Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.

eMethods

Sample and Variable Construction

1.1 TransUnion Credit Report Data

We use credit data provided by TransUnion, a global information solutions company, through a relationship with the Kilts Center for Marketing at The University of Chicago Booth School of Business. The data are an anonymized, nationally representative 10% random sample of persons with credit reports. The data was constructed by starting with a 10% random sample of persons in January 2000 and tracking these persons on a monthly basis from January 2000 to June 2020. In each month, a small percentage of people leave the panel (e.g., due to death). To maintain the representativeness of the data, each month a random 10% sample of persons with new credit reports (e.g., first-time borrowers) is added to the panel.

1.2 Sample Restrictions

The TransUnion variables were modified and enriched in January 2009. To maintain a consistent sample, we drop observations from prior to January 2009. We also drop persons who have a missing age or ZIP code, persons residing outside of the 50 states or the District of Columbia, and persons with an empty credit report, defined as a report with no credit record of any kind (i.e. no active or non-active tradeline, collection, or public record). The remaining sample (32.7 million observations in June 2020) is larger than 10% of the US adult population and may still include reports for persons who had emigrated and multiple reports for a person that were not linkable based on information provided to the credit bureau. The de-identified nature of the data precludes efforts to quantify the prevalence of these types of accounts in our sample.

1.3 Geographic Variables

We construct geographic variables based on person's ZIP code in the TransUnion data and crosswalks from government sources.

- To map ZIP codes to counties, we use *4th quarter 2019 ZIP-COUNTY* crosswalk from HUD's Office of Policy Development and Research (PD&R).[I] Since some ZIP codes cross multiple counties, we assign each ZIP code to the county with the plurality of residential addresses, as reported in the PD&R crosswalk file.

[I] https://www.huduser.gov/portal/datasets/usps_crosswalk.html

- We map county to state using the "State-County" level crosswalk (Summary Level 050) in *2018 State, County, Minor Civil Division, and Incorporated Place FIPS Codes* from US Census Bureau.[II]

- We map state to Census Region using the *2018 Census Bureau Region and Division Codes and State FIPS Codes* from US Census Bureau.[II]

1.4 Variable Definitions

Medical (Nonmedical) Debt in Collections: We define a medical debt in collections as a collection where i) Compliance Remark Code is not "AID"[III], ii) Current Balance Amount is positive, iii) Close Date is empty, and iv) the collection is classified as medical debt.[IV] A nonmedical debt has the same definition as medical debt, except that it is classified as nonmedical.

We identify a collection by Subject Key (the unique identifier for person) and Collection Key. In the collection segment of TransUnion data, lines that have the same Subject Key and Collection Key in the same month are treated as duplicated collections, and only the line with the maximum Current Balance Amount among them is used.

Delinquent Tradelines: We define a delinquent tradeline as a tradeline where i) Compliance Remark Code is not "AID", ii) Current Balance Amount is positive, iii) Close Date is empty, iv) the tradeline is classified as nonmedical, and v) Manner of Payment (MOP) is not "01", "02", "03", "8P", "9P" or "UR."[V]

Stock of Medical (Nonmedical) Debt in Collections: We define a person's stock of medical (nonmedical) debt in collections as the sum of the Current Balance Amount of all the medical (nonmedical) debts in collections for that person. We use the CPI-U to inflation-adjust dollar amounts to June 2020.[VI] After inflation adjusting, we Winsorize the individual-month-level stock medical (nonmedical) debt at the 99.99th percentile to reduce the influence of outliers. The 99.99th percentile is calculated using the pooled June 2009-2020 data, separately for medical and nonmedical debt. Medical debt is Winsorized at $319,333.31 and nonmedical debt is Winsorized at $198,365.44.

Mean Stock of Medical (Nonmedical) Debt in Collections is calculated by dividing the total stock medical (nonmedical) debt by the total number of observations.

[II] https://www.census.gov/geographies/reference-files/2018/demo/popest/2018-fips.html
[III] In Compliance Remark Code, "AID" stands for "Account information disputed by consumer."
[IV] This classifier variable takes on a value of 1 if the debt is "nonmedical" and 2 if the debt is "medical."
[V] In Manner of Payment, "01" is for "Current account", "02" for "Account 30 days past due date", "03" for "Account 60 days past due date ", "8P" for "Account paid in full, was a repossession", "9P' for "Account paid in full, was a collection or charge-off", and "UR" for "Unrated".
[VI] https://data.bls.gov/timeseries/CUUR0000SA0?amp%253bdata_tool=XGtable&output_view=data&include_graphs=true.

Flow of Medical (Nonmedical) Debt in Collections: We define the flow of medical (nonmedical) debt as the sum of new medical (nonmedical) debt in collections that year. A new medical (nonmedical) debt in collections is defined as a medical (nonmedical) debt in collections in a given month that was not reported to TransUnion in the previous month. We then calculate the flow of medical debt as the sum of all new debt that appeared on a person's credit report in the preceding 12 months (e.g., the flow for 2020 is calculated as the sum of new debt from July 2019 to June 2020). After inflation adjusting, we Winsorize the person-month-level flow medical (nonmedical) debt at the 99.99th percentile ($173,478.91 for medical and $138,021.03 for nonmedical), which is calculated by pooling together new medical (nonmedical) debt from all years.

Mean Flow of Medical (Nonmedical) Debt in Collections is calculated by dividing the total Flow of Medical (Nonmedical) Debt in Collections by the total number of observations.

1.5 Annualizing the 2009 Flow Data

Since our earliest data is January 2009, when calculating the flow of new medical (nonmedical) debt in collections, we can only start from February 2009 (we need to use January 2009 data to determine whether the account in collections is newly reported). As years are defined from the previous July to current June, we don't have the complete data for year 2009. We use flows from February to June 2009 and all data from years 2010 to 2020 to annualize the 2009 flow.

More specifically, three outcomes are subject to this adjustment: total flow medical (nonmedical) debt in collections, percentage with flow medical (nonmedical) debt in collections, and number of unique valid samples that ever exist in the data for the given year. Other outcomes of interest can be derived from these three. We calculated these three outcomes using both the full-year data (July to June for each year) and the February to June data for the years 2010 to 2020. Then, we calculated the average ratio of the February-to-June value to the full-year value across these 11 years, which is used to adjust the 2009 flow value.

1.6 ZIP Code-Level Total Population and Average Income Data

To construct measures of medical debt by ZIP code income decile, we require data on ZIP code average income and ZIP code total population. The ZIP code total population data and the per capita income data are from the 2014-2018 ACS 5-Year Estimates.[VII] We inflation adjust the income values to June 2020 using the CPI-U.[VI]

[VII] From: https://data.census.gov/cedsci/.

Linear Regression Model

To further examine the association between the Medicaid expansions and medical debt, we estimate a series of linear regression models that sequentially add controls for state-level demographic and economic characteristics.

Our baseline specification is a linear regression of the percentage change in the mean flow medical debt between 2013 and 2020 (defined the difference between the 2020 value and 2013 value, divided by the 2013 value) on indicator variables for states that expanded Medicaid in 2014, states that expanded Medicaid after 2014, and a constant. We estimate this model on data averaged at the state level (N=51). By estimating the model on state-level data, our standard errors are similar to what we would have obtained by estimating the model of individual-level data and clustering our standard errors at the state level.

To examine the sensitivity of the results, we estimate specifications that control for the state-level change in the unemployment rate, change in percentage of the population aged 65+, change in the percentage with a bachelor's degree or higher (conditional on 25+ years old), and change in inflation-adjusted median income. These controls were constructed using the 1-year ACS from 2019 and 2013. We use 2019 data because values for 2020 are not yet available. As shown in Table 6, the stable estimates of the percentage change in medical debt in expansion states, along with the sizeable increase in the R-squared, reduce concerns about confounding factors[1].

To further assess the sensitivity of our estimates, we estimate specifications that control for changes in the state-level share of for-profit hospital beds and state-level "surprise" out-of-network billing legislation. Changes in the share of for-profit hospital beds are calculated using the 2013 and 2018 Provider of Service files, compiled by Sacarny[2] and the billing laws are taken from the Commonwealth Fund[3]. We also estimate specifications that drop the 3 states (CA, MN, WA) that implemented general collections legislation during the 2013-2020 period, as documented by Fedaseyeu[4] and Fonseca and Zafar[5]. As shown in eTable 5, the estimates are very similar across specifications, providing confidence in the robustness of our results.

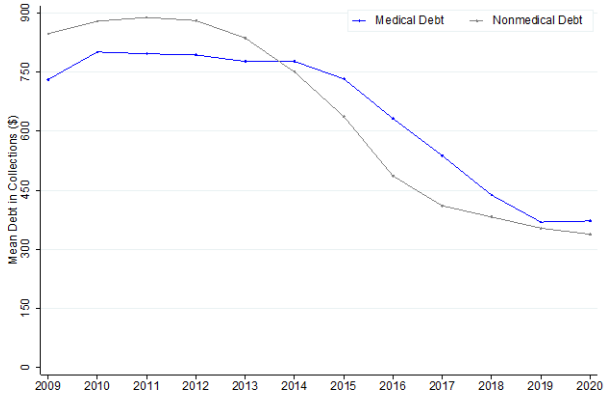
Alternative Sample Restriction

To examine sensitivity to dropping empty credit records (defined as a report with no credit record of any kind), we reproduce the main exhibits including these empty credit records. Compared to the baseline sample, which has 32.7 million observations in June 2020, the alternative sample has 37.7 million observations in June 2020, substantially more than 10% of the US adult population.

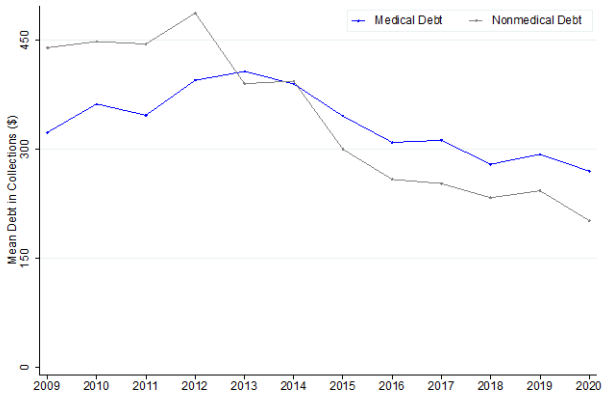
eTable 1 and eFigures 1-4 replicate the exhibits in the manuscript using this alternative sample. Because these additional observations increase the denominator, but not the numerator, the means and prevalences are reduced. The qualitative patterns are unchanged.

eFigure 1. Stock and Flow of Medical and Nonmedical Debt in Collections by Year (Alternative Sample)

A. Stock of debt (all debt in collections listed on credit reports).

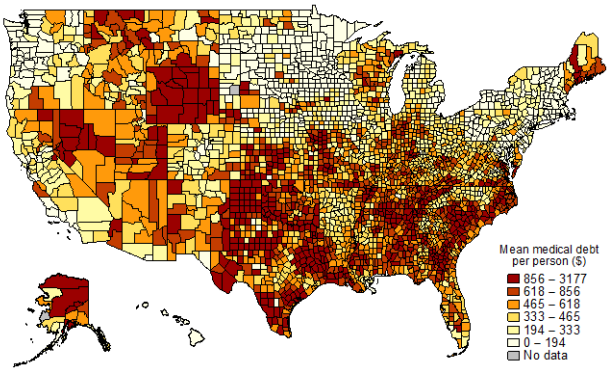


B. Flow of debt (new debt in collections accrued during the preceding 12 mo)

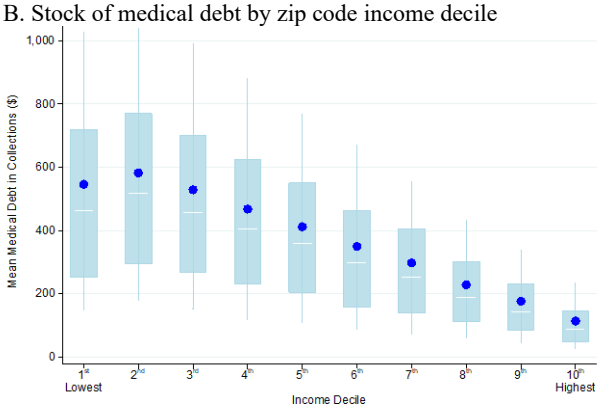


eFigure 2. Stock of Medical Debt by County and Zip Code Income Decile (Alternative Sample)

A. Mean stock of medical debt by county

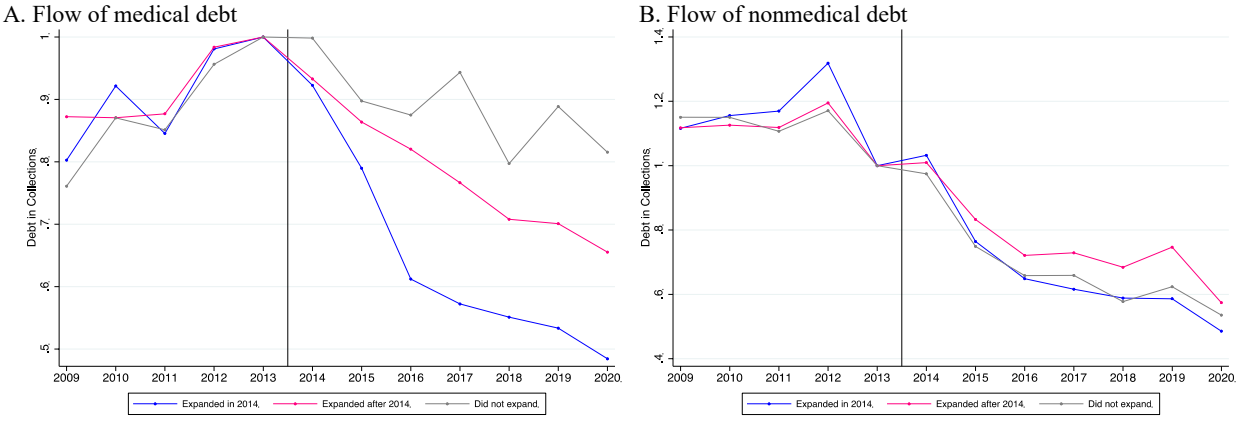


B. Stock of medical debt by zip code income decile



B, The dots are means, the black horizontal lines are medians, the boxes are the interquartile ranges, and the whiskers are the range (10-90) for stock by zip code income decile as of June 2020. The zip codes were assigned to income deciles using per-capita income estimates from the 5-year American Community Survey (2014-2018), weighting each zip code by its population in the American Community Survey. The median number of zip codes in each income decile was 3,475 (interquartile range, 2,399-3,762) in 2020.

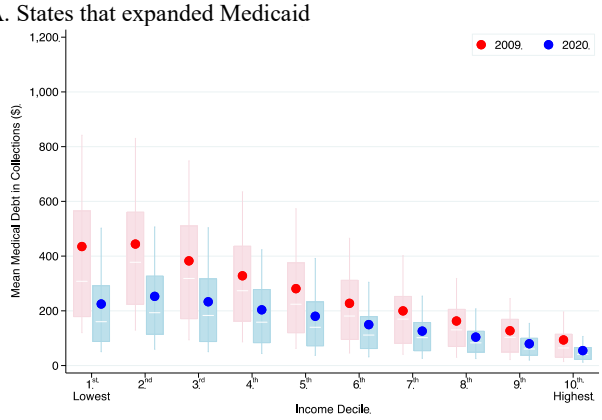
eFigure 3. Trends in Medical and Nonmedical Debt in Collections by Medicaid Expansion Status (Alternative Sample)



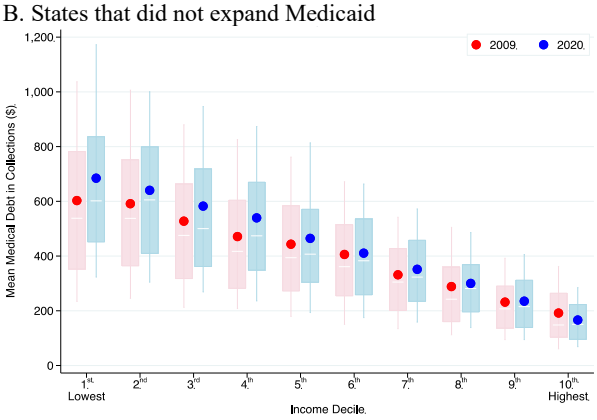
The plots show the flow of mean medical and nonmedical debt in collections, grouping states by Medicaid expansion status and normalizing values for each group to 1 in 2013 (eg, the normalized value for 2020 is calculated as the ratio of the unnormalized 2020 and 2013 values for that group). Values are from June of each year. The vertical line indicates the timing of initial Medicaid expansion.

eFigure 4. Flow of Medical Debt by State Medicaid Expansion Status and Zip Code Income Decile in 2009 and 2020 (Alternative Sample)

A. States that expanded Medicaid

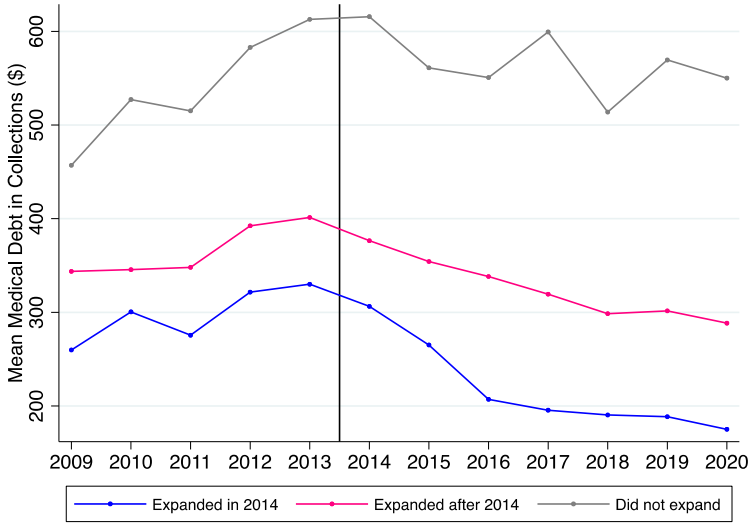


B. States that did not expand Medicaid



The dots are means, the black horizontal lines are medians, the boxes are the interquartile ranges, and the whiskers are the range (10-90) for stock by zip code income decile as of June 2020. The zip codes were assigned to income deciles using per-capita income estimates from the 5-year American Community Survey (2014-2018), weighting each zip code by its population in the American Community Survey. The median number of zip codes in each income decile was 3,474 (interquartile range, 2,396-3,766) in 2009, and 3,475 (interquartile range, 2,399-3,762) in 2020.

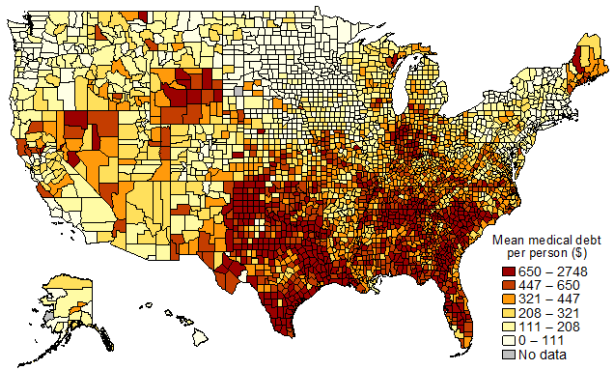
eFigure 5. Trends in Medical Debt in Collections by Medicaid Expansion Status, Unnormalized



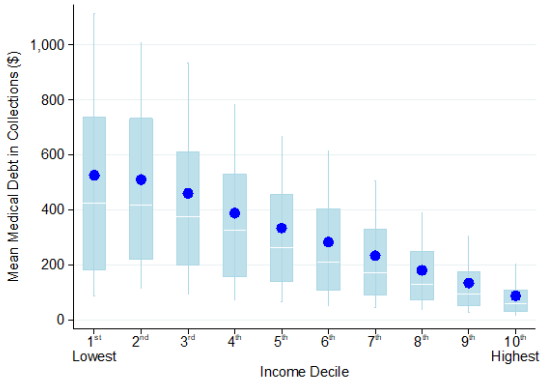
The plot shows the flow of mean medical debt in collections, grouping states by Medicaid expansion. Values are from June of each year. The vertical line indicates the timing of initial Medicaid expansion.

eFigure 6. Flow of Medical Debt by County and Zip Code Income Decile

A. Mean flow of medical debt by county



B. Mean flow of medical debt by zip code income decile



B, The dots are means, the black horizontal lines are medians, the boxes are the interquartile ranges, and the whiskers are the range (10-90) for stock by zip code income decile as of June 2020. The zip codes were assigned to income deciles using per-capita income estimates from the 5-year American Community Survey (2014-2018), weighting each zip code by its population in the American Community Survey. The median number of zip codes in each income decile was 3,474 (interquartile range, 2,398-3,762) in 2020.

eTable 1. Medical Debt Summary Statistics for 2020 Across the US and by US Census Region (Alternative Sample)

	Across US	Northeast	South	Midwest	West
Stock of Medical Debt[a]					
Medical Debt in Collections (%)[b]	15.4	9.4	20.6	15.5	11.0
Mean Medical Debt ($)	372	145	532	336	300
Mean Medical Debt for those with Debt ($)	2,424	1,549	2,595	2,169	2,733
Mean Nonmedical Debt ($)	338	277	401	294	316
Sample Sizes for June 2020[c]					
Medical Debt in Collections	5,803,567	595,662	3,029,355	1,188,722	989,828
Nonmedical Debt in Collections	6,204,151	840,501	2,867,876	1,223,042	1,272,732
All Individuals	37,690,810	6,328,240	14,720,873	7,656,723	8,984,974
Flow of Medical Debt[d]					
Medical Debt in Collections (%)[b]	11.6	6.3	16.9	11.7	6.8
Mean Medical Debt ($)	270	95	444	230	144
Mean Medical Debt for those with Debt ($)	2320	1500	2630	1962	2123
Mean Nonmedical Debt ($)	202	161	247	188	169
Sample Sizes for July 2019 to June 2020[c]					
Medical Debt in Collections	4,388,613	400,819	2,482,735	895,698	609,361
Nonmedical Debt in Collections	4,688,373	597,746	2,239,332	952,112	899,183
All Individuals	37,690,810	6,328,240	14,720,873	7,656,723	8,984,974

[a] Measures all debt in collections listed on credit reports.
[b] Ratio of persons with medical debt in collections to all individuals.
[c] Nationally representative, randomly selected 10% panel of all individuals with credit reports maintained by TransUnion.
[d] Measures new debt in collections accrued during the preceding 12 months.

eTable 2. States by Census Region

Census Region	States
Northeast	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, Pennsylvania
Midwest	Indiana, Illinois, Michigan, Ohio, Wisconsin, Iowa, Nebraska, Kansas, North Dakota, Minnesota, South Dakota, Missouri
South	Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, Texas
West	Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming, Alaska, California, Hawaii, Oregon, Washington

From https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf.

eTable 3. States by Expansion Status

Expansion Status	States
Expanded in 2014	Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Hawaii, Illinois, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, Nevada, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, Vermont, Washington, West Virginia
Expanded after 2014	Alaska, Idaho, Indiana, Louisiana, Maine, Michigan, Montana, New Hampshire, Pennsylvania, Utah, Virginia
Did not expand	Alabama, Florida, Georgia, Kansas, Mississippi, North Carolina, South Carolina, South Dakota, Tennessee, Texas, Wisconsin, Wyoming

From Kaiser Family Foundation (https://www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/).

eTable 4. Regression Estimates

Dependent Variable: Percentage Change in Mean Flow Medical Debt, 2020-2013					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Expanded in 2014 (dummy)	-34.0(-49.4 to -18.5)	-34.8(-47.4 to -22.2)	-33.4(-46.1 to -20.7)	-32.8(-46.1 to -19.6)	-26.9(-39.9 to -13.9)
Expanded after 2014 (dummy)	-20.4(-39.6 to -1.2)	-23.5(-40.5 to -6.5)	-21.0(-38.0 to -4.0)	-20.9(-37.7 to -4.0)	-19.2(-38.0 to -0.4)
Constant	-10.0(-22.8 to 2.8)	11.0(-12.6 to 34.5)	24.8(-12.7 to 62.3)	32.4(-36.1 to 101.0)	35.7(-32.1 to 103.5)
Controls					
Change in unemployment rate		x	x	x	x
Change in % 65+ age old			x	x	x
Change in % with bachelor's degree or higher (25+ years old)				x	x
Change in median income					x
N	51	51	51	51	51
Adjusted R-squared	0.369	0.408	0.406	0.395	0.422

Change of Expanded in 2014: -44.0(-52.7 to -35.2); Change of Expanded after 2014: -30.4(-44.8 to -16.1); Change of Did not expand: -10(-22.8 to 2.8).
State level regression weighted by population in 2018 5-year ACS (analytic weight). Controls are from 1-year ACS. All dollar amounts are inflated adjusted to June 2020. 95% confidence intervals in parentheses.

eTable 5. Regression Estimates (Additional Controls)

Dependent Variable: Percentage change in Per Capita Flow of Medical Debt, 2020-2013								
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Expanded in 2014 (dummy)	-34.0 (-49.4 to -18.5)	-34.2 (-50.1 to -18.3)	-32.4 (-46.4 to -18.5)	-28.2 (-43.0 to -13.5)	-26.9 (-39.9 to -13.9)	-26.4 (-40.8 to -12.1)	-28.5 (-41.5 to -15.6)	-26.9 (-39.2 to -14.5)
Expanded after 2014 (dummy)	-20.4 (-39.6 to -1.2)	-20.8 (-40.8 to -0.9)	-20.8 (-40.6 to -1.0)	-20.4 (-39.7 to -1.1)	-19.2 (-38.0 to -0.4)	-18.7 (-40.1 to 2.6)	-18.7 (-37.8 to 0.4)	-18.9 (-37.0 to -0.8)
Constant	-10.0 (-22.8 to 2.8)	-9.7 (-22.5 to 3.1)	-10.9 (-22.3 to 0.4)	-10.0 (-22.9 to 2.8)	35.7 (-32.1 to 103.5)	35.2 (-34.5 to 105.0)	40.7 (-35.0 to 116.4)	24.1 (-43.2 to 91.4)
Controls								
Change in unemployment rate					x	x	x	x
Change in % 65+ years old					x	x	x	x
Change in % with bachelors degree or higher (25+ years old)					x	x	x	x
Change in median income					x	x	x	x
Change in for-profit hospital beds		x				x		
Comprehensive Surprise Billing Protections			x				x	
Partial Surprise Billing Protections			x				x	
Exclude CA, MN, WA				x				x
N	51	51	51	48	51	51	51	48
Adjusted R-sq	0.369	0.355	0.350	0.292	0.422	0.409	0.408	0.300

Change of Expanded in 2014: -44.0(-52.7 to -35.2); Change of Expanded after 2014: -30.4(-44.8 to -16.1); Change of Did not expand: -10(-22.8 to 2.8).
State level regression weighted by population in 2018 5-year ACS (analytic weight). For-profit provider rate is from Provider of Service data. Surprise Billing Protections status is from The Commonwealth Fund (3). CA, MN, and WA are excluded to examine sensitivity to collections legislation that was introduced in these states during the 2013-2020 time period (4; 5). Other controls are from 1-year ACS. All dollar amounts are inflated adjusted to June 2020. 95% confidence intervals in parentheses.

eTable 6. Medical Debt Summary Statistics, 2009 to 2020

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Stock[a]												
Medical Debt in Collections (%)[b]	23.2	24.3	24.5	24.6	24.6	24.5	23.7	22.3	20.6	18.8	16.4	17.8
Mean Medical Debt ($)	750	827	822	826	814	820	780	682	587	485	417	429
Mean Medical Debt for those with Debt ($)	3,439	3,603	3,370	3,379	3,340	3,370	3,312	3,079	2,857	2,584	2,745	2,424
Mean Nonmedical Debt ($)	869	908	918	916	877	791	678	524	448	423	400	390
Sample Sizes for June 2020[c]												
Medical Debt in Collections	6,225,530	6,655,733	6,917,862	7,084,169	7,222,988	7,362,270	7,223,982	6,841,810	6,417,274	5,933,873	5,232,480	5,803,567
Nonmedical Debt in Collections	7,102,345	7,496,384	7,795,315	7,829,671	7,967,480	7,864,797	7,589,655	6,927,145	6,487,319	6,243,879	6,318,729	6,204,151
All Individuals	26,820,787	27,441,406	28,193,865	28,809,701	29,420,134	30,036,333	30,445,743	30,732,670	31,106,805	31,509,932	31,899,487	32,669,823
Flow[d]												
Medical Debt in Collections (%)[b]	14.3	14.4	14.0	15.5	15.7	15.6	14.5	14.0	14.1	13.3	13.5	13.0
Mean Medical Debt ($)	332	376	359	412	427	412	370	333	340	308	325	311
Mean Medical Debt for those with Debt ($)	2,326	2,606	2,563	2,665	2,723	2,636	2,553	2,384	2,411	2,316	2,407	2,396
Mean Nonmedical Debt ($)	452	464	460	508	410	416	321	279	276	258	275	233
Sample Sizes for July 2019 to June 2020[c]												
Medical Debt in Collections	3,831,300	3,955,774	3,951,809	4,451,485	4,614,147	4,690,576	4,407,713	4,295,551	4,382,006	4,186,489	4,302,175	4,240,869
Nonmedical Debt in Collections	5,494,610	5,397,238	5,454,426	5,744,339	5,551,042	5,830,848	5,302,236	4,840,979	4,890,268	4,550,778	4,424,641	4,519,576
All Individuals	26,820,787	27,441,406	28,193,865	28,809,701	29,420,134	30,036,333	30,445,743	30,732,670	31,106,805	31,509,932	31,899,487	32,669,823

[a] Measures all debt in collections listed on credit reports.
[b] Ratio of persons with medical debt in collections to all individuals.
[c] Nationally representative, randomly selected 10% panel of all individuals with credit reports maintained by TransUnion.
[d] Measures new debt in collections accrued during the preceding 12 months.

eTable 7. Medical Debt Summary Statistics by Income Decile, 2009 and 2020

Income Decile[a]	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Panel A. Nationwide										
2020										
Per Capita Income ($)	16,708	21,388	24,137	26,489	28,917	31,615	34,858	39,213	45,972	66,452
Mean Medical Debt in Collections, Stock[b] ($)	677	695	621	544	473	399	336	256	196	126
Mean Medical Debt in Collections, Flow[c] ($)	525	511	460	389	334	283	234	180	134	87
2009										
Per capita Income ($)	16,689	21,399	24,144	26,496	28,924	31,627	34,871	39,219	45,977	66,513
Mean Medical Debt in Collections, Stock[b] ($)	1,229	1,176	1,037	899	805	687	578	453	363	258
Mean Medical Debt in Collections, Flow[c] ($)	542	527	463	394	359	304	257	199	158	114
Panel B. States Expanded Medicaid in 2014										
2020										
Per Capita Income ($)	16,590	21,358	24,125	26,490	28,922	31,625	34,935	39,215	45,987	67,926
Mean Medical Debt in Collections, Stock[b] ($)	475	510	452	401	352	286	241	197	150	104
Mean Medical Debt in Collections, Flow[c] ($)	278	303	275	238	208	171	142	117	88	60
2009										
Per capita Income ($)	16,586	21,376	24,130	26,496	28,933	31,638	34,951	39,223	45,984	67,862
Mean Medical Debt in Collections, Stock[b] ($)	1,108	1,071	945	818	692	554	483	396	306	219
Mean Medical Debt in Collections, Flow[c] ($)	458	461	397	338	289	232	205	166	130	95
Panel C. States Did Not Expand Medicaid										
2020										
Per Capita Income ($)	16,780	21,398	24,142	26,493	28,894	31,616	34,710	39,214	45,954	63,558
Mean Medical Debt in Collections, Stock[b] ($)	913	910	812	752	643	563	478	380	298	205
Mean Medical Debt in Collections, Flow[c] ($)	836	760	680	624	533	468	396	333	260	184
2009										
Per Capita Income ($)	16,768	21,404	24,154	26,499	28,897	31,636	34,703	39,216	45,986	63,681
Mean Medical Debt in Collections, Stock[b] ($)	1,384	1,336	1,182	1,067	1,001	934	777	655	545	441
Mean Medical Debt in Collections, Flow[c] ($)	630	611	541	485	454	416	338	293	235	196

[a] ZIP codes are assigned to income deciles using per capita income estimates from the 2014-2018 5-year ACS, weighting each ZIP code by its population in the ACS.

[b] Stock measures all debt in collections listed on credit reports.

[c] Flow measures new debt in collections accrued in the preceding 12 months.

eTable 8. Medical Debt Summary Statistics by Medicaid Expansion Group, 2009 and 2020

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Panel A. Expanded in 2014												
Mean Medical Debt	260	300	276	322	330	306	265	207	196	190	189	175
Mean Nonmedical Debt	424	442	447	508	388	403	302	258	248	240	245	206
Mean Medical Debt (normalized to 2013)	0.79	0.91	0.84	0.97	1.00	0.93	0.80	0.63	0.59	0.58	0.57	0.53
Mean Nonmedical Debt (normalized to 2013)	1.09	1.14	1.15	1.31	1.00	1.04	0.78	0.67	0.64	0.62	0.63	0.53
Panel B. Expanded after 2014												
Mean Medical Debt	344	346	348	392	401	376	354	338	319	299	302	288
Mean Nonmedical Debt	370	374	372	400	337	342	287	250	255	243	270	212
Mean Medical Debt (normalized to 2013)	0.86	0.86	0.87	0.98	1.00	0.94	0.88	0.84	0.80	0.74	0.75	0.72
Mean Nonmedical Debt (normalized to 2013)	1.10	1.11	1.10	1.19	1.00	1.02	0.85	0.74	0.76	0.72	0.80	0.63
Panel C. Did not expand												
Mean Medical Debt	457	527	515	583	613	616	561	551	599	514	569	550
Mean Nonmedical Debt	548	551	531	567	488	478	373	330	333	296	329	287
Mean Medical Debt (normalized to 2013)	0.75	0.86	0.84	0.95	1.00	1.00	0.92	0.90	0.98	0.84	0.93	0.90
Mean Nonmedical Debt (normalized to 2013)	1.12	1.13	1.09	1.16	1.00	0.98	0.76	0.68	0.68	0.61	0.68	0.59

eTable 9. Regression Estimates[a]

Dependent Variable: Percentage Change in Mean Flow of Nonmedical Debt, 2020-2013					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Expanded in 2014 (dummy)	-4.5(-13.2 to 4.2)	-5.1(-12.7 to 2.4)	-5.3(-13.1 to 2.4)	-3.1(-11.2 to 4.9)	4.5(-1.5 to 10.5)
Expanded after 2014 (dummy)	3.2(-4.2 to 10.6)	0.9(-6.9 to 8.6)	0.5(-7.2 to 8.2)	1.2(-6.2 to 8.5)	3.3(-2.6 to 9.1)
Constant	-40.9(-46.6 to -35.3)	-25.1(-37.3 to -13.0)	-27.1(-43.6 to -10.7)	1.6(-23.1 to 26.2)	5.8(-12.4 to 23.9)
Controls					
Change in unemployment rate		x	x	x	x
Change in % 65+ age old			x	x	x
Change in % with bachelor's degree or higher (25+ years old)				x	x
Change in median income					x
N	51	51	51	51	51
Adjusted R-squared	0.035	0.156	0.139	0.299	0.596

Change of Expanded in 2014: -45.4(-52.1 to -38.8); Change of Expanded after 2014: -37.7(-42.4 to -33.0); Change of Did not expand: -40.9(-46.6 to -35.3).

[a] State level regression weighted by population in 2018 5-year ACS (analytic weight). Controls are from 1-year ACS. All dollar amounts are inflated adjusted to June 2020. 95% confidence intervals in parentheses.

eReferences

1. Oster E. Unobservable selection and coefficient stability: Theory and evidence. JBES. 2019 Apr;37(2):187-204. doi:10.1080/07350015.2016.1227711
2. Sacarny A. provider-of-services. GitHub. n.d. Accessed March 14, 2020. https://github.com/asacarny/provider-of-services
3. Hoadley J, Lucia K, Kona M. State efforts to protect consumers from balance billing. The Commonwealth Fund. 2019 Jan 18. Accessed March 14, 2020. https://www.commonwealthfund.org/blog/2019/state-efforts-protect-consumers-balance-billing
4. Fedaseyeu V. Debt collection agencies and the supply of consumer credit. J Financ Econ. 2020;138.1:93-221. doi:10.1016/j.jfineco.2020.05.002
5. Fonseca J, Zafar B. Access to credit and financial health: Evaluating the impact of debt collection. Working paper. n.d. Accessed March 14, 2020. https://scholar.princeton.edu/sites/default/files/juliafonseca/files/fonseca_zafar.pdf