

# ECON 470 Final Project Preliminary Analysis

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## 1 Motivation

The U.S. has long suffered from low healthcare insurance coverage and the subsequent poor health outcomes of its people. Understanding the impact of health care coverage on people's health status is crucial to designing the most effective policy to target people with the most urgent needs. This policy brief aims to access how various measures of health status are affected by the adoption of Medicaid expansion. The history of this topic dates back to the passage of the Patient Protection and Affordable Care Act (ACA) in 2010, which allowed states to expand their Medicaid programs to cover individuals with incomes up to 138% of the federal poverty level. However, the Supreme Court ruled in 2012 that the decision to expand Medicaid was up to each state, leading to a patchwork of different eligibility criteria across the country. While most states have expanded their Medicaid programs since 2014, the trend of adoption seems to halt as the remaining states are determined to opt out the Medicaid expansion. In this policy brief, the analysis will consider the self-reported health status, health care coverage, various demographic measures, and different chronic disease indicators. With a better understanding on the efficacy of Medicaid expansion on improving the health status of people, especially those who are lower-income, policy makers can better examine the costs and benefits of existing policies and potentially find better solutions.

## 2 Summarize the data

The analysis uses Medicaid expansion data from the Kaiser Family Foundation (KFF) and health status data from Behavioral Risk Factor Surveillance System (BRFSS) from data from 2012 to 2019. KFF provides state-level data on the Medicaid expansion status in each year. BRFSS is an annual mobile and landline telephone survey of health behaviors, chronic conditions, and use of preventative measures for adults ages 18 years and above. The BRFSS, conducted by state health departments in partnership with the Centers for Disease Control and Prevention (CDC), provides state-level data on health-related risk behaviors and chronic health conditions as well as health care access. The final data is constructed from matching the two data set by the full name of the state, which allows further analysis on the differences in various health status measures between states that have adopted Medicaid expansion and states that have not adopted.

### 3 Analysis: Tables and Figures

#### 3.1 Health Care Coverage Overview

Figure 1 displays the average health care coverage rate by Medicaid expansion status from 2012 to 2019. Since coverage under the Medicaid expansion became effective in 2014, people in states that have adopted the Medicaid expansion tend to have higher health care coverage rate on average, which suggests that adoption of Medicaid expansion may have led to more health care coverage.

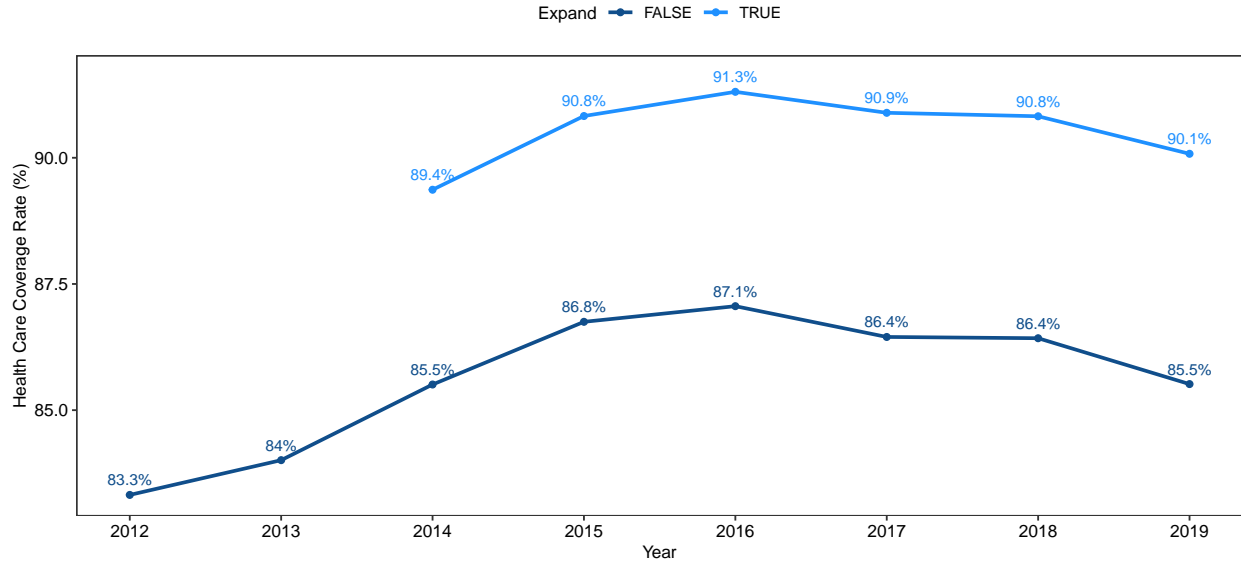


Figure 1: Average Health Care Coverage Rate by Medicaid Expansion Status from 2012 to 2019

Table 1 displays the summary statistics and figure 2 displays the distribution of healthcare coverage rate by Medicaid expansion status from 2012 to 2019. The box plot shows that the third quartile of health care coverage rate in states that have expanded Medicaid has been higher than the first quartile of health care coverage rate in states that have not expanded Medicaid. The observation is in line with the the previous suggestion that the adoption of Medicaid expansion may have led to more health care coverage.

Table 1: Summary Statistic of Health Care Coverage Rate by Medicaid Expansion Status from 2012 to 2019

year	Not Expanded						Expanded					
	Mean	Min	Q2	Median	Q3	Max	Mean	Min	Q2	Median	Q3	Max
2012	83.3	69.4	80.6	83.0	86.9	94.2	NA	NA	NA	NA	NA	NA
2013	84.0	72.0	80.7	83.3	87.6	93.9	NA	NA	NA	NA	NA	NA
2014	85.5	75.1	83.5	85.8	87.1	94.1	89.4	82.9	87.7	89.8	91.6	95.4
2015	86.8	76.6	84.9	86.8	88.4	93.0	90.8	85.1	89.0	91.6	92.8	94.9
2016	87.1	78.3	85.0	87.2	88.8	92.6	91.3	85.4	89.5	91.5	93.2	94.8
2017	86.4	75.8	84.8	86.1	88.5	93.8	90.9	84.1	89.4	91.1	92.6	94.7
2018	86.4	77.1	85.1	87.0	88.4	91.7	90.8	86.4	89.1	91.0	92.5	94.6
2019	85.5	76.2	84.2	85.9	87.3	92.0	90.1	83.4	88.8	90.4	91.8	94.2

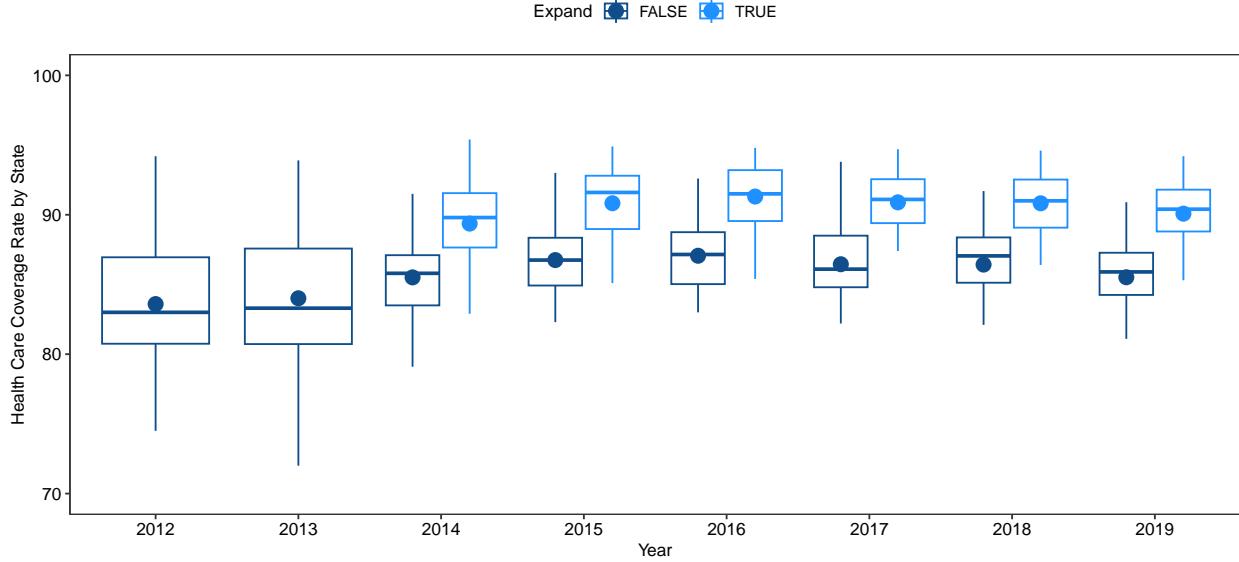


Figure 2: Distribution of Health Care Coverage Rate by Medicaid Expansion Status from 2012 to 2019

### 3.2 Health Care Coverage Demographics

Figure 3 displays the average health care coverage rate by gender and Medicaid expansion status from 2012 to 2019. Female tends to have higher health care coverage rate on average than male regardless of Medicaid expansion. Since 2014, both male and female in states that have adopted the Medicaid expansion tend to have higher health care coverage rate on average. The differences of health care coverage rate between states that have expanded and that have not expanded seem to be identical for male and female. The Medicaid expansion may be benefiting both genders equally and cannot close the gender gap of health care coverage.

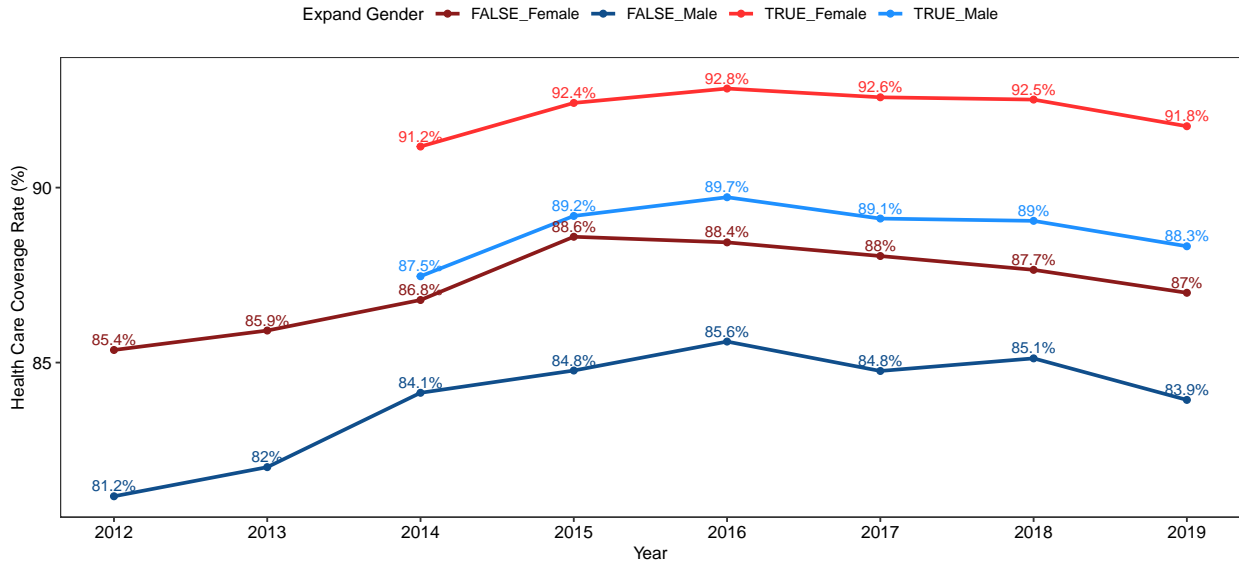


Figure 3: Average Health Care Coverage Rate by Gender and Medicaid Expansion Status from 2012 to 2019

Figure 4 displays the average health care coverage rate by household income and Medicaid expansion status from 2012 to 2019. People earning higher household income tends to have higher health care coverage rate on average than their less affluent counterparts regardless of Medicaid expansion. Since 2014, people from all household income levels in states that have adopted the Medicaid expansion tend to have higher health care coverage rate on average. The differences of health care coverage rate between states that have expanded and that have not expanded seem to be more for people earning lower household income. The Medicaid expansion may be benefiting the less affluent people more and may effectively mitigate the lack of health care coverage among the less-paid.

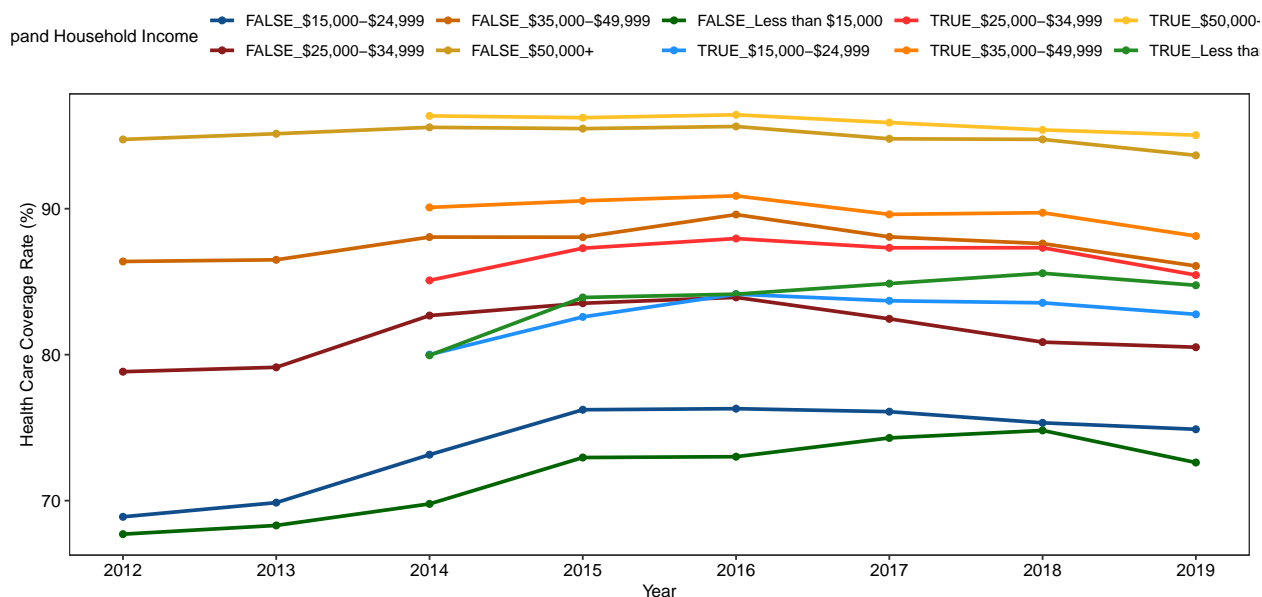


Figure 4: Average Health Care Coverage Rate by Household Income and Medicaid Expansion Status from 2012 to 2019

### 3.3 Health Status

Figure 5 displays the health status by response from 2012 to 2019. People are asked for their judgement of their overall health status and may answer excellent, very good, good, fair, or poor. Since 2014, there is little difference in the percentage of each response made by people in states that have adopted the Medicaid expansion comparing to states that have not adopted. The Medicaid expansion may not be able to improve people's perception of their own health status despite increasing the health coverage rate.

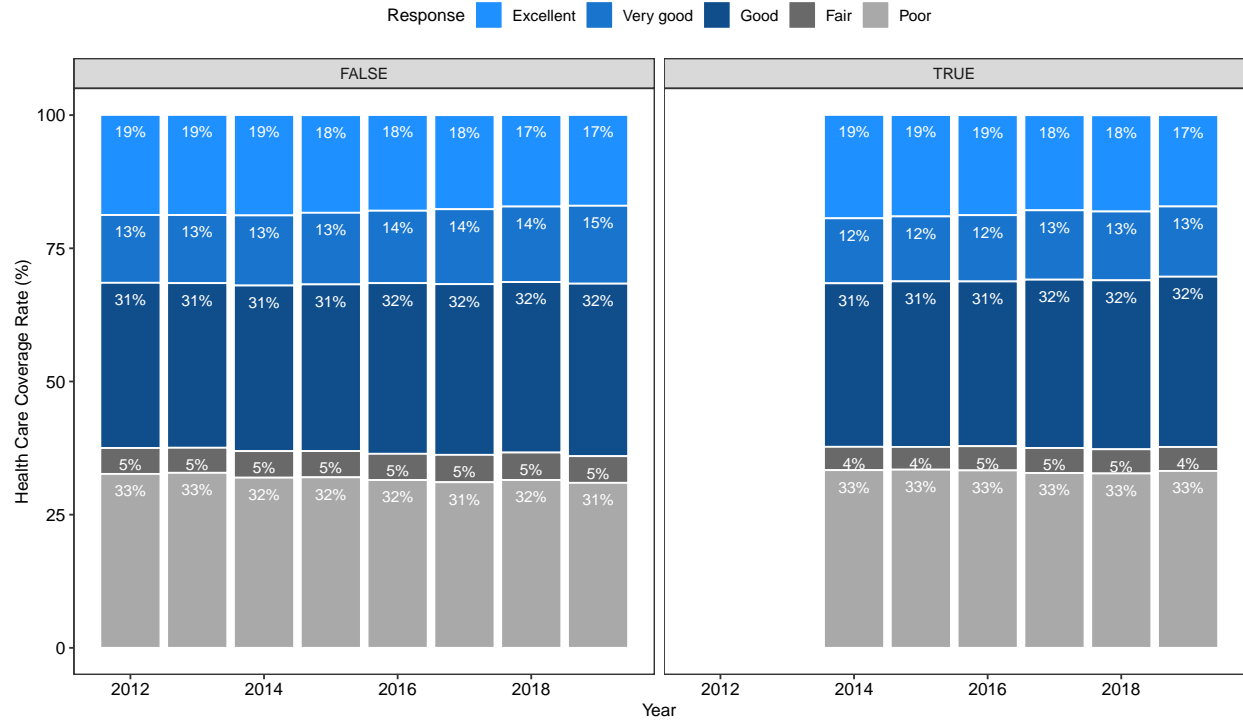


Figure 5: Health Status by Response from 2012 to 2019

Table 2 displays the summary statistics of the percentage of health status being excellent by Medicaid expansion status from 2012 to 2019.

Table 2: Summary Statistic of Health Care Coverage Rate by Medicaid Expansion Status from 2012 to 2019

year	Not Expanded						Expanded					
	Mean	Min	Q2	Median	Q3	Max	Mean	Min	Q2	Median	Q3	Max
2012	18.8	12.5	17.4	18.8	20.4	25.6	NA	NA	NA	NA	NA	NA
2013	18.8	12.9	17.4	18.6	20.1	26.8	NA	NA	NA	NA	NA	NA
2014	18.8	15.6	18.0	18.9	20.2	22.9	19.4	13.5	18.0	19.2	20.8	26.0
2015	18.3	15.8	16.7	18.3	19.6	22.4	19.0	13.0	17.5	18.9	20.6	27.2
2016	18.0	13.8	17.0	18.1	19.1	21.9	18.8	12.8	17.1	19.0	20.5	27.3
2017	17.7	14.6	16.8	17.6	19.0	20.8	17.9	11.8	16.0	18.0	19.4	27.0
2018	17.2	13.3	16.1	17.5	18.5	20.5	18.1	12.4	16.6	18.4	19.7	25.0
2019	17.0	12.7	15.5	17.2	18.8	20.6	17.1	10.4	16.0	17.5	18.2	25.2

Table 3 displays the summary statistics of the percentage of health status being poor by Medicaid expansion status from 2012 to 2019.

Table 3: Summary Statistic of Health Care Coverage Rate by Medicaid Expansion Status from 2012 to 2019

year	Not Expanded						Expanded					
	Mean	Min	Q2	Median	Q3	Max	Mean	Min	Q2	Median	Q3	Max
2012	4.9	2.8	3.6	4.4	5.7	9.1	NA	NA	NA	NA	NA	NA
2013	4.7	2.9	3.5	4.3	5.3	8.8	NA	NA	NA	NA	NA	NA
2014	5.0	3.1	3.8	4.7	5.7	7.6	4.4	2.7	3.2	3.8	4.8	9.1
2015	4.9	3.1	3.8	4.6	5.8	8.5	4.3	2.5	3.3	3.8	4.8	9.3
2016	4.9	2.9	4.0	4.8	5.6	7.6	4.5	2.6	3.6	4.2	5.1	8.7
2017	5.1	3.6	4.2	4.9	5.6	8.0	4.7	2.7	3.7	4.4	4.9	8.7
2018	5.2	3.3	4.2	4.7	6.0	8.2	4.5	2.9	3.7	4.2	5.0	9.4
2019	5.0	3.2	4.4	4.8	5.5	7.1	4.5	2.9	3.4	4.3	5.0	8.6