

Job Market Paper

Effect of Community Health Centers on Utilization of Emergency Rooms: Evidence from California

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Community Health Centers:

- Provide **outpatient primary** and **preventive** health care services (including dental, mental health/substance abuse)
- Serve **low-income** patients **regardless** of ability to pay
- **California (2010):** CHCs served more than 3.6 million patients (11.8 million visits)
- **Of these:***
 - 96.3% had family incomes below 200% FPL
 - 43.0 % were uninsured
 - 40.8 % were on Medicaid

Sources: OSHPD (2010) and *HRSA/BPHC (2010 California file)

Main Question: Do new community health centers reduce the use of emergency rooms for non-urgent care?

- Over-utilization of emergency rooms for non-urgent care is a growing concern in the United States
- Patients turn to ERs for non-urgent care when face barriers to accessing primary care physicians
 - Off-hours, waiting for appointment, lack of insurance, no regular doctor
- Addressing disparities in care for low-income patients:
 - Provide insurance, subsidies **and/or** build affordable clinics/health centers in poor areas

This Paper:

Objective: Estimate the **causal impact** of CHCs on ER visits

Two empirical strategies:

1. OLS (fixed effects)
2. Difference-in-differences (“highway” strategy)

Results:

(using January-June data)

1. OLS (fixed effects):

A clinic opening is associated with a 1.33-2.45% **decline** in non-admission ER visits by **uninsured** adults (ages 18-64) who reside within 5 miles of the clinic (2006-2010)

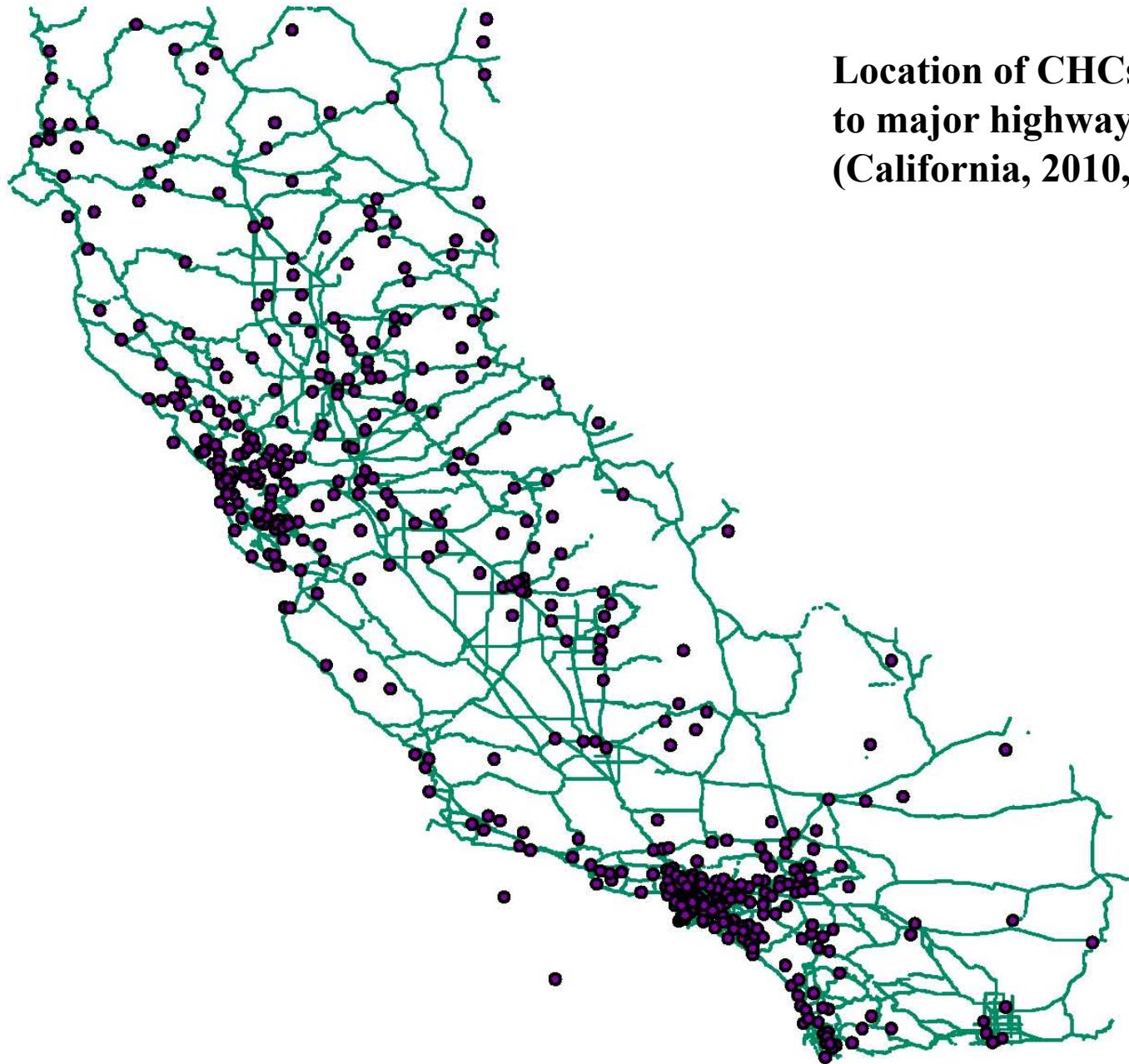
2. Difference-in-differences:

The number of ER visits by **uninsured** adults **declines by 10.2%** from 2006 to 2010 in the areas with clinic entry (between 2007-2009)

3. Both strategies:

Clinics have **no** impact on the volume of ER visits by patients with **private or public** insurance (Medicaid)

**Location of CHCs relative
to major highways
(California, 2010, n=578)**



Implementation of Diff-in-diff:

- Take the areas where the clinic entry happened between **2007-2009**
 - **2006** is the **pre-entry** year, and **2010** is the **post-entry** year

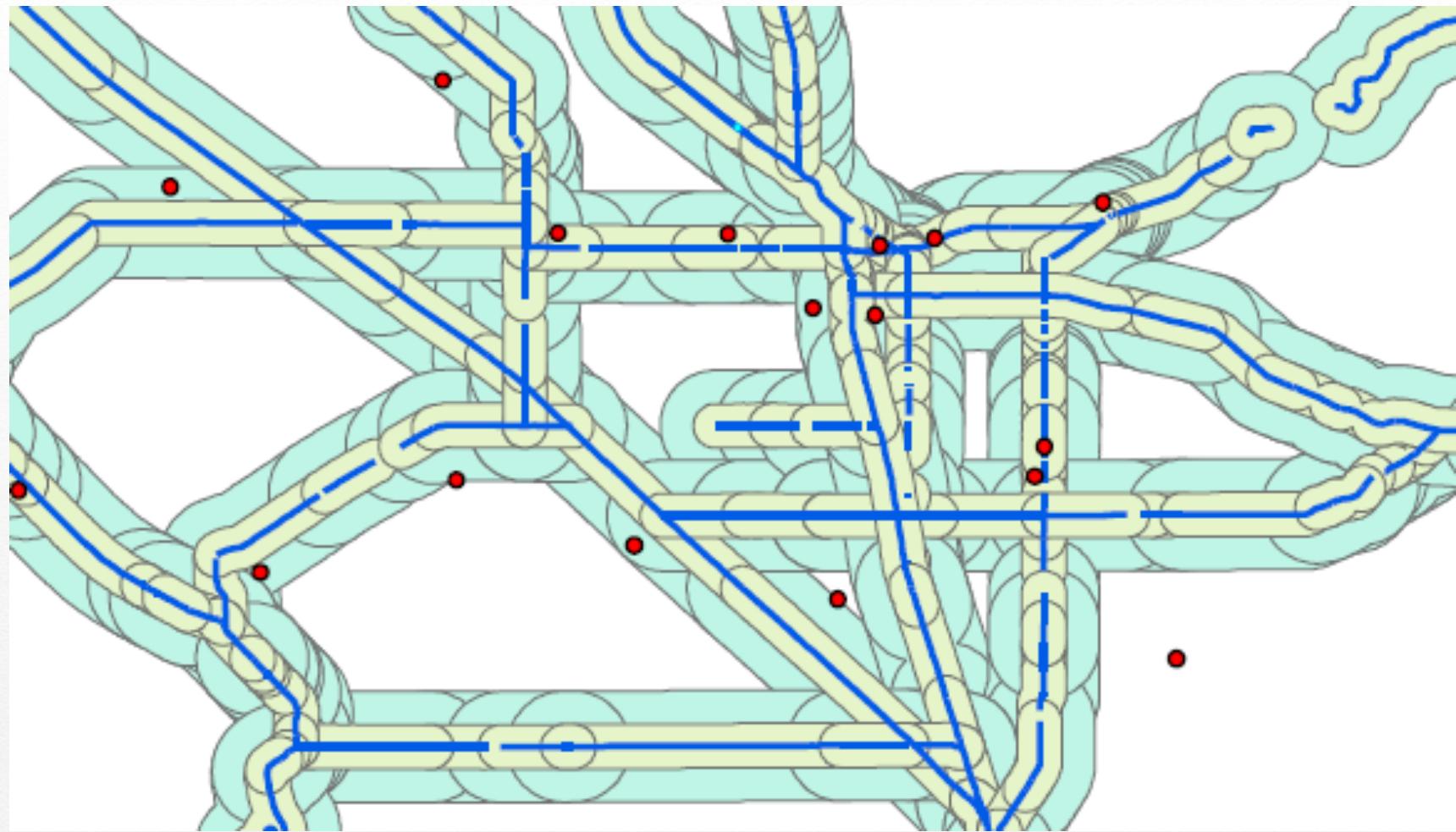
133 new entrants in 2007-2009:

2007: *n* = 43

2008: *n* = 39

2009: *n* = 51

- **Treatment:** Areas within 5 miles of the “treated” highway
- **Control:** Areas 5-10 miles away from the “treated” highway
- Compare ER utilization in treatment and control areas before (2006) and after (2010) the clinic establishment in 2007-2009



Diff-in-diff Specification:

$$\log Y_{zt} = \gamma_0 + \tau(G_z \cdot Y_{2010}) + \beta G_z + \delta Y_{2010} + \text{controls}_{zt} + \epsilon_{zt} \quad (2)$$

- Y_{zt} : Number of non-admission ER visits by the uninsured from zip Z in year t
 - where $t = 2006$ (pre-treatment) or $t=2010$ (post-treatment)
- G_z is an indicator variable for the proximity of zip Z to the treated highway
 - $G_z = 1$ if $0 \leq dist_z \leq 5$ miles (**treated**), zero if $5 < dist_z \leq 10$ miles
- Y_{2010} is an indicator variable for year 2010
- τ measures the percentage change in the number non-admission ER visits by uninsured in treatment and control areas between '06 & '10 due to clinic entry

The main identifying assumption: Treatment and control zip codes would follow the same time trend in the absence of the clinic entry in 2007-2009.

Diff-in-diff Results:

Non-admission ED encounters by the source of payment.

Adults ages 18-64; Y2006 vs. 2010

$$\log Y_{zt} = \gamma_0 + \tau(G_z \cdot Y_{2010}) + \beta G_z + \delta Y_{2010} + \epsilon_{zt}$$

logY_{zt}	(1) Uninsured	(2) Medicaid	(3) Privately Insured	(4) Other	(5) Total ER
$\hat{\tau}$	-0.136*** (0.0386)	-0.0676** (0.0326)	-0.0148 (0.0221)	0.0132 (0.0302)	-0.000493 (0.0166)
Observations	1,686	1,686	1,686	1,686	1,686
R-squared	0.074	0.073	0.023	0.049	0.054

Robust standard errors, clustered by zip code, are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Diff-in-diff Results:

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logY_{zt}	(1) Uninsured	(2) Medicaid	(3) Privately Insured	(4) Other	(5) Total ER
$\hat{\tau}$	-0.102*** (0.0387)	-0.0295 (0.0331)	-0.00396 (0.0227)	0.0330 (0.0305)	0.0218 (0.0169)
Observations	1,686	1,686	1,686	1,686	1,686
R-squared	0.319	0.359	0.078	0.178	0.228

Robust standard errors, clustered by zip code, are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Controls: Population Share of Hispanics in 2000 vs. 2010

Testing Validity of the Identifying Assumption:

1. Areas with no clinics

- $\hat{\tau} = -0.0247$ (st. error: 0.107)

2. Placebo test with privately insured (above)

- $\hat{\tau} = -0.0148$ (st. error: 0.0221)

3. Pre-trends

- 2005 vs. 2006: $\tilde{\tau} = 0.0182$ (st. error: 0.0256)

4. Inclusion of relevant time-varying variables (above)

- Population Share of Hispanics in 2000 vs. 2010

More Outcomes:

Non-admission ED encounters

Adults ages 18-64; Y2006 vs. Y2010

logY _{zt}	(1)		(2)		(3)		(4)		(5)		(6)	
	Uninsured		Non-Injuries		No Procedure							
	Males	Females		Uninsured	Insured		Uninsured	Insured		Uninsured	Insured	
$\hat{\tau}$	-0.136***	-0.0849*		-0.109***	0.0289*		-0.260***	-0.0813*				
	(0.0524)	(0.0504)		(0.0384)	(0.0160)		(0.0576)	(0.0420)				
Controls	Yes	Yes		Yes	Yes		Yes	Yes				
Observations	1,686	1,686		1,686	1,686		1,686	1,686				
R-squared	0.310	0.336		0.348	0.225		0.220	0.157				

Robust standard errors, clustered by zip code, are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Conclusions/Implications:

- 1. Community health centers have the greatest impact on the utilization of emergency rooms by uninsured patients.**
 - The most vulnerable group that usually has no medical home and turns to ERs for both urgent and non-urgent care (which is not necessarily free for them). Clinics might offer the uninsured a real alternative source of primary care.
- 2. The overall decline in uninsured ER visits is driven primarily by uninsured men.**
 - One explanation for this could be that women can get a certain amount of primary care services at family planning clinics, which also provide a lot of subsidized health services.

Conclusions/Implications:

3. **The lack of response by Medicaid patients requires further study, especially since we expect significant expansions in Medicaid eligibility.**
 - This group of patients goes to ERs for a lot of primary care services, where they have zero out-of-pocket expenses
 - ERs may be interested in “keeping” some Medicaid patients
 - Potentially could generate some cost-savings for the Medicaid program
4. **My estimates also imply that hospitals save between 6 to 16 cents in ER expenditure on charity care (for uninsured) per each dollar of spending on clinics.**