

MEDICAL DEBT ACROSS TENNESSEE'S 95 COUNTIES



THE SYCAMORE INSTITUTE

Acknowledgement: This research was funded by the Annie E. Casey Foundation. We thank them for their support but acknowledge that the findings and conclusions presented in this report are those of the authors alone, and do not necessarily reflect the opinions of the Foundation.

Sycamore takes a neutral and objective approach to analyze and explain public policy issues. Funders do not determine research findings. More information on our code of ethics is available [here](#).

Medical debt is surprisingly common and can have far-reaching effects on prosperity and health. This study focuses on medical debt in collections, exploring how the prevalence and amount of debt vary across Tennessee's 95 counties.

For background, prior reports explain [how medical debt occurs](#) as well as [who has medical debt in Tennessee and how it affects people's lives](#). Future work will focus on options for policymakers who want to address the issue.

KEY TAKEAWAYS

- The share of Tennesseans with medical debt on their credit report in 2016 varied across the state's 95 counties, ranging from a low of 10% to a high of 43%.
- The median amount of medical debt on Tennessee credit reports ranged from \$386 in the lowest county to \$1,496 in the highest.
- Tennessee counties with higher rates of medical debt were more likely to have elevated rates of uninsured residents, auto/retail loans and delinquencies, and payday lenders per capita.

How Medical Debt Impedes Prosperity and Health

Medical debt can have far-reaching effects on economic prosperity and health. Even small medical bills may be more than some families can afford without cutting back elsewhere or taking loans. (1) (2) (3) (4) When an unpaid medical bill becomes debt, it can have lasting and compounding effects. For example, it can reduce access to and increase the costs of debt types associated with economic mobility and long-term wealth creation. People with medical debt are also more likely to have worse physical and mental health and to forego needed medical care – which have [economic effects](#) of their own. (5) (6) (7) (8)

Medical Debt in Collections Across Tennessee's 95 Counties

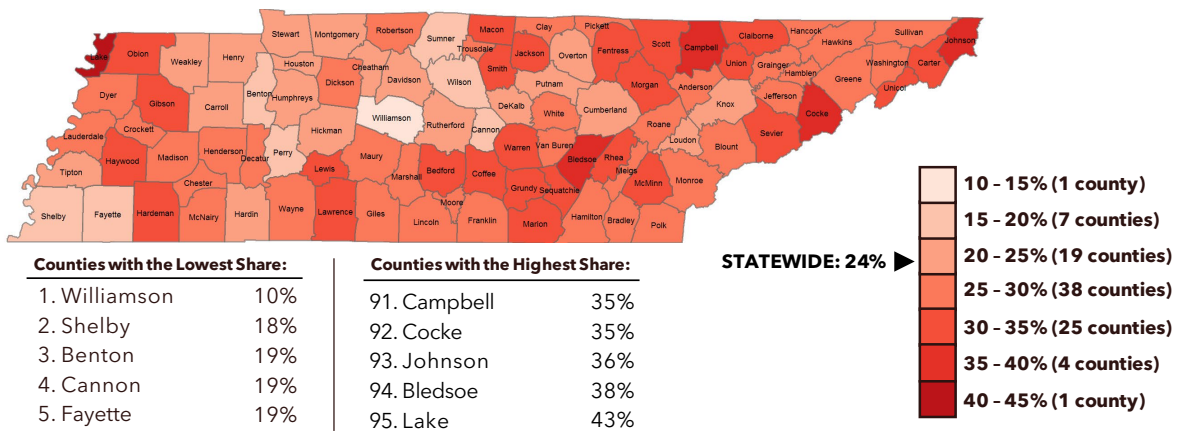
The share of Tennesseans with medical debt on their credit reports in 2016 ranged from 10% in Williamson County to 43% in Lake County (Figure 1), according to a sample of credit bureau data. Those rates compare to about 24% statewide and 18% across the U.S. (9)

The median amount of medical debt on Tennesseans' credit reports ranged from \$386 in Williamson County to \$1,496 in Unicoi County (Figure 2). (9) Statewide, the median was \$739. In other words, half of the affected Tennesseans had less than \$739 of medical debt on their credit histories, and half had more. Counties with higher median debt amounts did not necessarily have a higher share of residents with medical debt.

Use our [interactive map](#) to explore the data further.

Figure 1. Across 95 Counties, 10% to 43% of Tennesseans Had Medical Debt on Their Credit Report in 2016

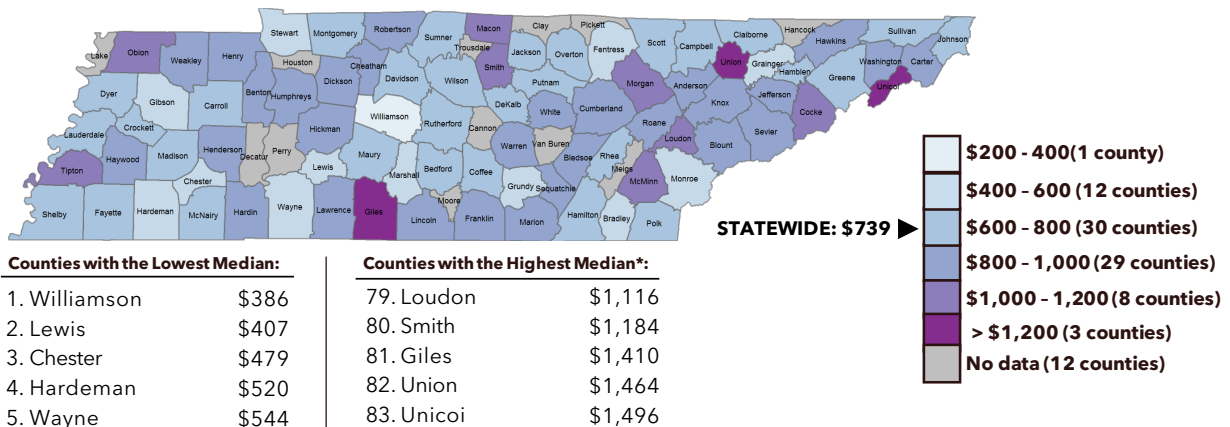
Share of Tennesseans with a Credit Report That Included Medical Debt in Collections by County (2016)



Source: 2016 credit bureau data via the Urban Institute's Debt in America project (9)

Figure 2. Median Medical Debt on Tennesseans' Credit Reports Ranged from \$386 in Lowest County to \$1,496 in Highest

Median Amount of Medical Debt in Collections on Tennesseans' Credit Reports by County (2016)



The median is the value at which half of all people had more and half had less.

*Out of 83 counties for which data are available.

Source: 2016 credit bureau data via the Urban Institute's Debt in America project (9)

Both figures include unpaid medical bills that have been reported to a credit bureau and added to an individual's credit history. Not all unpaid medical bills are reported, and an estimated 11% of U.S. adults have no credit record. (10)

Characteristics of Counties with High Rates of Medical Debt

To understand better the variation in medical debt prevalence across Tennessee, Sycamore analyzed the relationship with 18 county-level traits – including demographics, socioeconomics, housing, health and health care, and other types of debt. This type of analysis can inform the development of community-level approaches that may reduce the prevalence of medical debt (see our **Summary of Methods and Limitations**).

Counties with higher rates of medical debt were more likely to have elevated rates of uninsured residents, auto/retail loans and delinquencies, payday lenders per capita, and residents age 20-44. When controlling for other factors, we found no statistically significant relationships between the other county-level attributes we analyzed and the share of population with medical debt on a credit report. Below, we provide more details and context for our major findings. See **Table A3** in the Appendix for the complete results of our main analysis.

Higher Uninsured Rates

Counties with higher rates of medical debt in collections were more likely to have higher uninsured rates. This finding backs up a 2015 survey in which Americans without health insurance were more likely to report having unpaid medical bills than those with health insurance. (12) A major purpose of health insurance is to provide financial protection against catastrophic medical expenses. (4)

Other Types of Debt

Residents of counties with higher rates of medical debt in collections were more likely to have (and be delinquent on) auto/retail loans, but less likely to have student loan debt. Existing research shows consumers with medical debt are more likely to have other types of debt, both good and bad – like credit cards, car loans, mortgages, and payday loans. (13) (4) (12) (14) Due to medical debt's effect on credit scores, those forms of credit may have higher costs and less favorable terms.

The inverse relationship we found between medical debt and student loan debt was surprising. The reasons are unclear and warrant more research.

More Payday Lenders Per Capita

Counties with higher rates of medical debt in collections tended to have more payday lenders per capita. Payday loans are short-term, high-interest loans. A separate 2015 survey estimated that 51% of Tennesseans with unpaid medical bills (vs. 23% without) reported taking a payday loan in the last five years. (15) Our analysis indicates this relationship occurs at the community level as well as the individual level. Determining causation, however, may be a chicken and egg question. Are people with unpaid medical bills more likely to take payday loans, or do people who use payday loans have more trouble paying medical bills? The answer may be either or both.

Residents Age 20-44

Counties with higher rates of medical debt in collections tended to have a larger share of residents between 20 and 44 years of age. Previous research has found that prevalence of medical debt peaks between the ages of 27-44 and steadily decreases with age. (16) Using 2015 survey data, [we estimated](#) that medical debt was most common among Tennesseans aged 35-44. (17)

Parting Words

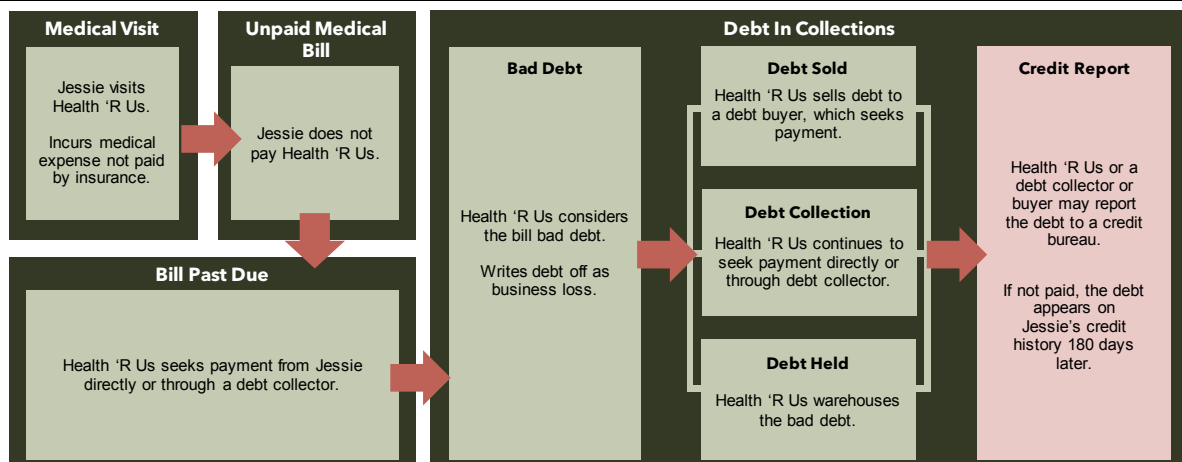
Medical debt is a complex topic with far-reaching implications for Tennesseans’ health and prosperity. This report is one of several that we hope will inform an evidence-based discussion about medical debt in Tennessee, its effects, and potential policy levers. In the future, we will explore options for policymakers who want to address the prevalence and effects of medical debt in our state.

Summary of Methods and Limitations

We performed descriptive, bivariate, and regression analysis to examine the association between the share of the population with medical debt in collections and other county-level characteristics. Our analysis, which has some limitations, relied primarily on credit bureau data from the Urban Institute (9) and 2013-2017 American Community Survey 5-year estimates (18).

The data used for this analysis do not include individuals without a credit report or whose unpaid bills have not been reported to a credit bureau (**Figure 3**). A 2015 study estimated that 11% of adults nationwide do not have a credit report, and those with lower incomes are less likely to have a credit report. (10) As a result, the medical debt estimates based on credit bureau data likely underestimate the prevalence of medical debt in Tennessee.

Figure 3. How a Medical Bill Becomes Medical Debt



Source: Adapted from Urban Institute (11)

This analysis uses county-level data to understand medical debt in Tennessee, whereas [a previous analysis](#) relied on individual-level data. Looking at both community and personal characteristics provides different but complimentary information. (19)

See the **Methods Appendix** for information about our data sources, methods, and limitations and the complete results from our analyses.

THE SYCAMORE INSTITUTE

The Sycamore Institute is an independent, nonpartisan public policy research center for Tennessee.

Sign up for email alerts at:
[SycamoreInstituteTN.org](https://www.sycamoreinstitute.org)

Written By

Courtnee Melton, PhD

Policy Analyst

CMelton@SycamoreInstituteTN.org

Media Inquiries

Brian Straessle

Director of External Affairs

BStraessle@SycamoreInstituteTN.org

Other Sycamore Staff

Laura Berlind

Executive Director

Mandy Pellegrin

Policy Director

Seb Rougemont

Operations & Engagement Coordinator

References

1. **Consumer and Community Development Research Section.** Report on the Economic Well-Being of U.S. Households in 2017. *Federal Reserve Board, Division of Consumer and Community Affairs*. May 2018. <https://www.federalreserve.gov/publications/files/2017-report-economic-well-being-us-households-201805.pdf>.
2. **Seifert, Robert W and Rukanina, Mark.** Bankruptcy Is the Tip of a Medical-Debt Iceberg. *Health Affairs*, 25(2): W89-W92. 2006. <https://www.healthaffairs.org/doi/10.1377/hlthaff.25.w89>.
3. **Pollitz, Karen and Cox, Cynthia.** Medical Debt Among People with Health Insurance. *Kaiser Family Foundation*. [Online] January 7, 2014. <https://www.kff.org/private-insurance/report/medical-debt-among-people-with-health-insurance/>.
4. **Hamel, Liz, et al.** The Burden of Medical Debt: Results from the Kaiser Family Foundation/New York Times Medical Bills Survey. *Kaiser Family Foundation*. January 2016. <https://www.kff.org/health-costs/report/the-burden-of-medical-debt-results-from-the-kaiser-family-foundationnew-york-times-medical-bills-survey/>.
5. **Kalousova, Lucie and Burgard, Sarah A.** Debt and Foregone Medical Care. *Journal of Health and Social Behavior*, 54(2): 204-220. 2013. <https://journals.sagepub.com/doi/pdf/10.1177/0022146513483772>.
6. **Sweet, Elizabeth, et al.** The High Price of Debt: Household Financial Debt and Its Impact on Mental and Physical Health. *Social Science and Medicine*, 91: 94-100. August 2013. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3718010/>.
7. **Robertson, Christopher Tarver, Egelhof, Richard and Hoke, Michael.** Get Sick, Get Out: The Medical Causes for Home Mortgage Foreclosures. *Health Matrix: The Journal of Law-Medicine*, 18(1). 2008. <https://scholarlycommons.law.case.edu/healthmatrix/vol18/iss1/4/>.
8. **Expanding Prosperity Impact Collaborative (EPIC).** Lifting the Weight: Solving the Consumer Debt Crisis for Families, Communities & Future Generations. *The Aspen Institute Financial Security Program*. 2018. http://www.aspenepic.org/wp-content/uploads/2018/12/LiftingtheWeight_SolutionsFramework.pdf.
9. **Ratcliffe, Caroline, et al.** Debt in American: An Interactive Map. *The Urban Institute*. December 6, 2017. Accessed on January 23, 2019 from https://apps.urban.org/features/debt-interactive-map/?type=medical&variable=perc_debt_collect&state=47.
10. **Bevoort, Kenneth, Grimm, Philipp and Kambara, Michelle.** Data Point: Credit Invisibles. *Consumer Financial Protection Bureau*. May 2015. https://files.consumerfinance.gov/f/201505_cfpb_data-point-credit-invisibles.pdf.
11. **Karpman, Michael and Caswell, Kyle J.** Past-Due Medical Debt Among Nonelderly Adults, 2012-15. *Urban Institute*. 2017. <https://www.urban.org/research/publication/past-due-medical-debt-among-nonelderly-adults-2012-15>.
12. **Consumer Financial Protection Bureau.** What is a Payday Loan? [Online] June 2, 2017. Accessed on January 28, 2019 from <https://www.consumerfinance.gov/ask-cfpb/what-is-a-payday-loan-en-1567/>.

13. **Gross, Tal and Notowidigdo, Matthew J.** Health Insurance and the Consumer Bankruptcy Decision: Evidence from Expansions of Medicaid. *Journal of Public Economics*, 95: 767-778. 2011. <http://isiarticles.com/bundles/Article/pre/pdf/48303.pdf>.
14. **Sycamore Institute's Analysis of.** 2012 and 2015 National Financial Capability Study. *FINRA Investor Education Foundation*. <http://www.usfinancialcapability.org/downloads.php>.
15. **Batty, Michael, Gibbs, Christa and Ippolito, Benedic.** Unlike Medical Spending, Medical Bills In Collections Decrease with Patients' Age. *Health Affairs*, 37(8): 1257-1264. 2018. <https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2018.0349>.
16. **Melton, Courtnee and Pellegrin, Mandy.** Medical Debt in Tennessee: Who Has It and Why Does It Matter? *The Sycamore Institute*. May 8, 2019. <https://www.sycamoreinstitutetn.org/2019/05/08/medical-debt-tennessee/>.
17. **U.S. Census Bureau.** 2013-2017 American Community Survey 5-Year Estimates. Accessed on February 11, 2019 via <http://factfinder.census.gov>.
18. **Braga, Breno, et al.** Local Conditions and Debt in Collections. *Urban Institute*. June 2016. <https://www.urban.org/sites/default/files/publication/81886/2000841-Local-Conditions-and-Debt-in-Collections.pdf>.
19. **Andersen, R and Davidson, P.** Improving access to care in America: individual and contextual indicators. In: *Andersen R, Rice T, Kominski J, eds. Changing the US Health Care System: Key Issues in Health Services Policy and Management*. 2007. https://www.academia.edu/14385102/IMPROVING_ACCESS_TO_CARE_IN_AMERICA_Individual_and_Contextual_Indicators.
20. **Thongnopnua, Joda, Morton, David and Sheppard, Nathan.** Fighting Predatory Lending in Tennessee. *Metro Ideas Project*. January 2018. <https://metroideas.org/projects/fighting-predatory-lending-in-tennessee/>.
21. **University of Wisconsin Population Health Institute.** 2018 County Health Rankings. Accessed on February 5, from <http://www.countyhealthrankings.org/app/tennessee/2018/overview>.
22. **Opportunity Nation.** The 2017 Opportunity Index: Technical Supplement. 2018. Accessed on February 26, 2019 from <http://opportunityindex.org/wp-content/uploads/2017/12/Opportunity-Index-2017-Technical-Supplement.pdf>.
23. **Dartmouth Atlas Project.** Medicare Reimbursements. 2016. Accessed on January 7, 2019 from <https://www.dartmouthatlas.org/interactive-apps/medicare-reimbursements/>.
24. **Ferrari, Silvia LP and Cribari-Neto, Francisco.** Beta Regression for Modelling Rates and Proportions. *Journal of Applied Statistics*, 31(7): 799-815. 2004. <https://www.ime.usp.br/~sferrari/beta.pdf>.
25. **Kieschnick, Robert and McCullough, BD.** Regression Analysis of Variates Observed on (0,1): Percentages, Proportions and Fractions. *Statistical Modelling*, 3: 193-213. 2003. <https://journals.sagepub.com/doi/10.1191/1471082X03st053oa>.

METHODS APPENDIX

Data Sources and Variables

This study combined data from multiple sources – all listed in **Table A1**. (20) (18) (21) (22) (9) All variables are measured at the county level.

Table A1. Detailed Data Description

Variable	Source	Year	Description
Medical Debt			
Medical debt prevalence	Urban Institute (9)	2016	Share of people with a credit bureau record who have medical debt in collections
Median medical debt	Urban Institute	2016	Median amount of medical debt in collections among those with any medical debt in collections
Housing			
Median rent	ACS (18)	2013-2017	Median gross rent (contract rent plus estimated average monthly utility costs)
Median home value	ACS	2013-2017	Median home value of owner-occupied housing units with a mortgage
Homeownership rate	ACS	2013-2017	Percent of housing units that are owner-occupied
Demographics			
Associate's degree or more	ACS	2013-2017	Share of population with an associate's degree or more as their highest level of education
Median age	ACS	2013-2017	Median age of county population
Non-white population	ACS	2013-2017	Share of population that is Non-Hispanic Black, Hispanic, Asian, Native Hawaiian/Pacific Islander or Non-Hispanic Other race
Median household income	ACS	2013-2017	Median household income (2017 dollars)
20-44 years old population	ACS	2013-2017	Share of the population between the ages of 20 and 44 years of age
Health and Health Care			
Health care utilization	County Health Rankings (21)	2015	Amount of Medicare reimbursements per enrollee adjusted for regional differences in prices (23)
Uninsured rate	ACS	2013-2017	Share of population without health insurance
Poor/fair self-rated health status	County Health Rankings	2016	Share of adults reporting their health as fair or poor (age-adjusted)
Economic Factors			
Unemployment rate	ACS	2013-2017	Share of the population that is unemployed
Pay day lenders per capita	Metro Ideas Project (20)	2017	Number of payday lenders divided by the total population

Table A1 (continued). Detailed Data Description

Variable	Source	Year	Description
Bank access	Opportunity Index (22)	2015	Number of banking institutions (commercial banks, savings institutions and credit unions) per 10,000 residents
Other Types of Debt			
Student loan debt	Urban Institute	2016	Share of people with a credit bureau record who have any student loan debt; includes student accounts that are open, deferred, and in collections
Student loan debt in collections	Urban Institute	2016	Share of people with any student loan debt who have student loan debt in collections
Auto/retail debt	Urban Institute	2017	Share of people with a credit bureau record who have an auto loan or lease or a retail installment loan
Auto/retail debt delinquency rate	Urban Institute	2017	Share of people with an auto loan or lease or a retail installment loan who are 60 or more days delinquent

Analytical Approach

We used choropleths maps to illustrate the geographic distribution of medical debt across Tennessee counties.

We completed univariate and bivariate analyses to describe the study sample and to examine relationships between the share of the population with medical debt in collections and other county-level characteristics. Complete results are provided in **Table A2**.

We primarily relied on beta regression models with White/Huber standard errors to analyze the relationship between county-level characteristics and the share of the population with medical debt in collections. Complete results are provided in **Table A3**. We chose this model because our variable of interest (i.e. the share of the population with medical debt in collections) was continuous but restricted to the interval (0,1). (24) (25) A regression coefficient tells you how much the mean of the independent variable changes given a one-unit shift in the dependent variables while holding all of the other variables in the model constant.

Following the regression models, we calculated predictive margins of statistically significant county-level characteristics to better illustrate the relationship between the share of the population with medical debt and those characteristics.

Maps were made in R, and all other analyses were completed using Stata version 14.2.

Limitations

The study had several limitations:

- Due to the availability of data, our analysis only included medical debt that has been reported to a credit bureau. While credit bureau data is extremely accurate, all medical debt is not reported to a credit bureau, and some people do not have a credit record. Consequently, the county-level prevalence of medical debt is likely underestimated.

- Because this is a cross-sectional study (i.e. only measures a single point in time), it only provides information about the associations between medical debt and county-level characteristics. It does not establish or provide evidence for any causal relationships between county characteristics and the prevalence of medical debt.

The results of **Table A2** informed the development of our statistical model for this paper but are not by themselves sufficient to draw conclusions about the prevalence of medical debt, which is influenced by many factors. These bivariate correlation coefficients only provide information about the strength and direction of the relationship between the share of the population with medical debt in collections and one other variable at a time.

Table A2. Associations Between Share of Population with Medical Debt And County-Level Characteristics

Variables	Correlation Coefficient
Housing	
Median rent	-0.49*
Median home value	-0.50*
Homeownership rate	-0.14
Demographics	
Associate's degree or more	-0.47
Median age	0.14
Non-white population	-0.09
Median household income	-0.53*
20-44 years old population	0.06
Health and Health Care	
Log health care utilization	0.31*
Uninsured rate	0.35*
Poor/fair self-rated health status	0.51*
Economic Factors	
Unemployment rate	0.28*
Pay day lenders per capita	0.12
Bank access	-0.19
Other Types of Debt	
Student loan debt	-0.39*
Student loan debt in collections	0.16
Auto/retail debt	0.01
Auto/retail debt delinquency rate	0.52*

Note: statistically significant variables * $p < 0.01$

Source: The Sycamore Institute's analysis of 2013-2017 ACS data (18), Urban Institute data (9), County Health Rankings data (21), Metro Ideas Project (20), and Opportunity Index (22) data

Table A3 presents the complete results of the findings reported in the main section of the report. Unlike Table A2, these results examine relationships between medical debt in collections and all of the other variables at the same time. This matters because there are many different factors that contribute to people having medical debt in collections. A multivariate analysis like this allows us to account for all of the most significant factors in combination.

Table A3. Complete Results of Beta Regression Analysis Reported in Main Section of Report

Dependent variable: Share of population with medical debt in collections

Variables	Coefficient	Std. Error
Housing		
Log median rent	-0.176	0.238
Log median home value	0.063	0.188
Homeownership rate	-0.012	0.006
Demographics		
Associate's degree or more	-0.007	0.006
Median age	0.039**	0.012
Non-white population	-0.003	0.003
Log median household income	0.204	0.322
20-44 years old population	0.044**	0.012
Health and Health Care		
Log health care utilization	-0.101	0.281
Uninsured rate	0.023*	0.011
Poor/fair self-rated health status	0.007	0.017
Economic Factors		
Unemployment rate	0.002	0.010
Payday lenders per capita	0.006*	0.003
Bank access	-0.005	0.014
Other Types of Debt		
Student loan debt	-0.021**	0.007
Student loan debt in collections	-0.002	0.003
Auto/retail debt	0.011**	0.005
Auto/retail debt delinquency rate	0.027**	0.007

Note: statistically significant variables * $p < .05$; ** $p < 0.01$. A statistically significant relationship between variables means that the observed associations are due to real differences and likely not due to random chance.

Source: The Sycamore Institute's analysis of data from 2013-2017 ACS (18), Urban Institute (9), County Health Rankings (21), Metro Ideas Project (20), and Opportunity Index (22)