Homework 5

ECON 470, Spring 2025

Sushmita Rajan

```
if (!require("pacman")) install.packages("pacman")
```

```
Loading required package: pacman
```

```
pacman::p_load(tidyverse, ggplot2, dplyr, lubridate, stringr, readxl, data.table, gdata,model

load("/Users/sushmitarajan/econ470spring2025/Homework5/submission1/results/Hwk5_workspace.RDa
```

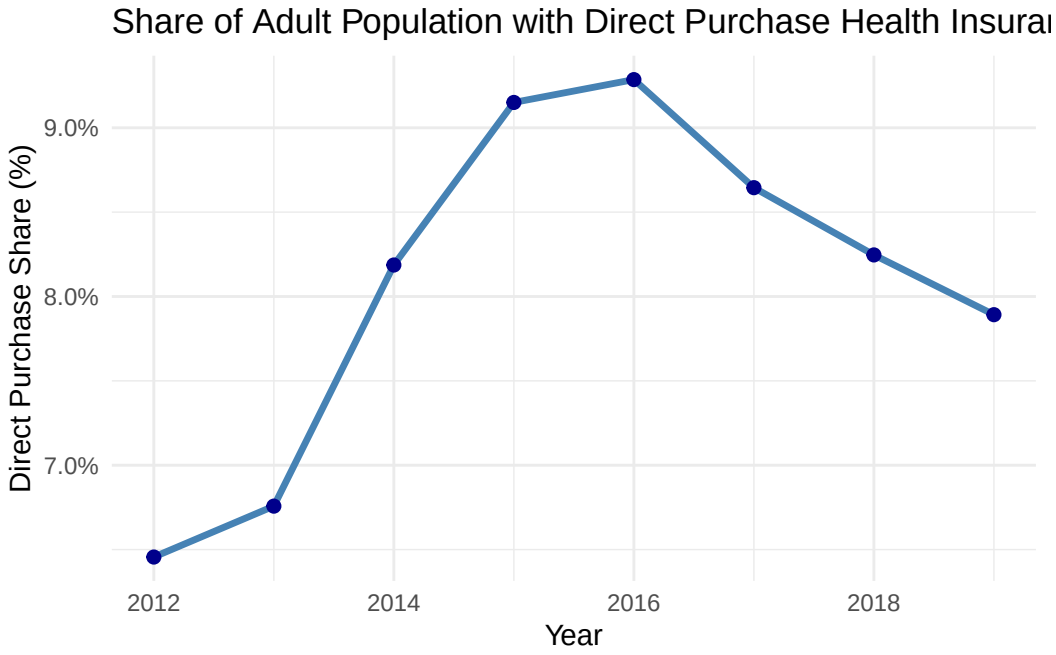
[Click here to visit my GitHub repository](https://github.com/sarajan03/econ470spring2025/tree/main/Homew

\newpage

1.Plot the share of the adult population with direct purchase health insurance over time.

```
#| echo: false

print(q1)
```



\newpage

2. Discuss the reduction in direct purchase health insurance in later years. Can you list a couple of policies that might have affected the success of the direct purchase insurance market?

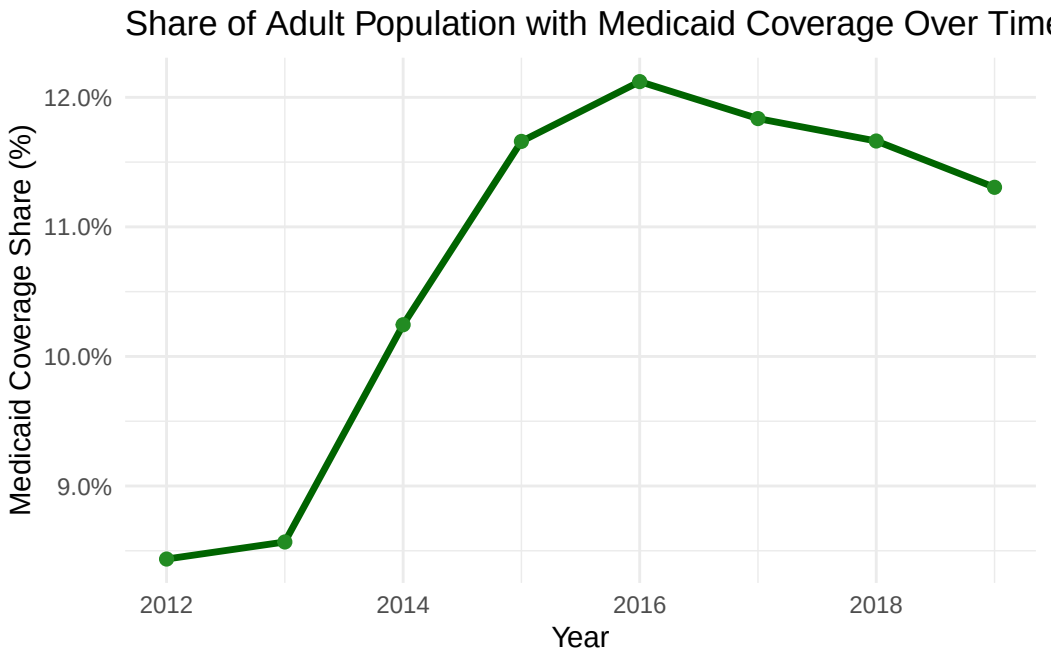
> In the later years, we observe a reduction in the share of adults with direct purchase health insurance. This decline can be attributed to a few significant factors. One of the most important policies influencing this trend was the Affordable Care Act (ACA), which provided more affordable options through the Medicaid expansion and the health insurance marketplaces. Another key policy was the introduction of the individual mandate penalty, which incentivized individuals to seek other coverage options beyond direct purchase.

\newpage

3.Plot the share of the adult population with Medicaid over time.

```
#| echo: false

print(q3)
```

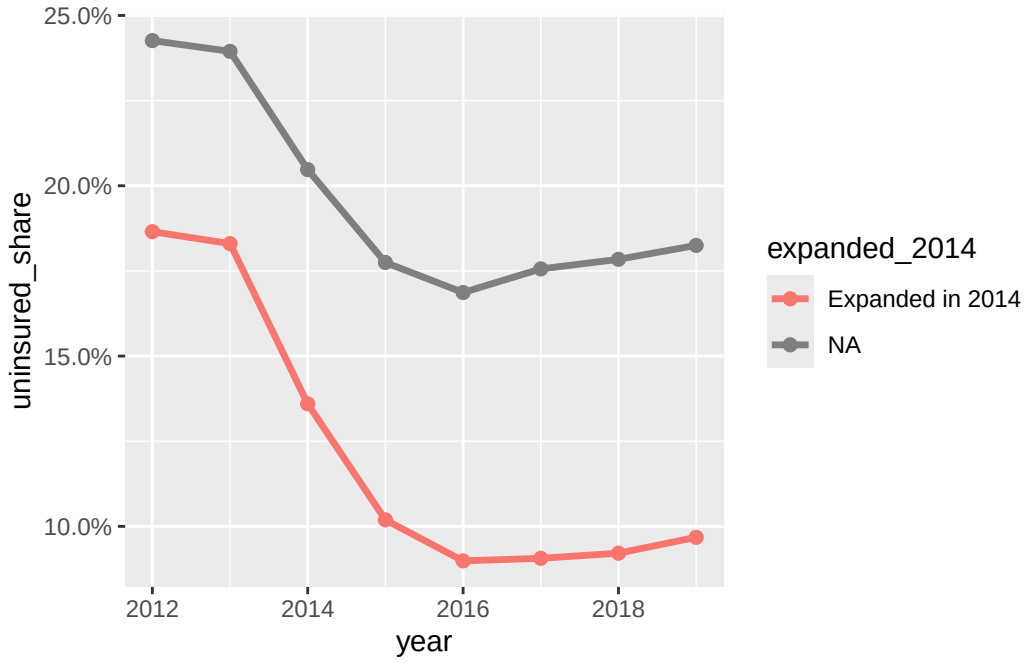


\newpage

4. Plot the share of uninsured over time, separately by states that expanded Medicaid in 2014 versus those that did not. Drop all states that expanded after 2014.

```
#| echo: false

print(q4)
```



\newpage

5. Calculate the average percent of uninsured individuals in 2012 and 2015, separately for expansion and non-expansion states. Present your results in a basic 2x2 DD table.

```
#| echo: false

q5
```

```
# A tibble: 2 x 4
  expanded_2014 `2012` `2015`    diff
  <chr>          <dbl>  <dbl>   <dbl>
1 Expanded       0.187  0.102 -0.0846
2 <NA>           0.243  0.177 -0.0651
```

\newpage

6. Estimate the effect of Medicaid expansion on the uninsurance rate using a standard DD regression estimator, again focusing only on states that expanded in 2014 versus those that never expanded.

Table: Regression Output with Clustered SE

term	estimate	std.error	statistic	p.value
postTRUE	-0.054	0.009	-6.155	0.000
expand_everTRUE	-0.046	0.011	-4.174	0.000
postTRUE:expand_everTRUE	-0.019	0.012	-1.565	0.118

\newpage

7. Include state and year *fixed effects* in your estimates. Try using the `lfe` or `fixest` package to estimate this instead of directly including the fixed effects.

```
#| echo: false

q7 <- kable(final_table, digits = 3, caption = "Regression Results (DD and TWFE models) with
print(q7)
```

Table: Regression Results (DD and TWFE models) with Clustered SE

term	statistic	DD	TWFE
postTRUE	estimate	-5.800000e-02	NA
postTRUE	std.error	4.000000e-03	NA
postTRUE	statistic	-1.418400e+01	NA
postTRUE	p.value	0.000000e+00	NA
expand_everTRUE	estimate	-2.600000e-02	NA
expand_everTRUE	std.error	5.000000e-03	NA
expand_everTRUE	statistic	-5.161000e+00	NA
expand_everTRUE	p.value	0.000000e+00	NA
treat	estimate	-1.700000e-02	-0.017
treat	std.error	7.000000e-03	0.006

treat	statistic	-2.595000e+00	-2.802
treat	p.value	1.000000e-02	0.005
factor(State)Alaska	estimate	7.100000e-02	NA
factor(State)Alaska	std.error	0.000000e+00	NA
factor(State)Alaska	statistic	5.178289e+14	NA
factor(State)Alaska	p.value	0.000000e+00	NA
factor(State)Arizona	estimate	4.600000e-02	NA
factor(State)Arizona	std.error	0.000000e+00	NA
factor(State)Arizona	statistic	4.755136e+14	NA
factor(State)Arizona	p.value	0.000000e+00	NA
factor(State)Arkansas	estimate	3.400000e-02	NA
factor(State)Arkansas	std.error	0.000000e+00	NA
factor(State)Arkansas	statistic	1.804953e+14	NA
factor(State)Arkansas	p.value	0.000000e+00	NA
factor(State)California	estimate	2.300000e-02	NA
factor(State)California	std.error	0.000000e+00	NA
factor(State)California	statistic	1.239335e+14	NA
factor(State)California	p.value	0.000000e+00	NA
factor(State)Colorado	estimate	5.000000e-03	NA
factor(State)Colorado	std.error	0.000000e+00	NA
factor(State)Colorado	statistic	3.019066e+13	NA
factor(State)Colorado	p.value	0.000000e+00	NA
factor(State)Connecticut	estimate	-3.400000e-02	NA
factor(State)Connecticut	std.error	0.000000e+00	NA
factor(State)Connecticut	statistic	-2.102696e+14	NA
factor(State)Connecticut	p.value	0.000000e+00	NA
factor(State)Delaware	estimate	-3.000000e-02	NA
factor(State)Delaware	std.error	0.000000e+00	NA
factor(State)Delaware	statistic	-1.980227e+14	NA
factor(State)Delaware	p.value	0.000000e+00	NA
factor(State)District of Columbia	estimate	-6.800000e-02	NA
factor(State)District of Columbia	std.error	0.000000e+00	NA
factor(State)District of Columbia	statistic	-4.696099e+14	NA
factor(State)District of Columbia	p.value	0.000000e+00	NA
factor(State)Florida	estimate	5.600000e-02	NA
factor(State)Florida	std.error	0.000000e+00	NA
factor(State)Florida	statistic	3.885263e+14	NA
factor(State)Florida	p.value	0.000000e+00	NA
factor(State)Georgia	estimate	4.400000e-02	NA
factor(State)Georgia	std.error	0.000000e+00	NA
factor(State)Georgia	statistic	3.065949e+14	NA
factor(State)Georgia	p.value	0.000000e+00	NA
factor(State)Hawaii	estimate	-5.800000e-02	NA

factor(State)Hawaii	std.error	0.000000e+00	NA
factor(State)Hawaii	statistic	-4.020781e+14	NA
factor(State)Hawaii	p.value	0.000000e+00	NA
factor(State)Idaho	estimate	1.600000e-02	NA
factor(State)Idaho	std.error	0.000000e+00	NA
factor(State)Idaho	statistic	1.104090e+14	NA
factor(State)Idaho	p.value	0.000000e+00	NA
factor(State)Illinois	estimate	0.000000e+00	NA
factor(State)Illinois	std.error	0.000000e+00	NA
factor(State)Illinois	statistic	-2.811184e+12	NA
factor(State)Illinois	p.value	0.000000e+00	NA
factor(State)Indiana	estimate	1.400000e-02	NA
factor(State)Indiana	std.error	0.000000e+00	NA
factor(State)Indiana	statistic	9.495132e+13	NA
factor(State)Indiana	p.value	0.000000e+00	NA
factor(State)Iowa	estimate	-4.400000e-02	NA
factor(State)Iowa	std.error	0.000000e+00	NA
factor(State)Iowa	statistic	-3.008274e+14	NA
factor(State)Iowa	p.value	0.000000e+00	NA
factor(State)Kansas	estimate	-2.400000e-02	NA
factor(State)Kansas	std.error	0.000000e+00	NA
factor(State)Kansas	statistic	-1.644615e+14	NA
factor(State)Kansas	p.value	0.000000e+00	NA
factor(State)Kentucky	estimate	-1.100000e-02	NA
factor(State)Kentucky	std.error	0.000000e+00	NA
factor(State)Kentucky	statistic	-7.985008e+13	NA
factor(State)Kentucky	p.value	0.000000e+00	NA
factor(State)Louisiana	estimate	5.000000e-02	NA
factor(State)Louisiana	std.error	0.000000e+00	NA
factor(State)Louisiana	statistic	3.474928e+14	NA
factor(State)Louisiana	p.value	0.000000e+00	NA
factor(State)Maine	estimate	2.000000e-03	NA
factor(State)Maine	std.error	0.000000e+00	NA
factor(State)Maine	statistic	1.684582e+13	NA
factor(State)Maine	p.value	0.000000e+00	NA
factor(State)Maryland	estimate	-2.400000e-02	NA
factor(State)Maryland	std.error	0.000000e+00	NA
factor(State)Maryland	statistic	-1.644876e+14	NA
factor(State)Maryland	p.value	0.000000e+00	NA
factor(State)Massachusetts	estimate	-8.300000e-02	NA
factor(State)Massachusetts	std.error	0.000000e+00	NA
factor(State)Massachusetts	statistic	-6.067121e+14	NA
factor(State)Massachusetts	p.value	0.000000e+00	NA

factor(State)Michigan	estimate	-2.100000e-02	NA
factor(State)Michigan	std.error	0.000000e+00	NA
factor(State)Michigan	statistic	-1.412152e+14	NA
factor(State)Michigan	p.value	0.000000e+00	NA
factor(State)Minnesota	estimate	-5.200000e-02	NA
factor(State)Minnesota	std.error	0.000000e+00	NA
factor(State)Minnesota	statistic	-3.600271e+14	NA
factor(State)Minnesota	p.value	0.000000e+00	NA
factor(State)Mississippi	estimate	4.000000e-02	NA
factor(State)Mississippi	std.error	0.000000e+00	NA
factor(State)Mississippi	statistic	2.798565e+14	NA
factor(State)Mississippi	p.value	0.000000e+00	NA
factor(State)Missouri	estimate	-1.400000e-02	NA
factor(State)Missouri	std.error	0.000000e+00	NA
factor(State)Missouri	statistic	-9.333400e+13	NA
factor(State)Missouri	p.value	0.000000e+00	NA
factor(State)Montana	estimate	3.800000e-02	NA
factor(State)Montana	std.error	0.000000e+00	NA
factor(State)Montana	statistic	2.552310e+14	NA
factor(State)Montana	p.value	0.000000e+00	NA
factor(State)Nebraska	estimate	-3.500000e-02	NA
factor(State)Nebraska	std.error	0.000000e+00	NA
factor(State)Nebraska	statistic	-2.438007e+14	NA
factor(State)Nebraska	p.value	0.000000e+00	NA
factor(State)Nevada	estimate	6.500000e-02	NA
factor(State)Nevada	std.error	0.000000e+00	NA
factor(State)Nevada	statistic	4.600766e+14	NA
factor(State)Nevada	p.value	0.000000e+00	NA
factor(State)New Hampshire	estimate	-1.800000e-02	NA
factor(State)New Hampshire	std.error	0.000000e+00	NA
factor(State)New Hampshire	statistic	-1.243662e+14	NA
factor(State)New Hampshire	p.value	0.000000e+00	NA
factor(State)New Jersey	estimate	9.000000e-03	NA
factor(State)New Jersey	std.error	0.000000e+00	NA
factor(State)New Jersey	statistic	5.904178e+13	NA
factor(State)New Jersey	p.value	0.000000e+00	NA
factor(State)New Mexico	estimate	5.500000e-02	NA
factor(State)New Mexico	std.error	0.000000e+00	NA
factor(State)New Mexico	statistic	3.857146e+14	NA
factor(State)New Mexico	p.value	0.000000e+00	NA
factor(State)New York	estimate	-2.100000e-02	NA
factor(State)New York	std.error	0.000000e+00	NA
factor(State)New York	statistic	-1.411681e+14	NA

factor(State)New York	p.value	0.000000e+00	NA
factor(State)North Carolina	estimate	1.500000e-02	NA
factor(State)North Carolina	std.error	0.000000e+00	NA
factor(State)North Carolina	statistic	1.054463e+14	NA
factor(State)North Carolina	p.value	0.000000e+00	NA
factor(State)North Dakota	estimate	-2.500000e-02	NA
factor(State)North Dakota	std.error	0.000000e+00	NA
factor(State)North Dakota	statistic	-1.735515e+14	NA
factor(State)North Dakota	p.value	0.000000e+00	NA
factor(State)Ohio	estimate	-1.900000e-02	NA
factor(State)Ohio	std.error	0.000000e+00	NA
factor(State)Ohio	statistic	-1.272539e+14	NA
factor(State)Ohio	p.value	0.000000e+00	NA
factor(State)Oklahoma	estimate	5.100000e-02	NA
factor(State)Oklahoma	std.error	0.000000e+00	NA
factor(State)Oklahoma	statistic	3.537050e+14	NA
factor(State)Oklahoma	p.value	0.000000e+00	NA
factor(State)Oregon	estimate	6.000000e-03	NA
factor(State)Oregon	std.error	0.000000e+00	NA
factor(State)Oregon	statistic	3.887026e+13	NA
factor(State)Oregon	p.value	0.000000e+00	NA
factor(State)Pennsylvania	estimate	-2.900000e-02	NA
factor(State)Pennsylvania	std.error	0.000000e+00	NA
factor(State)Pennsylvania	statistic	-1.970444e+14	NA
factor(State)Pennsylvania	p.value	0.000000e+00	NA
factor(State)Rhode Island	estimate	-3.400000e-02	NA
factor(State)Rhode Island	std.error	0.000000e+00	NA
factor(State)Rhode Island	statistic	-2.287084e+14	NA
factor(State)Rhode Island	p.value	0.000000e+00	NA
factor(State)South Carolina	estimate	1.700000e-02	NA
factor(State)South Carolina	std.error	0.000000e+00	NA
factor(State)South Carolina	statistic	1.196245e+14	NA
factor(State)South Carolina	p.value	0.000000e+00	NA
factor(State)South Dakota	estimate	-2.300000e-02	NA
factor(State)South Dakota	std.error	0.000000e+00	NA
factor(State)South Dakota	statistic	-1.566301e+14	NA
factor(State)South Dakota	p.value	0.000000e+00	NA
factor(State)Tennessee	estimate	-4.000000e-03	NA
factor(State)Tennessee	std.error	0.000000e+00	NA
factor(State)Tennessee	statistic	-2.726691e+13	NA
factor(State)Tennessee	p.value	0.000000e+00	NA
factor(State)Texas	estimate	9.000000e-02	NA
factor(State)Texas	std.error	0.000000e+00	NA

factor(State)Texas	statistic	6.177392e+14	NA
factor(State)Texas	p.value	0.000000e+00	NA
factor(State)Utah	estimate	-2.200000e-02	NA
factor(State)Utah	std.error	0.000000e+00	NA
factor(State)Utah	statistic	-1.490346e+14	NA
factor(State)Utah	p.value	0.000000e+00	NA
factor(State)Vermont	estimate	-5.500000e-02	NA
factor(State)Vermont	std.error	0.000000e+00	NA
factor(State)Vermont	statistic	-3.648612e+14	NA
factor(State)Vermont	p.value	0.000000e+00	NA
factor(State)Virginia	estimate	1.100000e-02	NA
factor(State)Virginia	std.error	0.000000e+00	NA
factor(State)Virginia	statistic	7.118503e+13	NA
factor(State)Virginia	p.value	0.000000e+00	NA
factor(State)Washington	estimate	-4.000000e-03	NA
factor(State)Washington	std.error	0.000000e+00	NA
factor(State)Washington	statistic	-2.866093e+13	NA
factor(State)Washington	p.value	0.000000e+00	NA
factor(State)Wisconsin	estimate	-7.400000e-02	NA
factor(State)Wisconsin	std.error	0.000000e+00	NA
factor(State)Wisconsin	statistic	-5.127263e+14	NA
factor(State)Wisconsin	p.value	0.000000e+00	NA
factor(State)Wyoming	estimate	4.000000e-03	NA
factor(State)Wyoming	std.error	0.000000e+00	NA
factor(State)Wyoming	statistic	2.705441e+13	NA
factor(State)Wyoming	p.value	0.000000e+00	NA
factor(year)2013	estimate	-2.000000e-03	NA
factor(year)2013	std.error	1.000000e-03	NA
factor(year)2013	statistic	-2.255000e+00	NA
factor(year)2013	p.value	2.500000e-02	NA
factor(year)2014	estimate	3.100000e-02	NA
factor(year)2014	std.error	3.000000e-03	NA
factor(year)2014	statistic	1.075800e+01	NA
factor(year)2014	p.value	0.000000e+00	NA
factor(year)2015	estimate	3.000000e-03	NA
factor(year)2015	std.error	2.000000e-03	NA
factor(year)2015	statistic	1.715000e+00	NA
factor(year)2015	p.value	8.700000e-02	NA
factor(year)2016	estimate	-8.000000e-03	NA
factor(year)2016	std.error	1.000000e-03	NA
factor(year)2016	statistic	-5.270000e+00	NA
factor(year)2016	p.value	0.000000e+00	NA
factor(year)2017	estimate	-5.000000e-03	NA

factor(year)2017	std.error	1.000000e-03	NA
factor(year)2017	statistic	-3.991000e+00	NA
factor(year)2017	p.value	0.000000e+00	NA
factor(year)2018	estimate	-4.000000e-03	NA
factor(year)2018	std.error	1.000000e-03	NA
factor(year)2018	statistic	-4.357000e+00	NA
factor(year)2018	p.value	0.000000e+00	NA

\newpage

8. Repeat the analysis in question 7 but include all states (even those that expanded after 2014). Are your results different? If so, why?

Table: Regression Results (DD and TWFE models) with Clustered SE, Including All States

term	statistic	DD	TWFE
postTRUE	estimate	-5.800000e-02	NA
postTRUE	std.error	4.000000e-03	NA
postTRUE	statistic	-1.418400e+01	NA
postTRUE	p.value	0.000000e+00	NA
expand_everTRUE	estimate	-2.600000e-02	NA
expand_everTRUE	std.error	5.000000e-03	NA
expand_everTRUE	statistic	-5.161000e+00	NA
expand_everTRUE	p.value	0.000000e+00	NA
treat	estimate	-1.700000e-02	-0.017
treat	std.error	7.000000e-03	0.006
treat	statistic	-2.595000e+00	-2.802
treat	p.value	1.000000e-02	0.005
factor(State)Alaska	estimate	7.100000e-02	NA
factor(State)Alaska	std.error	0.000000e+00	NA
factor(State)Alaska	statistic	5.178289e+14	NA
factor(State)Alaska	p.value	0.000000e+00	NA
factor(State)Arizona	estimate	4.600000e-02	NA
factor(State)Arizona	std.error	0.000000e+00	NA
factor(State)Arizona	statistic	4.755136e+14	NA
factor(State)Arizona	p.value	0.000000e+00	NA
factor(State)Arkansas	estimate	3.400000e-02	NA
factor(State)Arkansas	std.error	0.000000e+00	NA
factor(State)Arkansas	statistic	1.804953e+14	NA

factor(State)Arkansas	p.value	0.000000e+00	NA
factor(State)California	estimate	2.300000e-02	NA
factor(State)California	std.error	0.000000e+00	NA
factor(State)California	statistic	1.239335e+14	NA
factor(State)California	p.value	0.000000e+00	NA
factor(State)Colorado	estimate	5.000000e-03	NA
factor(State)Colorado	std.error	0.000000e+00	NA
factor(State)Colorado	statistic	3.019066e+13	NA
factor(State)Colorado	p.value	0.000000e+00	NA
factor(State)Connecticut	estimate	-3.400000e-02	NA
factor(State)Connecticut	std.error	0.000000e+00	NA
factor(State)Connecticut	statistic	-2.102696e+14	NA
factor(State)Connecticut	p.value	0.000000e+00	NA
factor(State)Delaware	estimate	-3.000000e-02	NA
factor(State)Delaware	std.error	0.000000e+00	NA
factor(State)Delaware	statistic	-1.980227e+14	NA
factor(State)Delaware	p.value	0.000000e+00	NA
factor(State)District of Columbia	estimate	-6.800000e-02	NA
factor(State)District of Columbia	std.error	0.000000e+00	NA
factor(State)District of Columbia	statistic	-4.696099e+14	NA
factor(State)District of Columbia	p.value	0.000000e+00	NA
factor(State)Florida	estimate	5.600000e-02	NA
factor(State)Florida	std.error	0.000000e+00	NA
factor(State)Florida	statistic	3.885263e+14	NA
factor(State)Florida	p.value	0.000000e+00	NA
factor(State)Georgia	estimate	4.400000e-02	NA
factor(State)Georgia	std.error	0.000000e+00	NA
factor(State)Georgia	statistic	3.065949e+14	NA
factor(State)Georgia	p.value	0.000000e+00	NA
factor(State)Hawaii	estimate	-5.800000e-02	NA
factor(State)Hawaii	std.error	0.000000e+00	NA
factor(State)Hawaii	statistic	-4.020781e+14	NA
factor(State)Hawaii	p.value	0.000000e+00	NA
factor(State)Idaho	estimate	1.600000e-02	NA
factor(State)Idaho	std.error	0.000000e+00	NA
factor(State)Idaho	statistic	1.104090e+14	NA
factor(State)Idaho	p.value	0.000000e+00	NA
factor(State)Illinois	estimate	0.000000e+00	NA
factor(State)Illinois	std.error	0.000000e+00	NA
factor(State)Illinois	statistic	-2.811184e+12	NA
factor(State)Illinois	p.value	0.000000e+00	NA
factor(State)Indiana	estimate	1.400000e-02	NA
factor(State)Indiana	std.error	0.000000e+00	NA

factor(State)Indiana	statistic	9.495132e+13	NA
factor(State)Indiana	p.value	0.000000e+00	NA
factor(State)Iowa	estimate	-4.400000e-02	NA
factor(State)Iowa	std.error	0.000000e+00	NA
factor(State)Iowa	statistic	-3.008274e+14	NA
factor(State)Iowa	p.value	0.000000e+00	NA
factor(State)Kansas	estimate	-2.400000e-02	NA
factor(State)Kansas	std.error	0.000000e+00	NA
factor(State)Kansas	statistic	-1.644615e+14	NA
factor(State)Kansas	p.value	0.000000e+00	NA
factor(State)Kentucky	estimate	-1.100000e-02	NA
factor(State)Kentucky	std.error	0.000000e+00	NA
factor(State)Kentucky	statistic	-7.985008e+13	NA
factor(State)Kentucky	p.value	0.000000e+00	NA
factor(State)Louisiana	estimate	5.000000e-02	NA
factor(State)Louisiana	std.error	0.000000e+00	NA
factor(State)Louisiana	statistic	3.474928e+14	NA
factor(State)Louisiana	p.value	0.000000e+00	NA
factor(State)Maine	estimate	2.000000e-03	NA
factor(State)Maine	std.error	0.000000e+00	NA
factor(State)Maine	statistic	1.684582e+13	NA
factor(State)Maine	p.value	0.000000e+00	NA
factor(State)Maryland	estimate	-2.400000e-02	NA
factor(State)Maryland	std.error	0.000000e+00	NA
factor(State)Maryland	statistic	-1.644876e+14	NA
factor(State)Maryland	p.value	0.000000e+00	NA
factor(State)Massachusetts	estimate	-8.300000e-02	NA
factor(State)Massachusetts	std.error	0.000000e+00	NA
factor(State)Massachusetts	statistic	-6.067121e+14	NA
factor(State)Massachusetts	p.value	0.000000e+00	NA
factor(State)Michigan	estimate	-2.100000e-02	NA
factor(State)Michigan	std.error	0.000000e+00	NA
factor(State)Michigan	statistic	-1.412152e+14	NA
factor(State)Michigan	p.value	0.000000e+00	NA
factor(State)Minnesota	estimate	-5.200000e-02	NA
factor(State)Minnesota	std.error	0.000000e+00	NA
factor(State)Minnesota	statistic	-3.600271e+14	NA
factor(State)Minnesota	p.value	0.000000e+00	NA
factor(State)Mississippi	estimate	4.000000e-02	NA
factor(State)Mississippi	std.error	0.000000e+00	NA
factor(State)Mississippi	statistic	2.798565e+14	NA
factor(State)Mississippi	p.value	0.000000e+00	NA
factor(State)Missouri	estimate	-1.400000e-02	NA

factor(State)Missouri	std.error	0.000000e+00	NA
factor(State)Missouri	statistic	-9.333400e+13	NA
factor(State)Missouri	p.value	0.000000e+00	NA
factor(State)Montana	estimate	3.800000e-02	NA
factor(State)Montana	std.error	0.000000e+00	NA
factor(State)Montana	statistic	2.552310e+14	NA
factor(State)Montana	p.value	0.000000e+00	NA
factor(State)Nebraska	estimate	-3.500000e-02	NA
factor(State)Nebraska	std.error	0.000000e+00	NA
factor(State)Nebraska	statistic	-2.438007e+14	NA
factor(State)Nebraska	p.value	0.000000e+00	NA
factor(State)Nevada	estimate	6.500000e-02	NA
factor(State)Nevada	std.error	0.000000e+00	NA
factor(State)Nevada	statistic	4.600766e+14	NA
factor(State)Nevada	p.value	0.000000e+00	NA
factor(State)New Hampshire	estimate	-1.800000e-02	NA
factor(State)New Hampshire	std.error	0.000000e+00	NA
factor(State)New Hampshire	statistic	-1.243662e+14	NA
factor(State)New Hampshire	p.value	0.000000e+00	NA
factor(State)New Jersey	estimate	9.000000e-03	NA
factor(State)New Jersey	std.error	0.000000e+00	NA
factor(State)New Jersey	statistic	5.904178e+13	NA
factor(State)New Jersey	p.value	0.000000e+00	NA
factor(State)New Mexico	estimate	5.500000e-02	NA
factor(State)New Mexico	std.error	0.000000e+00	NA
factor(State)New Mexico	statistic	3.857146e+14	NA
factor(State)New Mexico	p.value	0.000000e+00	NA
factor(State)New York	estimate	-2.100000e-02	NA
factor(State)New York	std.error	0.000000e+00	NA
factor(State)New York	statistic	-1.411681e+14	NA
factor(State)New York	p.value	0.000000e+00	NA
factor(State)North Carolina	estimate	1.500000e-02	NA
factor(State)North Carolina	std.error	0.000000e+00	NA
factor(State)North Carolina	statistic	1.054463e+14	NA
factor(State)North Carolina	p.value	0.000000e+00	NA
factor(State)North Dakota	estimate	-2.500000e-02	NA
factor(State)North Dakota	std.error	0.000000e+00	NA
factor(State)North Dakota	statistic	-1.735515e+14	NA
factor(State)North Dakota	p.value	0.000000e+00	NA
factor(State)Ohio	estimate	-1.900000e-02	NA
factor(State)Ohio	std.error	0.000000e+00	NA
factor(State)Ohio	statistic	-1.272539e+14	NA
factor(State)Ohio	p.value	0.000000e+00	NA

factor(State)Oklahoma	estimate	5.100000e-02	NA
factor(State)Oklahoma	std.error	0.000000e+00	NA
factor(State)Oklahoma	statistic	3.537050e+14	NA
factor(State)Oklahoma	p.value	0.000000e+00	NA
factor(State)Oregon	estimate	6.000000e-03	NA
factor(State)Oregon	std.error	0.000000e+00	NA
factor(State)Oregon	statistic	3.887026e+13	NA
factor(State)Oregon	p.value	0.000000e+00	NA
factor(State)Pennsylvania	estimate	-2.900000e-02	NA
factor(State)Pennsylvania	std.error	0.000000e+00	NA
factor(State)Pennsylvania	statistic	-1.970444e+14	NA
factor(State)Pennsylvania	p.value	0.000000e+00	NA
factor(State)Rhode Island	estimate	-3.400000e-02	NA
factor(State)Rhode Island	std.error	0.000000e+00	NA
factor(State)Rhode Island	statistic	-2.287084e+14	NA
factor(State)Rhode Island	p.value	0.000000e+00	NA
factor(State)South Carolina	estimate	1.700000e-02	NA
factor(State)South Carolina	std.error	0.000000e+00	NA
factor(State)South Carolina	statistic	1.196245e+14	NA
factor(State)South Carolina	p.value	0.000000e+00	NA
factor(State)South Dakota	estimate	-2.300000e-02	NA
factor(State)South Dakota	std.error	0.000000e+00	NA
factor(State)South Dakota	statistic	-1.566301e+14	NA
factor(State)South Dakota	p.value	0.000000e+00	NA
factor(State)Tennessee	estimate	-4.000000e-03	NA
factor(State)Tennessee	std.error	0.000000e+00	NA
factor(State)Tennessee	statistic	-2.726691e+13	NA
factor(State)Tennessee	p.value	0.000000e+00	NA
factor(State)Texas	estimate	9.000000e-02	NA
factor(State)Texas	std.error	0.000000e+00	NA
factor(State)Texas	statistic	6.177392e+14	NA
factor(State)Texas	p.value	0.000000e+00	NA
factor(State)Utah	estimate	-2.200000e-02	NA
factor(State)Utah	std.error	0.000000e+00	NA
factor(State)Utah	statistic	-1.490346e+14	NA
factor(State)Utah	p.value	0.000000e+00	NA
factor(State)Vermont	estimate	-5.500000e-02	NA
factor(State)Vermont	std.error	0.000000e+00	NA
factor(State)Vermont	statistic	-3.648612e+14	NA
factor(State)Vermont	p.value	0.000000e+00	NA
factor(State)Virginia	estimate	1.100000e-02	NA
factor(State)Virginia	std.error	0.000000e+00	NA
factor(State)Virginia	statistic	7.118503e+13	NA

factor(State)Virginia	p.value	0.000000e+00	NA
factor(State)Washington	estimate	-4.000000e-03	NA
factor(State)Washington	std.error	0.000000e+00	NA
factor(State)Washington	statistic	-2.866093e+13	NA
factor(State)Washington	p.value	0.000000e+00	NA
factor(State)Wisconsin	estimate	-7.400000e-02	NA
factor(State)Wisconsin	std.error	0.000000e+00	NA
factor(State)Wisconsin	statistic	-5.127263e+14	NA
factor(State)Wisconsin	p.value	0.000000e+00	NA
factor(State)Wyoming	estimate	4.000000e-03	NA
factor(State)Wyoming	std.error	0.000000e+00	NA
factor(State)Wyoming	statistic	2.705441e+13	NA
factor(State)Wyoming	p.value	0.000000e+00	NA
factor(year)2013	estimate	-2.000000e-03	NA
factor(year)2013	std.error	1.000000e-03	NA
factor(year)2013	statistic	-2.255000e+00	NA
factor(year)2013	p.value	2.500000e-02	NA
factor(year)2014	estimate	3.100000e-02	NA
factor(year)2014	std.error	3.000000e-03	NA
factor(year)2014	statistic	1.075800e+01	NA
factor(year)2014	p.value	0.000000e+00	NA
factor(year)2015	estimate	3.000000e-03	NA
factor(year)2015	std.error	2.000000e-03	NA
factor(year)2015	statistic	1.715000e+00	NA
factor(year)2015	p.value	8.700000e-02	NA
factor(year)2016	estimate	-8.000000e-03	NA
factor(year)2016	std.error	1.000000e-03	NA
factor(year)2016	statistic	-5.270000e+00	NA
factor(year)2016	p.value	0.000000e+00	NA
factor(year)2017	estimate	-5.000000e-03	NA
factor(year)2017	std.error	1.000000e-03	NA
factor(year)2017	statistic	-3.991000e+00	NA
factor(year)2017	p.value	0.000000e+00	NA
factor(year)2018	estimate	-4.000000e-03	NA
factor(year)2018	std.error	1.000000e-03	NA
factor(year)2018	statistic	-4.357000e+00	NA
factor(year)2018	p.value	0.000000e+00	NA

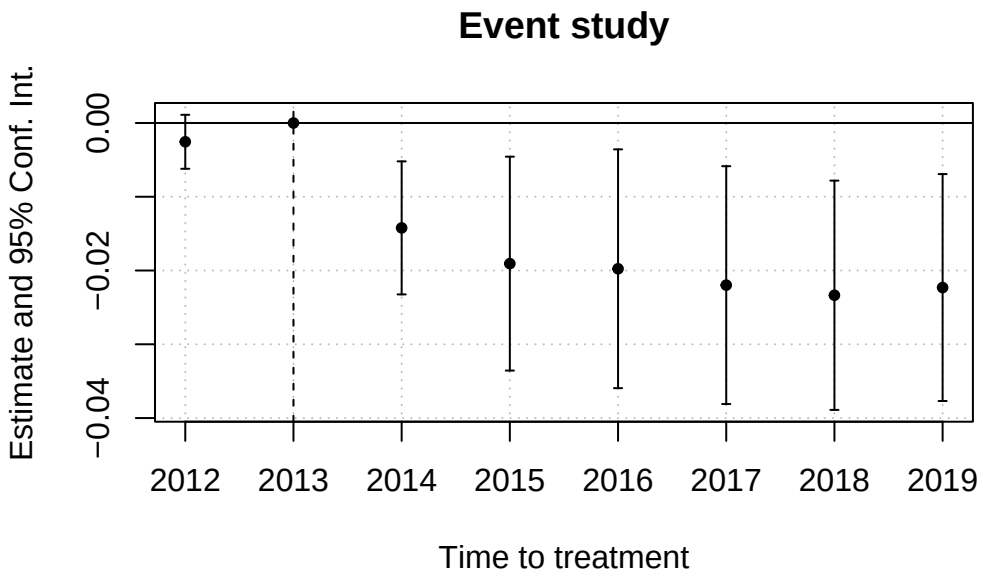
\newpage

9. Provide an "event study" graph showing the effects of Medicaid expansion in each year. Use the specification that includes state and year fixed effects, limited to states that expanded in 2014 or never expanded.

```
reg.dat <-acs_medicaid %>%
  filter(expand_year==2014 | is.na(expand_year), !is.na(expand_ever)) %>%
  mutate(perc_unins=uninsured/adult_pop,
         post = (year>=2014),
         treat=post*expand_ever)

mod.twfe <- feols(perc_unins~i(year, expand_ever, ref=2013) | State + year,
                  cluster=~State,
                  data=reg.dat)

q9 <- iplot(mod.twfe,
      xlab = 'Time to treatment',
      main = 'Event study')
```



\newpage

10. Repeat part 9 but again include states that expanded after 2014. Note: this is tricky...you need to put all states onto "event time" to create this graph.

```
q10 <- iplot(mod.twfe,
      xlab = 'Year',  # Change x-axis label to 'Year'
      main = 'Event Study with States Expanding After 2014',
      xvar = "calendar_year")  # Set xvar to 'calendar_year' for the x-axis
```