than 80 percent lower when the amount in collections was more than \$5,000.

## EXHIBIT 2

Mean medical collections (2016) and medical spending (2011–15), by age



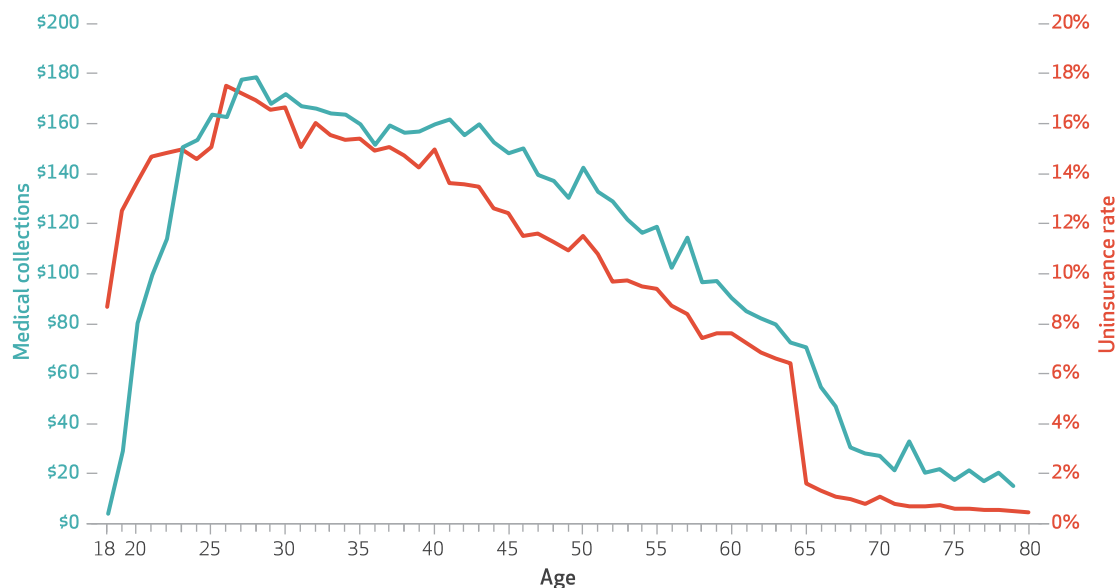
**SOURCE** Authors' analysis of data for 2016 from the Consumer Financial Protection Bureau's Consumer Credit Panel (medical collections) and for 2011–15 from the Medical Expenditure Panel Survey (medical spending). **NOTES** Medical collections are defined in the notes to exhibit 1. Medical spending includes spending on behalf of minor dependent children.

Although some unpaid debts were large, most were moderate size. Even in counties with high uninsurance rates, more than 45 percent of consumers with a medical collection in 2016 had an

annual total of less than \$600. This share was 53 percent for the full population. (See appendix E for this distribution for all consumers and how it varied with credit scores.)<sup>7</sup>

## EXHIBIT 3

Mean medical collections and uninsurance rates, by age, 2016

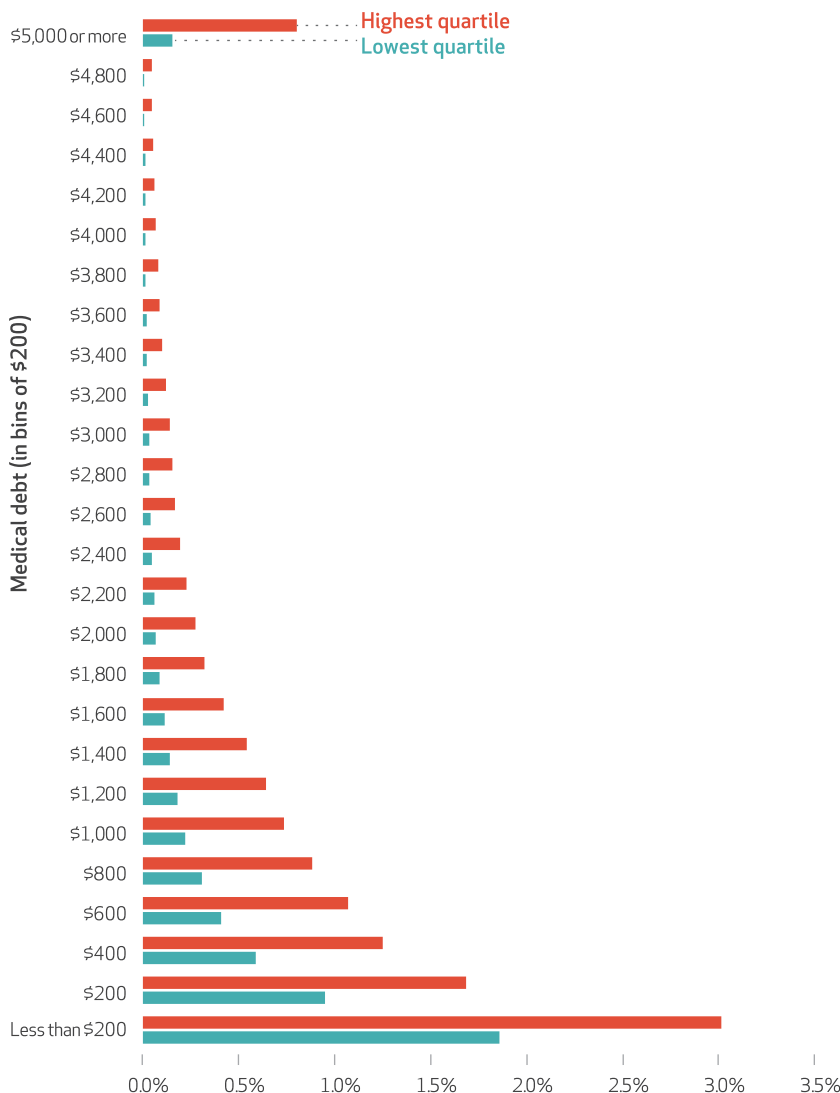


**SOURCE** Authors' analysis of data for 2016 from the Consumer Financial Protection Bureau's Consumer Credit Panel (medical collections) and the American Community Survey (uninsurance rates). **NOTES** Medical collections are defined in the notes to exhibit 1. Respondents were considered uninsured if they reported having no insurance at the time of the interview.



## EXHIBIT 4

Percent of people with medical collections of various sizes in US counties in the highest and lowest quartiles by uninsurance rate in 2016



**SOURCE** Authors' analysis of data for 2016 from the Consumer Financial Protection Bureau's Consumer Credit Panel (medical collections) and for 2015 from the Small Area Health Insurance Estimates (county uninsurance rates). **NOTES** We included consumers with no medical debt in 2016 in our analysis but omitted them from this exhibit for greater legibility of its nonzero portion. Consumers are grouped in bins of \$200 each.

## Discussion

Despite a marked increase in health care spending, the frequency and size of medical collections decrease substantially with age. The rate of having at least one new bill in medical collections in 2016 fell more than 50 percent from age twenty-seven to age sixty-four, and the median amount among those with medical debt decreased by 39 percent. The only extended period of rising medical debt, early adulthood, is also a time of largely flat medical spending.

Natural candidates to explain the disconnect

between medical spending and debt include household financial resources and insurance coverage. When unpaid medical debt is high, incomes are low, and vice versa. Further, the age profile for nonmedical collections is broadly similar to that for medical debt (see appendix D),<sup>7</sup> which suggests that general financial capability and financial resources play a role in both outcomes. Still, the most striking relationship is the close correlation between the lack of health insurance coverage and medical debt. This finding is consistent with prior research that has established causal links between health insurance and improved financial outcomes in specific settings.<sup>2,10,15-18</sup>

An examination of the relationship between medical debt and county-level income and insurance rates concurrently (while controlling for individual age and urban/rural status) showed that both medical and nonmedical collections fell as income and insurance rates rose. However, while the relationships between both collection types and income were very similar, the association between insurance rates and medical debt was twice as strong as that between insurance rates and nonmedical debt. This is consistent with the theory that health insurance coverage both directly reduces medical debt and may leave additional resources to pay for nonmedical debt.

The age profile of medical debt raises some questions. Notably, while the size of medical debt varies systematically with health insurance coverage rates, this relationship is less strong for its frequency. For example, from age twenty-seven to age forty-five the uninsurance rate dropped roughly 30 percent, yet the number of consumers incurring new debts fell by just under 10 percent. Similarly, we observed a drop in the size of medical debt at the age of Medicare eligibility (age sixty-five), consistent with prior research.<sup>2,15,19</sup> However, we saw little change in the downward trend in frequency. Exhibit 4 and appendix exhibits E1-E4 offer a potential explanation.<sup>7</sup> While some medical debt amounts are quite large, the majority are not. Further, insurance coverage is more strongly correlated with the occurrence of large medical debt amounts than it is with that of smaller ones, which is consistent with insurance being designed to mitigate very large financial shocks. However, under traditional insurance cost-sharing arrangements, some patients may still owe amounts that are similar in size to many of the medical debts we observed. This is also aligned with survey research findings that nearly half of respondents report that they are not prepared to pay for an emergency expense of several hundred dollars.<sup>20</sup>

## Policy Implications

As prior research has shown, our results suggest that health insurance is associated with medical debt. In addition, we found that younger adults are more likely than their older peers to have medical collections, despite having lower medical spending. Thus, policies that promote insurance coverage for younger adults may have the greatest effect on reducing medical collections. One such policy is the oft-debated limitation on age rating in the ACA Marketplaces for individual insurance coverage. An actuarially fair system would charge the oldest enrollees premiums closer to five times those of the youngest,<sup>21</sup> compared to the current three-to-one age rating cap. Relaxing this limitation could lower premiums for younger consumers and boost coverage in a group that currently incurs the most medical debt, though at a cost of higher premiums and potentially increased medical debt for older people. The extent to which this would alter the total amount of debt or simply redistribute it in part hinges on consumers' responsiveness to health insurance premiums and wealth differences across age groups.

While our results suggest that insurance is important for reducing the dollar amount of unpaid debts, they also imply that consumers could still incur a substantial amount of debt even under universal coverage, if such coverage required nontrivial cost sharing. This is consistent with data from the 2016 National Health Interview Survey, which show that 72 percent of the patients ages 20–65 who reported not being able to pay medical bills were insured.<sup>22</sup> Thus, one option is for policy makers to further limit allowable levels of cost sharing (for example, restricting the availability of “catastrophic” plans or requiring higher actuarial values more broadly). However, all else equal, this would increase the price of insurance, potentially discouraging the most price-sensitive consumers from purchasing coverage and raising concerns about moral hazard. Policy makers could increase subsidies to offset the price increases, but this may face political opposition, given recent evidence.

If policy makers are committed to the provision of insurance with substantial cost sharing, as has become increasingly common in many employer-sponsored plans and in the ACA individual market,<sup>23</sup> reducing medical collections would require policy efforts to increase funds

available to pay bills—either by increasing after-tax incomes or by promoting savings. Although health savings accounts are the most prominent health-specific savings vehicle, their tax-advantaged structure is considerably less valuable to the lower-income people who likely constitute more of the population with medical debt than higher-income people do. As a result, a continued focus on this type of policy would likely have muted effects on the medical debt of lower-income people.

Finally, consideration of the size distribution of medical debt is important for policies aimed at increasing insurance coverage. For example, Amy Finkelstein and coauthors argue that the availability of uncompensated care reduces the cost of being uninsured (though not fully) and may cause people to not purchase insurance even when the subsidized price is far below their own expected medical expenses.<sup>3</sup> Similarly, Neale Mahoney argues that bankruptcy offers some implicit health insurance for those without formal insurance.<sup>24</sup> Our results indicate that most medical debts are relatively modest in size, which means that they could be incurred before the insured person meets their deductible. Thus, the channels that decrease demand for insurance may be in effect for a wider range of medical expenses than previously thought.

## Conclusion

To inform ongoing policy debates regarding the role of health care in personal finances, this study established several facts about medical debt in the US. We showed that medical collections are not concentrated among older people whose health care use (and spending) tends to be high. Instead, debt is most pronounced for consumers younger than age forty and then decreases with age, closely tracking the rates of insurance coverage. However, because most medical debts are relatively modest in size, the effect that further insurance expansions could have on medical collections may be limited if they entail substantial cost sharing. Indeed, our data show that small medical debt amounts are still prevalent in counties with very high insurance coverage rates. Taken together, these findings are relevant to a host of policy considerations—particularly with regard to insurance design and regulation. ■

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helpful suggestions. The authors thank Derrick Choe for excellent research assistance. The views expressed are those of the authors and do not necessarily reflect those of the Board of Governors of the Federal Reserve

System or its staff, the Consumer Financial Protection Bureau, or the United States. [Published online July 25, 2018.]

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