ECON 470 HW5

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1 Instructions

In this assignment, you'll recreate the Insurance and Medicaid Expansion data and answer a few questions along the way. As with the prior assignments, the first step is to make sure you have the Insurance Access repository and downloaded all of the raw data sources. Once you have the data downloaded and the code running, answer the following questions:

2 Summarize the data

2.0.1 Question 1. Plot the share of insured individuals with direct purchase health insurance over time.

According to the U.S. Census Bureau, direct purchase health insurance, a type of private insurance, refers to a coverage through a plan purchased by an individual from a private company or through an exchange. Exchange plans include coverage purchased through the federal Health Insurance Marketplace as well as other state-based marketplaces and include both subsidized and unsubsidized plans. Figure 1 displays the share of insured individuals with direct purchase health insurance over time from 2012 to 2019.

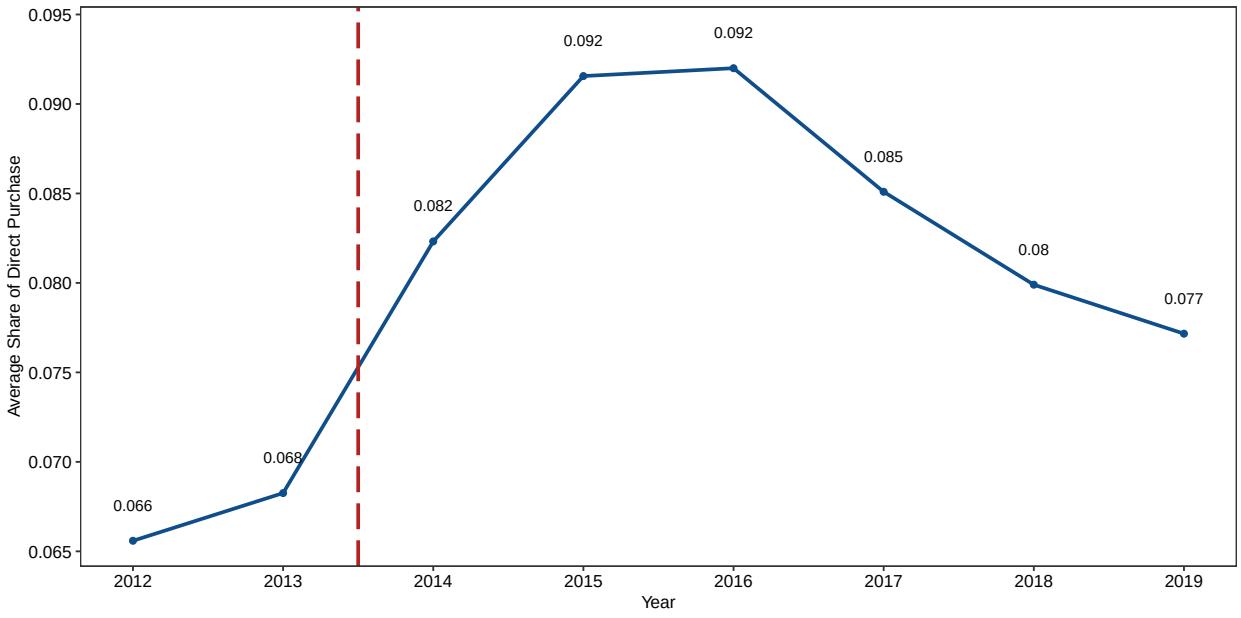

Figure 1: Average Share of Insured Individuals with Direct Purchase Health Insurance from 2012 to 2019

2.0.2 Question 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?

The share of insured individuals with direct purchase health insurance has been rapidly increasing from 2012 to 2016 and reached its peak in 2016. After staying roughly constant in 2015 and 2016, the share has been rapidly decreasing from 2016 to 2019. By 2019, the share of insured individuals with direct purchase health insurance has fallen to 0.077, below the 2014 level of 0.082.

Under the Patient Protection and Affordable Care Act (ACA) enacted in 2010, the **ACA individual mandate**, or the "Individual Shared Responsibility Provision," required most Americans to have health insurance coverage or face paying a penalty with the state or federal tax return. The ACA also created the Health Insurance Marketplace, which allows people to shop for and enroll in affordable medical insurance. This policy encouraged the demand for direct purchase health insurance as the previously uninsured individuals started to shop for private insurance options to meet the requirement.

Meanwhile, since 2016, the **ACA employer mandate** requires employers with 50 or more full-time equivalent (FTE) employees to provide health coverage to at least 95% of full-time employees and sets a minimum baseline of coverage and affordability. Employers who fail to comply face annual penalties if any of their employees end up qualifying for premium tax credits (subsidies) in the marketplace. Prior to 2016, employers with 50-99 employees were not required to offer coverage, and employers with 100 or more complied if they offered coverage to at least 70% of their full-time or FTE employees. This policy led to the more coverage by employer insurance, which reduced the number of people who need direct purchase insurance.

The **Tax Cuts and Jobs Act (TCJA)**, passed in 2017, eliminated the penalty under the ACA individual mandate, which consequently negatively affected the demand for direct purchase health insurance as people are no longer penalized for not having any insurance coverage. This policy significantly reduced the economic incentive for people to enroll in direct purchase insurance, which further contributes to the decrease in the share of direct purchase insurance.

2.0.3 Question 3. Plot the share of insured individuals with Medicaid over time.

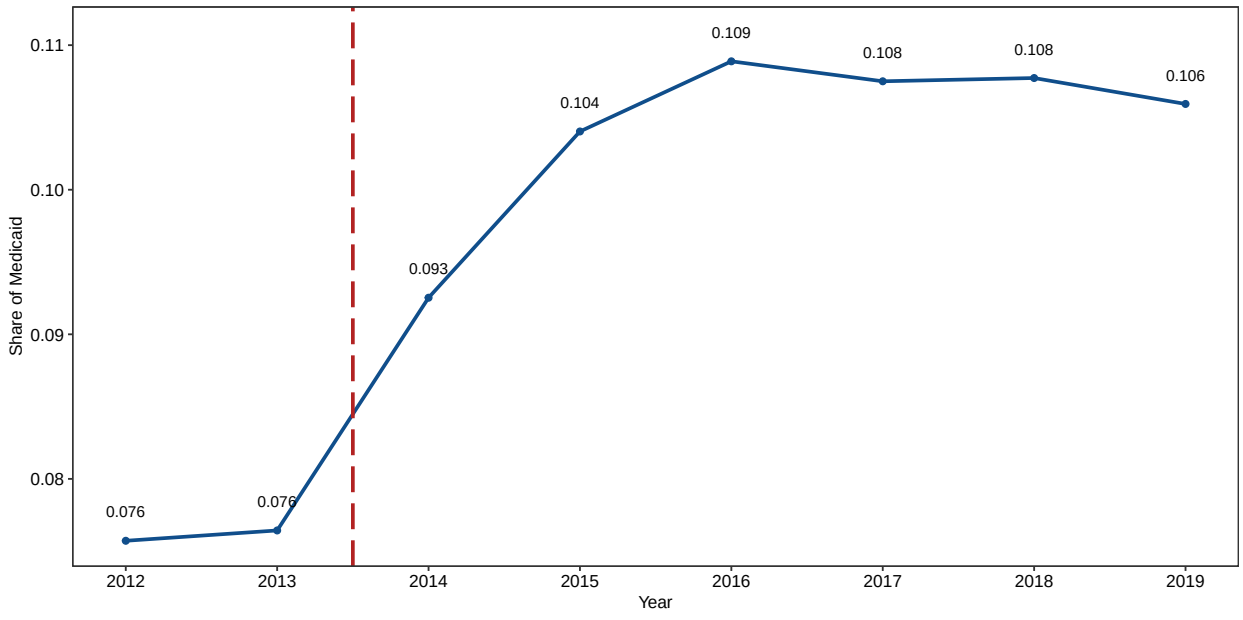

Figure 2: Share of Insured Individuals with Medicaid from 2012 to 2019

Figure 2 displays the share of insured individuals with Medicaid over time from 2012 to 2019, which has been rapidly increasing from 2012 to 2016 and later decreased slightly. Under the Medicaid expansion guideline, Medicaid eligibility is extended to adults under the age of 65 with incomes up to 138% of the federal poverty level/FPL (133% plus a 5% income disregard). However, since the Supreme Court ruling in June 2012, states have the option to decide whether to expand or not. Only 26 states chose to expand when Medicaid expansion first took effect in 2014. By 2016, 31 states have chosen to expand. Later, 2 more states, Maine and Virginia, expanded in 2019. Since most states that are willing to expand had expanded, the share of insured individuals with Medicaid remained at a stable level after 2016.

2.0.4 Question 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.

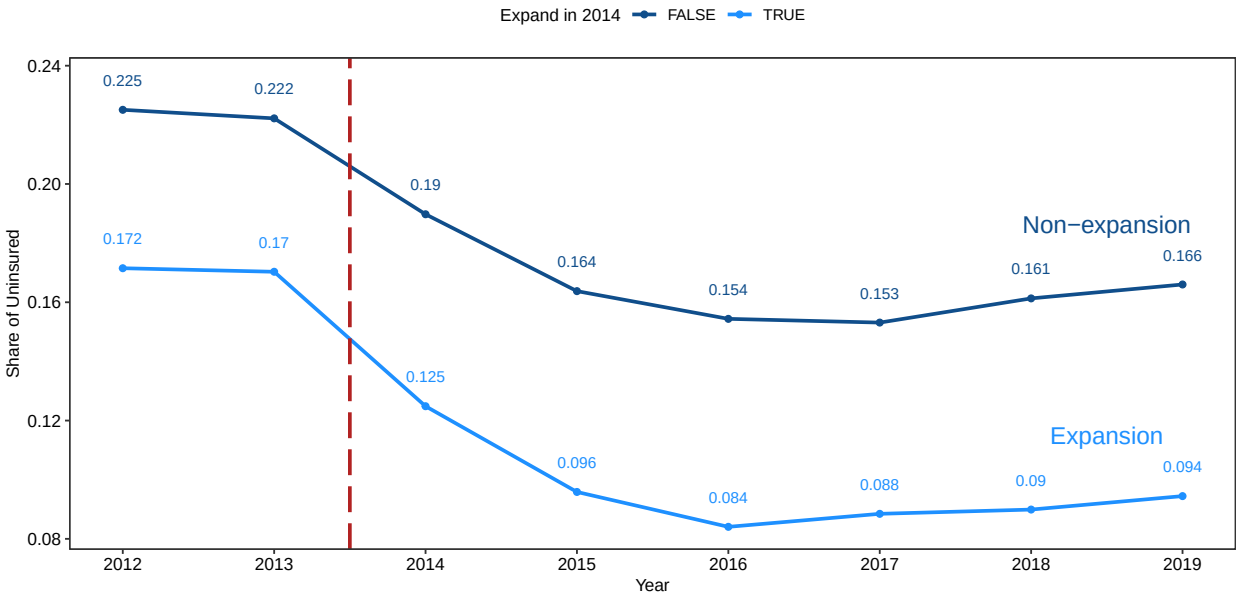

Figure 3: Share of Uninsured Individuals by If Expanded in 2014 from 2012 to 2019

Figure 3 displays the share of uninsured individuals over time from 2012 to 2019, separately by states that expanded Medicaid in 2014 versus those that did not. The states that expanded Medicaid in 2014 seem to have a relatively lower share of uninsured individuals even before 2014, which suggests that these states already had a lower uninsurance rate before the adoption of Medicaid expansion. After 2014, both states that expanded Medicaid in 2014 and those that did not experienced a sharp decrease in the uninsurance rate. For states that expanded Medicaid, the decrease in the uninsurance rate is larger in size. For states that did not expand Medicaid, the uninsurance rate increased faster after 2016.

3 Estimate ATEs

For the rest of the assignment, we're going to apply the difference-in-differences estimator to the question of Medicaid expansion and uninsurance.

3.0.1 Question 1. 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.

Table 1 displays a basic 2x2 DD table of the average percent of uninsured individuals in 2012 and 2015, separately for expansion and non-expansion states. For the purpose of this question, 2012 is the pre-period and 2015 is the post-period. The mean difference of uninsurance rate in the pre-period is 0.0536. The mean difference of uninsurance rate in the post-period is 0.0679. Thus, considering only 2012 and 2015, the Average Treatment Effects on Treated (ATT) is 0.0143.

Table 1: Average Percent of Uninsured Individuals

Group	Pre-Period	Post-Period
Non-Expansion	0.225	0.164
Expansion	0.172	0.096

3.0.2 Question 2. 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 2 displays the standard DD estimate of the effect of Medicaid expansion on uninsurance rate. According to the estimate, the Average Treatment Effects on Treated (ATT) is -0.0157.

Table 2: Standard DD Estimate of the Effect of Medicaid Expansion on Uninsurance Rate

	Standard DD
Intercept	0.2236***
	(0.0091)
Post 2014	−0.0589***
	(0.0105)
Expand	−0.0527***
	(0.0108)
Post × Expand	−0.0157
	(0.0125)
N	296
R2	0.50

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

3.0.3 Question 3. 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.

Table 3 displays the two-way fixed effects DD estimate of the effect of Medicaid expansion on uninsurance rate, considering the fixed effects of state and year. According to the estimate, the Average Treatment Effects on Treated (ATT) is -0.0157.

Table 3: DD with FE Estimate of the Effect of Medicaid Expansion on Uninsurance Rate

	Standard DD	TWFE
Intercept	0.2236***	
	(0.0091)	
Post 2014	−0.0589***	
	(0.0105)	
Expand	−0.0527***	
	(0.0108)	
Post × Expand	−0.0157	−0.0157+
	(0.0125)	(0.0082)
N	296	296
R2	0.50	0.93

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

3.0.4 Question 4. Repeat the analysis in question 3 but include all states (even those that expanded after 2014). Are your results different? If so, why?

Table 4 displays the two-way fixed effects DD estimates of the effect of Medicaid expansion on uninsurance rate, considering the fixed effects of state and year, including only states that expanded in 2014 versus all states. The Average Treatment Effects on Treated (ATT) is -0.0157 for states that expanded in 2014 or never expanded. The Average Treatment Effects on Treated (ATT) is -0.0219 for all states that expanded or never expanded. The results are different because the second estimate includes the effect of the time-varying treatment since not all states expanded Medicaid in the same year.

Table 4: DD with FE Estimates of the Effect of Medicaid Expansion on Uninsurance Rate

	Standard DD	TWFE	Time-Varying Treatment
Intercept	0.2236***		
	(0.0091)		
Post 2014	−0.0589***		
	(0.0105)		
Expand	−0.0527***		
	(0.0108)		
Post × Expand	−0.0157	−0.0157+	−0.0219***
	(0.0125)	(0.0082)	(0.0055)
N	296	296	400
R2	0.50	0.93	0.93

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

3.0.5 Question 5. 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.

Figure 4 displays the estimates of the effect of Medicaid expansion on uninsurance rate in each year, considering the fixed effects of state and year, including only states that expanded in 2014. The effect of Medicaid expansion is clearly different prior to and after the reference year of 2013. Prior to the reference year of 2013, the estimates are roughly zero since the Medicaid expansion has not taken effect. After the reference year of 2013, the estimates are all negative, suggesting that expanding Medicaid had a negative impact on the uninsurance rate.

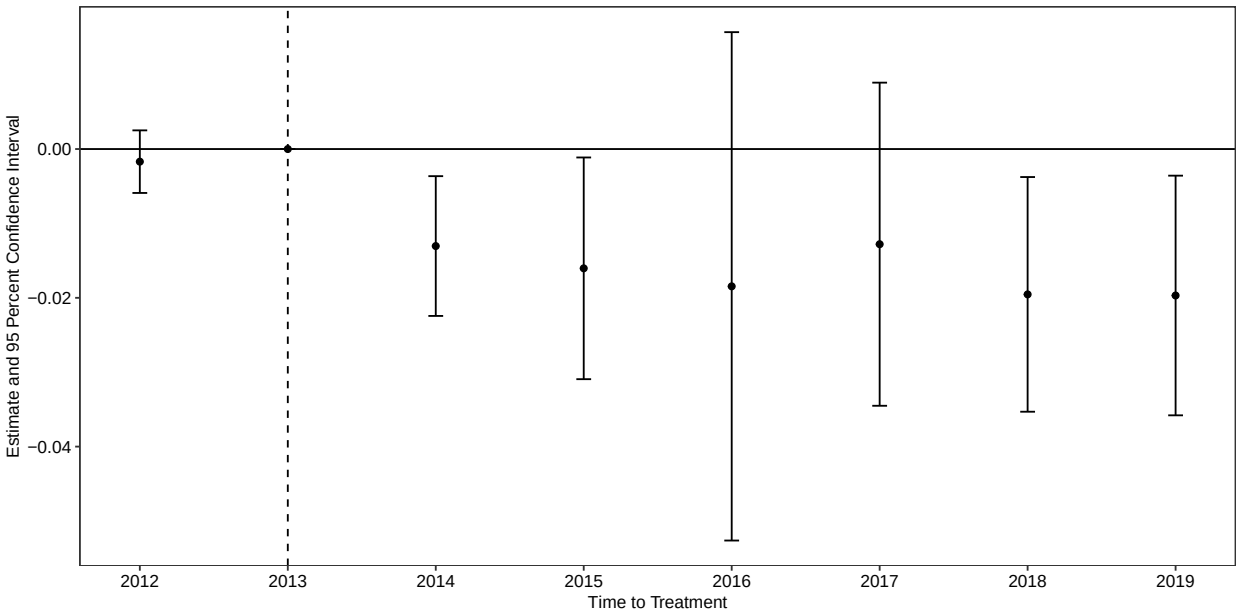

Figure 4: Event Study for Effects of Medicaid Expansion - States that Expanded in 2014

3.0.6 Question 6. Repeat part 5 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.

Figure 5 displays the estimates of the effect of Medicaid expansion on uninsurance rate in each year, considering the fixed effects of state and year, including all states that expanded. The effect of Medicaid expansion is clearly different prior to and after the reference year to treatment of -1. For years before treatment, the estimates are roughly zero since the Medicaid expansion has not taken effect. For years after treatment, the estimates are all negative, suggesting that expanding Medicaid had a negative impact on the uninsurance rate. Comparing to the estimates including only states that expanded in 2014, the estimates including all states that expanded show a more evident and larger negative impact.

There are not enough data points for time to treatment beyond 4 years in the past, as most states that have ever adopted Medicaid expansion expanded in 2014; thus the time to treatment values for these data points are assigned as -4.

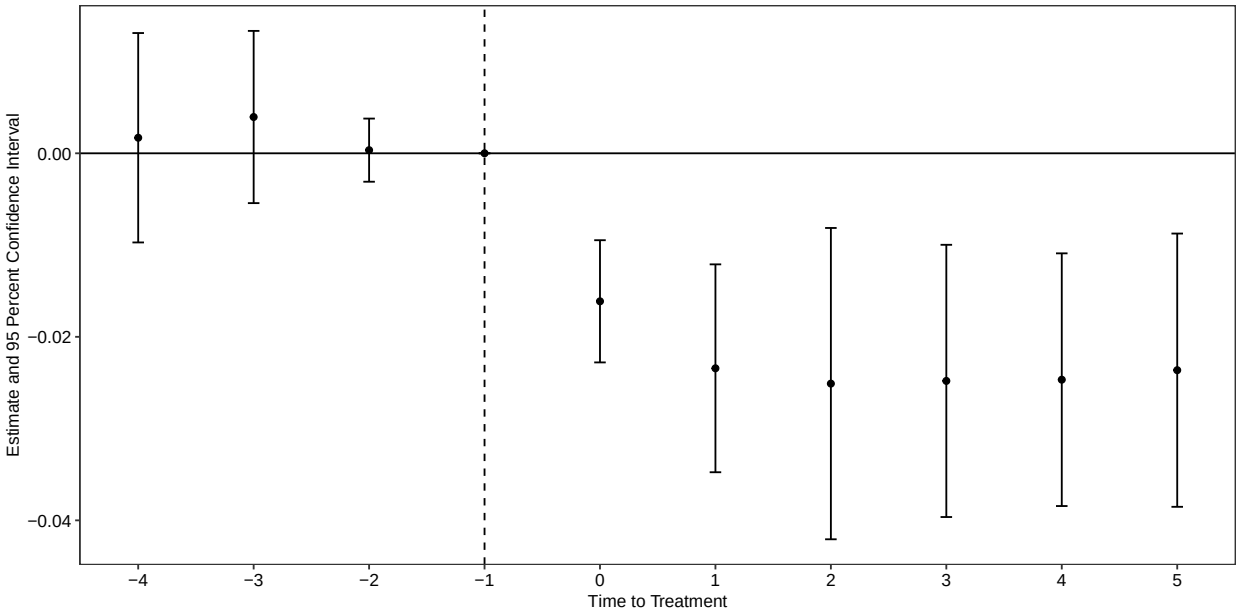

Figure 5: Event Study for Effects of Medicaid Expansion - All Expansion States