



Does Medicaid Improve Mental Health? An Examination of Treatment Use and Financial Security

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Mental Health is Important in Medicaid



- Mental illness is among the most common chronic conditions that Medicaid beneficiaries and low-income adults experience (U.S. SAMHSA, 2014; Mark et al., 2015; KFF, 2012)
 - Annual prevalence in the adult Medicaid population ranges from 21-33% across eligibility groups
 - Annual prevalence of mental illness among poor adults is 26% compared to 16% for adults with income \geq 200%FPL
- Coverage for behavioral health services in Medicaid has historically varied

Whether Health Insurance Helps Matters



- Important for evaluating policy alternatives
 - If health insurance causes improvements in health, insurance expansions are more cost-effective.
 - However, depending on *why* health insurance affects mental health, it becomes less obvious that government spending should be specifically targeted towards health insurance
- Equity motivation for coverage in low-income populations remains even if mental health improvements are not specifically present

How Might Medicaid Impact Mental Health?



Income effect: means-tested subsidy

- +/- Allows investment in health-related goods/services
- + Financial security => improved sense of well-being

Insurance effect: reduces financial risk of unexpected health shocks

- + Reduced stress in event of shock

Price effect: lowers price of health care with potential increase in use

- + Alleviates symptoms and/or supports health maintenance
- +/- Increases discovery of undiagnosed illness

Our Approach



- Use early state program expansions as natural experiments
 - Many states expanded coverage to non-elderly adults without dependent children and parents between 2001-2013
 - Created a unique dataset that characterizes Medicaid coverage at the state-year level
 - Use difference-in-differences and instrumental variable methods
- Examine four different measures of mental health across 13 years of restricted nationally representative Medical Expenditure Panel Survey data
 - Also consider intermediate outcomes that capture mental health service use and financial security
- Provide national estimates of the effects of Medicaid on mental health & role of potential mediators within a common population.



- *Mixed findings:*
 - OHIE finds reduced probability of screening positive for depression,^{b,c} improved well-being/happiness did not persist in Y2,^{b,c} and increased diagnosis of depression;^c
 - ACA-related expansion studies find no change in positive depression screen,^{e,f} mixed findings days not in good mental health,^d and marginally significant decrease in probability of serious psychological distress.^a

^aMcMorrow et al., 2016; ^bFinkelstein et al., 2012; ^cBaicker et al., 2013; ^dCourtemanche et al., 2017; ^eWherry and Miller, 2016; ^fMiller and Wherry, 2017; ^gGolberstein and Gonzales, 2015; ^hMaclean et al., 2017; ⁱGhosh et al., 2017

Empirical Evidence: Mechanisms



- Financial security. *Consistent findings.*
 - Reduced OOP spending;^{a,b,c,g} Medicaid expansions reduced multiple measures of medical-related financial strain.^{b,c,f}
- Mental health care use. *Mixed findings.*
 - ACA expansions increased mental health related Rx medication.^{h,i} No change in Rx medications for depression in OHIE.^c No effect of Pre-ACA expansions on mental health care use.^g

^aMcMorrow et al., 2016; ^bFinkelstein et al., 2012; ^cBaicker et al., 2013; ^dCourtemanche et al., 2017; ^eWherry and Miller, 2016; ^fMiller and Wherry, 2017; ^gGolberstein and Gonzales, 2015; ^hMaclean et al., 2017; ⁱGhosh et al., 2017

DATA: Medicaid Waiver Dataset



- Collected from state, federal, and other sources
- Contains multiple characteristics of expansions including:
 - Income eligibility thresholds
 - Capped coverage and stringency of cap
 - Premium-only coverage
 - Source of financing, program names
 - Service exclusions

Burns ME, Dague L, and Kasper, M. Medicaid Waiver Dataset: Coverage for Childless Adults, 1996–2014. Version 1.0. University of Wisconsin-Madison, 2016. Available at: <http://www.disc.wisc.edu/archive/Medicaid/index.html>.

DATA: Medical Expenditure Panel Survey



Accessed in Federal Research Data Centers and matched on state-year level to Medicaid Waiver Dataset

- National household survey of civilian, non-institutionalized U.S. population
- Source for outcome variables, mediators, and covariates
- Pooled data files from 2001-2013
- Supports (today's) cross-sectional and (future) panel analyses

Study Sample



- Non-institutionalized, civilian adults, ages 19 to 64.
- Pooled MEPS data from 2001 – 2013
 - Sample size is 123,104 childless adults and 108,612 parents.
 - Sample size varies across outcome measures because three measures only became available in 2004.
- Main sample includes all childless adults and parents without regard to income (potentially endogenous & badly measured)

Outcomes and Measures



- **First Stage Outcome:** Medicaid enrollment
 - Any health insurance coverage in the year
 - Results similar for number of months covered
- **Outcomes:** Mental Health
 - Fair/poor mental health
 - SF-12 Mental Component Summary Score
 - Positive screen for depression (PHQ2 \geq 3)
 - K6 screen for serious psychological distress
- **Mediators**
 - Health care use: all conditions and mental health conditions
 - Financial security: total OOP spending; total expenditures

Outcomes at Baseline



	I. Childless Adults		II. Parents	
	Treatment States	Comparison States	Treatment States	Comparison States
Any Health Insurance	0.86	0.85	0.86	0.85
Any Public Health Insurance	0.11	0.12	0.13	0.1**
Any Medicaid Coverage	0.06	0.05	0.12	0.08**
Negative screen for depression	0.9	0.9	0.92	0.91
Negative screen for serious psychological distress	0.94	0.94	0.96	0.96
SF-12 Mental Component Summary Score	50.72	50.45	50.8	50.17*
Excellent, Very Good, Good Mental Health	0.94	0.93	0.95	0.95

Outcomes at Baseline



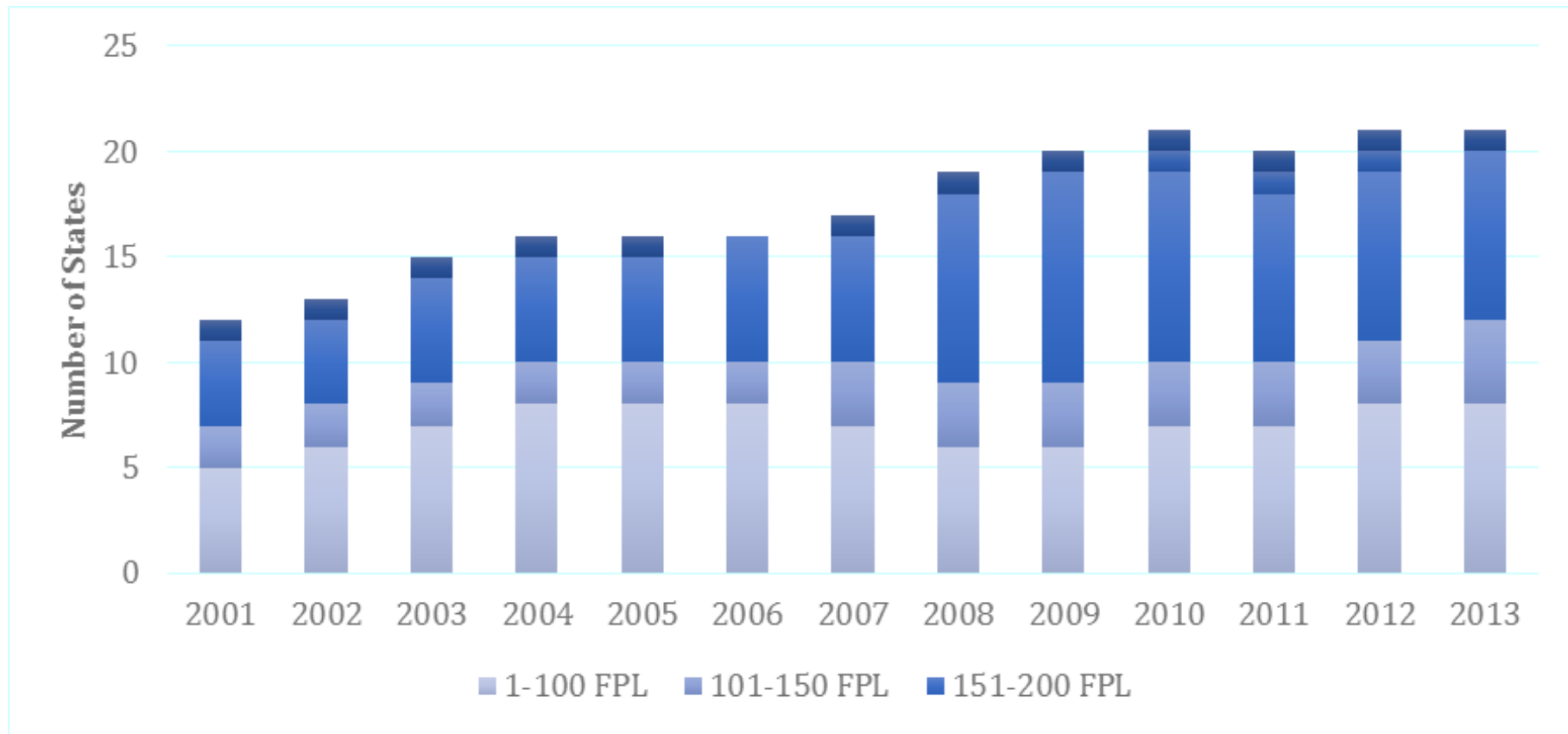
	I. Childless Adults		II. Parents	
	Treatment States	Comparison States	Treatment States	Comparison States
Any outpatient visit	0.73	0.73	0.66	0.70**
Any MHSUD outpatient visit	0.09	0.08	0.06	0.07
Any ED visit	0.13	0.14	0.11	0.14**
Any MHSUD ED visit	0.003	0.005	0.006	0.006
Any Inpatient Admission	0.07	0.07	0.06	0.07
Any MHSUD Inpatient Admission	0.004	0.005	0.002	0.003
Unweighted Sample, All Years (N)	39,536	83,568	36,333	72,279
States (N)	12	39	12	39

Independent Variables

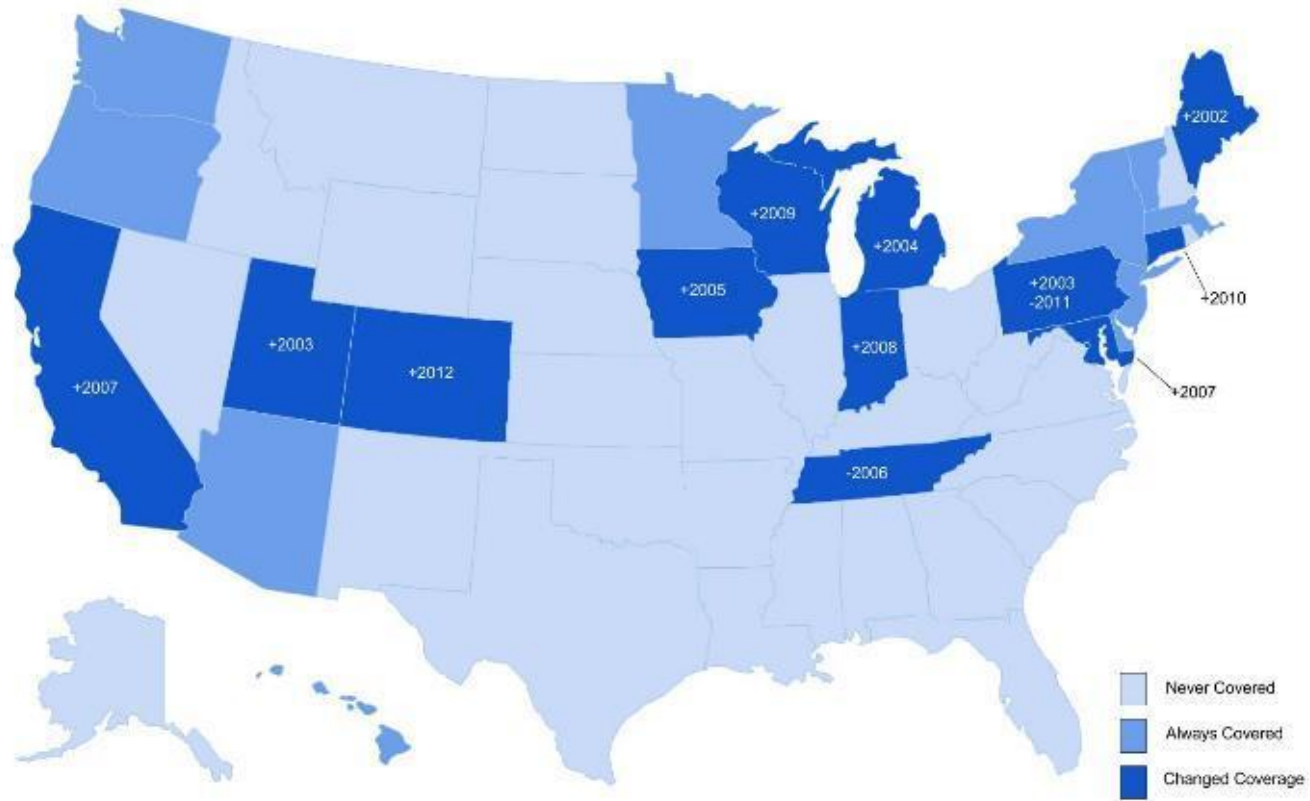


- Childless adults
 - Income threshold scaled to 1 = 100% FPL; used continuously
 - Results similar for binary indicator
 - Results similar with inclusion of indicator for uncapped as additional instrument
- Parents
 - Binary indicator of expansion in place over Section 1931 thresholds
 - Some combination of expansion characteristics likely to be the best instrument set, but not yet settled

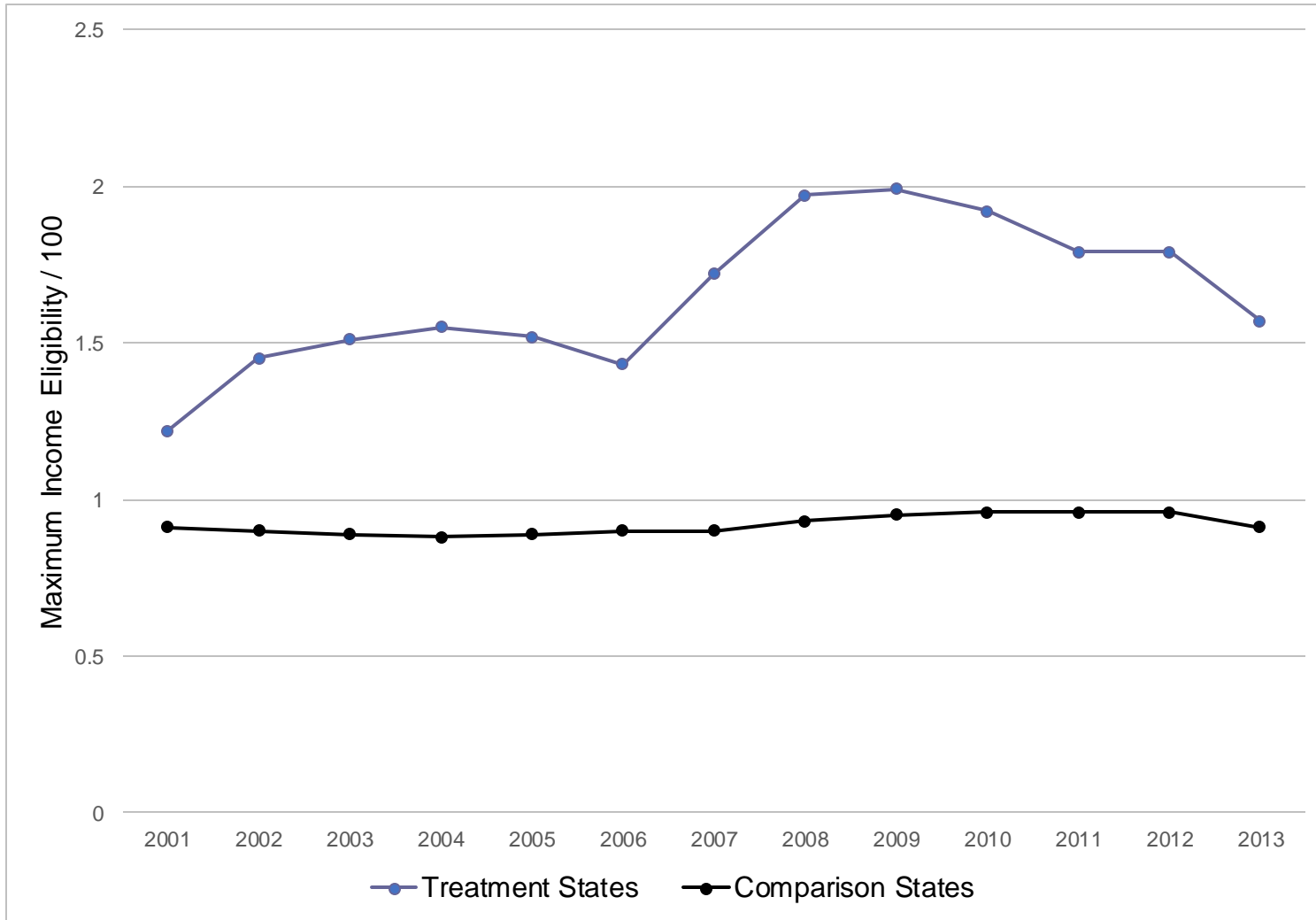
Max Income Eligibility, Childless Adults



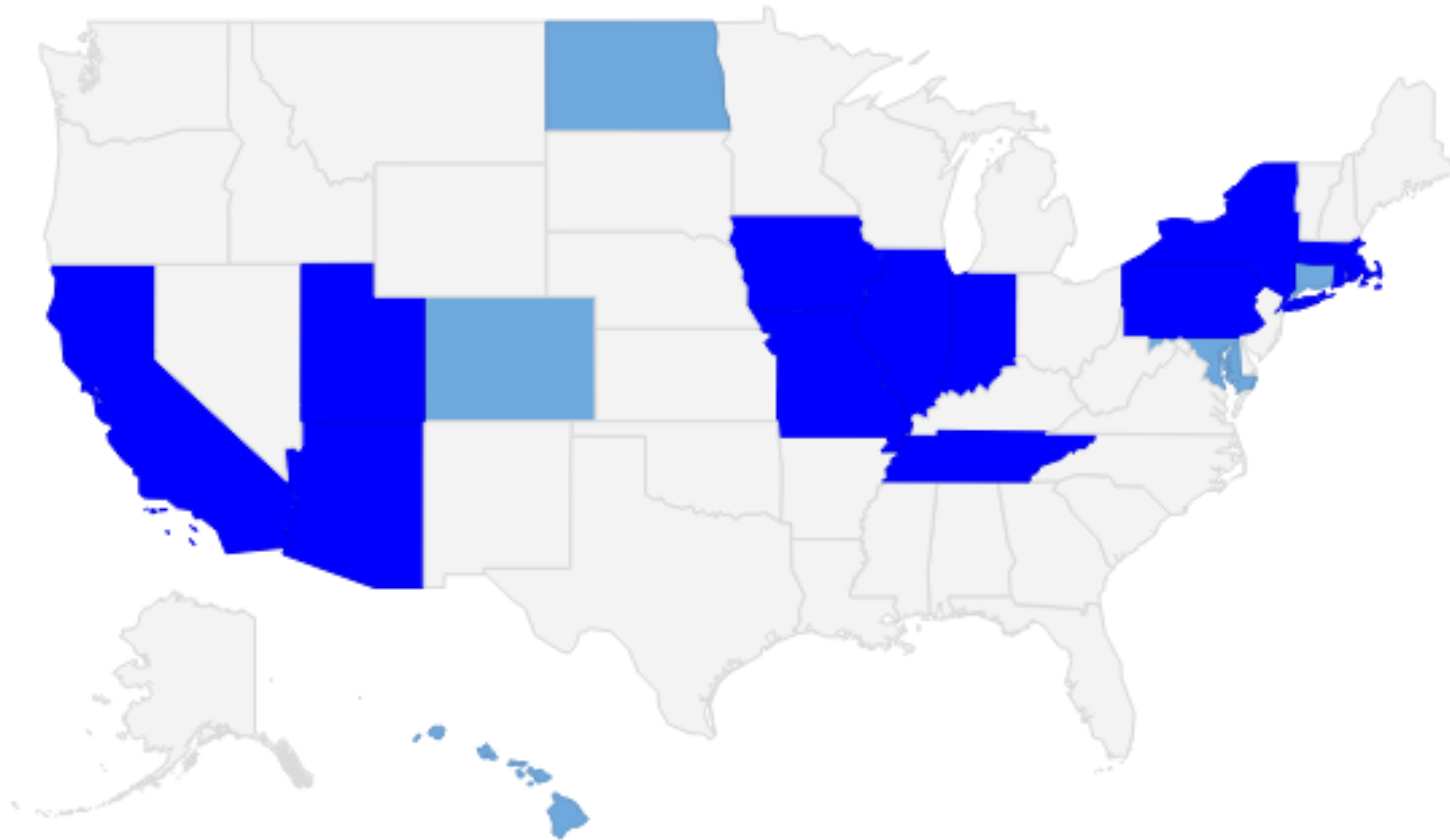
Expansions to Childless Adults, 2001 - 2013



Avg. Income Eligibility, Parents



Expansions to Parents, 2001-2013





The effect of Medicaid expansion on enrollment is given by:

$$Enroll_{ist} = \alpha_1 + \beta_1 * Expansion_{st} + \gamma_1 X_{ist} + \delta_{1s} + \theta_{1t} + \varepsilon_{1ist}$$

- *Expansion* is an indicator variable for whether or not a state had expanded Medicaid coverage in a given year.
- Standard difference-in-differences setup
 - Interpreting β_1 as the causal effect requires usual assumption of parallel trends.
 - Relies on the exogeneity of state Medicaid expansion decisions to the outcome variable.

Empirical Approach



Effect of expansion on mental health is given by

$$Y_{ist} = \alpha_2 + \beta_2 * Expansion_{st} + \gamma_2 X_{ist} + \delta_{2s} + \theta_{2t} + \varepsilon_{2ist}$$

- Parallel trends also required for interpreting β_2 as the intent-to-treat effect in this “reduced form” representation.
- Obtain an estimate of the effect of Medicaid enrollment on mental health in the ratio β_2/β_1
- Equivalent to an instrumental variables analysis using the expansions as instruments.
 - Exclusion restriction: the only channel through which Medicaid affects these mental health outcomes is through actually enrolling

Estimates of the effect of Medicaid enrollment on health care use, Childless Adults



<i>Dependent Variable</i>	Any Outpatient	Any Outpatient	Any ER Visits	Any ER Visits	Any Inpatient	Any Inpatient
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)
	<i>Any Visit Type</i>					
Any Health Insurance	0.342*** (0.003)	0.394** (0.195)	0.020*** (0.002)	0.147 (0.097)	0.047*** (0.002)	0.228** (0.114)
	<i>MHSA Visits Only</i>					
Any Health Insurance	0.047*** (0.002)	0.161 (0.188)	-0.000 (0.000)	0.040 (0.041)	0.001* (0.0004)	0.007 (0.021)
	<i>First Stage:</i>					
	Scaled Maximum Income Threshold			0.0130*** (0.00354)		
	F-statistic on omitted instrument			13.51		

Estimates of the effect of Medicaid enrollment on health care spending, Childless Adults



<i>Dependent variable</i>	Any Health Insurance	Total Out of Pocket	Total Out of Pocket	Total Expenditures	Total Expenditures
	First Stage (1)	OLS (2)	IV (3)	OLS (4)	IV (5)
Any Health Insurance		54.04*** (8.219)	222.1 (265.5)	2458.8*** (78.48)	7400.5* (4495.6)
Scaled Maximum Income Threshold	0.0130*** (0.00354)				
F-statistic on omitted instrument	13.51				
Individuals (Unweighted N)	123,104	123,104	123,104	123,104	123,104

Estimates of the effect of Medicaid enrollment on mental health, Childless Adults



<i>Dependent variable</i>	Not Depressed	Any Health Insurance	Not Depressed	Not SPD	Any Health Insurance	Not SPD
	OLS	First Stage	IV	OLS	First Stage	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Any Health Insurance	0.0167*** (0.00263)		-0.191 (0.351)	0.00960*** (0.00213)		-0.217 (0.269)
Scaled Maximum Income Threshold		0.0120*** (0.00332)			0.0125*** (0.00343)	
F-statistic on omitted instrument		12.93			13.36	
Individuals (Unweighted N)		83,639			83,021	

Estimates of the effect of Medicaid enrollment on mental health, Childless Adults



<i>Dependent variable</i>	SF-12 Mental Component Summary Score	Any Health Insurance	SF-12 Mental Component Summary Score	Mental Health VG/G	Any Health Insurance	Mental Health VG/G
	OLS (7)	First Stage (8)	IV (9)	OLS (10)	First Stage (11)	IV (12)
Any Health Insurance	0.660*** (0.0757)		-8.729** (3.928)	0.00102 (0.00206)		-0.0584 (0.235)
Scaled Maximum Income Threshold		0.0129*** (0.00383)			0.0130*** (0.00353)	
F-statistic on omitted instrument		11.38			13.55	
Individuals (Unweighted N)		115,109			123,038	

Estimates of the effect of Medicaid enrollment on health care use, Parents



<i>Dependent Variable</i>	Any Outpatient	Any Outpatient	Any ER Visits	Any ER Visits	Any Inpatient	Any Inpatient
	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Any Visit Type</i>						
Any Health Insurance	0.318*** (0.00509)	0.878** (0.369)	0.0291*** (0.00523)	-0.249 (0.305)	0.0462*** (0.00177)	0.00420 (0.121)
<i>MHSA Visits Only</i>						
Any Health Insurance	0.0368*** (0.00199)	0.0704 (0.115)	0.000437 (0.000530)	-0.0273 (0.0387)	0.000818*** (0.000302)	-0.0119 (0.0225)
<i>First Stage:</i>						
Has a Program Outside of Section 1931				0.0227** (0.00960)		
F-statistic on omitted instrument				5.610		

Estimates of the effect of Medicaid enrollment on health care spending, Parents



<i>Dependent variable</i>	Any Health Insurance	Total Out of Pocket	Total Out of Pocket	Total Expenditures	Total Expenditures
	First Stage (1)	OLS (2)	IV (3)	OLS (4)	IV (5)
Any Health Insurance		-3.288 (10.51)	166.9 (601.2)	1524.6*** (69.35)	-474.9 (2927.9)
Has a Program Outside of Section 1931	0.0227** (0.00960)				
F-statistic on omitted instrument	5.610				
Individuals (Unweighted N)	108,612				

Estimates of the effect of Medicaid enrollment on mental health, Parents



<i>Dependent variable</i>	Not Depressed	Any Health Insurance	Not Depressed	Not SPD	Any Health Insurance	Not SPD
	OLS (1)	First Stage (2)	IV (3)	OLS (4)	First Stage (5)	IV (6)
Any Health Insurance	-0.000142 (0.00389)		0.394 (0.526)	-0.00131 (0.00282)		0.150 (0.383)
Has a Program Outside of Section 1931		0.0127* (0.00639)			0.0135** (0.00574)	
F-statistic on omitted instrument		3.971			5.569	
Observations (Unweighted N)		72,490			71,928	

Estimates of the effect of Medicaid enrollment on mental health, Parents



<i>Dependent variable</i>	SF-12 Mental Component Summary Score		SF-12 Mental Component Summary Score		Mental Health VG/G	
	Any Health Insurance	Any Health Insurance	Any Health Insurance	Any Health Insurance	Any Health Insurance	Any Health Insurance
	OLS (7)	First Stage (8)	IV (9)	OLS (10)	First Stage (11)	IV (12)
Any Health Insurance	0.176 (0.136)		-5.532 (10.16)	-0.00486 (0.00346)		0.202 (0.246)
Has a Program Outside of Section 1931		0.0232** (0.00983)			0.0227** (0.00969)	
F-statistic on omitted instrument		5.566			5.475	
Observations (Unweighted N)		101,382			108,563	



All results should be considered preliminary.

- Clear increases in health insurance coverage from both the childless adult and parental expansions, with a larger increase from the parental expansions.
- Strong evidence of increased overall health care utilization for childless adults
 - Weaker support for increased utilization of mental health and substance abuse-specific outpatient and ER services, with a wide range of potential point estimates

Summary



- Only see increased outpatient utilization for parents
 - No evidence of increased mental health and substance-abuse specific use.
- For childless adults we find strong evidence of increased total expenditures but no evidence of a decrease in out of pocket spending
- However, for parents we find no evidence of any change in either outcome.

Summary



- Despite the increased health care utilization and potential for improved financial well-being, we find no evidence of increased mental health in a variety of measures for childless adults or for parents
 - In fact, one measure suggests a substantial decrease.
- Our findings are not supportive of the hypothesis that these Medicaid expansions improved mental health, nor that they improved measures we might expect to mediate the relationship.



- Lots of work remaining!
- OOP spending is a bad measure of financial risk; it simultaneously reflects the price effects and consumption-smoothing effects of Medicaid coverage. MEPS has some other interesting measures we plan to look at
- Empirical models that more explicitly consider the skewed nature of outcomes
- Use the panel nature of the MEPS
- Find combination of program attributes that are most predictive of enrollment for parents to obtain a stronger first stage.
- Prescription drug outcomes
- Decompose SF-12 to identify source of declines
- Design checks, placebo analyses, & robustness checks as in Burns and Dague (2017).



Comments Welcome!

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Health Outcome Measures



SF-12v2

General health today

During a typical day, limitations in moderate activities

During a typical day, limitations in climbing several flights of stairs

During the past 4 weeks, as a result of physical health, accomplished less than would like

During the past 4 weeks, as a result of physical health, limited in kind of work or other activities

During the past 4 weeks, as a result of mental problems, accomplished less than you would like

During the past 4 weeks, as a result of mental problems, did work or other activities less carefully than usual

During the past 4 weeks, pain interfered with normal work outside the home and housework

During the past 4 weeks, felt calm and peaceful

During the past 4 weeks, had a lot of energy

During the past 4 weeks, felt downhearted and depressed

During the past 4 weeks, physical health or emotional problems interfered with social activities

A proprietary weighting algorithm uses all 12 items to arrive at the mental component summary score (MCS) with a range of 0-100. A higher value indicates better health. The items in bold text are those items that are weighted more heavily in the calculation of the MCS score.

Kessler Index

During the past 30 days, felt nervous

During the past 30 days, felt hopeless

During the past 30 days, felt restless or fidgety

During the past 30 days, felt so sad that nothing could cheer the person up

During the past 30 days, felt that everything was an effort

During the past 30 days, felt worthless

Response values for each item: 0=None of the time; 1=A little of the time; 2=Some of the time; 3=Most of the time; 4=All of the time. The summation of scores from these six items yields the K6 summary score.

PHQ-2

During the past two weeks, bothered by having little interest or pleasure in doing things

During the past two weeks, bothered by feeling down, depressed, or hopeless

Response values include: 0= not at all; 1=several days; 2=more than half the days; 3=nearly every day. The summation of scores from the two items yields the PHQ-2 summary score.