Health Insurance and the Supply of Entrepreneurs: Evidence from the ACA Medicaid Expansion
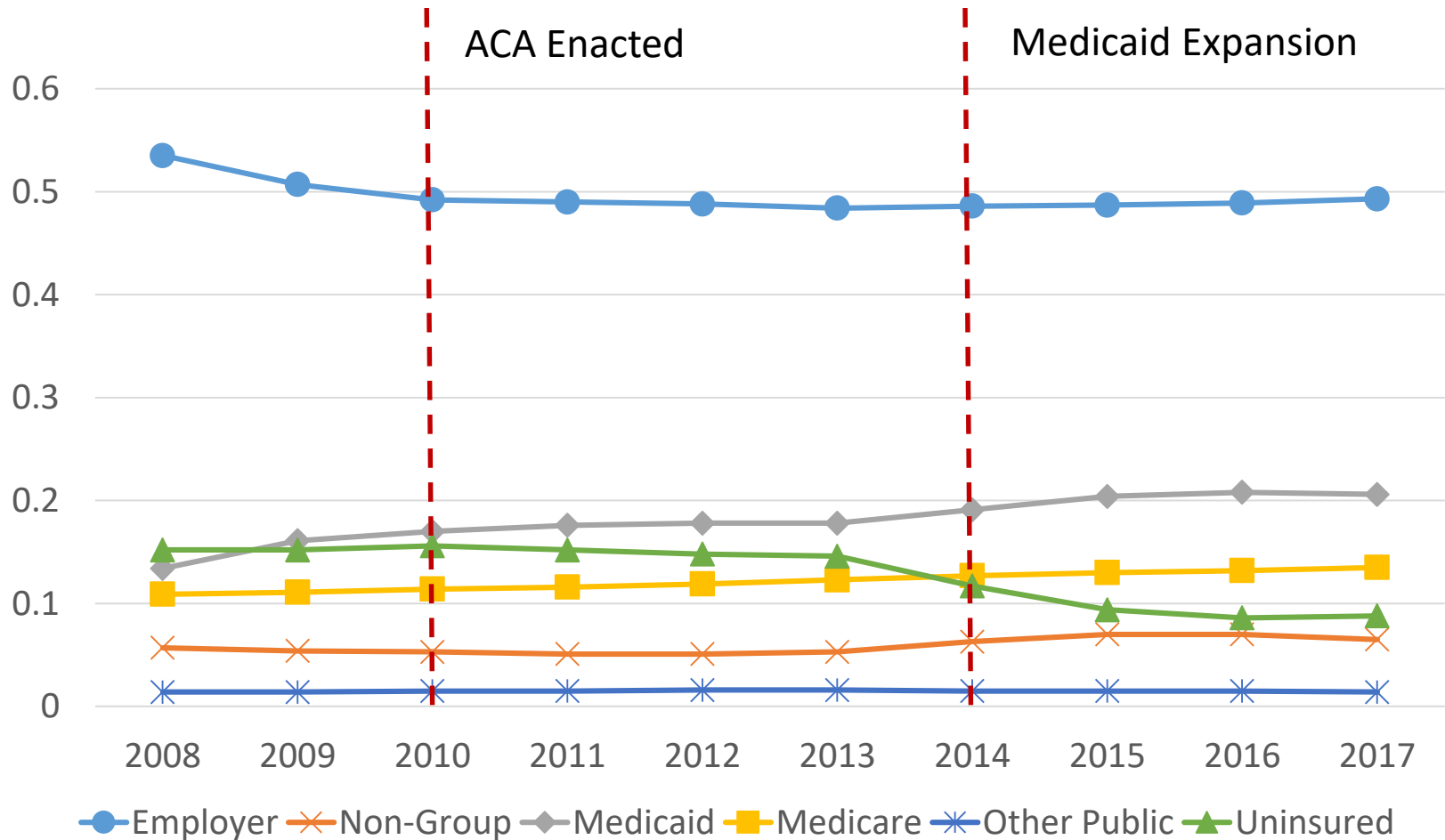
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Health Insurance Coverage, ACS 2008-2017

Motivation

- Self-employed individuals are excluded from group health insurance markets
  - Limited access to health insurance distort self-employment decisions (e.g. Fairlie, Kapur, and Gates 2011)

- The ACA expanded Medicaid eligibility for all nonelderly low income adults
  - Medicaid explains 60 percent of increased insurance rate resulting from the ACA (Frean, Gruber, and Sommers 2017)
  - 21.3 million low income adults would be newly covered by Medicaid under the eligibility expansion (Stephens et al. 2013)
  - Childless adults were previously excluded from Medicaid eligibility

- Does the ACA Medicaid eligibility expansion increase the self-employment propensity among low income childless adults?

The ACA Medicaid Expansion

- Originally, the ACA mandated all states to expand Medicaid eligibility to all individuals with income below 138% of FPL, starting in 2014
- The 2012 Supreme Court ruling changed the mandate of the ACA Medicaid expansion to be optional to individual states

Expansion States

- 27 states (including DC) in 2014 and 7 states between 2015 and 2017
- Eligibility for all individuals in families with incomes below 138% of FPL

Non-Expansion States

- 18 states without Medicaid expansion between 2015 and 2017

Medicaid Eligibility for Childless Adults

Source: Kaiser Family Foundation

Studies on Health Insurance and Entrepreneurship

- Large number of studies on health insurance and self-employment (without exogeneous variation)
  - Bruce, Holtz-Eakin, and Quinn (2000); DeCicca (2010); Gumus and Regan (2015); Heim and Lurie (2010, 2014); Holtz-Eakin, Penrod, and Rosen (1996); Niu (2014); Tüzemen and Becker (2014); Velamuri (2012); Wellington (2001); Zissimopoulos and Karoly (2007)

- Public health insurance and self-employment
  - Boyle and Lahey (2010): Eligibility expansion of the Veterans Affairs (VA)
  - Fairlie, Kapur, and Gates (2011): Medicare
  - Dolan (2015): Medicaid coverage expansion for young children
  - Olds (2016): State Children's Health Insurance Program (SCHIP)
  - Fossen and König (2017): public and private health insurance system in German
  - Liu and Zhang (2018): Urban Resident Basic Medical Insurance in China
  - Kuo and Lin (2018): National Health Insurance (NHI) program in Tiwan

- The ACA and entrepreneurs found limited evidence
  - Bailey (2017): Dependent Coverage Mandate
  - Heim and Yang (2017): Health Insurance Exchange

Studies on the Medicaid and Labor Market

- Empirical studies on Medicaid expansions on employment
  - Pre-ACA: Baicker et al. (2013); Dague, DeLeire, and Leininger (2017); Garthwaite, Gross, and Notowidigdo (2014)
  - ACA: Duggan, Goda, and Jackson (2017); Gooptu et al. (2016); Kaestner et al. (2017); Leung and Mas (2016)

- However, these studies did not examine effects on self-employment, except for Duggan, Goda, and Jackson (2017)
  - Focus on other labor market outcomes
  - Report positive, insignificant increase in self-employment
 - Analyze short-term effects 2014-2015

Data

Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS)

- 2004 – 2018 data for 2003 – 2017 analysis
- CPS Survey Design (4-8-4): Households are interviewed for 4 months, left out of sample for 8 months, and re-interviewed for 4 months

Sample Restriction

- Non-disabled childless adults with ages 26–64
- Low income households (< 300% of FPL)
- Exclude Alaska and Hawaii
  - Both states have different guidelines for the Federal Poverty Line
- Exclude Prior Expansion States
- Exclude Wisconsin
  - Wisconsin increased the eligibility of state Medicaid program in 2014
- Treatment group: 22 states
- Control group: 18 states

Medicaid Coverage and Self-employment Rates
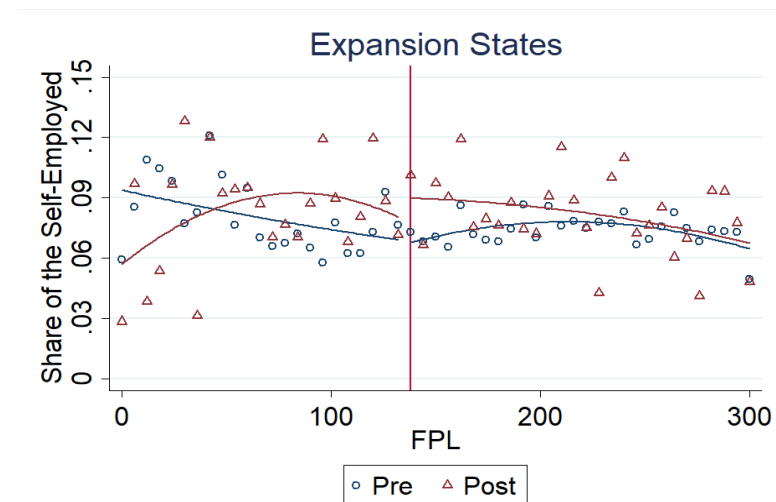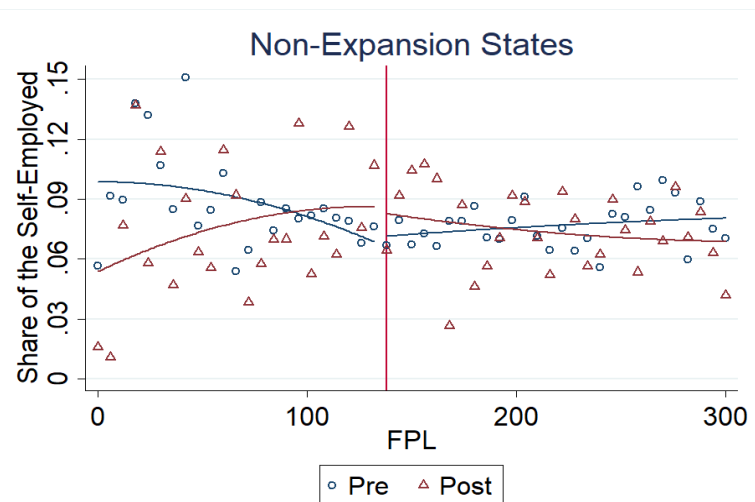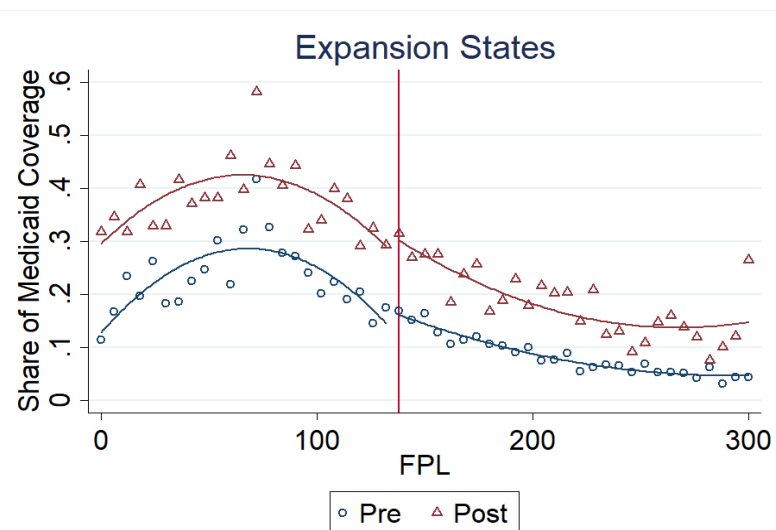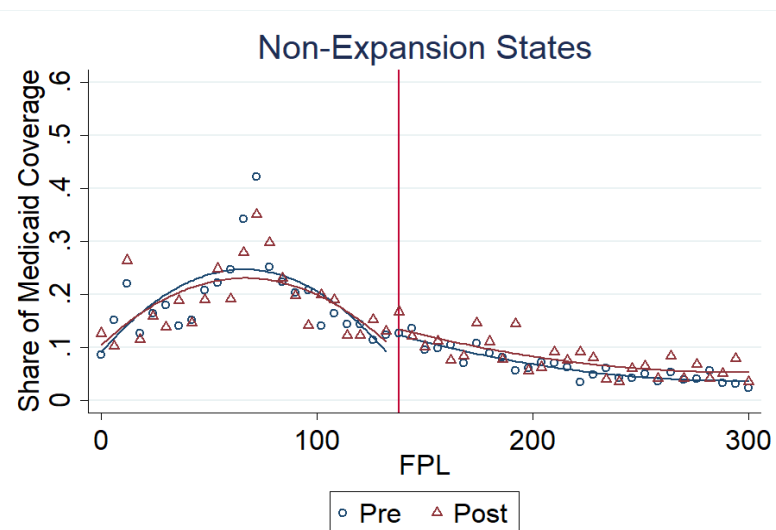
Descriptive Statistics: Demographics

	All	Self-employed	Employee	Pre (2003–2013) Expansion	Pre (2003–2013) No Expansion
Demographics					
Age	47.17	48.55	44.10	47.16	47.19
Female	0.50	0.34	0.47	0.50	0.50
Hispanic	0.13	0.11	0.16	0.12	0.13
Non-Hispanic White	0.68	0.78	0.65	0.71	0.66
Non-Hispanic Black	0.14	0.06	0.14	0.10	0.17
Non-Hispanic Asian	0.03	0.03	0.04	0.04	0.02
Non-Hispanic Other	0.02	0.01	0.02	0.02	0.02
Foreign Born	0.17	0.18	0.20	0.18	0.15
Married	0.38	0.43	0.31	0.37	0.39
< High School	0.18	0.13	0.17	0.18	0.21
High School	0.39	0.36	0.40	0.40	0.39
Some College	0.26	0.29	0.28	0.26	0.26
University	0.12	0.17	0.11	0.12	0.11
> University	0.05	0.06	0.04	0.05	0.04
Family Income	24,562	24,111	28,268	23,808	23,751
Observations	156,257	12,050	74,197	66,601	51,705

Note: Sample is restricted to non-disabled childless adults aged 26-64. The estimates are calculated by using weights provided by the U.S. Census.

Methods

Intent-To-Treat Effects

- Difference-in-Differences (DD)

- Propensity Score Weighted Difference-in-Differences (PSW-DD)

Heterogeneous effects

- Interaction with Access to Spousal Coverage

Local Average Treatment Effects ("Compliers")

- Instrumental Variable (IV)

- Propensity Score Weighted Instrumental Variable (PSW-IV)

Difference-in-Differences (DID)

$$Y_{ist} = \alpha_0 + \beta(E_s \cdot P_{st}) + X_{ist}\gamma + \delta Unemp_{st} + \mu_s + \tau_t + \varepsilon_{ist}$$

Y_{ist}: outcome for individual i in state s at time t

E_s: indicator for Medicaid expansion states

P_{st}: indicator for after the ACA Medicaid expansion

X_{ist}: set of demographic and human capital variables

$Unemp_{st}$: state specific unemployment rate

μ_s: state fixed effects

τ_t: time fixed effects

ε_{ist}: error term

Identifying Assumption

- In the absence of the Medicaid expansion, the trend of the self-employment rate (and transitions) in expansion states would be the same as in non-expansion states.

Propensity Score Weight (PSW)

- Multinomial regression is used to estimate propensity score for four groups:
  - Group 1: expansion states in pre-time period
  - Group 2: expansion states in post-time period
  - Group 3: non-expansion states in pre-time period
  - Group 4: non-expansion states in post-time period

	No ME	ME
Pre	G3	G1
Post	G4	G2

- Difference-in-difference specification is estimated with propensity score weight

$$w_i = \frac{p_1(X_i)}{p_g(X_i)}$$

w_i: weight for an individual i

$p_g(X_i)$: propensity score for group $g = 1, 2, 3, 4$

Treatment Effect
$$TE = (w_i E[Y_{ist}|X_{ist} = x, E_s = 1, P_t = 1] - w_i E[Y_{ist}|X_{ist} = x, E_s = 0, P_t = 1])$$
$$-(E[Y_{ist}|X_{ist} = x, E_s = 1, P_t = 0] - w_i E[Y_{ist}|X_{ist} = x, E_s = 0, P_t = 0])$$

DID Estimates: Self-Employment and Employee

	(1)	(2)	(3)	(4)
	Self-Employment		Wage Earner	
	DID	PSW-DID	DID	PSW-DID
Panel A: FPL<300%				
Expansion × Post	0.0112***	0.0082***	0.0008	-0.0017
	(0.0036)	(0.0029)	(0.0060)	(0.0089)
Mean of Medicaid	[0.076]	[0.076]	[0.473]	[0. 473]
Characteristics	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Unemployment Rate	Yes	Yes	Yes	Yes

Note: Non-disabled Childless Adults in Low Income Households

Event Study: Self-Employment

DID: Self-Employment

Heterogeneous Effects by Spousal Coverage

$$Y_{ist} = \alpha_0 + \beta_1(E_s \cdot P_{st}) + \beta_2(E_s \cdot P_{st} \cdot NoSESI_{ist})$$
$$+X_{ist}\gamma + \delta Unemp_{st} + \mu_s + \tau_t + \varepsilon_{ist}$$

$NoSESI_{ist}$: an indicator for no access to spousal employer sponsored insurance coverage by individual i in state s on time t

	(1) Self-employed	(2) Wage Earner
Panel A: FPL<300%		
Expansion × Post (β_1)	0.0017	0.0166
	(0.0092)	(0.0174)
Expansion × Post × NoSESI (β_2)	0.0206**	-0.0287*
	(0.0092)	(0.0163)
Test: $\beta_1 + \beta_2 \neq 0$	0.0223***	-0.0122
[p-value]	[0.0003]	[0.8696]

Instrumental Variable

First Stage

$$Medicaid_{ist} = \alpha_0 + \beta(E_s \cdot P_{st}) + X_{ist}\gamma + \mu_s + \tau_t + \varepsilon_{ist}$$

Second Stage

$$Y_{ist} = \alpha_0 + \pi\widehat{Medicaid}_{ist} + X_{ist}\gamma + \mu_s + \tau_t + \varepsilon_{ist}$$

$Medicaid_{ist}$: an indicator for Medicaid coverage by individual i in state s on time t

Assumption

- Medicaid expansion affects self-employment choice only through taking up Medicaid.

IV Estimates: Self-Employment and Employee

	(1)	(2)	(3)	(4)	(5)	(6)
	Self-Employment			Wage Earner		
	OLS	IV	PSW-IV	OLS	IV	PSW-IV
Panel A: FPL<300%						
Medicaid	-0.0380***	0.1124***	0.0776***	-0.2740***	0.0185	-0.0144
	(0.0020)	(0.0376)	(0.0284)	(0.0070)	(0.0602)	(0.0532)
1st Stage Medicaid		0.0994***	0.1065***		0.0994***	0.1065***
		(0.0069)	(0.0065)		(0.0069)	(0.0065)
F-statistics		106.5	135.4		106.5	135.4
Mean of Medicaid		[0.135]	[0.135]		[0.135]	[0.135]
Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Unemp. Rate	Yes	Yes	Yes	Yes	Yes	Yes

Note: Non-disabled Childless Adults in Low Income Households

DID Estimates: Self-Employment Flow

	(1)	(2)	(3)	(4)
	SE Entry		SE Exit	
	DID	PSW- DID	DID	PSW- DID
Panel A: FPL<300%				
Expansion × Post	0.0093**	0.0084**	-0.0012	0.0009
	(0.0038)	(0.0034)	(0.0036)	(0.0033)
Mean of Dep. Var.	[0.028]	[0.028]	[0.031]	[0.031]
Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Unemp. Rate	Yes	Yes	Yes	Yes

Note: Non-disabled Childless Adults in Low Income Households

Business Characteristics

	(1) Biz Income (Positive)	(2) Full-time SE	(3) Part-time SE	(4) Inc. SE	(5) Uninc. SE
Panel A: All					
Expansion × Post	0.0102***	0.0055*	0.0057**	-0.0004	0.0116***
	(0.0033)	(0.0033)	(0.0023)	(0.0016)	(0.0033)

	(6) Log of Biz Income (Amount)	(7) Uninsured	(8) Unhealthy	(9) Weeks Worked	(10) Hours Worked
Panel B: Self-Employed					
Expansion × Post	0.0727	-0.0626**	0.0043	0.1574	-0.3954
	(0.1993)	(0.0271)	(0.0147)	(0.6450)	(0.8103)

Note: Non-disabled Childless Adults in Low Income Households

Conclusion

- The ACA Medicaid expansion increases 11-15 percent in self-employment rate among low income childless adults

- Larger increase in SE rate for groups without access to spousal coverage

- Covered individuals ("compliers") have much higher tendencies to be self-employed

- Impact is on entry, not exit, consistent with negligible income effects

- This research suggest that limited access to health insurance is a barrier to self-employment

Appendix

List of States' Adoption of the ACA Medicaid Expansion

No ACA Medicaid Expansion	ACA Medicaid Expansion	
	Prior Expansion	**No Prior Expansion**
Alabama, Florida, Georgia, Idaho, Kansas, Mississippi, Missouri, Nebraska, North Carolina, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Wisconsin[†], Wyoming	Arizona[‡], Colorado, Connecticut, Delaware, District of Columbia[*], Hawaii, Minnesota, New York, Vermont[*]	Alaska[§], Arkansas[‡], California, Illinois, Indiana[§‡], Iowa[‡], Kentucky, Louisiana[§], Maryland, Massachusetts[*], Michigan[§‡], Montana[§‡], Nevada, New Hampshire[§‡], New Jersey, New Mexico, North Dakota, Ohio, Oregon, Pennsylvania[§], Rhode Island, Washington, West Virginia

Note: [†] Wisconsin did not adopt the ACA Medicaid expansion, but increased Medicaid eligibility to childless adults up to 100% FPL in 2014. [*] indicates states that made full prior expansions before 2014. [§] identifies states that adopted the Medicaid expansion after January 1, 2014: Michigan (4/1/2014), New Hampshire (8/15/2014), Pennsylvania (1/1/2015), Indiana (2/1/2015), Alaska (9/1/2015), Montana (1/1/2016), and Louisiana (7/1/2016). [‡] specifies states that have approved Section 1115 waivers for the Medicaid expansion: Arizona, Arkansas, Indiana, Iowa, Michigan, Montana, and New Hampshire. [*] Under the MassHealth Medicaid waiver, parents and childless adults up to 133% of the FPL were covered in Massachusetts.

Robustness Checks

- Different Income Thresholds (<135% or <100% FPL)

- Falsification Test (>300% or >400% FPL)

- Synthetic Control Group Method

- Logit and Probit Models

- Low Education Sample (High school or less)

- Control Health Insurance Market Conditions
  - Control individual and small group market Herfindahl-Hirschman Index

- Estimates with different treatment and control groups
  - e.g. including late expansion states or Wisconsin

DID Estimates: <138% or <100% FPL

	(1)	(2)	(3)	(4)
	Self-Employment		Wage Earner	
	DID	PSW-DID	DID	PSW-DID
Panel A: FPL<138%				
Expansion × Post	0.0160**	0.0128**	0.0025	0.0023
	(0.0063)	(0.0051)	(0.0095)	(0.0086)
Panel B: FPL<100%				
Expansion × Post	0.0167**	0.0162***	-0.0094	-0.0102
	(0.0076)	(0.0062)	(0.0109)	(0.0096)
Characteristics	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Unemployment Rate	Yes	Yes	Yes	Yes

Note: Non-disabled Childless Adults in Low Income Households

Falsification Test: >300% or >400% FPL

	(1)	(2)	(3)	(4)
	Self-Employment		Wage Earner	
	DID	PSW-DID	DID	PSW-DID
Panel A: FPL>300%				
Expansion × Post	-0.0027	-0.0028	-0.0045	-0.0030
	(0.0026)	(0.0024)	(0.0048)	(0.0040)
Panel B: FPL>400%				
Expansion × Post	-0.0033	-0.0014	-0.0056	-0.0062
	(0.0030)	(0.0026)	(0.0055)	(0.0046)
Characteristics	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Unemployment Rate	Yes	Yes	Yes	Yes

Note: Non-disabled Childless Adults in Low Income Households

Synthetic Control (1/2)

- The SCGM constructs a synthetic control group that produce an approximation for covariates of the treated group in pre intervention time periods.

- Weights are chosen to minimize the root mean square prediction error (RMSPE) in the pre-intervention time period

$$RMSPE = \sqrt{\frac{\sum_t^{T_0}(Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt})^2}{T_0 - t + 1}}$$

Y_{jt}: the observed outcome at group j and time t, and

w_j^*: the optimal weights that minimizes RMSPE

t: the beginning of the time periods

T_0: the end of the time periods

Synthetic Control (2/2)

A synthetic control group

$$\widehat{Y_{1t}^N} = \sum_{j=2}^{J+1} w_j^* Y_{jt}$$

Average Treatment Effect

$$\widehat{\alpha_{1t}} = Y_{1t} - \widehat{Y_{1t}^N} = Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt}$$

Identifying Assumption

- No structural breaks: the number of factors are fixed over the period

Synthetic Control Group Method: Average Treatment Effects of Medicaid

	(1) Self-Employed	(2) SE Entry	(3) SE Exit
Panel A: FPL<300%			
Treatment Effect	0.0095*	0.0038	0.0015
P-value	[0.0526]	[0.8421]	[0.7895]
RMSPE	0.003	0.005	0.011

Synthetic Control Group Method: Treatment Effects 2003–2017

Self-employment

Logit and Probit Estimates, Low Income Sample (<300% FPL)

	(1)	(2)	(3)	(4)	(5)	(6)
	Self-Employed		SE Entry		SE Exit	
	DID	PSW- DID	DID	PSW- DID	DID	PSW- DID
Panel A: Logit						
Expansion × Post	0.0110***	0.0077***	0.0085**	0.0083**	-0.0013	0.0009
	(0.0036)	(0.0030)	(0.0034)	(0.0033)	(0.0033)	(0.0032)
Panel B: Probit						
Expansion × Post	0.0111***	0.0080***	0.0088***	0.0082**	-0.0015	0.0007
	(0.0035)	(0.0029)	(0.0033)	(0.0032)	(0.0033)	(0.0032)
Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Unemp. Rate	Yes	Yes	Yes	Yes	Yes	Yes

Low-Education Childless Adult Sample (High School or Less)

	(1)	(2)	(3)	(4)	(5)	(6)
	Self-Employed		SE Entry		SE Exit	
	DID	PSW- DID	DID	PSW- DID	DID	PSW- DID
Panel A: Low Education						
Expansion × Post	0.0064*	0.0049	0.0086**	0.0070**	0.0008	0.0004
	(0.0034)	(0.0030)	(0.0040)	(0.0033)	(0.0036)	(0.0030)
Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Unemp. Rate	Yes	Yes	Yes	Yes	Yes	Yes

Control Herfindahl-Hirschman Index (HHI), Low-Income Childless Adult Sample

	(1)	(2)	(3)	(4)	(5)	(6)
	Self-Employed		SE Entry		SE Exit	
	DID	PSW- DID	DID	PSW- DID	DID	PSW- DID
Panel A: Individual and Small Group Insurance Market Competition						
Expansion × Post	0.0114**	0.0070*	0.0089**	0.0082*	-0.0048	-0.0009
	(0.0051)	(0.0040)	(0.0043)	(0.0042)	(0.0047)	(0.0043)
Individual	-0.0002	0.0003	-0.0044**	-0.0024*	-0.0020	-0.0009
Market HHI/1,000	(0.0014)	(0.0014)	(0.0017)	(0.0013)	(0.0020)	(0.0017)
Small Group	-0.0001	-0.0017	-0.0026	-0.0057*	-0.0019	-0.0024
Market HHI/1,000	(0.0033)	(0.0030)	(0.0031)	(0.0033)	(0.0032)	(0.0031)
Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Unemp. Rate	Yes	Yes	Yes	Yes	Yes	Yes

Different Treatment and Control Groups, Low Income Sample (<300% FPL)

	(1)	(2)	(3)	(4)	(5)	(6)
	Self-Employed		SE Entry		SE Exit	
	DID	PSW- DID	DID	PSW- DID	DID	PSW- DID
Panel A: Excluding Late Expansion States						
Expansion × Post	0.0116***	0.0088***	0.0100**	0.0087**	-0.0021	-0.0003
	(0.0039)	(0.0032)	(0.0043)	(0.0037)	(0.0039)	(0.0036)
Panel B: Including Wisconsin in Control Group						
Expansion × Post	0.0115***	0.0084***	0.0082**	0.0073**	-0.0004	0.0013
	(0.0036)	(0.0029)	(0.0038)	(0.0035)	(0.0035)	(0.0032)
Panel C: Including Prior Expansion States in Treatment Group						
Expansion × Post	0.0105***	0.0076***	0.0076**	0.0069**	-0.0000	0.0020
	(0.0034)	(0.0028)	(0.0036)	(0.0033)	(0.0035)	(0.0032)
Panel D: Including Both Wisconsin and Prior Expansion States						
Expansion × Post	0.0109***	0.0079***	0.0065*	0.0059*	0.0008	0.0021
	(0.0033)	(0.0028)	(0.0036)	(0.0033)	(0.0034)	(0.0031)
Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Unemp. Rate	Yes	Yes	Yes	Yes	Yes	Yes