

The Effect of Cash Benefits on Health Care Utilization & Health: Evidence from a Randomized Study of Income Support

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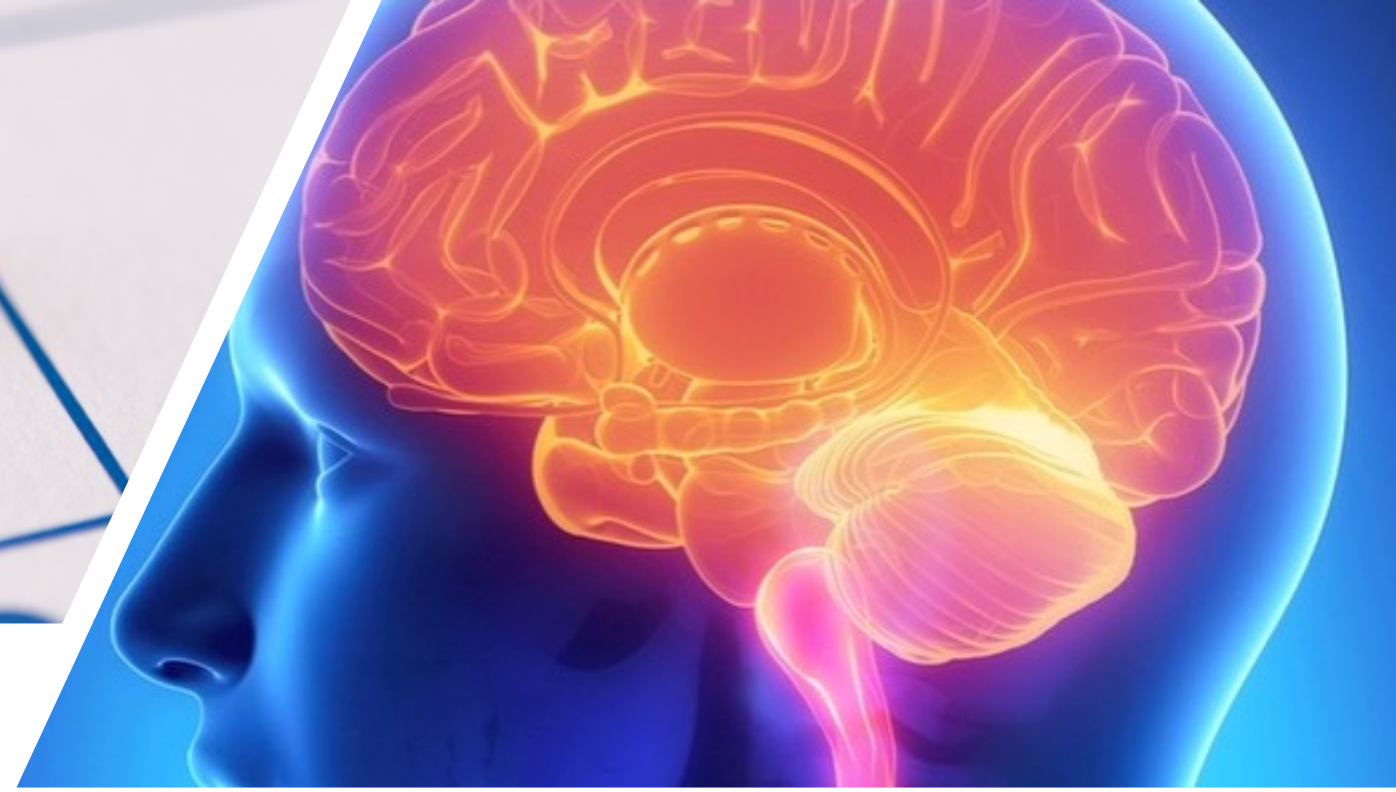
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Chelsea, Massachusetts

No disclosures



Study Aim

- To understand the effect of income support on health care utilization and health, using a **randomized controlled study of cash benefits** in Chelsea, Massachusetts.



Chelsea, Massachusetts

Two Pathways?



Related Literature

■ Randomized controlled trials

- Negative income tax (Elesh and Lefcowitz 1977; Kehrer and Wolin 1979; Federal Reserve Bank of Boston and The Brookings Institution 1986)
- Expansion of EITC (Courtin et al. 2020, 2021)
- Basic income (Kangas et al. 2019; West and Castro 2023; Troller-Renfree et al. 2022; Gennetian et al., 2022; Miller et. al., 2024)
- One-time payments (Pilkauskas et al. 2023; Jacob et al. 2022; Jarozewicz et al. 2022)

■ Quasi-experimental studies

- Winning the lottery (e.g., Lindahl 2005; Cesarini et al. 2016*)
- Basic income (Forget 2011*)
- Social Security notch (Snyder & Evans 2006; Golberstein 2015; Berman 2020*)
- Examiner assignment for disability or SSDI discontinuities (Silver & Zhang 2022*; Gelber et al. 2022)
- Dividend payments from casinos or Alaska's oil fund (e.g., Akee et al. 2010; Costello et al. 2003; Guettabi and Witman 2022*)
- Expansions of EITC (e.g., Evans & Garthwaite 2014; Collin et al. 2021)
- Pandemic-era programs e.g., child tax credit (Berkowitz & Basu 2021; Shafer et al. 2022; Bovell-Ammon et al. 2022; Bouchelle et al. 2022; Evangelist et al. 2021; Batra et al. 2023; Bullinger & Boy 2023; Glasner et al. 2022; Parolin et al. 2021; Pilkauskas et al. 2022)

Outline

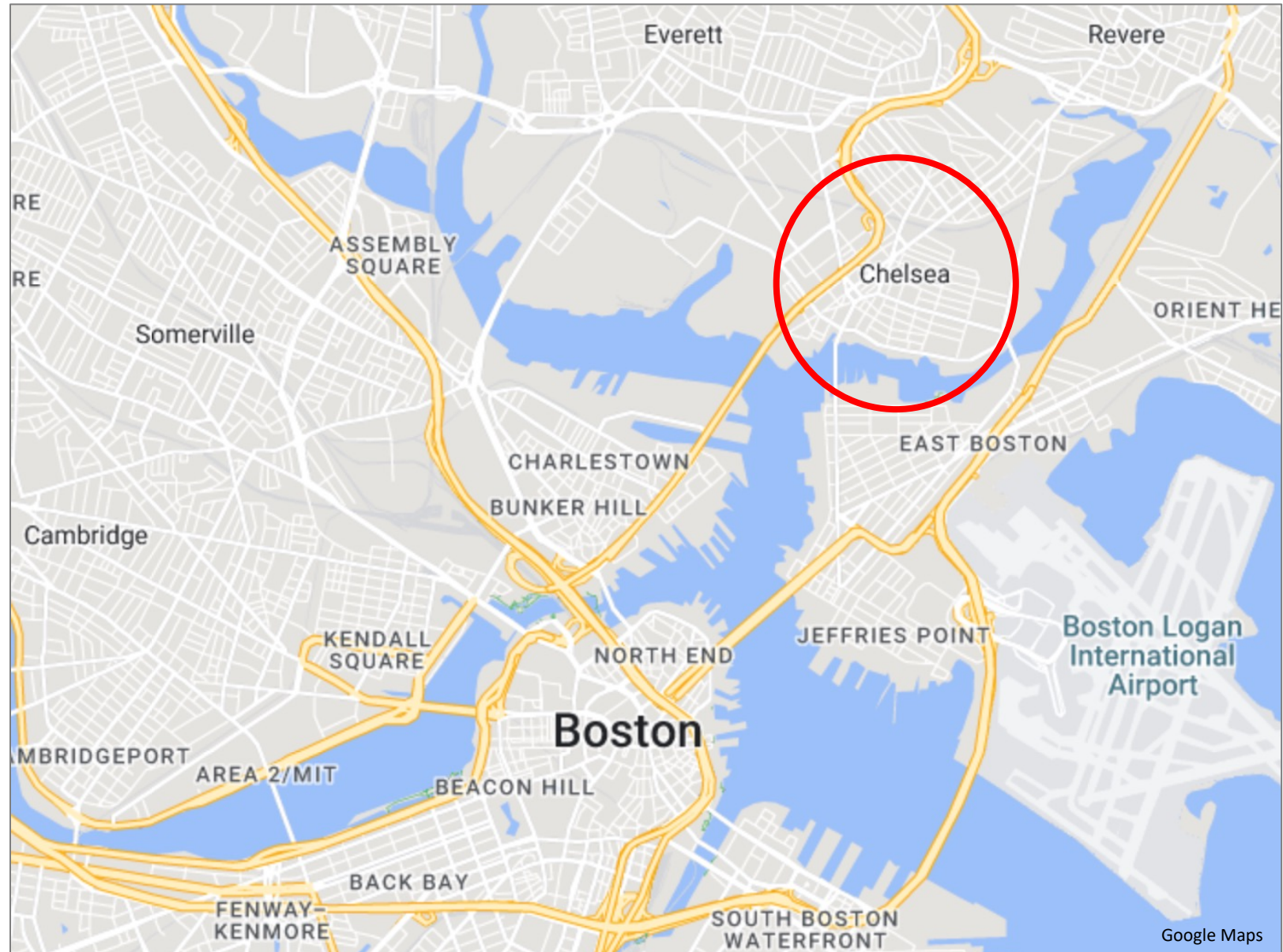
1. Intervention
2. Data, Outcomes, Empirical Specification
3. Participation and Results
4. Discussion

Outline

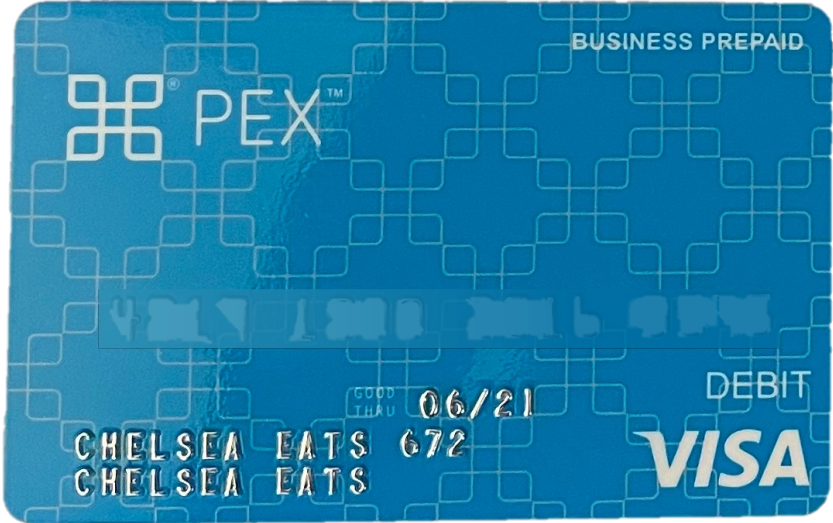
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Chelsea, Massachusetts

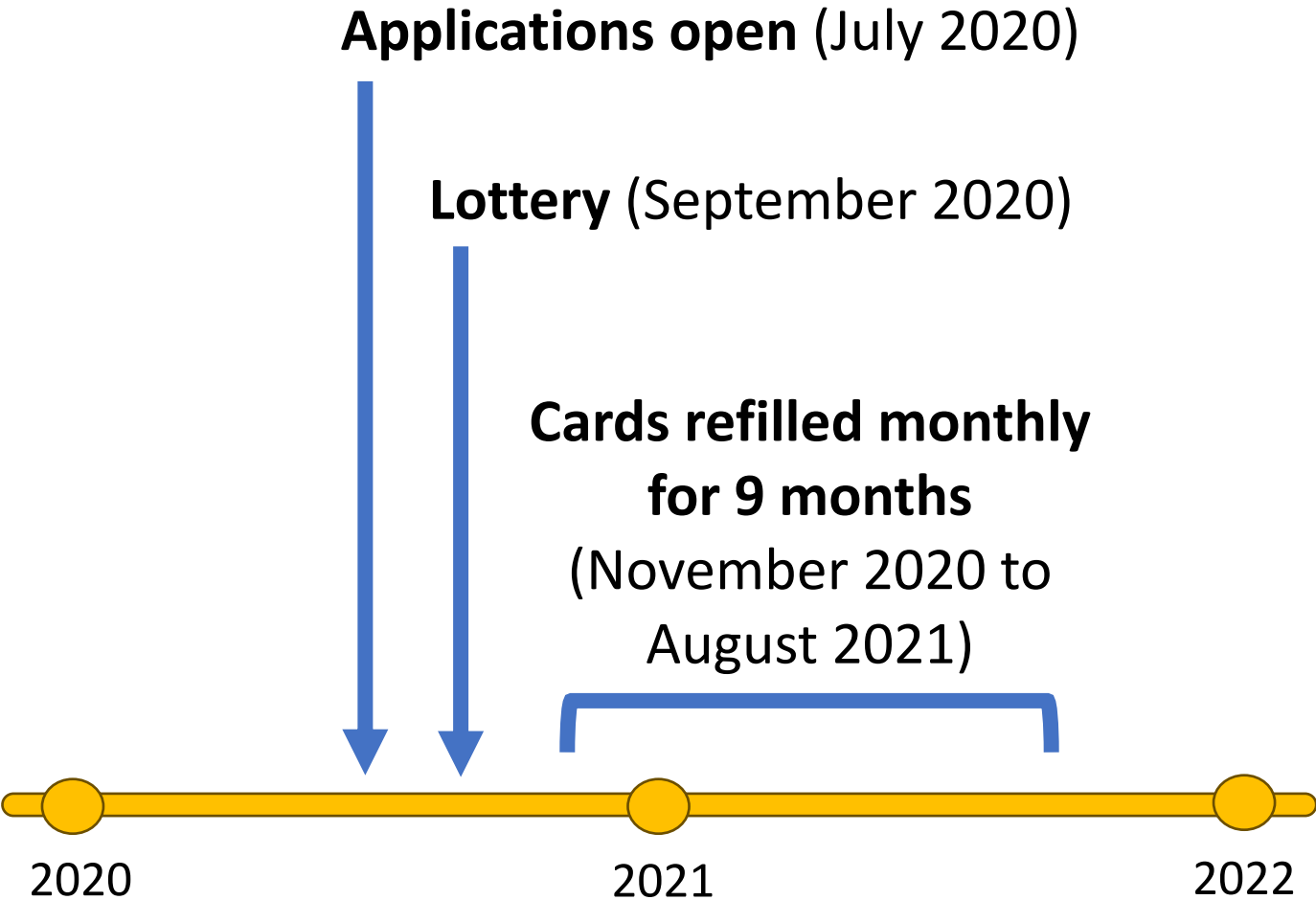
- Low-income community
- Large Hispanic, Latino and immigrant population
- Highest confirmed COVID infection rate in the state



Intervention



Intervention



Intervention

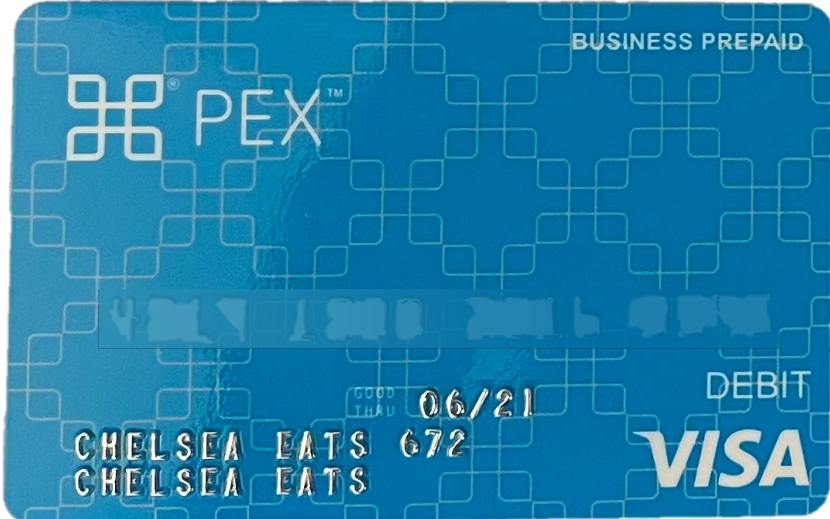
Recurring

Large amount

Unconditional

No restrictions

Randomized



Intervention

- **Eligibility criteria**
 - Resident of Chelsea, Massachusetts
 - Household income <30% area income
- **Can receive *additional* lottery tickets for:**
 - Child ages 0-5
 - Child ages 6-17
 - Older adult age 65+
 - Disability
 - Not receiving UI
 - No food assistance
 - No one working
 - Veteran



The Boston Globe

Chelsea is about to become the country's biggest experiment in giving out no-strings-attached checks

By [Shirley Leung](#) Globe Columnist,
Updated October 17, 2020, 3:58 p.m.



Outline

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Data

- **Electronic health records**
 - Cambridge Health Alliance
 - Mass General Brigham
 - East Boston Neighborhood Health Center
- **Participants linked to their medical records**

Provider	% of Acute Care	% of Outpatient Care
Cambridge Health Alliance	46	6
Mass General Brigham	31	43
East Boston Neighborhood HC	--	29
Other	23	22

Source: 2017-2019 Case Mix data

Source: 2016 MA APCD

▶ Map

▶ Linkage rates

Outcomes

■ Primary Outcome

Number of emergency department visits

■ Secondary Outcomes

ED visits by type

- Admission to hospital
- Behavioral health
- Substance use
- Potentially avoidable

Outpatient use

- Primary care
- Behavioral health
- Other subspecialties
- Urgent care

Clinical measures

- Blood pressure
- Weight
- Cholesterol
- Hemoglobin A1c

Covid vaccination

At least one shot of Moderna, Pfizer, or J&J

*Outcomes pre-specified on ClinicalTrials.gov (NCT05622903)

*Outcomes assessed from November 2020 through August 2021

Empirical Specification

- Estimate using ordinary least squares linear regression model:

$$y_i = \beta_0 + \beta_1 CASH_i + \beta_2 X_i + \varepsilon_i$$

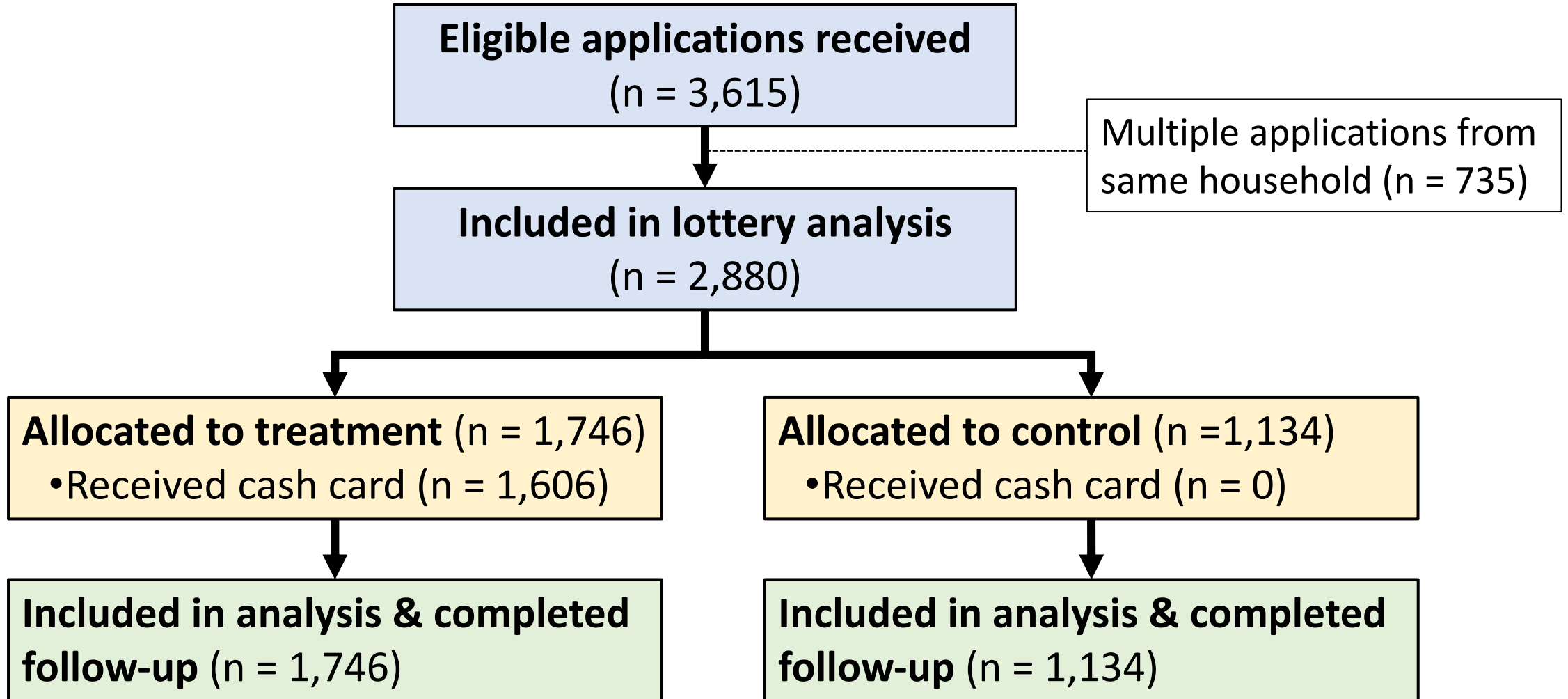
where:

- y the outcome of interest for individual i
- β_1 is the coefficient of interest**
- $CASH_i$ is an indicator equal to 1 if individual i was randomized to the treatment group
- X_i are a vector of patient covariates (i.e., sex, age) and baseline utilization
- Control group participants weighted by (p/1-p)** [▶ Tickets](#)
- Sensitivity analyses:
 - Exclusion of covariates
 - Fixed effects for number of lottery tickets

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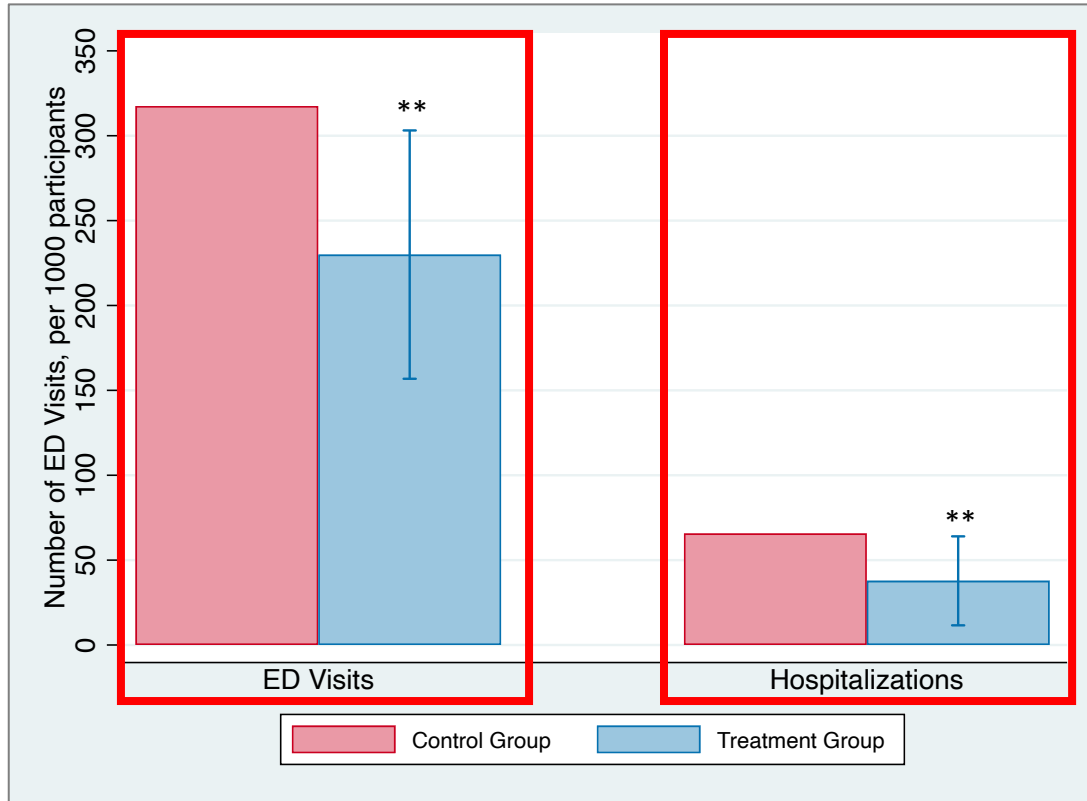
Participation



Characteristics

	Control (N = 1,134)	Treatment (N = 1,746)	p-value
Female sex, %	77	76	0.86
Age, years	46	45	0.20
Family size, no.	3	3	0.52
Family income (annual), \$	16,265	17,154	0.08
Other family characteristics, %			
Child ages 0-5	39	40	0.61
Child ages 6-17	58	58	0.94
Older adult ages 65+	22	22	0.85
Working family member	40	42	0.36
Receiving unemployment \$	19	18	0.43
Receiving food assistance	42	42	0.84

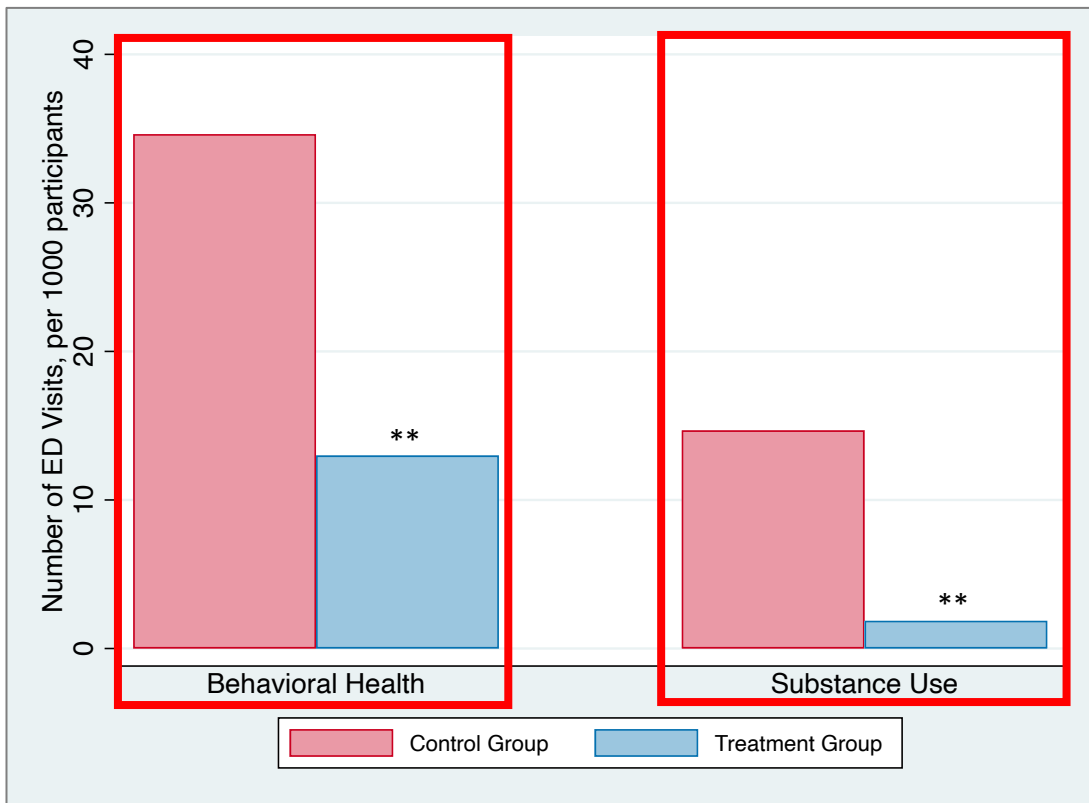
Result #1: ED Visits ↓ By 27%



	Control Mean	Cash Effect
Emergency department use		
Total visits, per 1000	317.5	-87.0** (-160.2 to -13.8)
ED visits with hospitalization		
Total visits, per 1000	65.7	-27.3** (-53.6 to -1.1)

* p < 0.1
** p < 0.05
*** p < 0.01

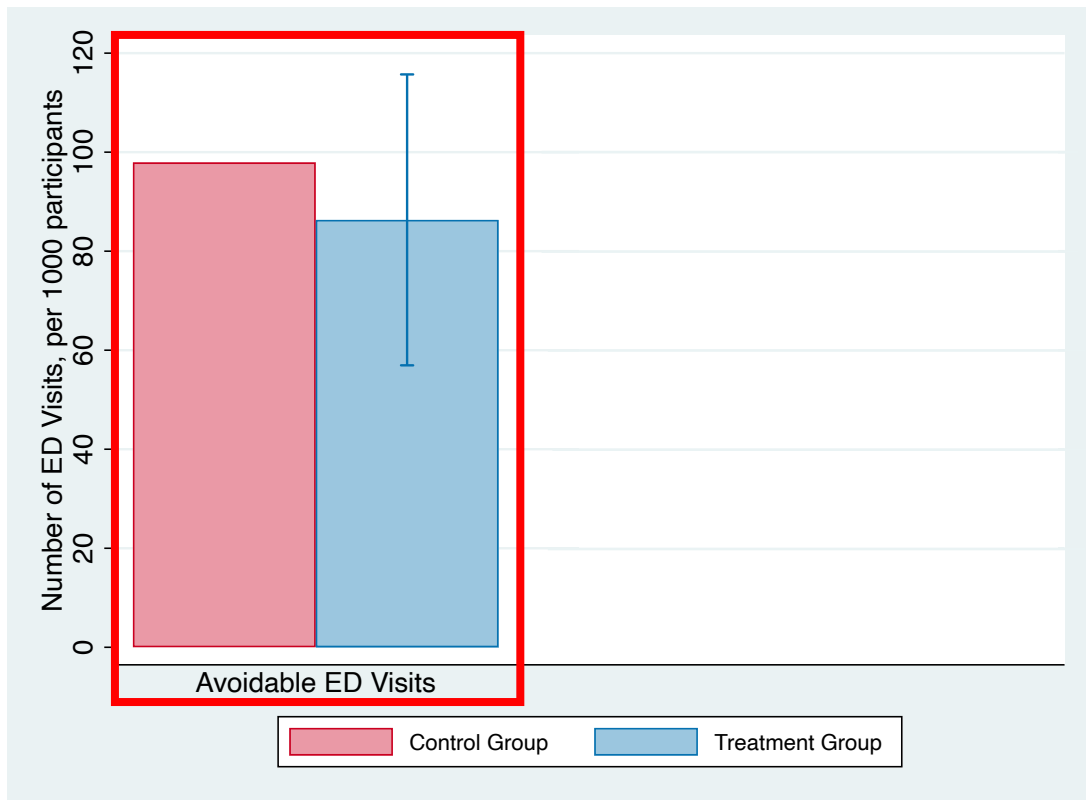
Result #2: Behavioral Health-Related ED Visits ↓ by 62%



	Control Mean	Cash Effect
Behavioral health-related ED visits		
Total visits, per 1000	34.6	-21.6** (-40.2 to -3.1)
Substance use-related ED visits (subset of behavioral health ED visits)		
Total visits, per 1000	14.7	-12.8** (-25.0 to -0.6)

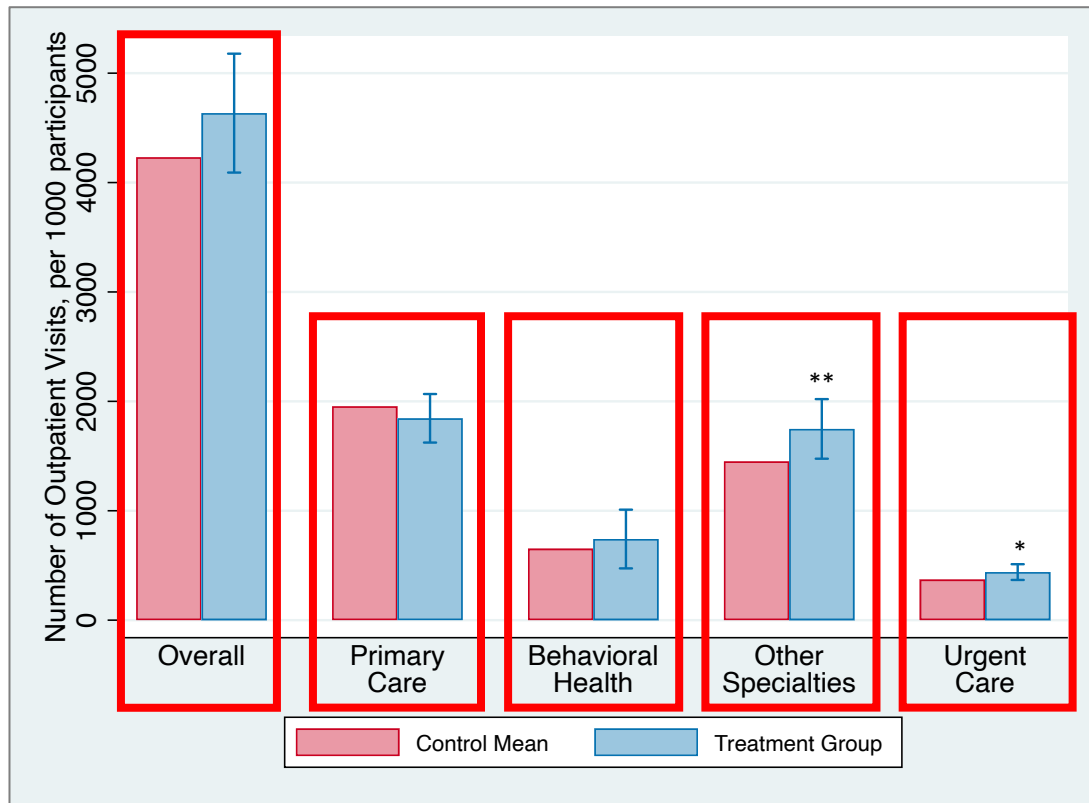
* p < 0.1
 ** p < 0.05
 *** p < 0.01

Result #3: Potentially Avoidable ED Visits ↓



	Control Mean	Cash Effect
Potentially avoidable ED visits		
Total visits, per 1000	94.8	-10.2 (-38.2 to 17.9)

Result #4: Outpatient Use ↑ by 10%, Especially...



	Control Mean	Cash Effect
Outpatient visits overall		
Total visits, per 1000	4,313.6	424.3 (-118.6 to 967.2)
By department		
Primary care	1,887.9	-90.4 (-308.1 to 127.2)
Behavioral health	629.5	83.5 (-182.9 to 349.9)
Other specialties	1,424.8	303.1** (32.9 to 573.2)
Urgent care	371.4	68.8* (-3.3 to 140.8)

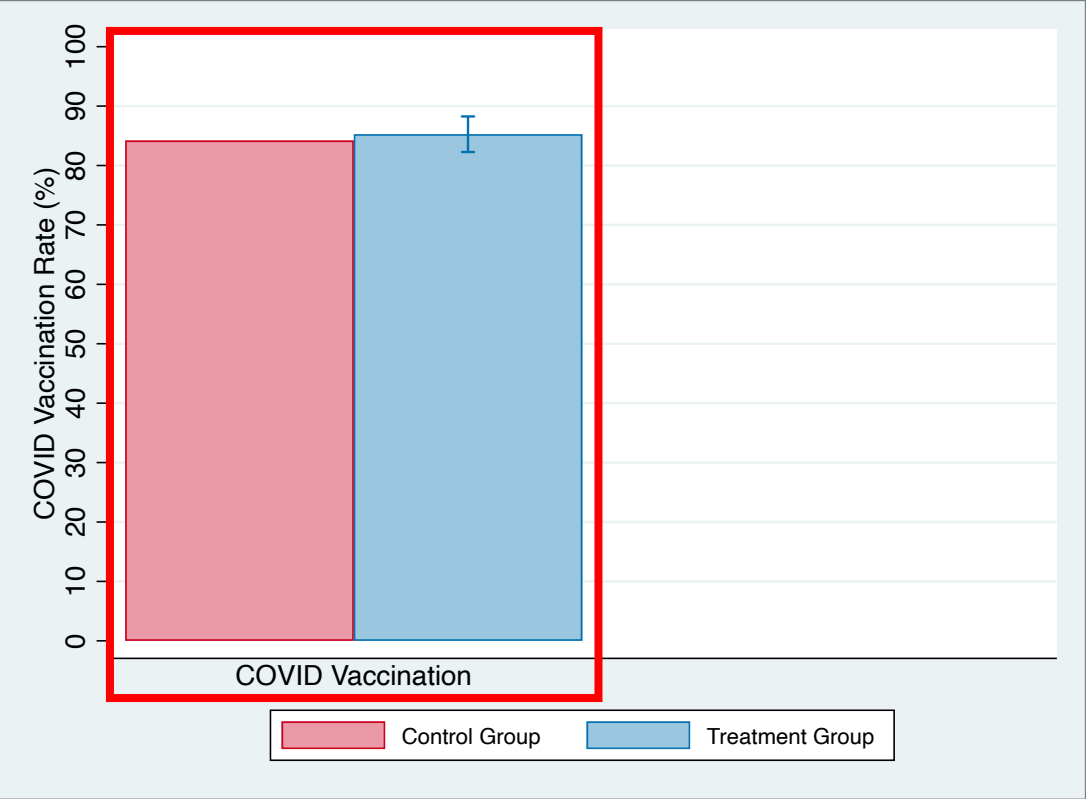
* p < 0.1
 ** p < 0.05
 *** p < 0.01

Result #5: No Difference in BP, Weight, Cholesterol, or A1c

	N	Control Mean	Cash Effect
Systolic Blood Pressure, mmHg	1,745	124.3	0.4 (-1.5 to 2.3)
Weight, kg	1,545	78.0	0.3 (-0.3 to 1.0)
LDL Cholesterol, mg/dL	293	104.1	-7.5* (-15.5 to 0.5)
Hemoglobin A1c, %	614	7.5	-0.3 (-0.6 to 0.1)

* p < 0.1
** p < 0.05
*** p < 0.01

Result #6: No Difference in COVID Vaccination Rates



	N	Control Mean	Cash Effect
COVID-19 Vaccination	2,476	84.2	1.1 (-1.9 to 4.1)

* p < 0.1
** p < 0.05
*** p < 0.01

Summary of Results So Far

- ✓ No change in blood pressure, weight, cholesterol, or hemoglobin A1c levels
- ✓ No difference in COVID vaccination rates
- ✓ **Large reduction in emergency department visits** by 27%, including hospitalizations
- ✓ **Large increase in subspecialty outpatient care** by 21%

Is this substitution from the emergency room to outpatient care?

Could there be cost savings to the health care system?

Is this substitution from the ED to outpatient care?

- No change in primary care, urgent care
- No change in prescriptions

Is this substitution from the ED to outpatient care?

	Subgroup A (younger, less disability, higher baseline income), N = 1,643			Subgroup B (older, more disability, lower baseline income), N = 1,237		
	Control Mean	Cash Effect	P Value	Control Mean	Cash Effect	P Value
Emergency department use (overall), visits per 1000	231.2	-43.1 (-114.5 to 28.4)	0.24	433.5	-149.0 (-290.4 to -7.6)	0.04
Hospitalized	36.8	-8.0 (-29.5 to 13.5)	0.47	104.5	-52.8 (-105.3 to -0.3)	0.05
Behavioral health	10.8	-4.4 (-14.1 to 5.4)	0.38	66.7	-39.8 (-77.3 to -2.2)	0.04
Substance use	2.9	-2.1 (-6.5 to 2.2)	0.33	30.6	-24.2 (-48.6 to 0.1)	0.05
Outpatient use (subspecialities), visits per 1000	1,344.4	520.8 (152.5 to 889.1)	0.01	1,532.8	30.4 (-371.2 to 431.9)	0.88

Could there be cost savings to the health care system?

		Hospitalization = \$10,000			Hospitalization = \$16,903			Hospitalization = \$20,000		
		ED Visit Cost			ED Visit Cost			ED Visit Cost		
		\$500	\$757	\$1,000	\$500	\$757	\$1,000	\$500	\$757	\$1,000
Outpatient visit cost	\$75	-267	-283	-299	-454	-470	-486	-539	-555	-570
	\$122	-244	-261	-276	-431	-448	-463	-516	-532	-547
	\$200	-207	-224	-240	-393	-410	-425	-477	-493	-509

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Two Pathways?

Emergency care:



Subspecialty care:



Additional Takeaways

- Strengths

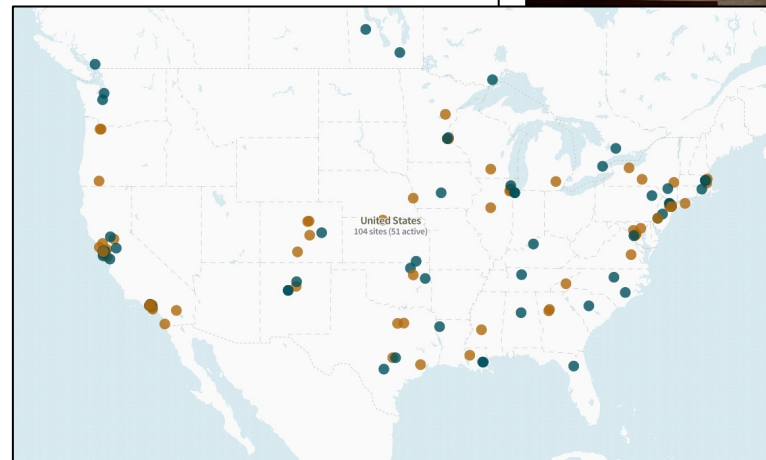
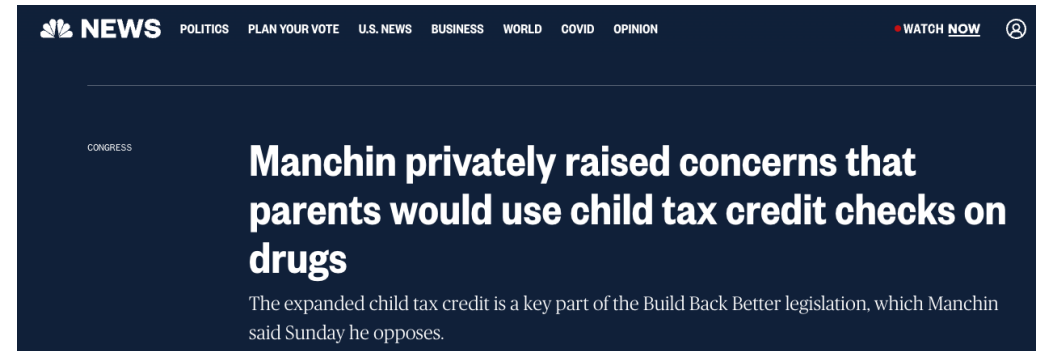
- Randomized study design
- Cash benefit was recurring, large, unconditional, unrestricted
- Program was well targeted
- Use of administrative data

- Limitations

- External generalizability
- Unable to see care outside our data
- Not powered to detect changes in biomarkers

Policy Implications

- Pervasive belief that the poor will spend cash benefits on drugs and alcohol
- Findings may help inform policy debates around basic income & child tax credit



Acknowledgements

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<https://bit.ly/cashexperiment>



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