

# 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.

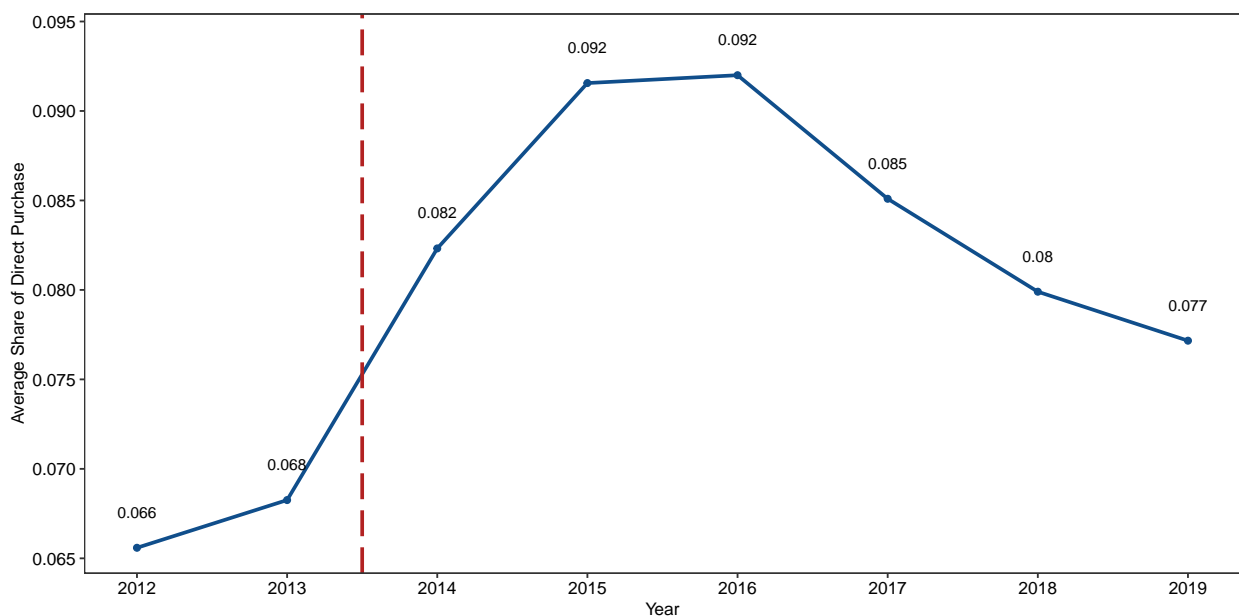


Figure 1: Average Share of Insured Individuals with Direct Purchase Health Insurance from 2012 to 2019

**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 until 2015, stayed roughly constant in 2016, and has been rapidly decreasing ever since 2017. While the share of direct purchase health insurance was decreasing, the share of employer health insurance was increasing after 2016. Meanwhile, the uninsurance rate also increased slightly after 2016.

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.

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.

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 coverage. This could be the main reason that explains 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 displays the share of insured individuals with Medicaid over time from 2012 to 2019.

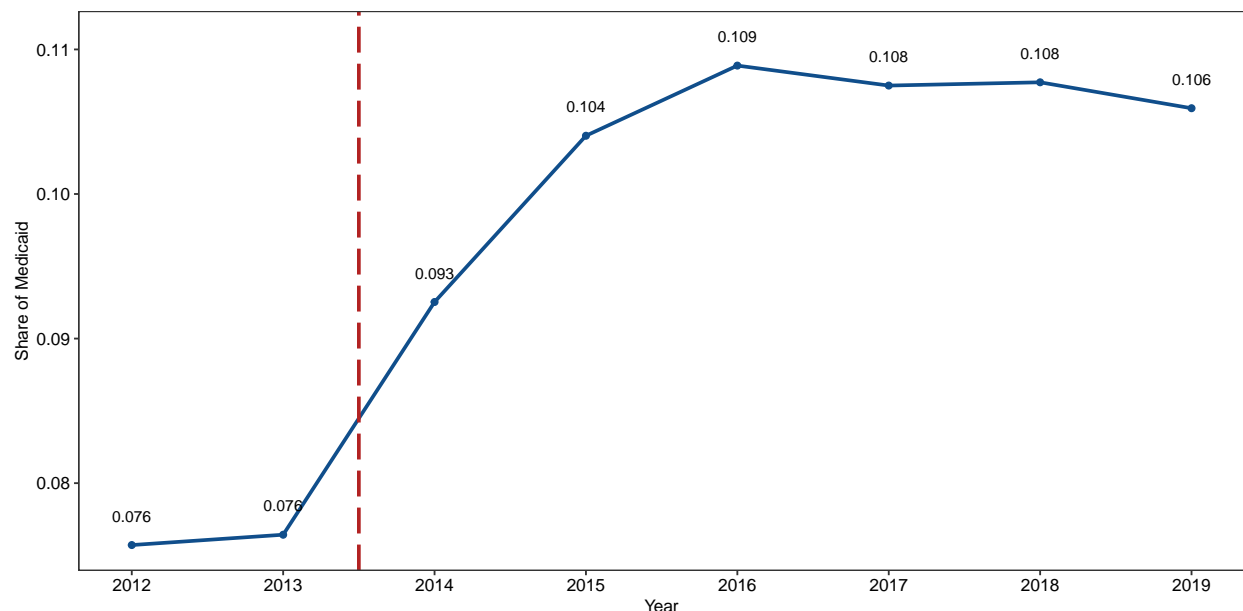


Figure 2: Share of Insured Individuals with Medicaid from 2012 to 2019

#### 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 displays the share of uninsured individuals with Medicaid 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 regardless of 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 did not expand Medicaid, the uninsurance rate increased faster after 2016.

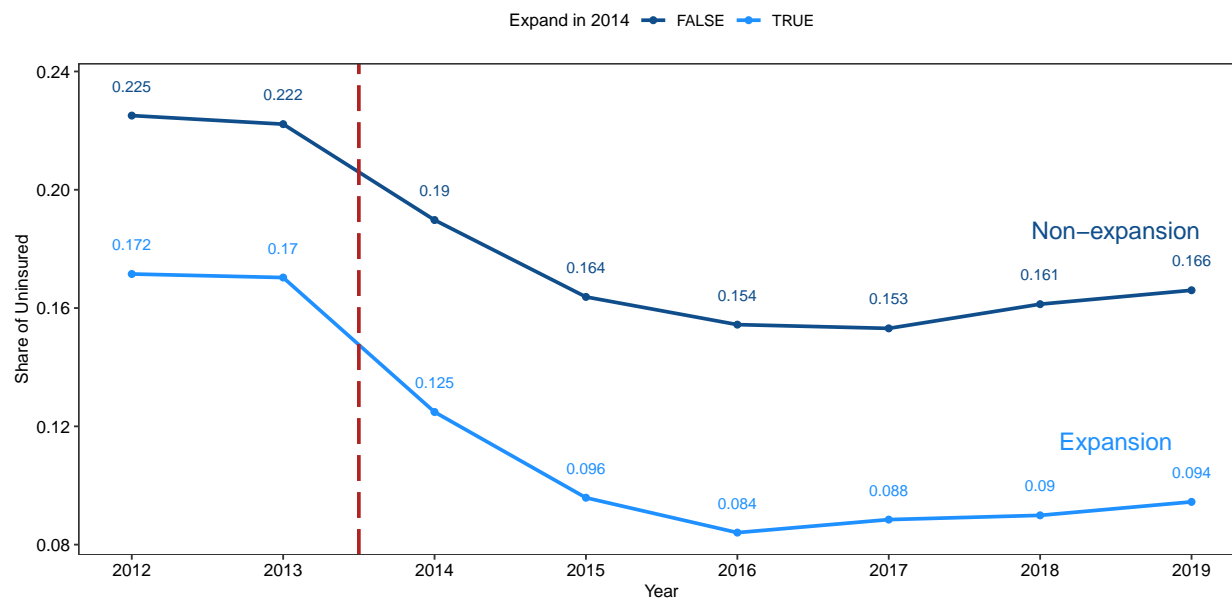


Figure 3: Share of Uninsured Individuals by If Expanded in 2014 from 2012 to 2019

### 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.

Table 1: Average Percent of Uninsured Individuals

expand_ever	2012	2015
TRUE	0.17	0.10
FALSE	0.23	0.16

#### 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: Standard DD Estimates of the Effect of Medicaid Expansion on Uninsurance Rate

	DD
postTRUE	-0.059*** (0.010)
expand_everTRUE	-0.053*** (0.011)
postTRUE × expand_everTRUE	-0.016 (0.012)
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: DD with FE Estimates of the Effect of Medicaid Expansion on Uninsurance Rate

	DD	TWFE
postTRUE	−0.059*** (0.010)	
expand_everTRUE	−0.053*** (0.011)	
treat	−0.016 (0.012)	−0.016+ (0.008)
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: DD with FE Estimates of the Effect of Medicaid Expansion on Uninsurance Rate

	DD	TWFE	TWFE All
postTRUE	−0.059*** (0.010)		
expand_everTRUE	−0.053*** (0.011)		
treat	−0.016 (0.012)	−0.016+ (0.008)	−0.014+ (0.007)
N	296	296	400
R2	0.50	0.93	0.92

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

**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.

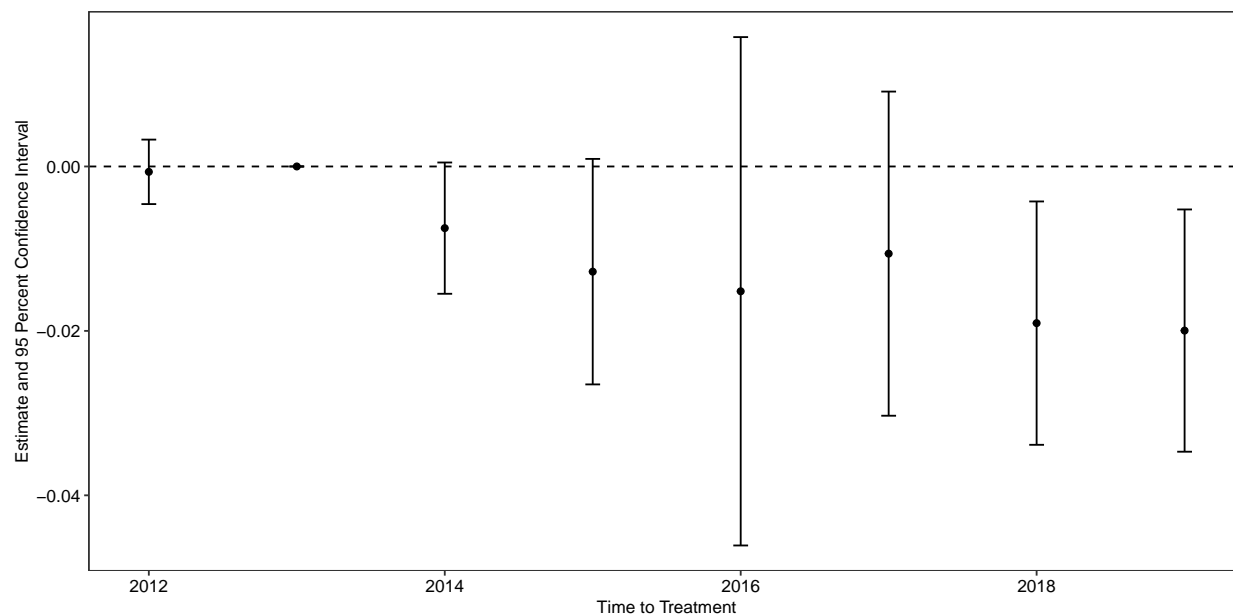


Figure 4: Event Study for Effects of Medicaid Expansion - States that Expanded in 2014 or Never Expanded

Table 5: DD with FE Estimates of the Effect of Medicaid Expansion on Uninsurance Rate

	TWFE Ref=2013
year = 2012 × expand_ever	-0.001 (0.002)
year = 2014 × expand_ever	-0.008+ (0.004)
year = 2015 × expand_ever	-0.013+ (0.007)
year = 2016 × expand_ever	-0.015 (0.016)
year = 2017 × expand_ever	-0.011 (0.010)
year = 2018 × expand_ever	-0.019* (0.008)
year = 2019 × expand_ever	-0.020* (0.008)
N	400
R2	0.92

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

**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.

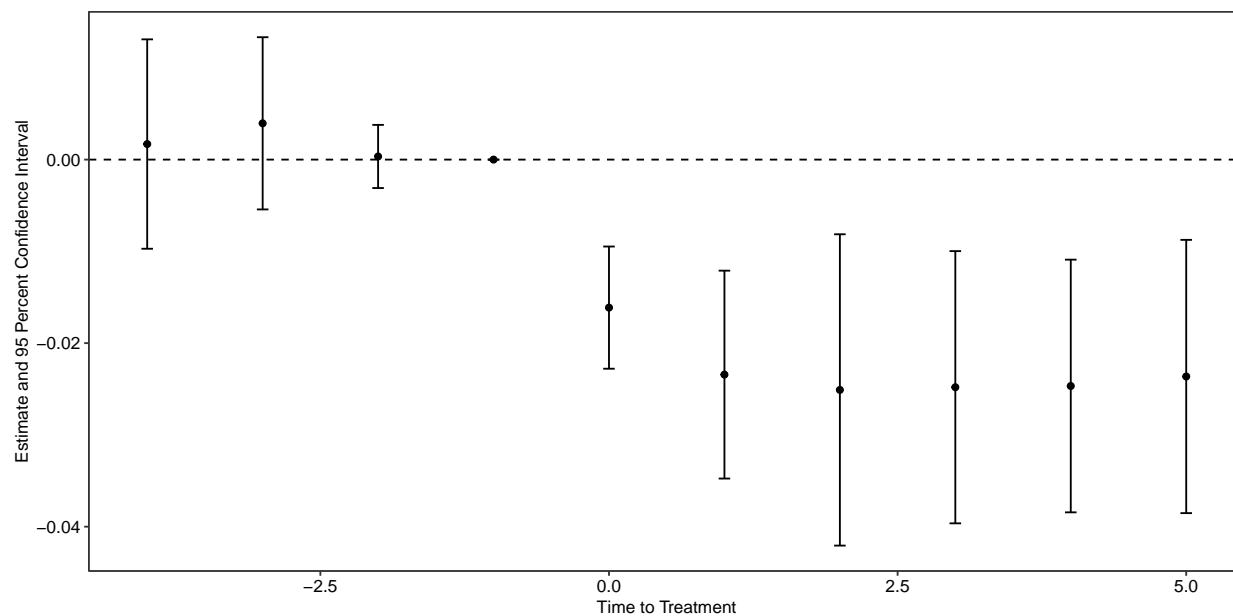


Figure 5: Event Study for Effects of Medicaid Expansion - All States

Table 6: DD with FE Estimates of the Effect of Medicaid Expansion on Uninsurance Rate

	TWFE Ref=-1
time_to_treat = -4 × expand_ever	0.002 (0.006)
time_to_treat = -3 × expand_ever	0.004 (0.005)
time_to_treat = -2 × expand_ever	0.000 (0.002)
time_to_treat = 0 × expand_ever	-0.016*** (0.003)
time_to_treat = 1 × expand_ever	-0.023*** (0.006)
time_to_treat = 2 × expand_ever	-0.025** (0.009)
time_to_treat = 3 × expand_ever	-0.025** (0.008)
time_to_treat = 4 × expand_ever	-0.025*** (0.007)
time_to_treat = 5 × expand_ever	-0.024** (0.008)
N	400
R2	0.93

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