Assignment 2

[PART I]

Table 1. **Effect of having an elite college degree on whether the fictitious candidate's job application was called back**

	(1) Called Back
Elite School Candidate	0.137***
	(4.27)
Gender	-0.0440
	(-1.37)
Constant	0.610***
	(22.01)
N	864

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table shows the results from regressions analyzing the effect of having an elite college degree on callback (1 or 0) in hiring situations while controlling for gender (male=1, female=0).

It turned out that having an elite college degree positively and statistically significantly affects a job applicant's callback rate, even controlling for gender. A job candidate with an elite college degree is more likely to get a callback from an employer, regardless of gender.

[PART II]

Regarding the pre-treatment trends of both control and treatment groups, I ran a regression and test to account for this. Table 2-1 shows the results from the regression, while Table 2-2 shows the results of the F-test.

Table 2-1. **Evaluating parallel trends requirement of a difference-in-differences**

	(1) Lung Hospitalizations
0.vapingban	0
	(.)
1.vapingban	-6466.2***
	(-56.52)
0.post	0
	(.)
1.post	1641.9***

	(17.33)
0.vapingban#0.post	0
	(.)
0.vapingban#1.post	0
	(.)
1.vapingban#0.post	0
	(.)
1.vapingban#1.post	0
	(.)
_cons	113319.6***
	(2084.27)
N	1050

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table shows the results from regressions estimating the interaction effect of anti-vaping law and post (1 if year>=2021, 0 otherwise) on number of lung hospitalization.

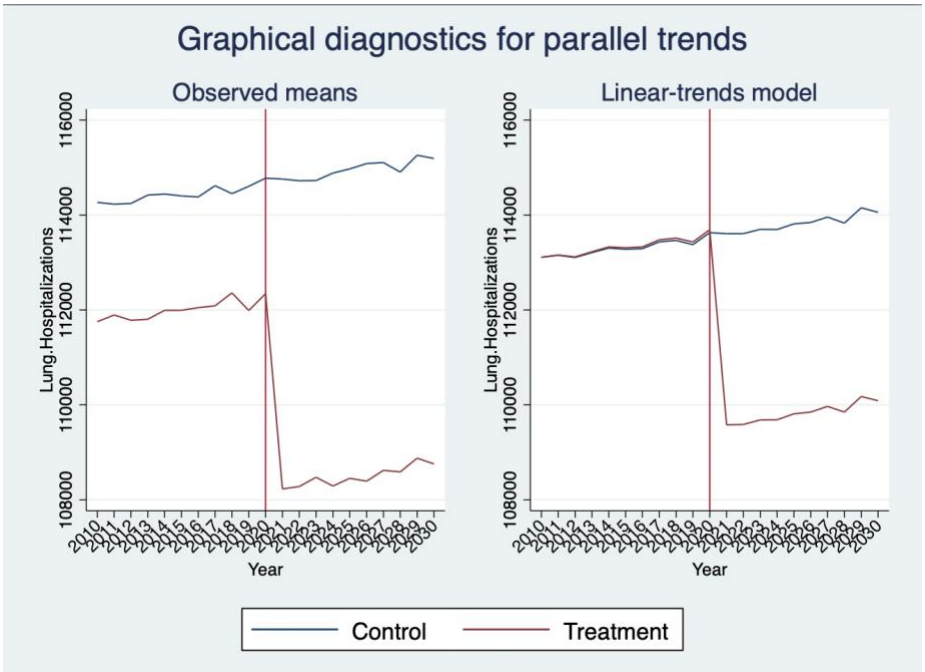
As I was unable to get the coefficients for interaction terms through regression (see Table 2-1), I ran an F-test to evaluate the parallel trends requirement. Table 2-2 shows the results from the F-test, and the null hypothesis (i.e., linear trends are parallel) cannot be rejected. Therefore, I would assume the parallel trends requirement is met.

Table 2-2. **Evaluating parallel trends requirement of a difference-in-differences**

Parallel-trends test (pretreatment time period)
H0: Linear trends are parallel

F(1, 49) = 0.20
Prob > F = 0.6561

Additionally, I worked on the graphical diagnostics for parallel trends requirement. As you can see from the below, the linear trends between control and treatment groups greatly overlap. Also, regarding the observed means, though the control and treatment variable has different y-intercept, they generally showed a similar pre-treatment trend. Therefore, I would conclude the pre-treatment parallel trends assumption is met in this dataset.



Then, as the pretreatment parallel trends assumption was met, I ran a DID regression estimating the effect of the anti-vaping law on a number of lung hospitalizations while including state and year-fixed effects. The results are shown in Table 4-1. The results are shown in Table 4-1. It turned out that the number of lung hospitalizations significantly dropped in those states that adopted anti-vaping laws.

Table 4-1. **Effect of anti-vaping law adoption on the number of lung-related hospitalizations**

	(1) Lung Hospitalizations
vapingban*post	-4030.5***
	(-61.64)
_Istateid_2	-203.4
	(-1.25)
_Istateid_3	229.3
	(1.41)
_Istateid_4	54.38
	(0.33)
_Istateid_5	483.8**
	(2.97)
_Istateid_6	411.7*
	(2.53)

_Istateid_7	464.7**
	(2.86)
_Istateid_8	453.9**
	(2.79)
_Istateid_9	971.4***
	(5.97)
_Istateid_10	632.8***
	(3.89)
_Istateid_11	969.6***
	(5.96)
_Istateid_12	1002.0***
	(6.16)
_Istateid_13	1092.6***
	(6.71)
_Istateid_14	1225.7***
	(7.53)
_Istateid_15	1360.2***
	(8.36)
_Istateid_16	1257.0***
	(7.72)
_Istateid_17	1482.4***
	(9.11)
_Istateid_18	1819.9***
	(11.18)
_Istateid_19	1598.8***
	(9.82)
_Istateid_20	1774.2***
	(10.90)
_Istateid_21	2078.9***
	(12.77)
_Istateid_22	1995.4***
	(12.26)
_Istateid_23	2030.8***

	(12.48)
_Istateid_24	1979.1***
	(11.94)
_Istateid_25	2182.9***
	(13.17)
_Istateid_26	2266.3***
	(13.68)
_Istateid_27	2458.9***
	(14.84)
_Istateid_28	2535.4***
	(15.30)
_Istateid_29	2627.4***
	(15.86)
_Istateid_30	2738.8***
	(16.53)
_Istateid_31	2923.4***
	(17.64)
_Istateid_32	3128.3***
	(18.88)
_Istateid_33	3099.8***
	(18.71)
_Istateid_34	3120.5***
	(18.83)
_Istateid_35	3223.7***
	(19.46)
_Istateid_36	3288.3***
	(19.84)
_Istateid_37	3433.5***
	(20.72)
_Istateid_38	3462.1***
	(20.89)
_Istateid_39	3748.6***
	(22.62)

_Istateid_40	3809.3***
	(22.99)
_Istateid_41	3823.5***
	(23.08)
_Istateid_42	3960.6***
	(23.90)
_Istateid_43	3993.4***
	(24.10)
_Istateid_44	3996.4***
	(24.12)
_Istateid_45	4161.8***
	(25.12)
_Istateid_46	4389.1***
	(26.49)
_Istateid_47	4584.8***
	(27.67)
_Istateid_48	4624.6***
	(27.91)
_Istateid_49	4504.9***
	(27.19)
_Istateid_50	4917.5***
	(29.68)
_Iyear_2011	43.72
	(0.41)
_Iyear_2012	1.140
	(0.01)
_Iyear_2013	106.0
	(1.01)
_Iyear_2014	205.0
	(1.94)
_Iyear_2015	183.3
	(1.74)

_Iyear_2016	198.0
	(1.88)
_Iyear_2017	343.4**
	(3.26)
_Iyear_2018	378.0***
	(3.58)
_Iyear_2019	291.1**
	(2.76)
_Iyear_2020	546.8***
	(5.18)
_Iyear_2021	497.9***
	(4.54)
_Iyear_2022	502.0***
	(4.58)
_Iyear_2023	594.6***
	(5.42)
_Iyear_2024	593.9***
	(5.41)
_Iyear_2025	716.2***
	(6.53)
_Iyear_2026	748.9***
	(6.83)
_Iyear_2027	865.8***
	(7.89)
_Iyear_2028	742.0***
	(6.76)
_Iyear_2029	1067.1***
	(9.73)
_Iyear_2030	974.6***
	(8.89)
_cons	110787.4***
	(807.50)
N	1050

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table shows the results from DID regressions analyzing the effect of the anti-vaping law on number of lung hospitalizations. Year and state fixed effect included.

I ran the same regression using *didregress* code in Stata. The results are shown in Table 4-2. The coefficient was the same (both -4030.5***), confirming the negative effect of the anti-vaping law adoption on the number of lung hospitalizations.

Table 4-2. **Effect of anti-vaping law adoption on the number of lung-related hospitalizations**

	(1) Lung Hospitalizations
ATET	
r1vs0.vapingban	-4030.5***
	(-59.24)
Controls	
2010.year	0
	(.)
2011.year	43.72
	(0.42)
2012.year	1.140
	(0.01)
2013.year	106.0
	(0.90)
2014.year	205.0
	(1.99)
2015.year	183.3
	(1.76)
2016.year	198.0
	(1.68)
2017.year	343.4**
	(2.84)
2018.year	378.0**
	(3.26)
2019.year	291.1**
	(2.92)

2020.year	546.8***
	(5.19)
2021.year	497.9***
	(4.51)
2022.year	502.0***
	(5.23)
2023.year	594.6***
	(5.11)
2024.year	593.9***
	(6.03)
2025.year	716.2***
	(6.19)
2026.year	748.9***
	(6.46)
2027.year	865.8***
	(8.21)
2028.year	742.0***
	(6.30)
2029.year	1067.1***
	(9.92)
2030.year	974.6***
	(8.19)
_cons	113110.8***
	(1514.02)
N	1050

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table shows the results from DID regressions analyzing the effect of the anti-vaping law on number of lung hospitalizations.