

Empirical Assignment 1

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1 Summary Statistics

Table 1 shows the mean, standard deviation, minimum, and maximum uncompensated care values from 2003 to 2019. The mean steadily increases until 2013. After 2013, we see a decrease followed by an increase. The maximum value of uncompensated care reaches its highest value in 2016. The negative minimum values indicate a reporting or calculation error with the data.

Table 2 shows the mean, standard deviation, minimum, and maximum total revenue values from 2003 to 2019. The average and maximum total revenue increase over the entire time period, but the standard deviation also increases each year. The negative total revenue values indicate at least one hospital was operating at a loss in that given year. However, all hospitals reported positive total revenue starting in 2013 according to our data.

Table 1: Summary Statistics - Uncompensated Care				
	Mean	Standard Deviation	Minimum	Maximum
2003	13750714.2	32587628.4	-128490	777987403
2004	15381278	36702311.7	1	820253000
2005	17450505.6	37806316.6	1	939134000
2006	21207631	47723258.8	-2667140	1074625000
2007	23890388.4	51816232.7	1	1203374820
2008	26897102.5	57173473.3	1	1361805561
2009	28192299.5	48084630.4	1	583975318
2010	30109277.6	71908357.9	1	2793923000
2011	35832356.5	77177143.5	-54283503	2059698345
2012	38093291.7	87040637.2	-1213043	1882619896
2013	39983569.1	81152473.9	-274185	1817294160
2014	37395915	89020259.1	-25850677	1993553072
2015	34126799.8	87414848.8	-33577	2042616756
2016	45740704	401558870	30619	2.0406E+10
2017	41812669.2	102877932	-27988	2753803541
2018	40234223.9	105191613	9533	2606345461
2019	51980489	128813028	-97309089	2648257912

Table 2: Summary Statistics - Total Revenue				
	Mean	Standard Deviation	Minimum	Maximum
2003	197297261	340308984	-1757898	4722758791
2004	218309037	380538410	154394	5525730727
2005	238903830	420571526	1	6398553843
2006	263933948	465770546	-104189	7784094716
2007	287793491	509740587	63650	8577046126
2008	313230097	557736008	4	9293788259
2009	343868995	615365959	119236	9846464732
2010	368766204	662403468	306861	10185415748
2011	396589746	715044896	-27582223	10572291195
2012	420822735	768898836	-11799711	11865320139
2013	447328716	836590634	94880	12751708196
2014	481186418	908414182	6624	13376352387
2015	520701412	971208353	9368	14143533186
2016	565419642	1064671577	84952	15618749067
2017	607157402	1169439971	124513	16863431079
2018	622936858	1250489927	282914	18677245214
2019	682528022	1388341741	3	22000932119

2 Mean Uncompensated Care by Hospital Type

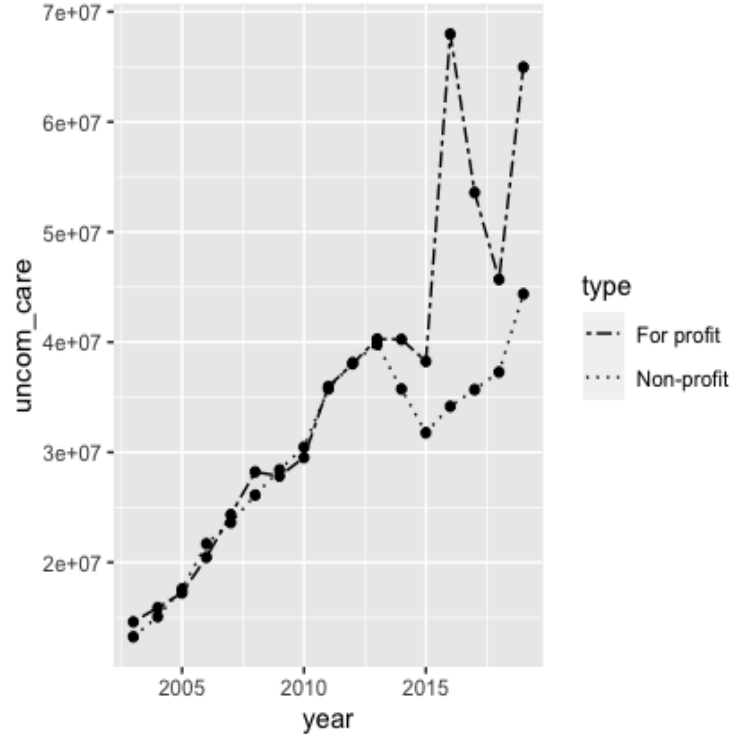


Figure 1: Average Uncompensated Care by Hospital Type

3 Simple Difference in Differences

The table below shows the two-way fixed effects for the total sample, as well as groups that were treated in 2014, 2015, and 2016. Of the four estimates, only the estimate using groups treated in 2015 show a positive and insignificant coefficient value. All estimates included state and year fixed effects. The estimate with the states treated in 2014 show the largest decrease in uncompensated care as a result of the Medicaid expansion. This is to be expected because the first year states could adopt the expansion was 2014.

Dependent Var.:	Full Sample		2014 Treatment		2015 Treatment		2016 Treatment	
	Uncompensated Care		Uncompensated Care		Uncompensated Care		Uncompensated Care	
treat	-24,003,199.1*** (6,437,589.3)		-29,255,658.5*** (5,926,680.2)		1,338,250.6 (23,038,401.7)		-28,916,221.1*** (7,103,101.2)	
Fixed-Effects:								
State	Yes		Yes		Yes		Yes	
Year	Yes		Yes		Yes		Yes	

S.E.: Clustered	by: State		by: State		by: State		by: State	
Observations	41,941		36,641		20,483		18,942	
R2	0.03156		0.08601		0.02339		0.07402	
Within R2	0.00211		0.00816		1.45E-06		0.00097	

4 Event Study

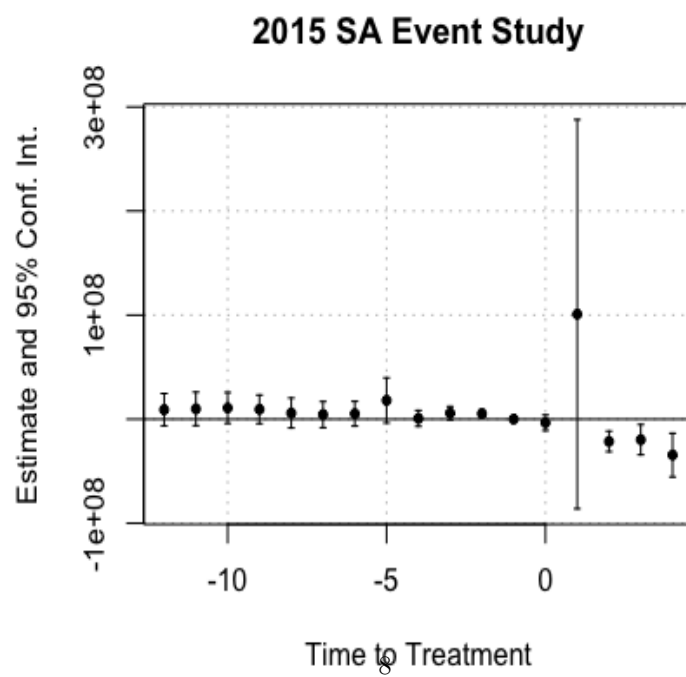
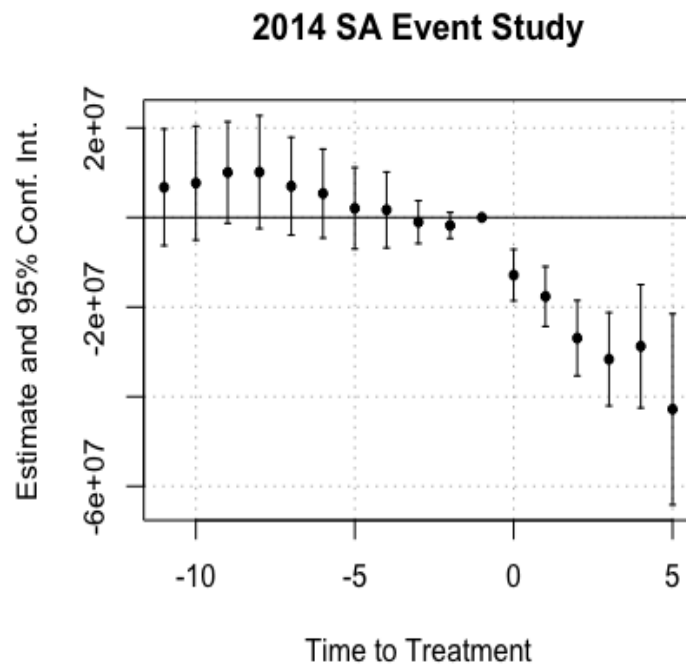
Table 3: Event Study		
	Full Sample	2014 Treatment
Dependent Variable	Uncompensated Care	Uncompensated Care
treat_interaction-16	49,504,308.8** (17,823,510.1)	
treat_interaction-15	54,297,490.6** (17,962,951.1)	
treat_interaction-14	53,972,839.4** (17,426,471.5)	
treat_interaction-13	53,921,814.7** (16,737,876.3)	
treat_interaction-12	43,427,264.4* (17,221,608.7)	
treat_interaction-11	46,581,656.5** (14,991,530.2)	1,918.6 (1.48e+10)
treat_interaction-10	46,529,904.3** (14,671,766.5)	904,998.9 (1.48e+10)
treat_interaction-9	47,368,317.2** (14,400,568.5)	3,217,375.3 (1.48e+10)
treat_interaction-8	46,468,103.3** (14,369,832.7)	3,369,353.0 (1.48e+10)
treat_interaction-7	43,535,329.8** (13,490,259.0)	225,069.9 (1.48e+10)
treat_interaction-6	42,928,082.2** (12,688,978.4)	-1,437,469.5 (1.48e+10)
treat_interaction-5	44,004,937.7*** (12,002,916.9)	-4,814,362.2 (1.48e+10)
treat_interaction-4	40,881,696.2** (11,920,126.4)	-5,137,377.0 (1.48e+10)
treat_interaction-3	38,651,480.9*** (10,329,192.8)	-7,770,279.2 (1.48e+10)
treat_interaction-2	37,974,495.1*** (10,054,529.9)	-8,598,780.0 (1.48e+10)
treat_interaction-1	39,007,173.5*** (9,948,084.9)	-6,745,971.2 (1.48e+10)
treat_interaction0	28,270,440.0** (9,413,134.9)	-19,693,724.3 (1.48e+10)
treat_interaction1	39,425,624.9* (18,346,062.4)	-24,415,450.1 (1.48e+10)
treat_interaction2	3,825,466.6 (12,949,897.9)	-33,650,974.9 (1.48e+10)
treat_interaction3	8,281,466.7 (6,643,740.9)	-38,469,545.0 (1.47e+10)
treat_interaction4	7,283,604.1 (4,962,929.7)	-35,520,167.7 (1.47e+10)
treat_interaction5		-49,600,636.6 (1.47e+10)
Fixed-Effects:		
State	Yes	Yes
Year	Yes	Yes
S.E.: Clustered	by: State	by: State
Observations	41,941	36,641
R2	0.03314	0.08756
Within R2	0.00373	0.00984

Table 4: Event Study Estimates

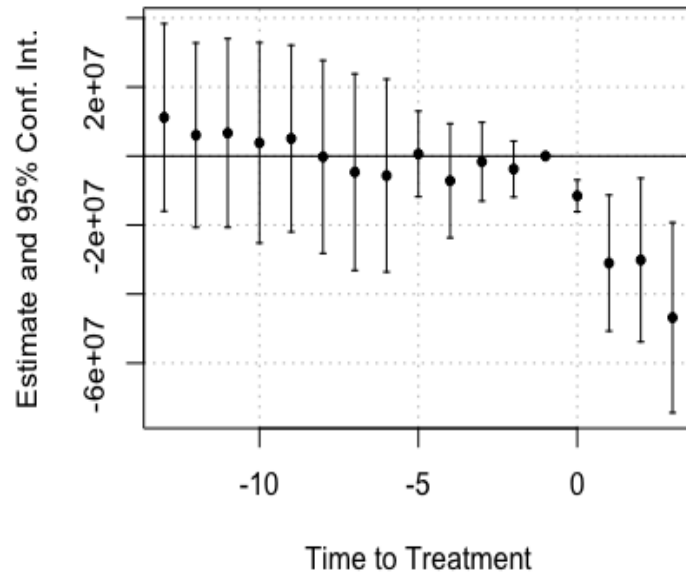
Dependent Var.:	2014 Treatment		2015 Treatment		2016 Treatment	
	Uncompensated Care		Uncompensated Care		Uncompensated Care	
year = -13						11,173,510.9 (13,862,584.1)
year = -12						6,039,033.1 (13,632,153.1)
year = -11		6,737,435.4 (6,635,456.3)		9,132,188.3 (7,920,239.9)		6,670,033.2 (13,949,593.8)
year = -10		7,684,742.9 (6,493,583.6)		10,762,276.9 (7,560,582.5)		3,821,004.6 (14,804,006.5)
year = -9		10,043,544.8. (5,779,719.0)		9,462,160.5 (7,014,522.9)		5,057,512.5 (13,795,447.8)
year = -8		10,133,298.7 (6,427,343.1)		5,950,791.5 (7,338,232.7)		-255,995.9 (14,256,556.8)
year = -7		6,986,585.1 (5,571,419.9)		4,373,407.5 (6,405,500.7)		-4,668,940.1 (14,530,775.7)
year = -6		5,347,789.0 (5,061,789.6)		5,261,546.2 (6,063,133.6)		-5,669,924.5 (14,245,143.1)
year = -5		2,063,223.0 (4,633,552.1)		18,055,146.6 (11,061,607.9)		588,119.2 (6,325,520.4)
year = -4		1,689,026.6 (4,316,870.6)		747,157.8 (3,889,032.4)		-7,151,562.9 (8,429,908.5)
year = -3		-1,027,325.0 (2,434,967.7)		5,776,829.3. (3,243,814.6)		-1,642,962.2 (5,816,185.8)
year = -2		-1,772,296.5 (1,481,997.0)		5,340,467.0** (1,660,792.2)		-3,787,062.2 (4,139,114.3)
year = 0		-12,859,989.6*** (2,923,777.5)		-3,490,106.4 (3,786,710.1)		-11,529,919.8*** (2,351,667.5)
year = 1		-17,639,088.0*** (3,409,356.1)		100,866,500.5 (95,363,278.1)		-31,024,781.3** (10,048,128.4)
year = 2		-26,934,029.1*** (4,289,437.8)		-21,356,522.1*** (5,015,535.4)		-30,129,160.4* (12,095,868.3)
year = 3		-31,634,985.0*** (5,310,719.6)		-19,716,204.0* (7,426,412.9)		-46,821,096.4** (14,057,935.3)
year = 4		-28,745,949.9*** (7,018,469.6)		-34,498,193.9** (10,683,514.2)		
year = 5		-42,809,078.9*** (10,874,210.8)				
Fixed-Effects:						
Staet	Yes		Yes		Yes	
Year	Yes		Yes		Yes	

S.E.: Clustered	by: State		by: State		by: State	
Observations	36,641		20,483		18,942	
R2	0.08756		0.02631		0.07438	
Within R2	0.00984		0.003		0.00136	

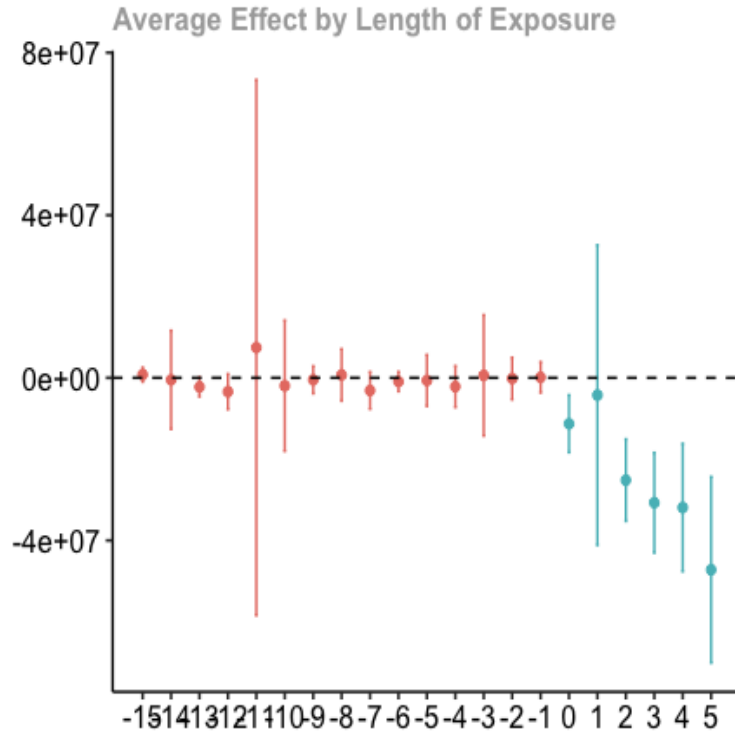
6 Sun and Abraham Graph



2016 SA Event Study



7 Callaway and Sant'Anna



8 Rambachan and Roth

Unfortunately I had an error in my code that I could not debug. I am confident the issue is in `createSensitivityResults`, but I could not isolate which component caused the error.

9 Discussion

I find that uncompensated care decreases after states adopt the Medicaid expansion. Comparing the estimates of the 2014 treatment group, the two-way fixed effect finds a decrease in uncompensated care. Looking further at the data, the event study finds that uncompensated care began decreasing 6 years prior to the state adopting Medicaid expansion, although the most significant change in the decrease happens the year after treatment. The Sun and Abraham estimate finds a reduction in uncompensated care starting three years before the adoption. It estimates the largest decrease in uncompensated care the year of adoption.

The different estimators all calculate a decrease in uncompensated care after the states adopt the Medicaid expansion, illustrating that the results are not driven by the type of estimator. This gives us confidence in our findings.

10 Reflection

Surprisingly, I found the components of the report, i.e. graphs, tables, and the latex document, to be the hardest part of this assignment. I have always made my graphs in Excel, and this assignment helped me remember why. I will need to get more familiar with how to change the axes and other elements of graphs like the Callaway and Sant'Anna graph, as these are not easily produced in Excel. I will need to improve my Latex skills as well to improve my report for the next assignment.