The Impact of Social Insurance on Household Debt

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Disclosure Statement

- We gratefully acknowledge financial support for this project from the Rodney L. White Center for Financial Research

- Both coauthors have nothing else to disclose

Motivation: Social Insurance and Consumer Credit Markets

- Unsecured debt (e.g., credit cards) is an important consumption-smoothing tool
  - Of the 4 in 10 US adults anticipating difficulty meeting an unexpected $400 expense, credit cards are the **most** cited tool they expect to rely on (SHED, 2019)
  - 43% of US households experiencing an income shortfall report turning to borrowing, including credit cards (SCF, 2016)
- Lack of insurance can ↑ household reliance on debt to cope with adverse shocks
  - Expanding social insurance can **crowd out** this use of debt
- But improved **financial resilience** from better insurance can **crowd in** credit supply

Outline

1. Background: Credit Cards and Medicaid

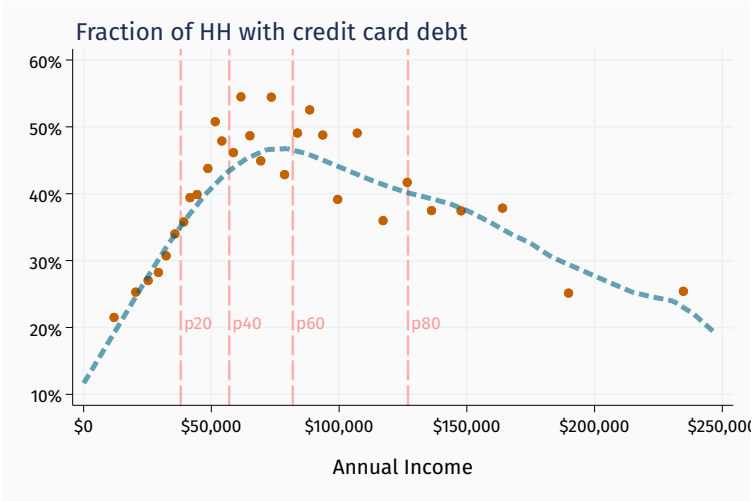
2. Estimating the Impact of Medicaid on Credit Outcomes

3. A Model with Health Insurance and Unsecured Debt

4. Conclusion

Background: Credit Cards and Medicaid

Credit Card Debt Along the Income Distribution



Source: 2017 PSID

▸ By Age Group ▸ Inquiry Ratio ▸ Inquiries ▸ Collections ▸ Med. Collections

Background: Medicaid Expansions

- Medicaid: gov't program providing health insurance to low-income households
- **64.7 million** Americans received health insurance through Medicaid in 2019
- ACA provided federal funds for state expansions of Medicaid eligibility in 2014
  - But 2012 NFIB v. Sebelius Supreme Court ruling made expansions **optional**

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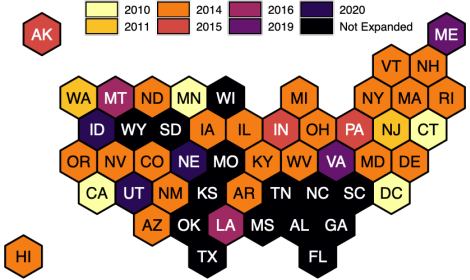
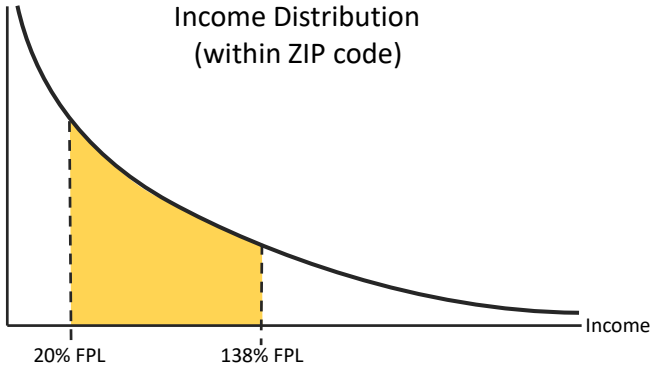
- **64.7 million** Americans received health insurance through Medicaid in 2019
- ACA provided federal funds for state expansions of Medicaid eligibility in 2014
  - But 2012 NFIB v. Sebelius Supreme Court ruling made expansions **optional**
- Staggered expansion across states ensued:



Variation in Impact of Medicaid Expansions

- Expanding under ACA ↑ Medicaid income limit to 138% of the federal poverty level
- Impact on eligibility depends on (1) pre-ACA income limit & (2) income distribution



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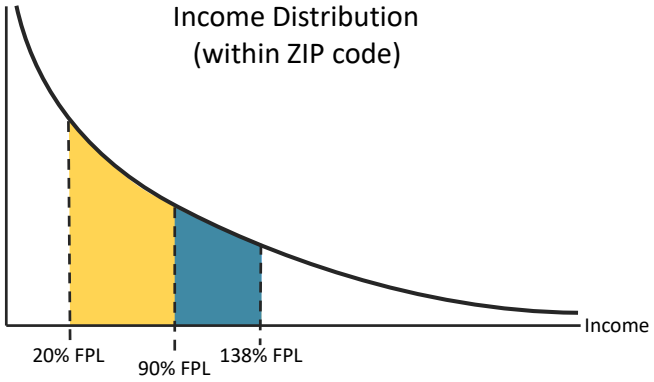

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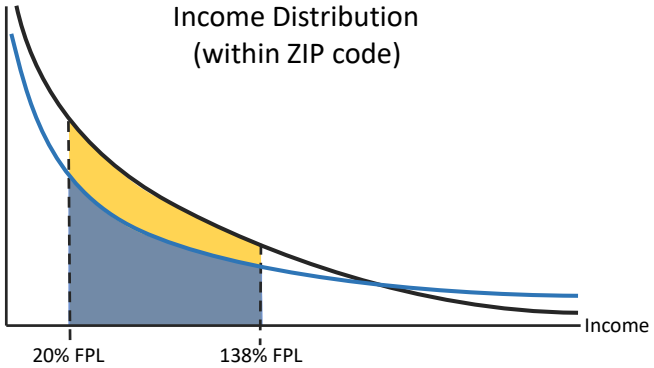

Estimating the Impact of Medicaid on Credit Outcomes

Data

- **Experian Data:** detailed credit outcomes
  - Annual panel of 10 million US residents spanning 2010-2021
  - Have revolving balances quarterly 2012-2020
  - Geographically representative

- **ZIP-Level Medicaid Eligibility**
  - IRS SOI data: distribution of income at the ZIP-level
  - ACS data: joint distribution of household size and income
  - Combine data to estimate ZIP-level eligibility

Estimating the Causal Effect of Medicaid Eligibility

- **Goal:** estimate the causal effect of expanded Medicaid eligibility on credit outcomes
  - Outcomes: borrowing, credit supply & demand proxies, default, and credit scores
- **Challenges:**
  - Medicaid eligibility is negatively correlated with income
  - Later state-level expansions coincided with other political changes (e.g., new gov't)
- **Approach:** continuous diff-in-diff comparing ZIP codes
  - Idea: compare ZIP codes with similar income but different-sized Medicaid expansions
  - Similar to Goodman-Bacon (2018, 2021), but using ZIP vs. state-level variation
- **Identifying Assumption:** change in eligibility is uncorrelated with other shocks coinciding with expansion

Results: Eligibility → Borrowing

	1[Has CC]	log(CC Bal.)	log(CC Rev. Bal.)
$\text{NewElig}_{zs} \times \text{Post}_{st}$	0.327***	0.999***	0.742***
	(0.05)	(0.24)	(0.21)
NewElig_{zs}	-0.493***	-1.337***	-1.108***
	(0.08)	(0.28)	(0.25)
$\log(\text{AGI}_{zcst})$	0.110***	0.629***	0.560***
	(0.01)	(0.02)	(0.02)
Obs	106,616	352,537	352,533
R2	0.781	0.855	0.819
Mean	84%	$4,239	$3,628

Notes: All specifications include, year, state, county, state-year, and county-year fixed effects. Standard errors are clustered by state. Significance: 0.10*, 0.05**, 0.01***.

▸ Dynamic ▸ Inc. Interaction ▸ Est. Hetero. ▸ Alt. Approaches

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BJS: *Modified* Borusyak, Jaravel, and Spiess (2022) heterogeneity-robust estimator

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Summary of Additional Resuls

- **Credit Supply & Demand Proxies:**
  - Credit card utilization **decreases**
  - Credit limits **increase**
  - New credit cards per inquiry **increase**
  - Credit card inquiries **increase**

- **Default & Credit Risk:**
  - 30 and 90 day delinquency **decrease**
  - Likelihood and amount of debt in collections **decrease**
  - Credit scores **increase**

A Model with Health Insurance and Unsecured Debt

Households

Income shocks

- Income: $$\ln y_{it} = \begin{cases} \rho \ln y_{it-1} + \epsilon^{y}_{it}, & \text{w.p. } \lambda_y \\ \ln y_{it-1}, & \text{w.p. } 1-\lambda_y \end{cases}$$

Expenditure shocks

- Medical expenditure: $X_{it} \sim \ln \mathcal{N}(\mu_x, \sigma_x^2)$
- Insurance by income: $M_{it} = oop\,(y_{it}) X_{it}$

Debt

- Borrow (or save) using one-period debt securities: b_{it}
  - Can choose to go **delinquent** on debt (suffer utility cost)
  - Pay endogenous interest rate $r(y_{it}, b_{it+1}) = \frac{1}{q(y_{it}, b_{it+1})}$

Delinquency and Credit Supply

Households with delinquent debt:

- Cannot save or borrow
- Medical expenditure piles up on debt
- With some probability, stochastic fraction of debt is forgiven

Credit supply

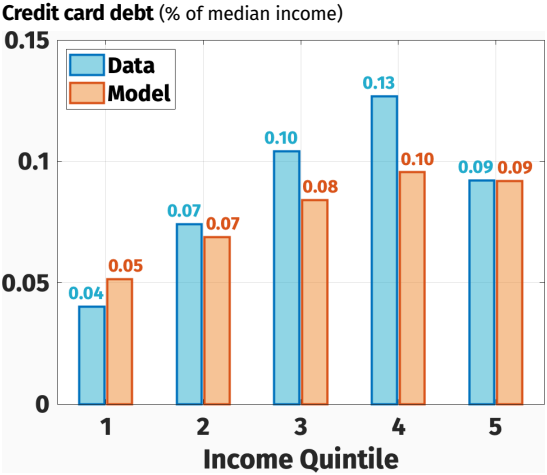
- Perfect competition among lenders
- **Hybrid of short-term and long-term debt**

Calibration

Medical Expenditure Panel Survey

- Distribution of medical expenditure
- Joint distribution of insurance type and income
- Out-of-pocket (OOP) expenses by insurance type

Panel Study of Income Dynamics



Expansion of Medicaid

- **Experiment: ↑ Medicaid coverage 1.6 pps**

Medicaid Expansion Impact

Debt Level	+1.33%
Welfare	+0.18%

Expansion of Medicaid

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- Decompose **borrowing** and **welfare** response into three channels:

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Expansion of Medicaid

- **Experiment: ↑ Medicaid coverage 1.6 pps**
- Decompose **borrowing** and **welfare** response into three channels:
  - **Direct insurance channel:** increases wealth in some states of the world ⇒ **less debt**

Medicaid Expansion Impact		Direct Effect
Debt Level	+1.33%	-1.14%
Welfare	+0.18%	+0.15%

Expansion of Medicaid

- **Experiment: ↑ Medicaid coverage 1.6 pps**
- Decompose **borrowing** and **welfare** response into three channels:
  - **Direct insurance channel:** increases wealth in some states of the world ⇒ **less debt**
  - **Credit demand channel:** precautionary savings and *debt aversion* ⇒ **ambiguous**

Medicaid Expansion Impact		Direct Effect	CD
Debt Level	+1.33%	-1.14%	-1.43%
Welfare	+0.18%	+0.15%	+0.0001%

Expansion of Medicaid

- **Experiment: ↑ Medicaid coverage 1.6 pps**
- Decompose **borrowing** and **welfare** response into three channels:
  - **Direct insurance channel:** increases wealth in some states of the world ⇒ **less debt**
  - **Credit demand channel:** precautionary savings and *debt aversion* ⇒ **ambiguous**
  - **Credit supply channel:** lower delinquency risk ⇒ better credit terms ⇒ **more debt**

Medicaid Expansion Impact		Direct Effect	CD	CS
Debt Level	+1.33%	-1.14%	-1.43%	+3.90%
Welfare	+0.18%	+0.15%	+0.0001%	+0.03%

Expansion of Medicaid

- **Experiment: ↑ Medicaid coverage 1.6 pps and finance it with a uniform income tax**
- Decompose **borrowing** and **welfare** response into three channels:
  - **Direct insurance channel**: increases wealth in some states of the world ⇒ **less debt**
  - **Credit demand channel**: precautionary savings and *debt aversion* ⇒ **ambiguous**
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Medicaid Expansion Impact		**Direct Effect**	**CD**	**CS**
Debt Level	+1.33%	-1.14%	-1.43%	+3.90%
(incl. tax effects)	+1.63%	-1.00%	-1.25%	+3.88%
Welfare	+0.18%	+0.15%	+0.0001%	+0.03%
(incl. tax effects)	+0.09%	+0.06%	+0.0001%	+0.03%

Conclusion

Conclusion

Q: **How does social insurance affect household debt?**

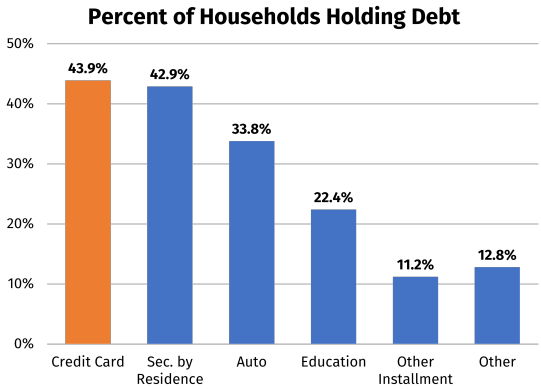
- We focus on expansion of health insurance through Medicaid
- Empirical evidence implies
  - 1% increase in Medicaid eligibility → **0.74% increase in credit card debt**
- Quantitative model
  - Credit supply channel **drives the rise in debt**
  - Credit supply response leads to **first order welfare gains (1/3 of total)**

Social insurance can crowd in private insurance (credit access) with large welfare gains

Thanks!

Appendix

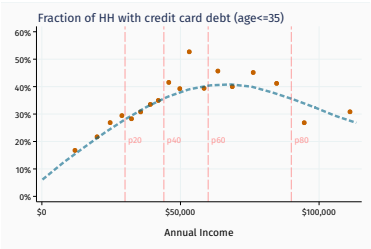
Credit Card Debt in the US

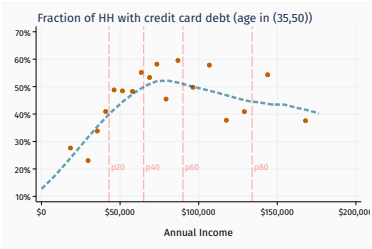


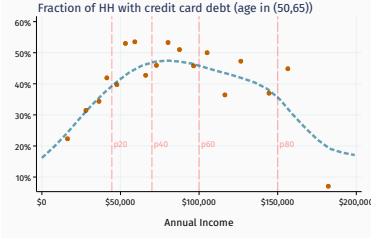
Source: 2016 SCF

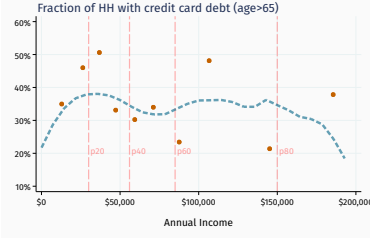
- US households held **$927 bil.** in credit card balances in 2019
- Avg. credit card balances are $4,239
  - Avg. **revolving** (unpaid) balances: **$3,628**
  - 61% of US residents are revolvers
- Commercial banks earned $90 bil. in CC interest income in 2019 ($700 per HH)
- The average credit card interest rate is 14%

Credit card debt versus income across age groups



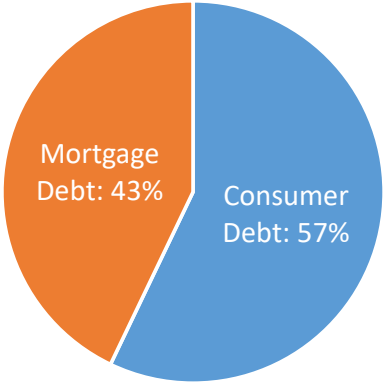


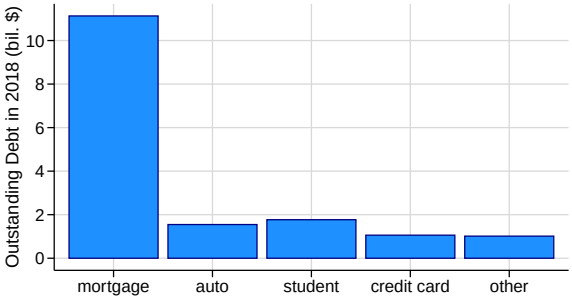




back

Share of Debt Service Payments (2018)

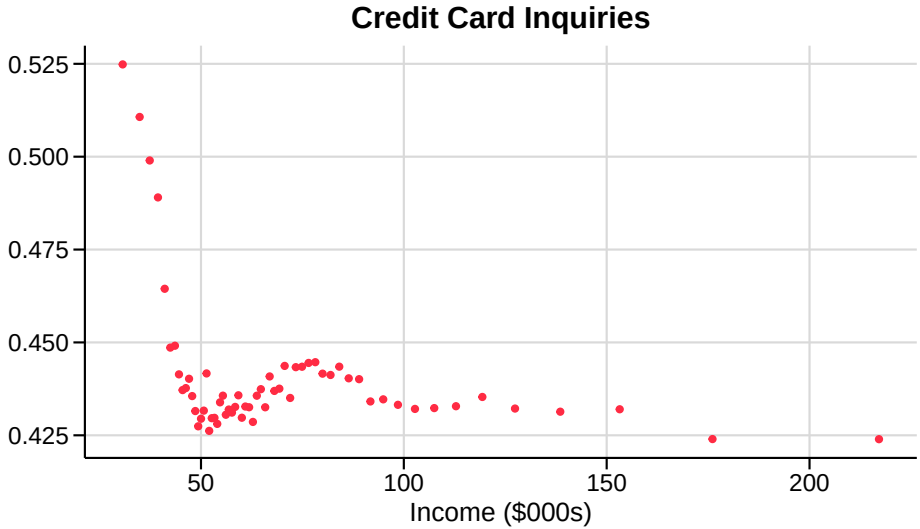




Go Back

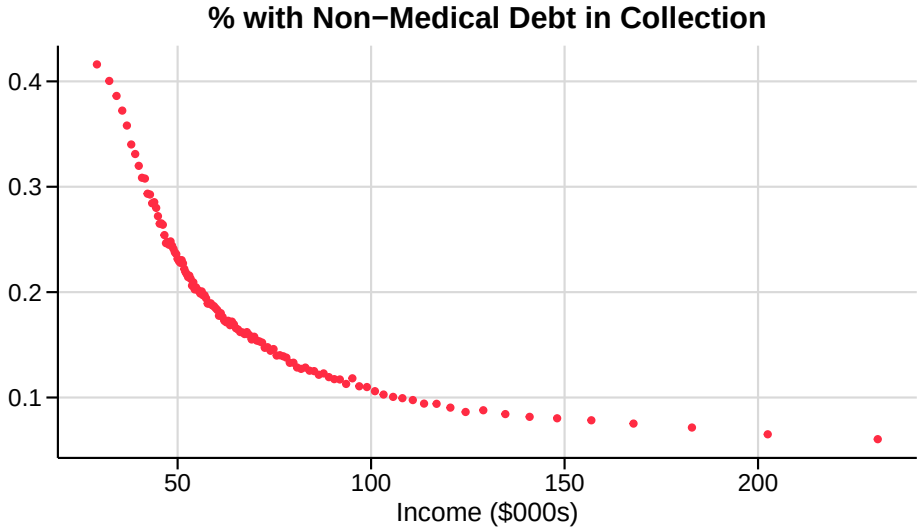
New Credit Cards to Inquiries (ZIP-level)

Credit Card Inquiries (ZIP-level)

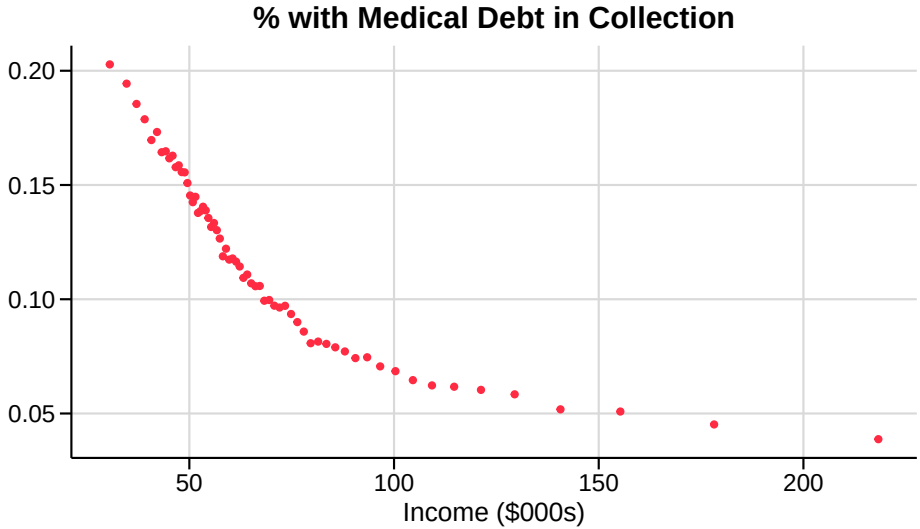


Non-Medical Debt in Collection (ZIP-level)

Back



Medical Debt in Collection (ZIP-level)



Empirical Strategy: Continuous Diff-in-Diff

- **Idea:** compare ZIP-level outcomes before/after expansion in ZIPs with different changes in eligibility. Estimate:

$$Y_{zcst} = \alpha_1 \text{Post}_{st} + \alpha_2 \Delta\text{Elig}_{zs} + \beta\,(\text{Post}_{st} \times \Delta\text{Elig}_{zs}) + \phi_{st} + \phi_{ct} + X_{zcst} + \varepsilon_{zcst}$$

  where Y_{zcst} is an outcome in ZIP z, of county c in state s in year t and ΔElig_{zs} is the change in eligibility in ZIP z in the year before vs. after state s's expansion

- **Outcomes:** credit scores, borrowing, credit supply & demand proxies, default

- **Identifying Assumption:** change in eligibility is uncorrelated with other shocks coinciding with expansion

▸ Drivers of Variation

State-Level Analysis: Econometric Approach

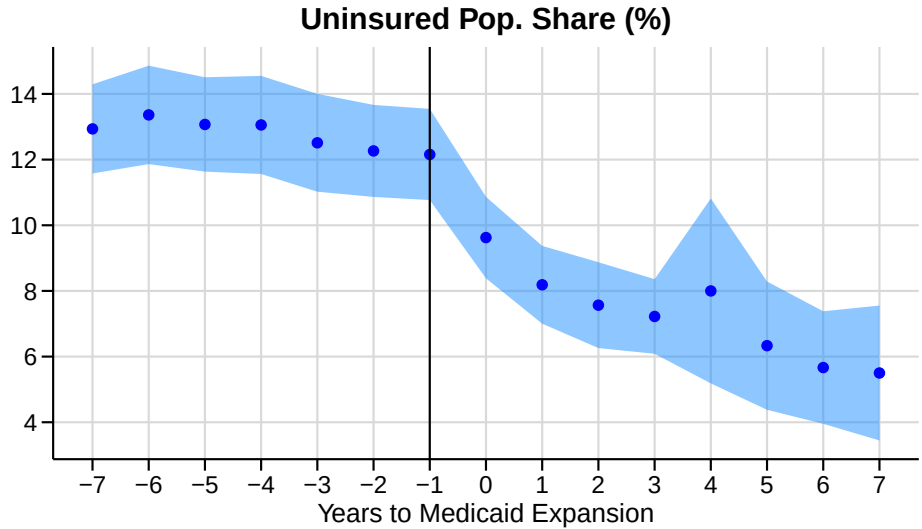
- How does health insurance affect credit card debt?

$$ln(cc_{s,t}) = \text{Insured}_{s,t}\beta + X_{s,t}\gamma + \theta_s + \tau_t + \varepsilon_{s,t}$$

  - $cc_{s,t}$ = credit card debt per capita in state s at time t
  - $\text{Insured}_{s,t}$ = % pop. w/ health insurance in s at time t
  - $X_{s,t}$ = state-level controls

- Instrument for insured rate using indicator for adopting Medicaid expansion
  - Expect negative OLS bias: cc debt is countercyclical, insurance coverage procyclical
  - Identifies the causal effect when expansion only affects cc debt through insurance

Uninsured rates fell after Medicaid expansion



Drivers of Variation in Change in Eligibility

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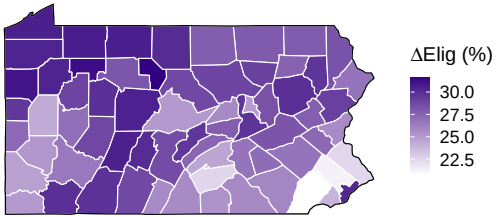

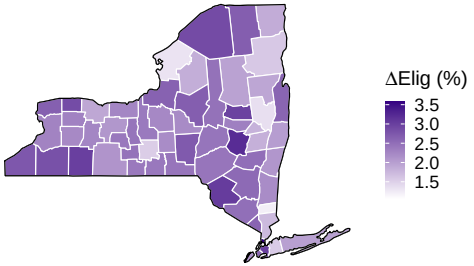

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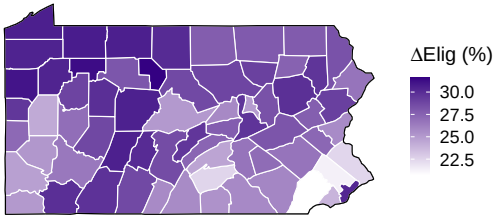

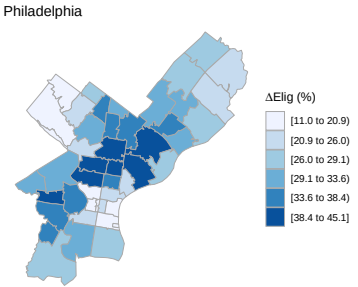

State-level: Health Insurance and CC Debt

Go Back

	TSLS		OLS	
	(1)	(2)	(3)	(4)
$\text{Insured}_{s,t}$	1.34**	1.41***	0.01	0.06
	(0.43)	(0.35)	(0.11)	(0.09)
	First Stage			
$\mathbb{1}[\text{Adopted}]_{s,t}$	1.44***	1.56***		
	(0.19)	(0.19)		
Controls		✓		✓
Stage 1 F	55.7	65.8		
Obs.	765	765	765	765

$$ln(cc_{s,t}) = \text{Insured}_{s,t}\beta + X_{s,t}\gamma + \theta_s + \tau_t + \varepsilon_{s,t}$$

$$\mathbb{1}[\text{Adopted}]_{s,t} \xrightarrow{\text{IV}} \text{Insured}_{s,t}$$

Notes: Each regression includes state and year fixed effects and robust standard errors. Control variables include the unemployment rate, log(population), log(house prices), house price growth, and state-level GDP growth. Statistical significance: 5%*, 1%**, and 0.1%***. CC Debt Share

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Go Back

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$$\mathbb{1}[\text{Adopted}]_{s,t} \xrightarrow{\text{IV}} \text{Insured}_{s,t}$$

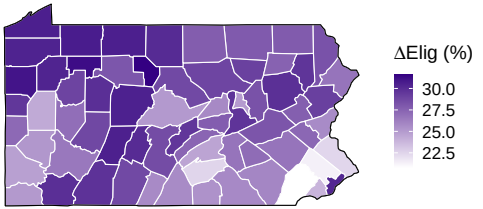
Expanding Medicaid → ↑ **cc debt 2.2%**
→ ↑ **$20.4 bil**

Notes: Each regression includes state and year fixed effects and robust standard errors. Control variables include the unemployment rate, log(population), log(house prices), house price growth, and state-level GDP growth. Statistical significance: 5%*, 1%**, and 0.1%***. CC Debt Share

Strategy #2: Treatment Intensity Across Counties

Go Back

- Expansion of Medicaid → **change in eligibility criteria**
- **Can calculate eligibility at a granular level** using data on the distribution of income
  - And data on the joint distribution of income and household size
- **Continuous Treatment DID**: compare county level debt-to-income before/after expansion in counties with different impact on **eligibility**
- **Regression result:** 1 p.p. ↑ in eligibility → 0.8 p.p. ↑ in debt-to-income (3.6% ↑ in debt)



Calibrated parameters

Utility

$$\beta = 0.92$$
$$\gamma = 3$$
$$\xi = 0.35$$
$$r_f = 2\%$$

Income Process

$$\lambda_y = 0.42$$
$$\rho_y = 0.88$$
$$\sigma_y = 0.07$$

Haircut Process

$$\lambda_d = 0.94$$
$$\beta_1^d = 1.7$$
$$\beta_2^d = 9$$

Medical Shocks

$$\mu_e = 0.08$$
$$\sigma_e = 1.6$$

Insurance

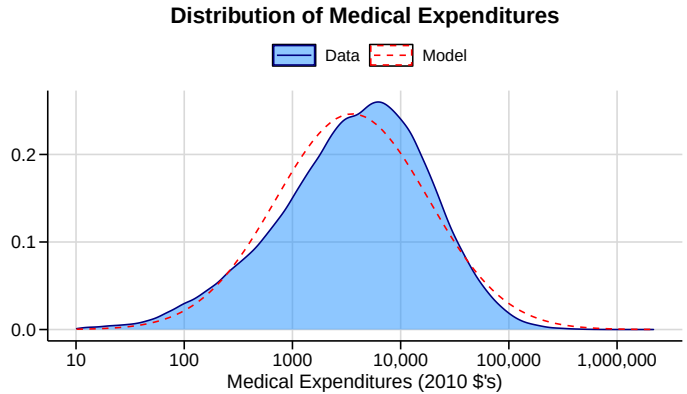
$$P_m = 0.1 - 0.15 \ln y$$
$$P_i = 0.78 + 0.21 \ln y$$
$$P_u = 1 - P_m - P_i$$

Out of Pocket

$$OOP = P_m O_m + P_i O_i + P_u O_u$$
$$O_m = 7\%$$
$$O_i = 27\%$$
$$O_u = 63\%$$

back

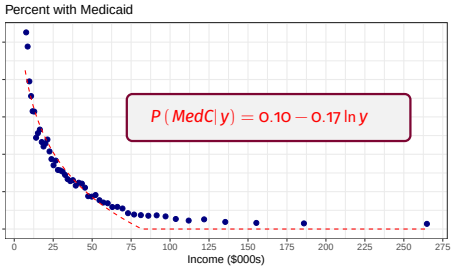
Distribution of expenditure shocks

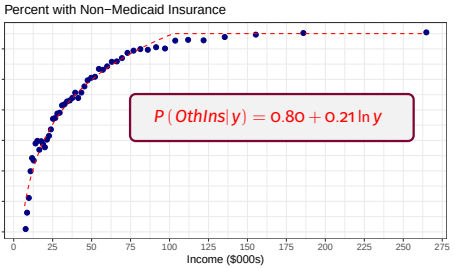


$$X_{it} \sim \ln \mathcal{N}\left(\ln(0.08), 2.62\right)$$

- Median expenditure shock = 8% annual income
- 1 s.d. above median = 40% annual income

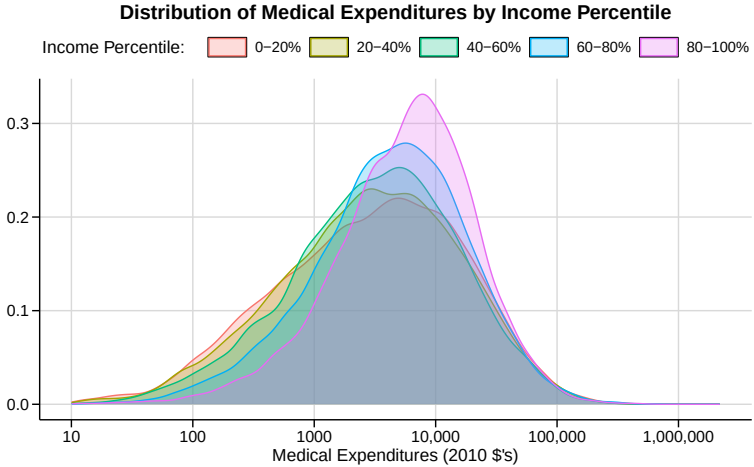
Out-of-pocket expenditure by income





$$oop(y) = P(MedC|y) \times 6.8\% + P(OthIns|y) \times 27.5\% + P(NoIns|y) \times 62.7\%$$

Medical expenditure distribution by income



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