



MEDICAID EXPANSION

The Effect of Medicaid Expansion on Health Service Accessibility

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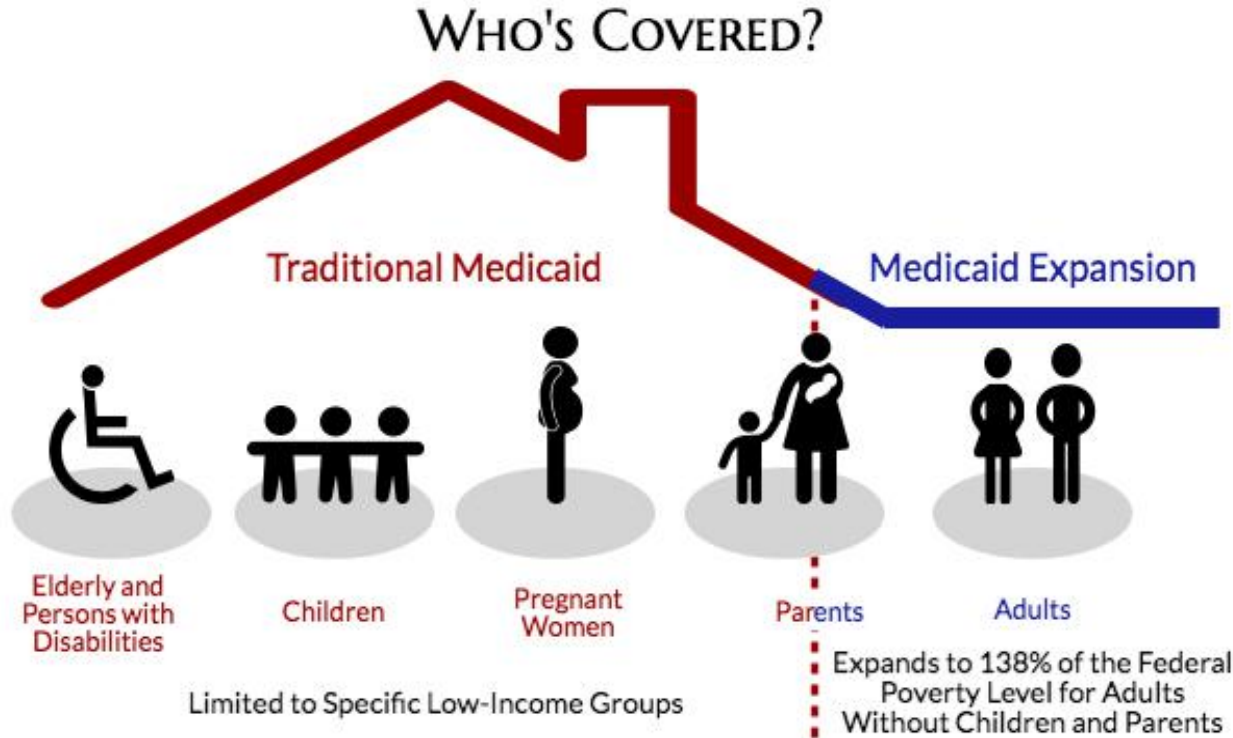
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INTRODUCTION

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Medicaid Expansion

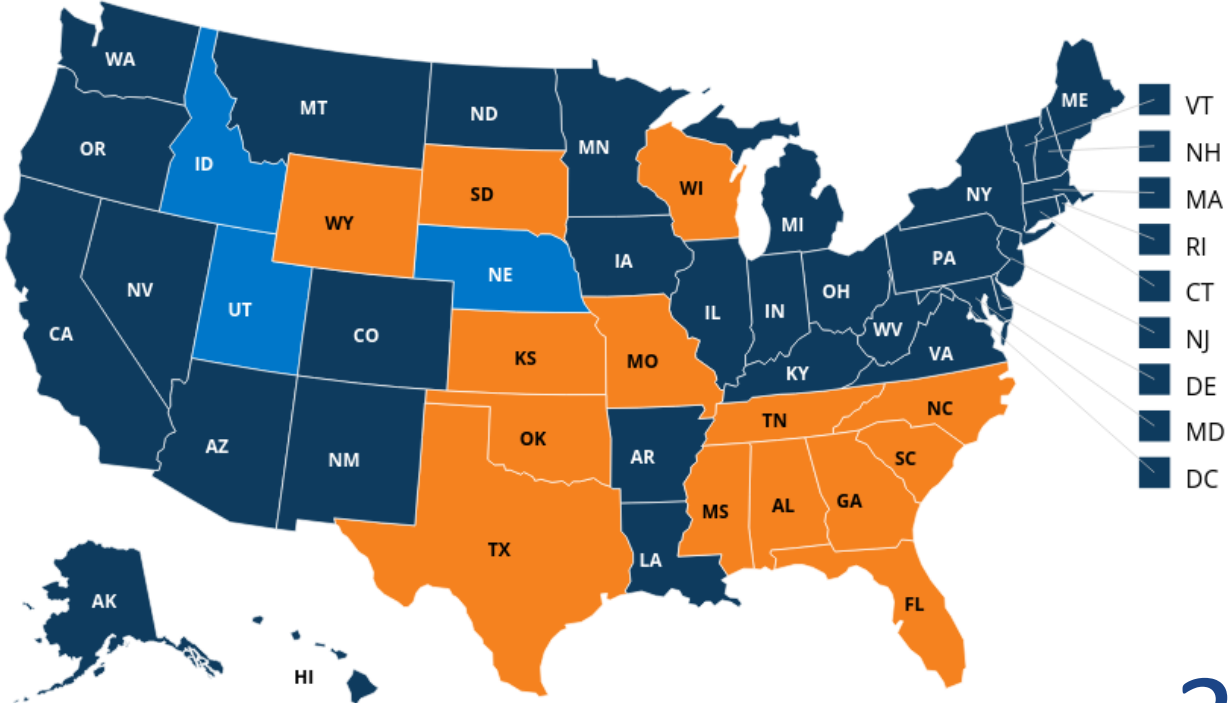


2014

- Affordable Care Act (ACA)
- Expand Medicaid **Eligibility**
- **26 states & DC** expanded



Status of State Action on the Medicaid Expansion Decision



To date, **37** states (including DC) have adopted the Medicaid expansion.

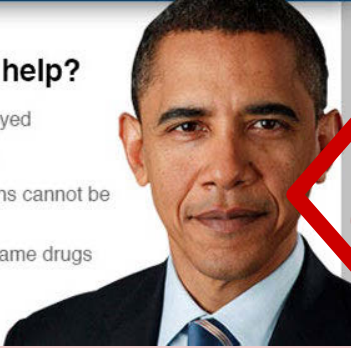
■ Adopted and Implemented ■ Adopted but Not Implemented ■ Not Adopted

SOURCE: Kaiser Family Foundation, kff.org

Supporters

How Does Obamacare help?

- ✓ Health coverage for the unemployed
- ✓ Lower monthly health premiums
- ✓ People with pre-existing conditions cannot be denied coverage
- ✓ Discounts for seniors on brand-name drugs
- ✓ And more...

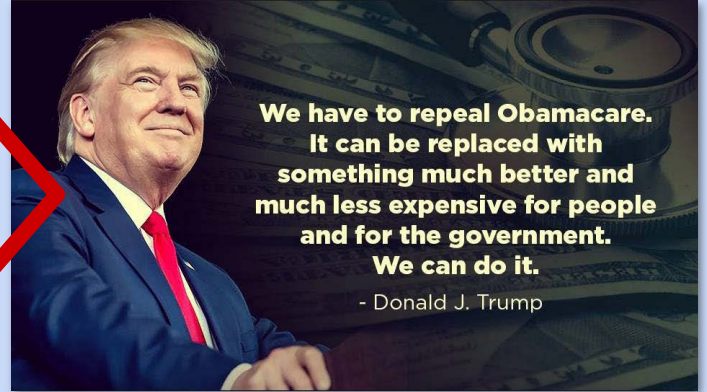


**Health
Outcomes**

Opponents

**We have to repeal Obamacare.
It can be replaced with
something much better and
much less expensive for people
and for the government.
We can do it.**

- Donald J. Trump

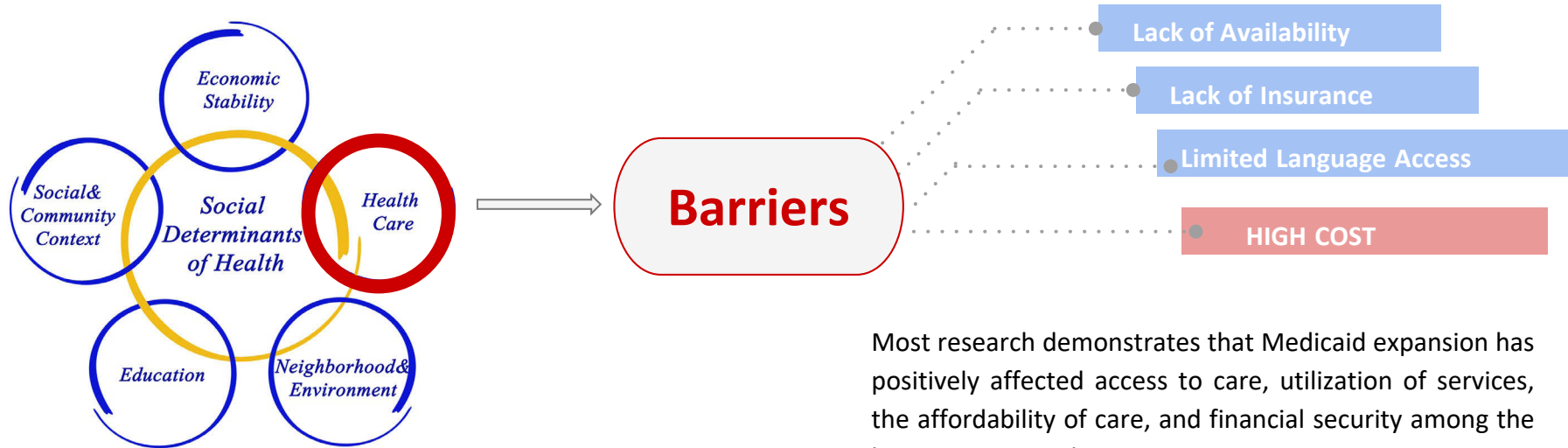


THEORY

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Theory

Lack of access, or limited access, to health services greatly impacts an individual's health status. When individuals do not have health insurance, they are less likely to participate in preventive care and are more likely to delay medical treatment. ¹



Most research demonstrates that Medicaid expansion has positively affected access to care, utilization of services, the affordability of care, and financial security among the low-income population.

RESEARCH QUESTION

/03

Research Question

Does Medicaid expansion improve health accessibility?

Our hypothesis: Yes, it does.

HYPOTHESIS

/04

Hypothesis

Medicaid expansion will **improve health accessibility** by covering more people under health insurance.

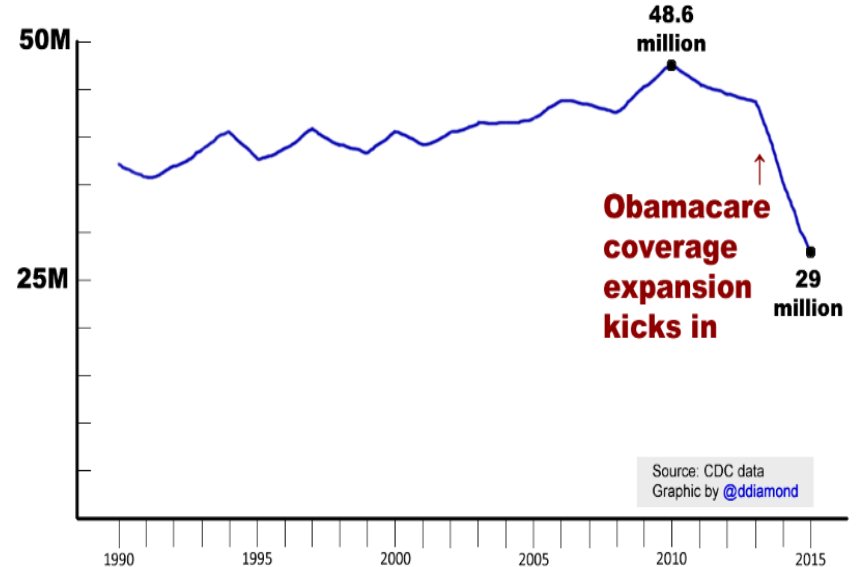
202 studies

A review of the research shows that **Medicaid expansion** is associated with:

- *Significant coverage gains
- *Increased access to care, utilization & affordability
- *Reductions in uncompensated care costs for hospitals and clinics

KFF
HENRY J KAISER
FAMILY FOUNDATION

Number of uninsured Americans, by year



METHODOLOGY

/05

2014-2017

States that keep the status of Medicaid expansion: 27 states (2014)

Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Hawaii, Illinois, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Ohio, Oregon, Rhode Island, Vermont, Washington, West Virginia

States that keep the status of non-Medicaid expansion: 19 states (non-expansion before Dec, 2017)

Alabama, Florida, Georgia, Idaho, Kansas, Maine, Mississippi, Missouri, Nebraska, North Carolina, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Wisconsin, Wyoming.

Methods

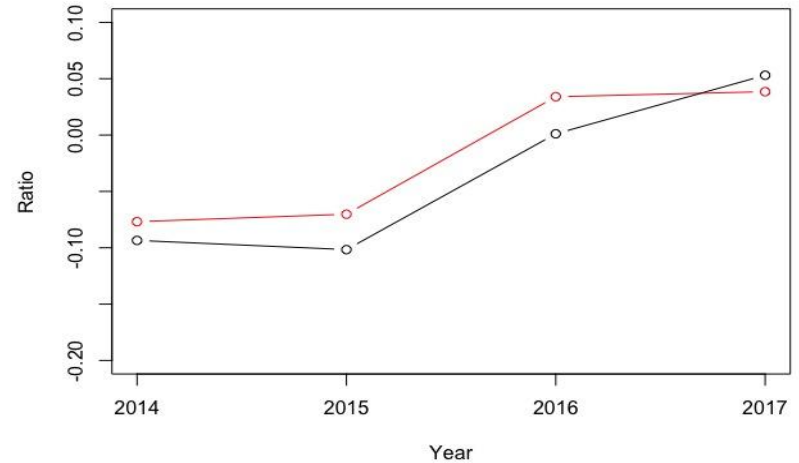
Percent of Adults Reporting **Not Seeing a Doctor** in the Past 12 Months **Because of Cost**



Health service accessibility



Comparison of growth rate



— Black: 27 Medicaid expansion states
— Red: 19 non-Medicaid expansion states

Why is the result so unexpected?

Maybe it's because **other factors** have more impact on health service accessibility.

Data Collection: Year 2013-2017

1 dependent variable:

Percent of Adults Reporting **Not Seeing a Doctor** in the Past 12 Months **Because of Cost**

18 independent variables:

Medicaid expansion status, change in GDP, average GDP, change in poverty rate, average poverty rate, average total population, average uninsured rate, GDP per capita, unemployment rate, change in proportion of population over the age of 65, average proportion of population over the age of 65, change in homeless rate, average homeless rate, median income, proportion of white/black/other race

Data Sources

Continuous Variables

Source

GDP

Bureau of Economic Analysis

poverty rate, median income

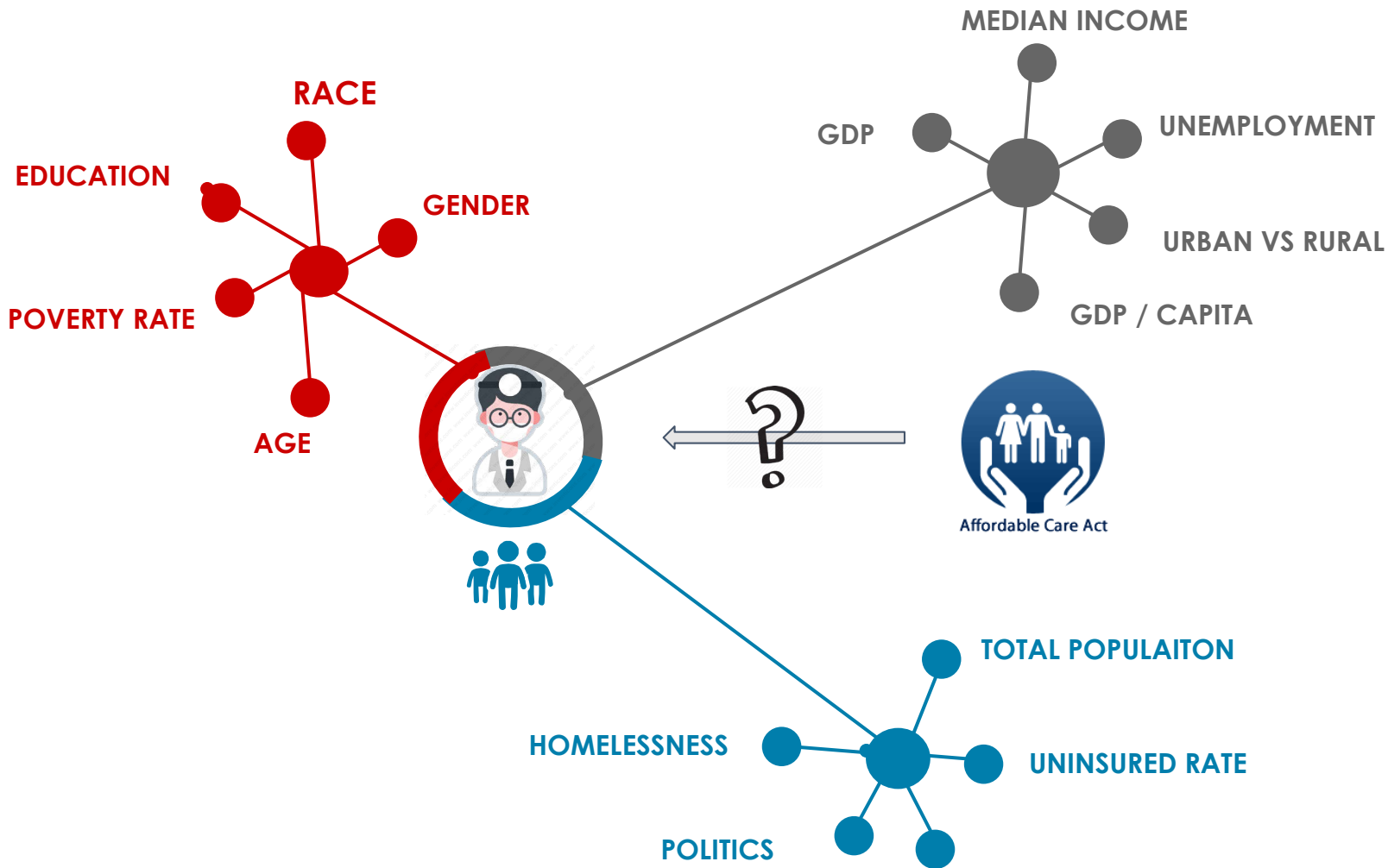
U.S. Census Bureau

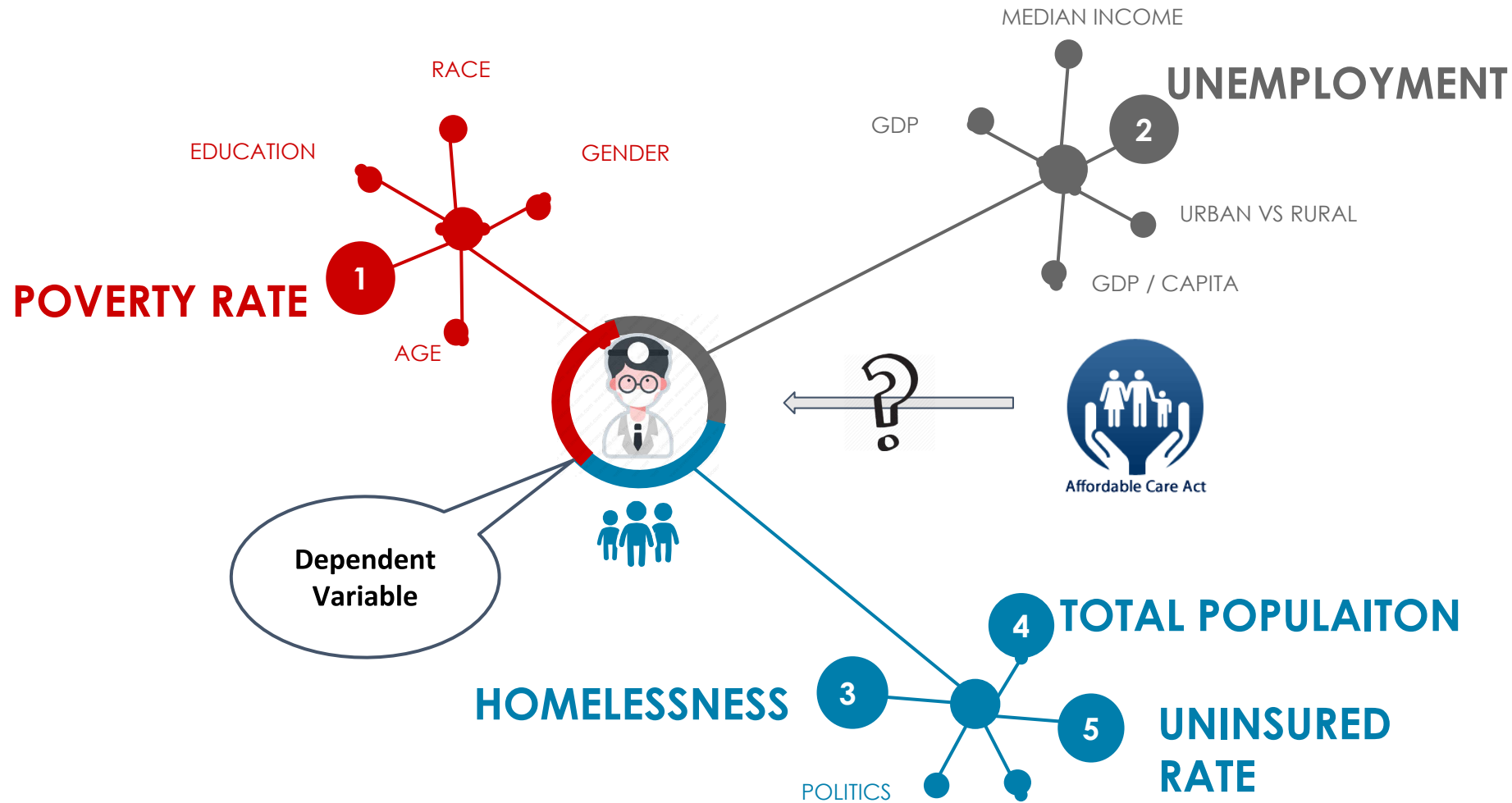
race, homelessness rate, population over
65

Kaiser Family Foundation

total population, unemployment rate,
uninsured rate

Social Explorer Census Tract





Regression Results

Dependent variable:

	changenodoc				
	Model 1 (1)	Model 2 (2)	Model 3 (3)	Model 4 (4)	Final Model (5)
md	-0.003 (0.007)	-0.005 (0.007)	-0.002 (0.007)	-0.002 (0.006)	-0.003 (0.005)
aveUnemployed	-0.223** (0.095)	-0.216** (0.092)	-0.210** (0.089)	-0.155* (0.085)	-0.152** (0.074)
avepvr	0.383 (12.424)				
aveUninsured	0.074 (0.141)				
avehomeless	-0.027 (0.035)	-0.005 (0.036)	-0.016 (0.035)	-0.031 (0.034)	-0.032 (0.029)
logpvr		0.0005 (0.016)	0.0001 (0.015)	-0.004 (0.014)	-0.017 (0.013)
UninsuredC2		3.627* (1.887)	4.178** (1.844)	4.063** (1.710)	4.662*** (1.446)
UninsuredC		-0.045 (0.148)	0.052 (0.151)	0.096 (0.141)	0.095 (0.122)
avetotalpop			-0.000* (0.000)		
logpop				-0.007*** (0.002)	-0.008*** (0.002)
Constant	0.081*** (0.026)	0.073 (0.131)	0.077 (0.127)	0.140 (0.120)	0.060 (0.108)
Observations	46	46	46	46	44
R ²	0.317	0.377	0.434	0.505	0.656
Adjusted R ²	0.231	0.281	0.329	0.413	0.589
Residual Std. Error	0.016 (df = 40)	0.016 (df = 39)	0.015 (df = 38)	0.014 (df = 38)	0.012 (df = 36)
F Statistic	3.708*** (df = 5; 40)	3.928*** (df = 6; 39)	4.155*** (df = 7; 38)	5.528*** (df = 7; 38)	9.808*** (df = 7; 36)

Note:

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

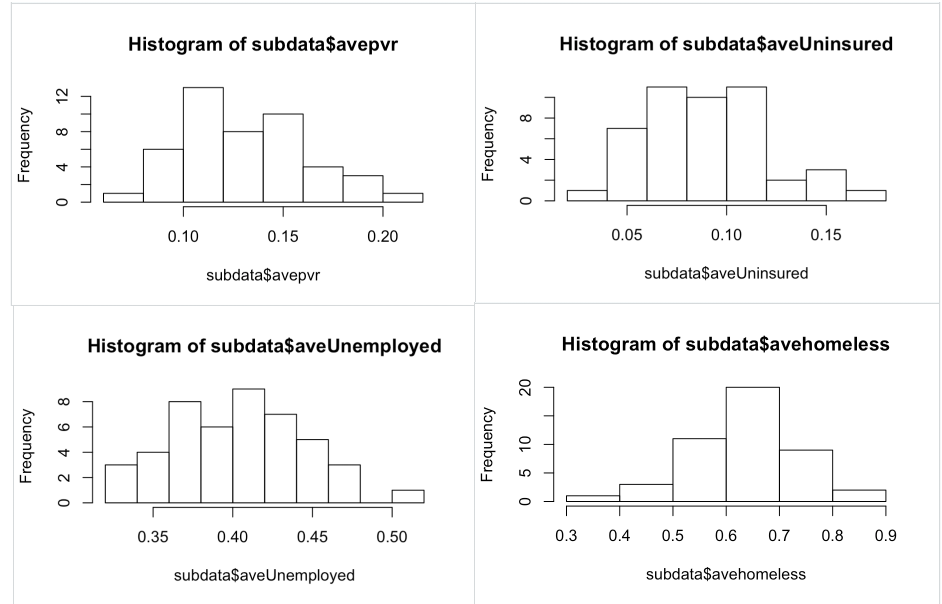
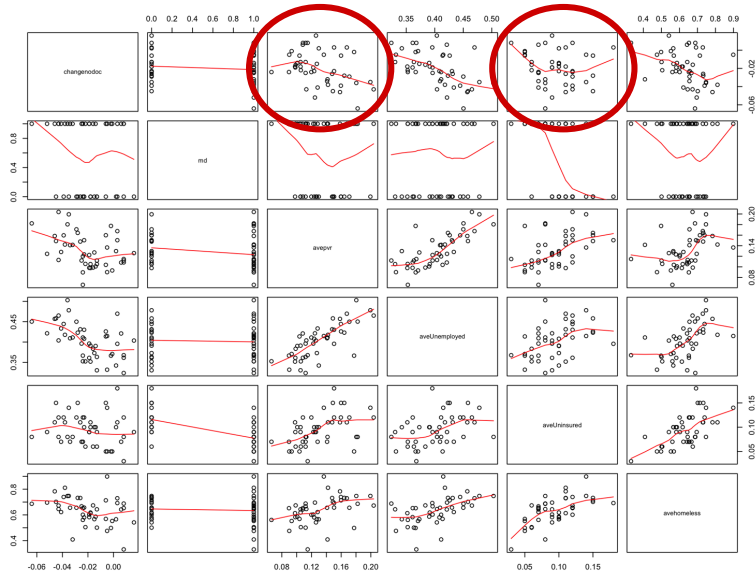
Model 1

$$\hat{y} = b_0 + b_1(\text{Medicaid expansion}) + b_2(\text{average unemployment rate}) + b_3(\text{average poverty rate}) + b_4(\text{average uninsured rate}) + b_5(\text{average homeless rate})$$

Ordinary Least Squares regression (OLS)

Model 1 Diagnostics and Corrections

Linearity



- ✓ average poverty rate: log transformation
- ✓ average uninsured rate: center and add a quadratic term

avepr \rightarrow $\log(\text{avepr})$
aveUninsured \rightarrow $(\text{aveUninsured} - \text{mean})^2$

Regression Results

Dependent variable:

	Model 1 (1)	Model 2 (2)	Model 3 (3)	Model 4 (4)	Final Model (5)
md	-0.003 (0.007)	-0.005 (0.007)	-0.002 (0.007)	-0.002 (0.006)	-0.003 (0.005)
aveUnemployed	-0.223** (0.095)	-0.216** (0.092)	-0.210** (0.089)	-0.155* (0.085)	-0.152** (0.074)
avepvr	0.383 (12.424)				
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UninsuredC		-0.045 (0.148)	0.052 (0.151)	0.096 (0.141)	0.095 (0.122)
avetotalpop			-0.000* (0.000)		
logpop				-0.007*** (0.002)	-0.008*** (0.002)
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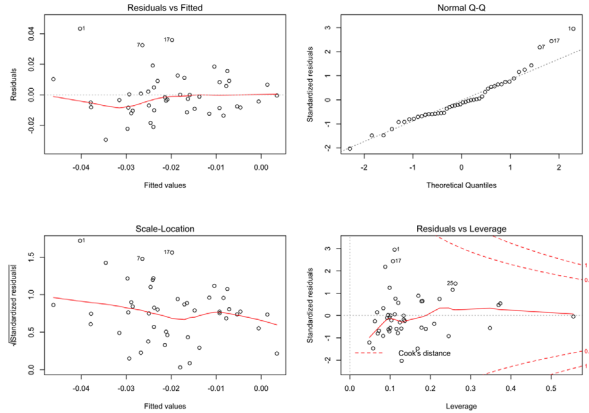
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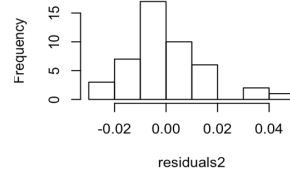
Model 2

$$\hat{y} = b_0 + b_1(\text{Medicaid expansion}) + b_2(\text{average unemployment rate}) + b_3(\text{average homeless rate}) + b_4(\text{log poverty rate}) + b_5(\text{Centered uninsured rate}) + b_6(\text{Centered, squared uninsured rate})$$

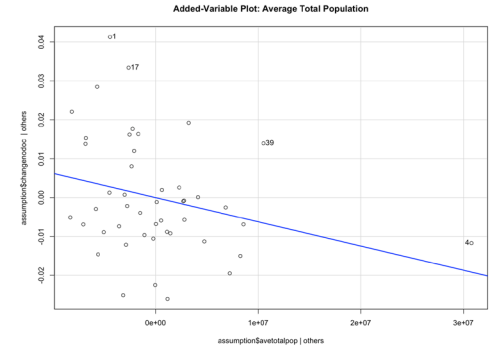
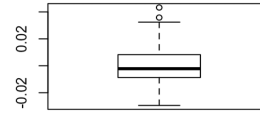
Model 2 Diagnostics and Corrections



Model 2: Histogram of residuals



Model 2: Boxplot of residuals



Homoscedasticity

Normality of Residuals

**Omitted variables bias -
average total population**

Regression Results

Dependent variable:

	Model 1 (1)	Model 2 (2)	changenodoc Model 3 (3)	Model 4 (4)	Final Model (5)
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aveUnemployed	-0.223** (0.095)	-0.216** (0.092)	-0.210** (0.089)	-0.155* (0.085)	-0.152** (0.074)
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Model 3

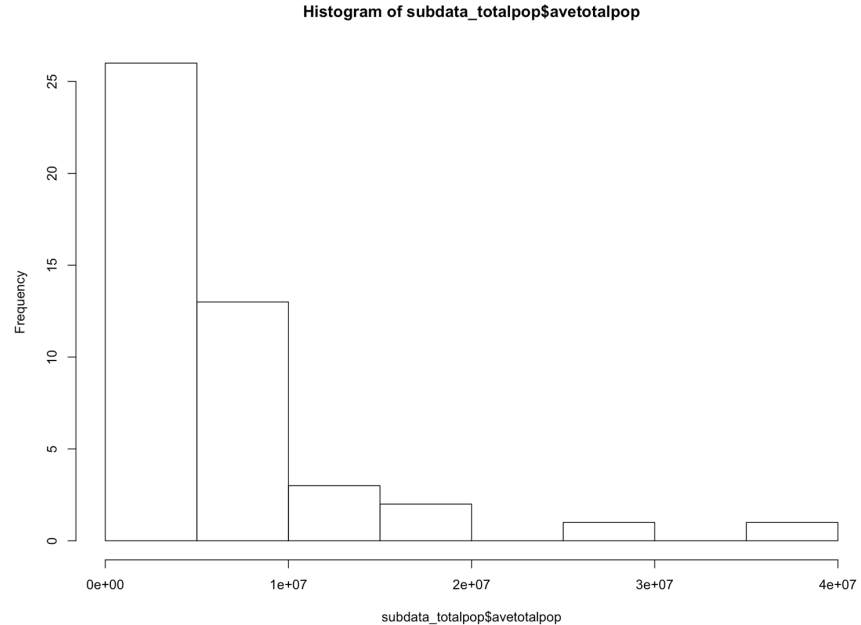
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Model 3 Diagnostics and Corrections

Linearity

Homoscedasticity

Normality of Residuals



✓ average total population: log transformation

avetotalpop → log(avetotalpop)

Regression Results

Dependent variable:

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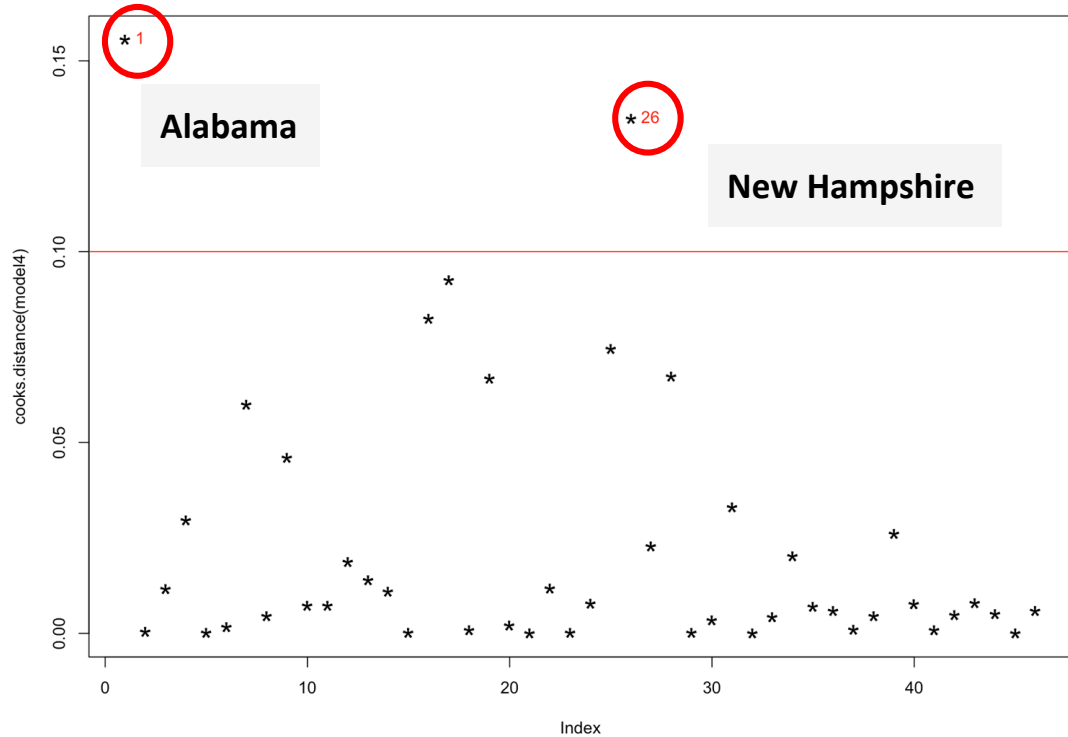
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Model 4 Diagnostics and Corrections

Figure 7 - Influential Observations by Cooks distance



Remove outliers

Regression Results

Dependent variable:

	changenodoc				
	Model 1	Model 2	Model 3	Model 4	Final Model
	(1)	(2)	(3)	(4)	(5)
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Note:

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

Final Model

$\hat{y} = b_0 + b_1(\text{Medicaid expansion}) + b_2(\text{average unemployment rate}) + b_3(\text{average homeless rate}) + b_4(\text{log poverty rate}) + b_5(\text{centered uninsured rate}) + b_6(\text{centered, squared uninsured rate}) + b_7(\text{log total population})$

RESULTS


/06


Final Model


	Estimate	Standard error	p-value
Intercept	0.139004	0.054595	0.015318 *
Medicaid expansion status	-0.003402	0.005413	0.533650
log poverty rate	-0.017183	0.013365	0.206794
(centered uninsured rate) ²	4.662136	1.445654	0.002681 **
centered uninsured rate	0.094778	0.122157	0.442892
unemployment rate	-0.151695	0.074056	0.047867 *
homelessness rate	-0.032388	0.028609	0.265084
log population	-0.007630	0.001968	0.000432 ***

Note: p-value 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '' 1

1. Medicaid expansion: No effect

2. ↑ unemployment rate  ↑ improvements in health service accessibility

3. ↑ uninsured rate  ↓ improvements in health service accessibility

4. ↑ total population  ↑ improvements in health service accessibility

CONCLUSION

/07

Conclusions

1

Result

Medicaid Expansion **does not necessarily improve** health service accessibility

3

Factors

- Unemployment Rate
- Uninsured Rate
- Population



Accessibility
to health care
due to \$\$\$

LIMITATION

/08

Limitations

1

Not enough indicators of health accessibility

2

Not enough independent variables

3

Data snooping

4

Regression model overfitting

APPENDIX

/09

Q & A

/10
