Discussion of

Medicaid and Mortality: New Evidence from Linked Survey and Administrative Data

Miller, Johnson, Wherry (QJE 2021)

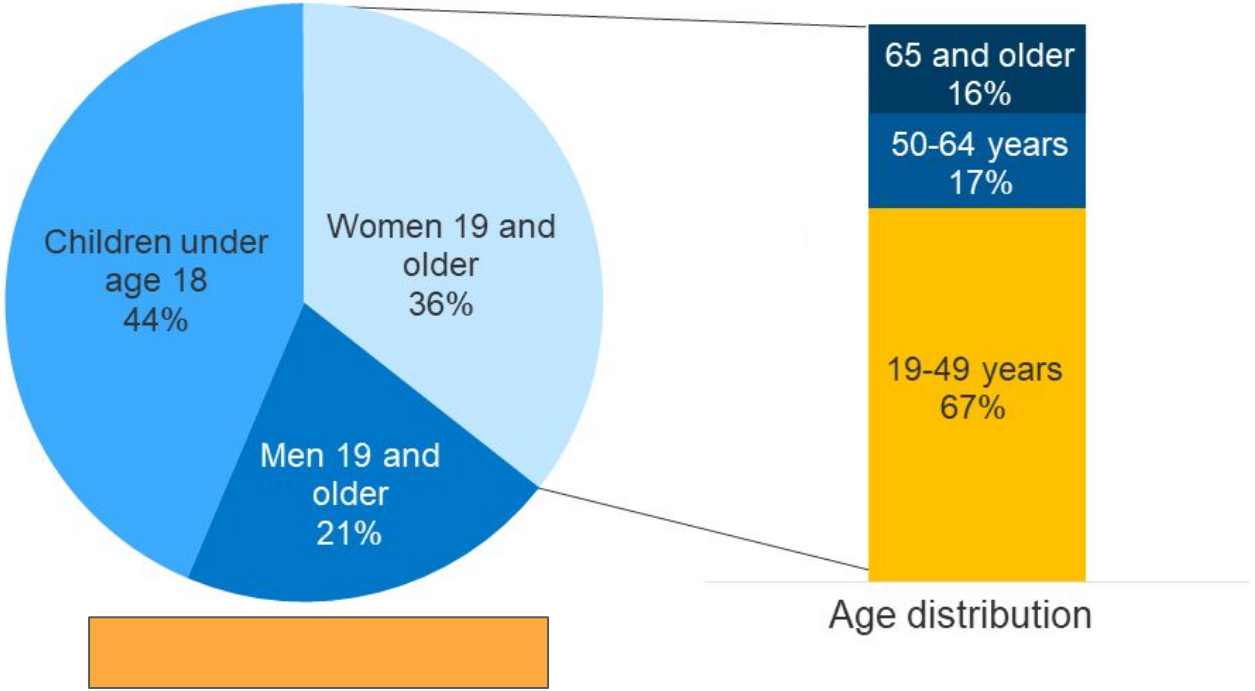
Outline

- Background on Medicaid Expansion

- Paper
  - Data
  - Main Results

- Comparisons to past works on mortality and health insurance expansion

How many people are covered by Medicaid?



NOTE: 2014 data unavailable for AK, CO, FL, KS, NC and RI and for all four quarters of AL, DC, DE, IL, KY, MD, ME, MT, ND, NE, NH, NM, NV, SC, TX, VA, & WI; excluded from US totals.
SOURCE: Kaiser Family Foundation estimates based on 2014 Medicaid Statistical Information System (MSIS).

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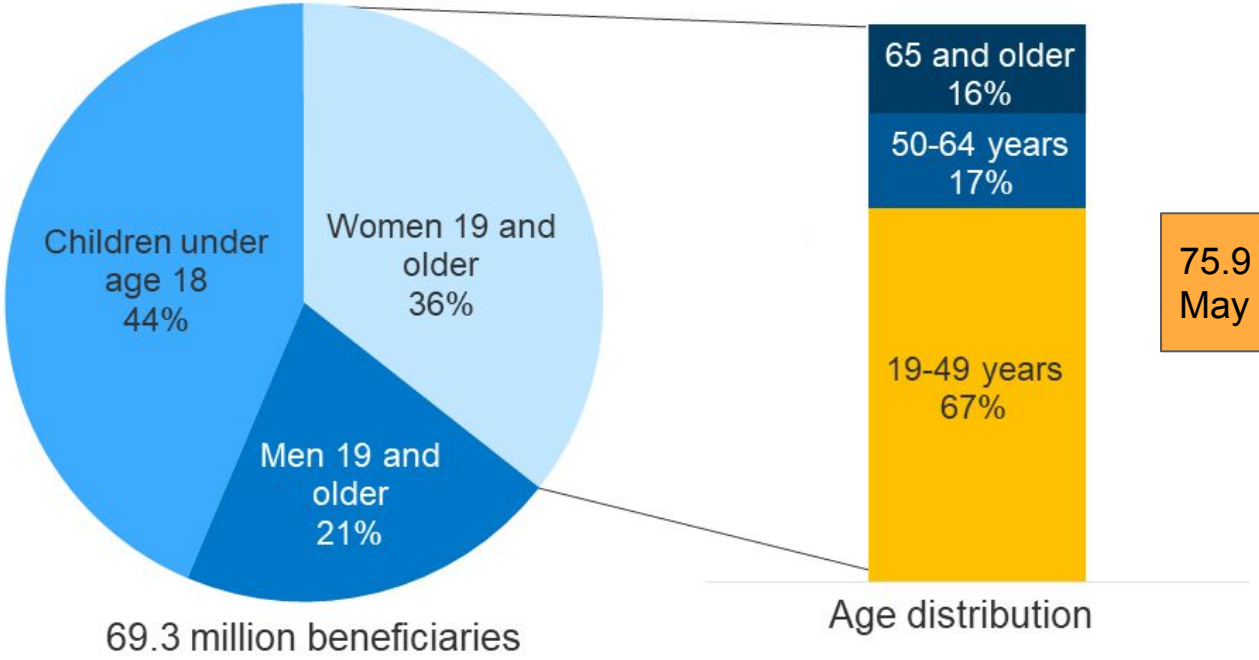

75.9 million in May 2021

NOTE: 2014 data unavailable for AK, CO, FL, KS, NC and RI and for all four quarters of AL, DC, DE, IL, KY, MD, ME, MT, ND, NE, NH, NM, NV, SC, TX, VA, & WI; excluded from US totals.
SOURCE: Kaiser Family Foundation estimates based on 2014 Medicaid Statistical Information System (MSIS).

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What did 2010 ACA Medicaid expansion do?

Before ACA	2014
Pregnant women, adults with disabilities, very low-income parents qualify for Medicaid	29 states and D.C. expand Medicaid coverage to all adults in families with incomes under 138% of the FPL.
Employer-sponsored coverage	
Medicare for age 65+, long-term disabled	Mandate, individual insurance exchanges

Brief Medicaid history

1965	Introduction of Medicare and Medicaid under the Social Security Act; Medicaid eligibility linked to AFDC, SSI receipt
1982-	Optional and mandatory coverage of children, pregnant women, and working disabled with incomes up to 250% of the FPL
1993-	Medicaid waivers allow statewide expansion demonstrations
2010	Affordable Care Act Medicaid expansions, individual exchanges

What does Medicaid cover?

Mandatory services

- Inpatient and outpatient hospital services;
- Physician, midwife, and nurse practitioner services;
- Early and periodic screening, diagnosis, and treatment (EPSDT) for children up to age 21;
- Laboratory and x-ray services;
- Family planning services and supplies;
- Federally qualified health center (FQHC) and rural health clinic (RHC) services;
- Freestanding birth center services (added by ACA);
- Nursing facility (NF) services for individuals age 21+;
- Home health services for individuals entitled to NF care;
- Tobacco cessation counseling and pharmacotherapy for pregnant women (added by ACA); and
- Non-emergency transportation to medical care

Selected optional services

- Prescription drugs
- Dental care
- Durable medical equipment
- Personal care services
- Home and community-based services (HCBS)

How does coverage compare to other health insurance plans?

NOTE: The mandatory and optional services shown here apply for Medicaid beneficiaries who qualify under pre-ACA eligibility rules. Newly eligible adults under the ACA Medicaid expansion receive Alternative Benefit Plans (ABPs), which must include the ten categories of “essential health benefits” specified in the ACA as well as family planning services and supplies, FQHC and RHC services, and non-emergency medical transportation, and provide parity between physical and mental health/substance use disorder benefits.

How may Medicaid expansion impact mortality?

- Access to care
- Quality of care
- Income effect
- Reduction in stress
- Anything else?

Miller, Johnson, & Wherry (2021) Main Results

- Data Description
- First Stage
- Main Mortality Results

In 2020, KFF published a literature review of Medicaid expansion papers published between January 2014 and January 2020. How many did they include?

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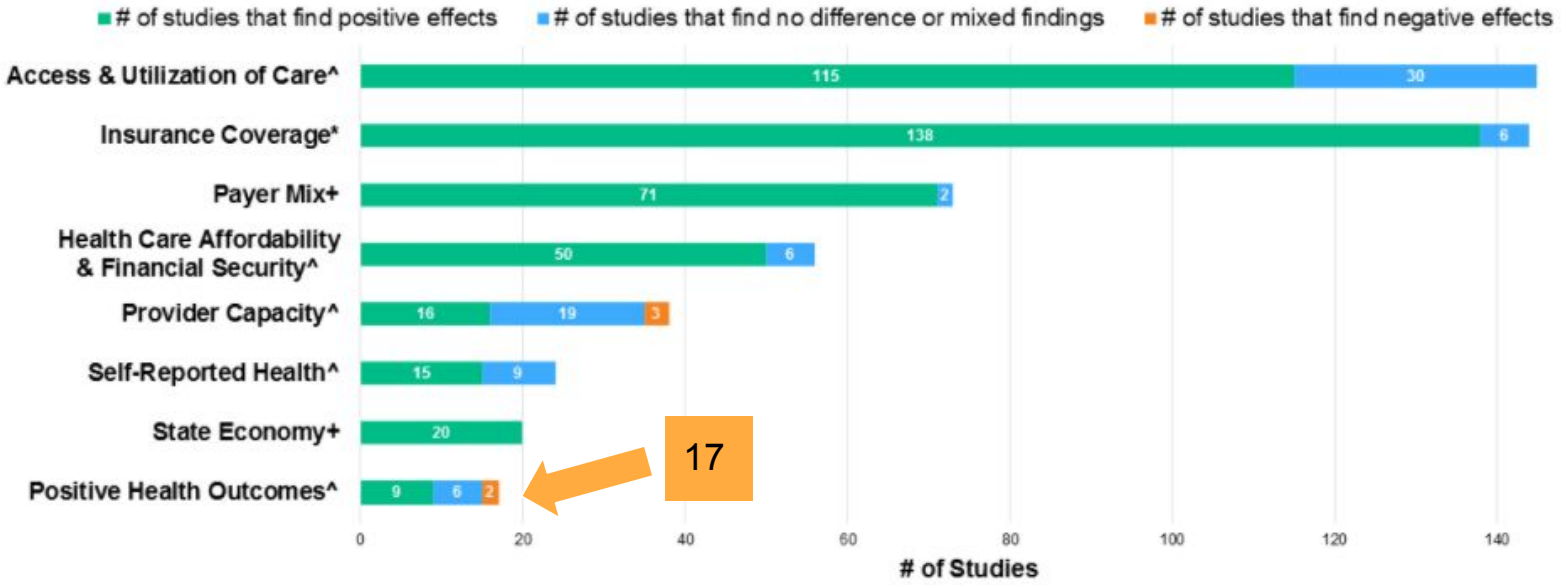
Out of 404 studies on the ACA Medicaid expansion, how many looked at objective measures of health care outcomes?

Studies generally find positive effects of the ACA Medicaid expansion on different outcomes.



NOTES: This brief groups outcomes into 3 categories, indicated as such: *Coverage outcomes, ^Access outcomes, +Economic outcomes. Studies may have findings on multiple outcomes and be counted in multiple bars. "Insurance Coverage" includes coverage rates generally and for Medicaid.
SOURCE: KFF analysis of 404 studies of the impact of state Medicaid expansion published between January 2014 and January 2020.

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MJW2021 Linked data

- Individual survey records in the pre-period: ACS 2008-2013 includes 4 million respondents with information on characteristics that determine Medicaid eligibility, including income, citizenship status, receipt of other social assistance
- Linked to Medicaid enrollment files (for first stage)
- Linked to administrative data on mortality (for reduced form)
- Linked 2008 ACS sample to Mortality Disparities in American Communities
    - Links death certificate based cause of death to individuals who responded to the 2008 wave of the ACS and has death info through 2015
    - Available via application in RDC (at NBER)
    - Public limited data should be available soon

Relative to previous papers: can subset to population targeted by Medicaid expansions, which improves statistical power to detect mortality effect

Sample population

From ACS 2008-2013

- Family income at or under 138% of the FPL
  - Or less than high school degree (low socioeconomic status but might not meet income cutoff at time of ACS interview)
- Ages 55-64 in 2014

Exclude:

- Noncitizens (not Medicaid eligible)
- Those receiving Supplemental Security Income (SSI) (always Medicaid eligible)
- Residents of DE, MA, NY, VT (expanded Medicaid coverage prior to ACA)
- Residents of DC (implemented ACA Medicaid expansion in 2011)

Main Event Study Specification

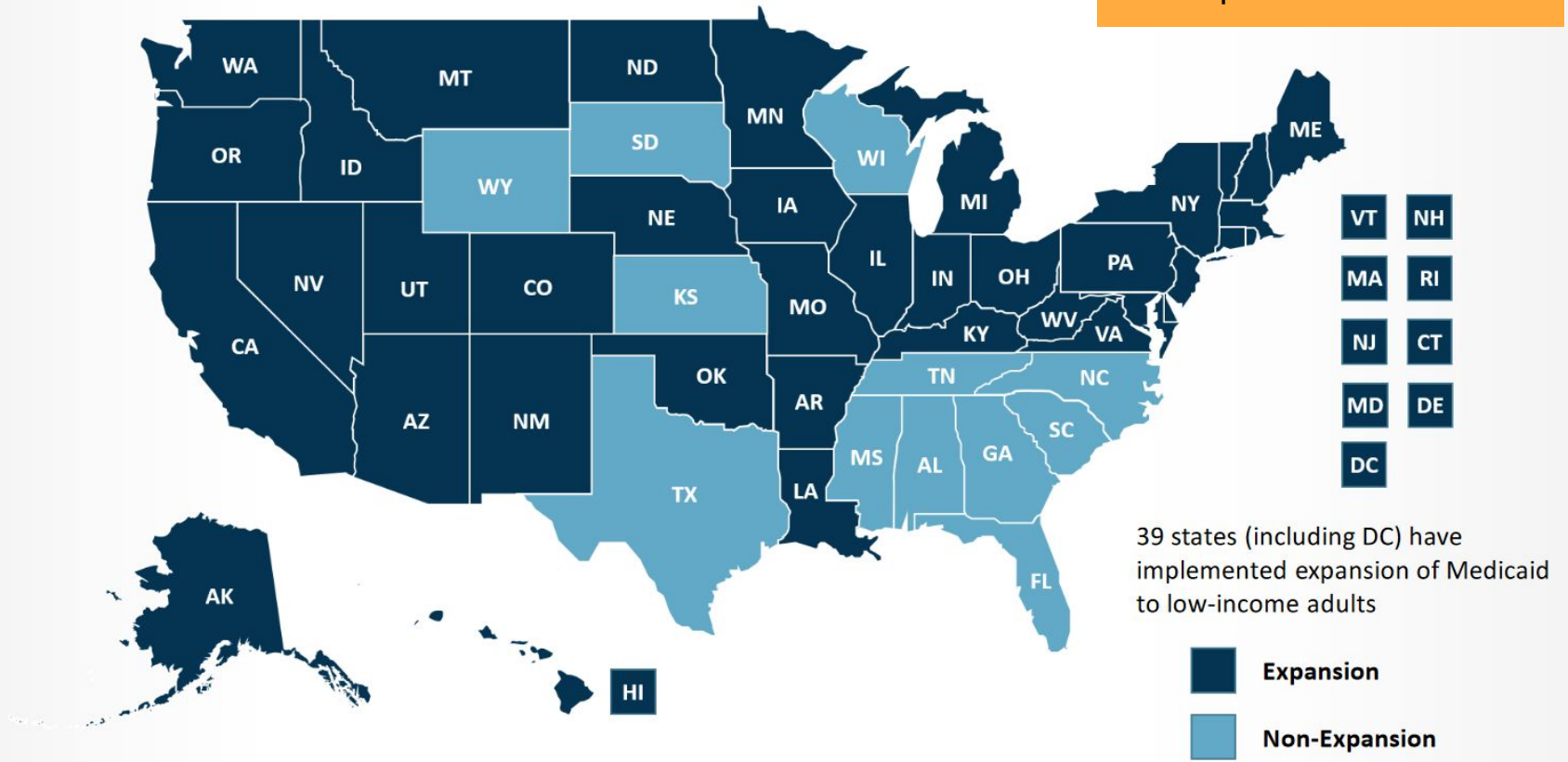
$$Y_{isjt} = Expansion_s \times \sum_{\substack{y=-6 \\ y \neq -1}}^{3} \beta_y \mathbf{I}(t - t_s^* = y) + \beta_t + \beta_s + \beta_j$$
$$+\gamma \mathbf{I}(j = t) + \epsilon_{isjt}.$$

- Y = Medicaid enrollment/death of person (i) in state (s) in survey wave (j) and time (t)

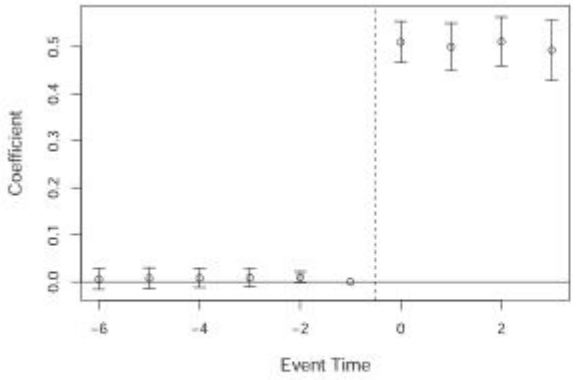
Adult Coverage Expansion

as of July 2021

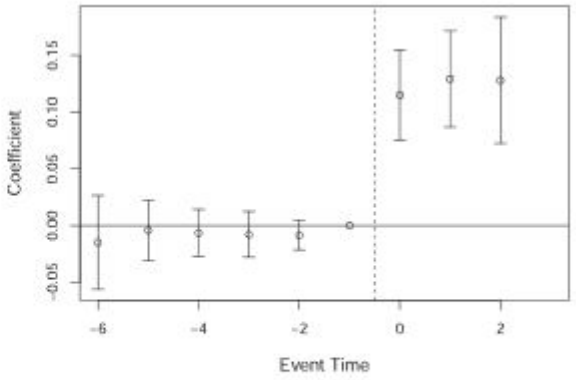
What are differences between expansion and non-expansion states?



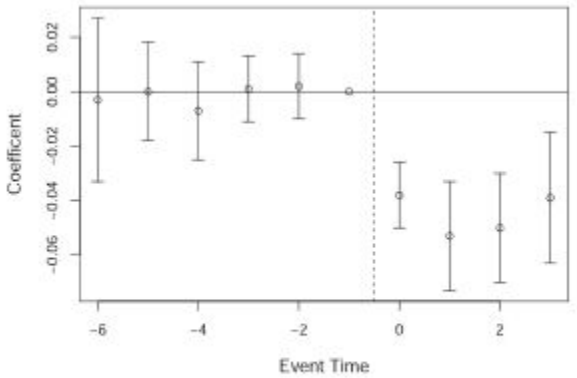
First stage: Effect of Medicaid expansions on Medicaid eligibility and coverage in analysis sample



(A) Medicaid Eligibility (ACS)

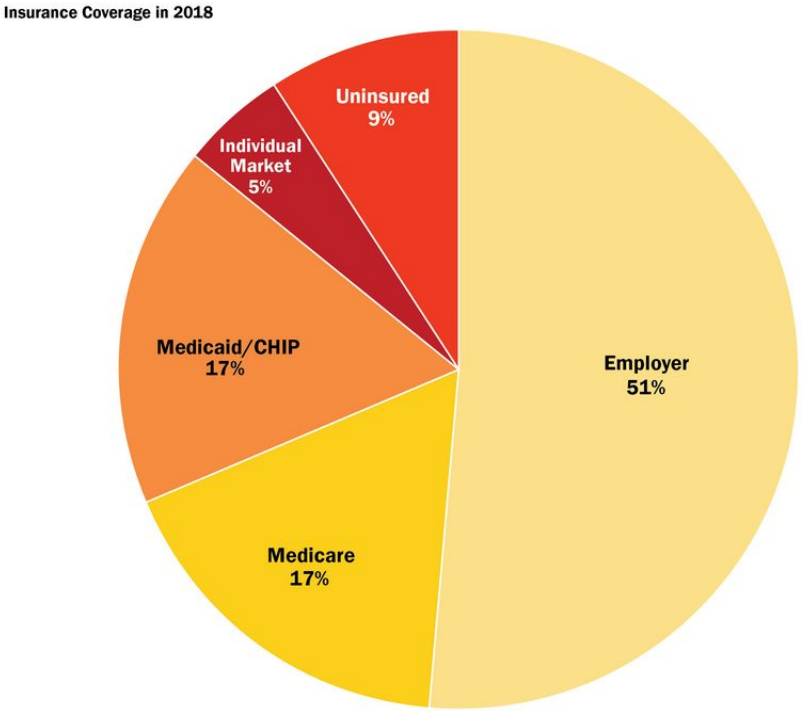


(B) Any Medicaid Enrollment in Year (CMS)



(E) Uninsured (ACS)

Potential changes in coverage



Source: National Health Interview Survey; author's calculations.
Note: People reporting multiple sources of coverage have been assigned a single primary source of coverage. Employer coverage includes military coverage, and Medicaid/CHIP coverage includes coverage under other government programs.

USC Schaeffer BROOKINGS

Transitions to Medicaid (12.8%)

- Uninsured -> Medicaid (4.4%)
- Employer -> Medicaid
- Medicare -> Medicaid
- Individual -> Medicaid

No change in coverage

- Continue uninsured, employer, Medicare, Medicaid, or individual coverage
- Any effects of expansion?

Which groups might be most/least affected?

- Among US citizens aged 55-64 with income < 138 FPL and/or lack a HS degree, how much did mortality change in each year?

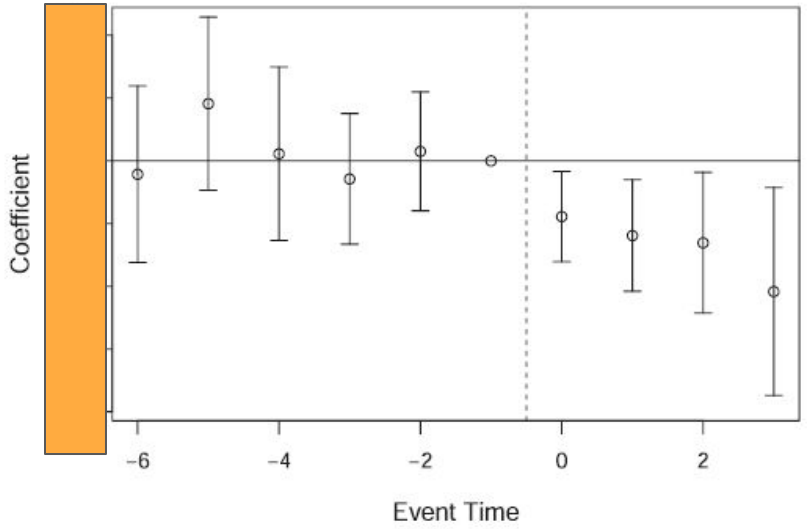
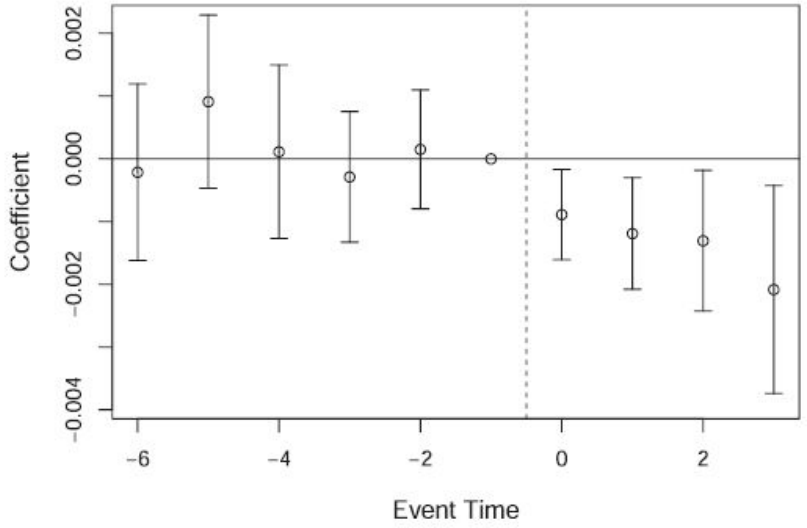


FIGURE II

Effect of the ACA Medicaid Expansions on Annual Mortality

This figure reports coefficients from the estimation of equation (1) for annual mortality. The coefficients represent the change in mortality for expansion states relative to nonexpansion states in the six years before and four years after expansion, as compared to the year immediately prior to the expansion. The sample is defined as U.S. citizens ages 55–64 in 2014 observed in the 2008–2013 American Community Survey who are not SSI recipients and who have either less than a high school degree or family income below 138% FPL.

- Among US citizens aged 55-64 with income < 138 FPL and/or lack a HS degree, how much did mortality change in each year?
  - Grows from ~1 pp in years 0 to ~2 pp in year 3
  - Reduction of about 8.1% relative to estimated CF death rate



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Which of the following Robustness / Tests did they *not* do?

- Deal with staggered treatment issues
  - Restricting to 2014 expanders only
  - Use Sun and Abraham (2020) estimator
  - Use Goodman-Bacon (2019) decomposition
- Deal with Differential Pre-trends
  - Use Roth (2019) detection procedure
  - Differential linear trends in expansion vs. non-expansion
  - State-specific time trends in two step procedure (Goodman Bacon 2019)
  - Interact 2019 county level unemployment rate, median income poverty rate, share Black, share Hispanic, share female with linear year trends
- Deal with Confounding Factors
  - Control for predicted changes in labor demand at the county level
  - Include time-varying controls for county-level characteristics
  - Control to opioid policies
  - Control for “china shock”
  - Add individual covariates for race, age, and gender
  - Control for everything previously tried
  - Estimate only for people < 61 to avoid Medicare influence
- Placebo Tests
  - Randomly assign treat to pre-ACA
  - Test on age 65+
  - Test on income > 400% FPL

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They did all of them

Are there any more that you would recommend?

Any concerns for identification?

Miller, Johnson, & Wherry (2021) Interpretation

- Is this effect big?
- Are there heterogeneous effects?
- What could be driving it?

How does Medicaid Enrollment Impact Individual Mortality?

- Issues in scaling diff-in-diff estimate
  - **Sample:** Potential spillovers(e.g. if Medicaid expansion increased physician supply, then could have positive spillovers onto people whose coverage did not actually change)
  - **Timing:** Cumulative vs. within-year effects
  - **Coverage:** Overall insurance coverage or Medicaid coverage

Scaling First Stage	**Time span of effect**	**Implied Mortality Reduction**
Medicaid enrollment	Cumulative	11.9% to 21.5%
Medicaid enrollment	Contemporaneous	14.9 to 63.2%
Net insurance coverage	Contemporaneous	102% to 184%

Other papers have found smaller, but consistent estimates of mortality reductions **in this age group**

- Similar Effect Somewhat Similar Effect Different Effect

Paper	Context	Findings
Finkelstein & McKnight (2006)	Introduction of Medicare in 1965	No impact on elderly mortality in first 10 years
Card, Dobkin, Maestas (2009)	Comparison of utilization / mortality for emergency admissions for individuals above / below 65	Small but statistically significant discontinuity in short term mortality up to 9 months after
Oregon Health Experiment	RCT of Medicaid to working age adults 68% 20-50 yo, 32% 50-64 yo	Improved self-reported health & reduced depression Among those aged 55-64, stat insignificant but similarly sized effect on mortality
Goldin, Lurie, and McCubbin (2019)	RCT in which IRS sent informational letters to 3.9 million who paid a tax penalty for lacking HI	Find similar effect
Black et al (2019)	ACA expansion on different age groups	Small effect, big CI
Chen (2019)	ACA expansion on 55-64 yo's	1.8 percent reduction

Other Insurance Expansion Papers in the Adult-Age Population have also found reductions in mortality

- Generally consistent with pooled MJW estimates
- Unclear whether the results in these other papers are primarily driven by the older population

Paper	Context	Findings
Sommers Long and Baicker (2014)	2006 Massachusetts health reform, 20-64 yo	Similar sized reduction
Sommers (2017)	20-64 yo's following pre-ACA Medicaid expansions in AZ, ME, and NY	Similar sized reduction
Chen (2019)	ACA Medicaid expansion 25-64 yo	Smaller sized reduction
Borgschulte and Vogler (2020)	ACA Medicaid expansion, 20-64 yo	Similar sized reduction

Heterogeneity

- Co-authors find some evidence of heterogeneity in both take-up and mortality impacts

- Largest impact for white males
  - Rural
  - Drug / Alcohol treatment?
  - If cumulative insurance matters, in worse health than women previously on prenatal medicare
  - Any other ideas?

Table A10: Difference-in-Differences Estimates: Heterogeneity Analysis

	Medicaid eligibility	Medicaid coverage	Uninsurance	Mortality	
				Counterfactual rate	Change
Race/ethnicity					
White, non-Hispanic	0.543***	0.116***	-0.044***	0.01849	-0.00169***
N=2,672,000	(0.023)	(0.014)	(0.010)		(0.00041)
Black, non-Hispanic	0.537***	0.111***	-0.050***	0.01805	0.00045
N=629,000	(0.018)	(0.020)	(0.015)		(0.00097)
Other, non-Hispanic	0.412***	0.185***	-0.045***	0.00953	-0.00047
N=238,000	(0.028)	(0.029)	(0.013)		(0.00149)
Hispanic	0.333***	0.174***	-0.035**	0.00892	-0.00072
N=513,000	(0.022)	(0.020)	(0.014)		(0.00044)
Gender					
Female	0.526***	0.136***	-0.048***	0.01265	-0.00085
N=2,085,000	(0.027)	(0.022)	(0.010)		(0.00058)
Male	0.469***	0.119***	-0.040***	0.02004	-0.00184***
N=1,948,000	(0.024)	(0.018)	(0.011)		(0.00063)
Marital status					
Married, spouse present	0.373***	0.114***	-0.026**	0.01203	-0.00133*
N=1,846,000	(0.023)	(0.021)	(0.012)		(0.00075)
Unmarried, spouse not present	0.576***	0.138***	-0.055***	0.01942	-0.00132**
N=2,188,000	(0.026)	(0.021)	(0.011)		(0.00052)
Other					
Less than high school	0.276***	0.111***	-0.032**	0.01523	-0.00163**
N=1,897,000	(0.012)	(0.024)	(0.013)		(0.00080)
Less than 138% FPL	0.664***	0.142***	-0.055***	0.01801	-0.00131***
N=2,670,000	(0.032)	(0.020)	(0.011)		(0.00047)
Uninsured at time of ACS	–	0.246***	–	0.01460	-0.00150**
N=1,280,000		(0.026)			(0.00066)

Notes: Table displays estimates for coefficients for the difference-in-differences model described in text. Counterfactual mortality rate calculated as sum of post-period mean in expansion states and the absolute value of the DD estimate. N refers to sample size in mortality analyses. See Section VII for additional discussion. Significance levels: *=10%, **=5%, ***=1%.

Exploratory Attempt at Understanding Mechanism

- Partition cause of death into
  - Internal (e.g. healthcare-amenable or not)
  - External (i.e. non-disease)
- Data is not great
- Large reduction in internal causes, but point estimate does not suggest that this is necessarily driven by health care-amenable causes

TABLE II

EFFECT OF THE ACA EXPANSIONS ON COVERAGE AND MORTALITY: CAUSE OF DEATH

	Deaths from internal causes (1)	Deaths from health care–amenable causes (2)	Deaths from external causes (3)
Difference-in-differences model			
Expansion × post	−0.00235	−0.00099	0.00038
	(0.00675)***	(0.00050)*	(0.00020)*
Event study model			
Year 1	−0.00221	−0.00041	0.00010
	(0.00126)*	(0.00082)	(0.00039)
Year 0	−0.00209	−0.00103	0.00025
	(0.00108)*	(0.00075)	(0.00032)
Year −1 (omitted)	0	0	0
Year −2	−0.00053	0.00065	−0.00007
	(0.00083)	(0.00053)	(0.00034)
Year −3	0.00088	0.00014	−0.00007
	(0.00104)	(0.00072)	(0.00044)
Year −4	−0.00044	−0.00008	−0.00032
	(0.00112)	(0.00082)	(0.00038)
Year −5	0.00075	0.00047	−0.00022
	(0.00095)	(0.00074)	(0.00037)
Year −6	0.00071	0.00023	−0.00060
	(0.00106)	(0.00062)	(0.00035)
N (Individuals × year)	683,000	683,000	683,000
N (Individuals)	88,500	88,500	88,500

Notes. This table displays the event study coefficient estimates of equation (1) using the MDAC. Sample sizes are rounded following census disclosure rules. See text for more details. DRB Disclosure Approval no. CBDRB-FY19-310. Significance levels: * = 10%, ** = 5%, *** = 1%.

Suggestive, but not really causal story of which ICD-9 codes had the largest reductions post-ACA

Table A4: Impact of the ACA Expansions on Mortality: Impact by ICD Grouping

	Infectious disease	Neoplasms	Diseases of the blood and blood-forming organs	Endocrine, nutritional and metabolic diseases	Mental/behavioral
Expansion × Post	-0.0000671 (0.0001273)	-0.0005512 (0.0004556)	0.0000337 (0.0000345)	-0.0004314 (0.0002277)*	-0.0000465 (0.0001100)
Mean	0.004121	0.02718	0.0002675	0.005279	0.001676
	Nervous system	Circulatory system and cardiovascular	Respiratory	Digestive	Skin and sub-cutaneous tissue
Expansion × Post	-0.0000131 (0.0001162)	-0.0008861 (0.0004804)*	-0.0003801 (0.0002758)	-0.0000046 (0.000243)	-0.00002550 (0.0000119)**
Mean	0.002392	0.02504	0.008223	0.006589	0.00008866
	Musculoskeletal system	Genitourinary system	Other		
Expansion × Post	0.0001148 (0.0000706)	-0.0001297 (0.0001101)	0.0003175 (0.0001910)		
Mean	0.0004495	0.002094	0.07006		

Notes: This table displays the difference-in-differences coefficient estimates using the MDAC. Each entry is the result from a different regression. Rates are reported under coefficient estimates. All estimates are rounded following Census disclosure rules. DRB Approval Number: CBDRB-FY19-400. See text for more details. Significance levels: *=10%, **=5%, ***=1%.

- **<u>The function of insurance differs by income group</u>**
    - For **high income people**
        - a set of rules under which one can access care (e.g.a network of providers and HMO access rules)
        - access to a lower price
        - consumption smoothing into ``sick states”
    - For **low income people**
        - All of the above
        - Net transfer of resources
        - Linking up with social safety net / resources
        - Anything else?

Mechanisms?

- **Access:** Past studies have found that in first year of the expansion...
  - Increases in hospitalizations, physician visits and diagnoses of chronic illness
  - Increases in the use of prescription drugs
  - Improvements in access to medication and personal physicians, ED
- **Stress/Mental Health**
  - OHIE found reduction in mental health strain
- **Income Effect**
  - Less strong effects than access, but in general find reductions in medical debt, catastrophic health spending, and financial insecurity measures
- **Other Social Programs**
  - Sine evidence that participation in WIC increased after expansion

State Decisions Not to Expand Have Led to 15,000 Premature Deaths (2014-2017)

- What type of evidence is convincing to non-economists?
- How important should policy advocacy be to economists?

State	Lives Lost 2014-2017
Texas	2,920
Florida	2,776
North Carolina	1,400
Georgia	1,336
Tennessee	964
South Carolina	788
Missouri	776
Alabama	768
Kentucky	704
Wisconsin	576
Mississippi	540
Oklahoma	476
Kansas	288
Utah**	216
Idaho**	180