Just Scraping By: sbranse, klam4, xlei3, mdrisco5

Hypothesis

The Affordable Care Act had three goals: make affordable health insurance more available, expand the Medicaid program, and lower overall costs of healthcare [1]. Therefore, we hypothesize that in New England states, the Affordable Care Act increased low-income residents' access to healthcare using the following metrics to determine success: **health coverage**, **cost barrier to seeking medical help**, **self-reported health**, **and checkup frequency.**

[1] **https://www.healthcare.gov/glossary/affordable-care-act/**

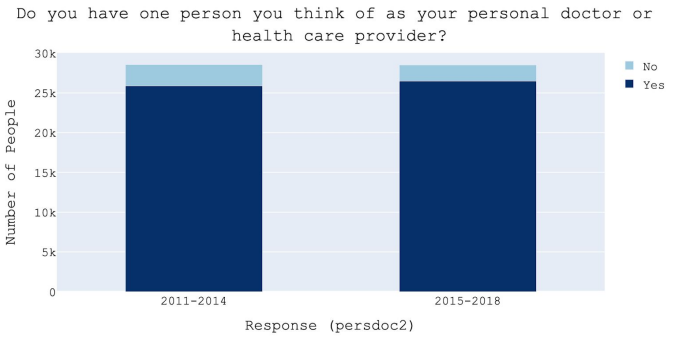
Data

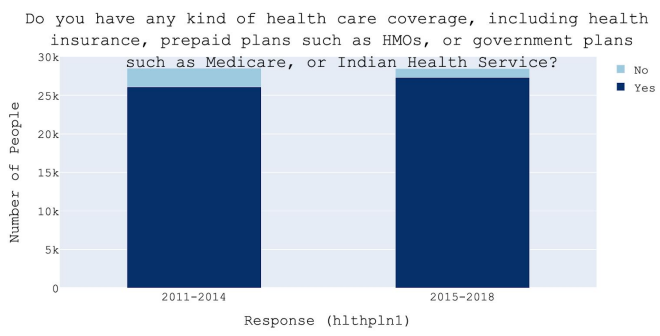
Data is taken from the BRFSS (Behavioral Risk Factor Surveillance System), which is the largest continuously-conducted telephone health survey system in the world. We analyzed survey responses from 2011-2018 regarding preventative care for low-income residents in 5 Northeastern states: Massachusetts, Rhode Island, Vermont, New Hampshire, and Connecticut. All of the states within this set adopted the Medicaid expansion and had no other major changes to healthcare within the time period. The data had to be processed to account for different naming conventions between the years, and most of the columns had to be filtered for empty or nondeterministic responses. Certain questions had a large (>90%) proportion of null responses and some questions were not offered in all of the years, which posed challenges in our analysis.

Findings

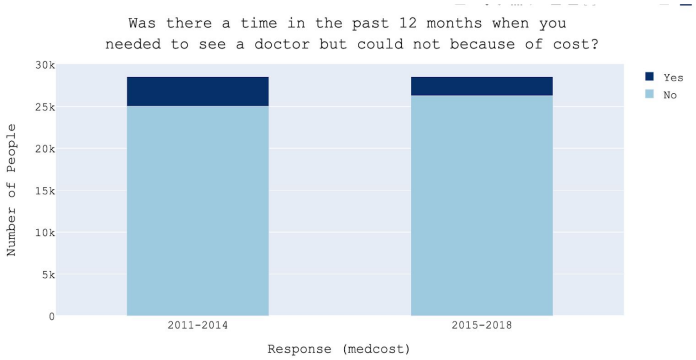
Claim #1: There is an increase in the proportion of low income residents who have access to health care in 2015-2018 (post-ACA) compared to the residents surveyed in 2011-2014.

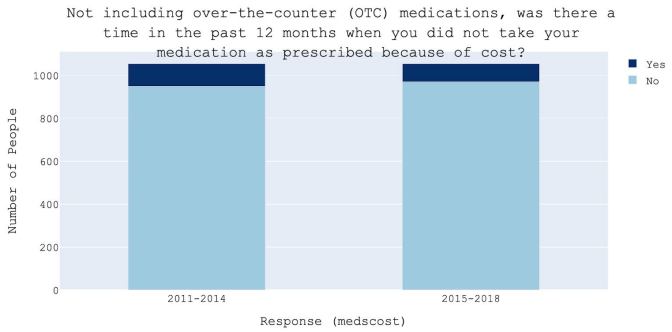
Support for Claim #1: Chi-squared test for independence on two variables : **hlthpln1** (proportion of low-income residents who are insured) and **persdoc2** (proportion of low-income residents who have a personal doctor or health care provider) resulted in p-values both less than 0.0001. Considering this is lower than our alpha of .05, we can reject the null hypothesis that there is no difference in proportion of low-income residents who have access to health care in 2015-2018 (post-ACA) compared to the residents surveyed in 2011-2014. The direction of the difference is seen in the graphs below, where the proportion of people with healthcare coverage and who have a personal doctor is greater in the post-ACA period.





Claim #2: There is a decrease in the proportion of low income residents who could not access medical care because of cost in 2015-2018 (post-ACA) compared to the residents surveyed in 2011-2014.





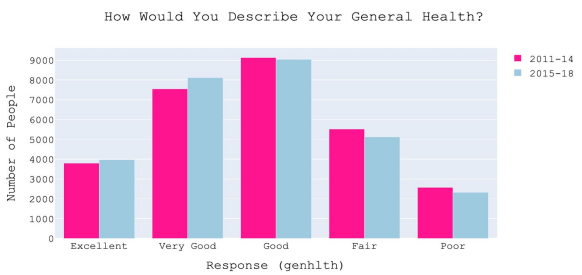
Support for Claim #2: We did a chi-squared test for independence using the variable **medcost** (couldn't see a doctor in the past 12 months because of cost). The p-value of this test was 7.5 x 10^{-67}. Hence, this is a significant result and there is a difference in medcost between 2011-2014 and 2015-2018. Upon looking at the chart below from the dataset, we observe that cost was less of a barrier to seeing the doctor in 2015-2018 compared to 2011-2014.

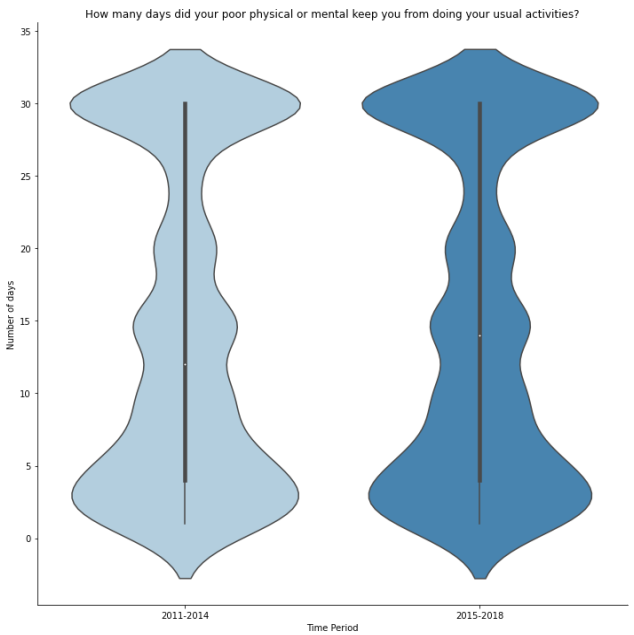
Counter for Claim #2: The variable, **medscost** (couldn't take prescribed medication because of cost), was also tested using a chi-squared test in potential support of this claim, however, the test produced a p-value of 0.103. Thus, we fail to reject the hypothesis that there is a relationship between time period and access to medication because of cost. This test might not be fully representative of the sample size of the population as it was not included in the survey for multiple years (2011, 2012, and 2015), and even when it was included there were very few responses.

Claim #3: Self-reported overall health for low income residents is better in 2015-2018 compared to 2011-2014.

Support for Claim #3: We performed a t-test on the **genhlth** variable, with responses being matched with a number (Excellent = 0, Good = 1, etc.). The mean score for 2015-2018 is lower than the mean score for 2011-2014, signifying better general health (p=6.1e-14). We can reject the null hypothesis that there is no change in general health of low income participants from before to after the ACA in favor of the hypothesis that there is an increase in quality of general health post-ACA.

Counter for Claim #3: The variable poorhlth (how many days you could not carry out everyday tasks because of health) was also tested using a t-test in potential support of this claim. However, with a p value of .06, we fail to find a correlation between ACA enactment and less days missed because of poor health.





Claim #4: There is a decrease in the length of time between the last checkup for low-income residents in 2015-2018 (post-ACA) compared to the residents surveyed in 2011-2014.

Support for Claim #4: We performed a chi-squared test for independence on the variable checkup1, where participants were asked the length of time between their last checkup. The test signifies a relationship between time period and checkup frequency (p=1.63e-20). Looking at the graph of the distribution, it appears that checkups were more frequent in the 2015-2018 (post-ACA) era.