

**Effects of Labour Market Policy on Voting Behaviour:
A Difference-in-Differences Analysis on Nebraska and Missouri**

Econ 452 Research Final

Professor Md Moshi Ul Alam

Group members:

Seth Abelson 17sla2@queensu.ca
Kelston Chen 17kc44@queensu.ca
Evan Murray evan.murray@queensu.ca
Nolan Shin 17nys2@queensu.ca

Abstract

It is often believed that the presidential party's performance in developing the economy is a large factor in the party's success. However, whether this relationship is causal remains unclear. To test this, a difference-in-differences model will be conducted on the states of Missouri and Nebraska in order to find whether this is a causal relationship between the economy and party votes. This study will take advantage of the available county-level data for six election cycles (2000–2020), along with the statutory change to the NESL (Nebraska Employment Security Law) as a proxy for the economic climate. In absence of such a policy for Missouri, the difference in voting behaviour for the Democratic Party can be measured. Using a LPM (extensive voter margin) and an OLS model (intensive voter margin) we find that there is a significant and positive relationship between the employment policy and votes for the Democratic Party. However, we are also able to falsify parallel trends and therefore fail to conclude on any causal relationship between votes in favour of the Democratic Party and the implementation of the NESL.

Table of Contents

Introduction:	3
Data:.....	5
The Model:.....	8
<i>Expected Results</i>	9
Results:	10
Discussion/Limitations:.....	13
Conclusion:.....	15
References.....	16

Introduction:

The political landscape of the United States has drawn great attention over the years from both political and economic scholars alike. Popular works from Fair (1978) and Kahane (2009) have explored in depth the relations between the state of the economy and federal election results, laying out much of the groundwork for the political and economic theory of voting behavior. The general framework for voting behavior comes from the basic idea of utility maximization; where voters will tend to vote for the party that they believe will maximize their future expected utility (Fair, 1978). Another vital aspect of voter theory stems from Fair (1978), the idea that elevated costs exist in making voting decisions at a non-presidential level. For this reason, much of the previous topical work has focused on presidential elections rather than congressional or gubernatorial elections, as most voters will attribute the state of the economy to the president and not to their local riding (Kahane, 2009). This theory was also empirically tested in Kessener and Warshaw's (2019) paper on presidential accountability. They found that the presidential party was held accountable for the economy at multiple levels in the government and even concluded that the economy had a weak effect on voting results for lower-level elections.

Further voting behaviour theory outlines the importance of the president and their party through the effect of incumbency. Both Fair (1978) and Kahane (2009) mention the theoretical importance of economic conditions on votes for the incumbent party, implying that a good or satisfactory performance of the economy is directly linked to the incumbent party where voters will reward the party that satisfies this expectation. Both Fair (1978) and Kahane (2009) empirically concluded, though Kahane with much stronger evidence, that, "... the economy matters..." (Kahane, 2009) in voting decisions.

Juxtaposed to Fair (1978) and Kahane's (2009) work on incumbency voting, further economic theory indicates how volatility favours one party over the other. In Pařtor and Veronesi's 2019 paper on "Political Cycles and Stock Returns" they find that during times of high-risk, voters tend to favour Democrats, while during times of great stability, Republicans. Additionally, as mentioned by Pařtor and Verones (2019), volatility-based voting falls under the idea of prospective voting, where individuals vote according to what they think the presidential party will do. Conversely, incumbency-based voting falls under retrospective voting, where individuals vote based on what has

been done by the previous administration. These economic theories will be used as the foundation of our paper and will help provide substance for the intuition behind our model and our results.

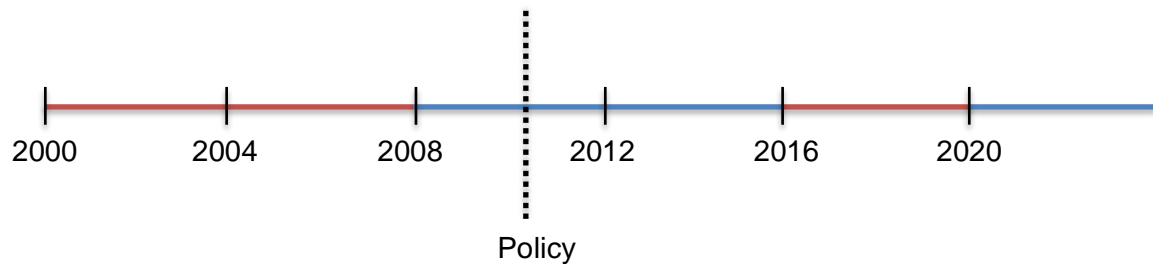


Figure 1: Policy Timeline

Notes: red sections represent Republican incumbency; blue sections represent Democrat incumbency. The dotted line represents the time of which the policy was instated, 2010-2011.

Based on previous intuition garnered from Kahane, Fair, Pařtor and Veronesi, it is expected that the state of the economy has a significant impact on voter preferences. For this reason, we aimed to determine whether labour market stabilization policies would have a significant effect on voting for the Democratic Party. Labour policies were chosen as a proxy for the state of the economy, as the labour market conditions are usually felt most strongly by ordinary people, voters. The major policy in question is a 2010 statutory change in Nebraska’s Employment Security Law that allowed Nebrasaka to receive \$46.3 Million in unemployment insurance (NDL, 2011). In order to test this relationship, a difference-in-differences model is used, with Nebraska as the treatment and the state of Missouri, who did not receive this benefit, as the control. By examining the difference in voting behaviour between Nebraska and Missouri, the impact that the policy had on voter preferences can be determined.

Missouri was selected as our control state for multiple reasons. Primarily, since we are using county-level data from 2000-2020, we wanted to ensure that both states in question had homogenous voting results over the time period. Since both Nebraska, and Missouri were Republican states over this timeline, Missouri met this criterion. An additional, yet important, consideration was the demographic distribution of the two states, along with their close geographic proximity. Both states again aligned well with these criteria. In combining this intuition with several vital economic and demographic controls, the impact of this policy will be discerned by this paper.

The use of a difference-in-differences model in this context has also been done with Elinder, Jordahl, and Poutvaara’s 2015 paper on how policy implementation from

the Social Democrats in Sweden affected voting behaviour between two demographics. More specifically, Elinder et al. looked at how the implementation of increased financial support for young children affected voting for families with older children, the control group, and families with young children, the treatment group. Their model then measured the effect of the policy as the change in votes for the Social Democratic party, stemming from the policy and the difference in voting between the two demographics. While our paper does not focus on the variation in voting demographics like Elinder et al., the difference-in-differences model provides a great foundation for how the model can be used within the context of voting behaviour and encapsulates well how we can extend this model to the Nebraska Employment Security Law (NESL).

Therefore, the difference-in-differences model in this paper will look at whether voting behaviour changes with the introduction of a labour market stabilization policy. This scenario will be able to shed light on both economic voting theories by highlighting the potential effects from both prospective voting (risk aversion) and retrospective voting (incumbency effects). In addition, two difference-in-differences models will be run to analyze the effects on both the extensive (whether Democrats win in a county) and intensive margins of voting (the proportion of votes for Democrats).

Overall, our difference-in-differences model found that the NESL had a negligible effect on voting behaviour in Nebraska relative to Missouri and that there is no causal relationship between the implementation of the policy and increased votes for the Democratic Party. Based on this fact, we cannot make any empirical conclusion about the efficacy of this policy in gaining votes and cannot reasonably conclude the relationship between the Nebraska labour stabilizing policy and Democratic votes is causal.

Data:

The data for this paper comes from three main sources, the MEDL (MIT Elections Data Lab), the United States Census Bureau and the BLS (Bureau of Labor Statistics). All the election result data was gathered by the database from the MEDL, which provided county level voting data for the presidential election from 2000 to 2020. This dataset records votes for Democrats, Republicans, the Green party, and "Other" parties. However, since the United States is considered a two-party system, voter data for the latter two parties were dropped.

The bulk of our demographic data and some economic indicators came from the United States Census Bureau. This included statistics on diversity, median age, total population, vacancy rates, and poverty rates. For variables like diversity, the percentage of the population that was white was subtracted by one, indicating the portion of the population that is not white. This somewhat crude measure will be used as our metric for the diversity in a county. One noticeable pattern with the diversity data, which bodes well for this study, is the lack of diversity between the two states. Taking the mean percentage of the non-white population for each state, less than a two-percentage point difference is found. There was some missing data for demographics for the years of 2004 and 2008, which was filled with demographic data from the CDC (Centers for Disease Control and Prevention).

The vacancy data recorded the number of housing units that were vacant for each county. This dataset also provided the number of occupied housing units, thus dividing the two metrics would return the vacancy rate (as a percentage) at the county level. This variable is used as a proxy measure for economic conditions, where a high vacancy rate is likely correlated with low, or declining economic growth, and a low vacancy rate, the opposite. Again, we see a small, less than one percentage point, difference between the two states. Poverty data was given in population values, which was then divided by the total population for each county, returning the rate, or percentage of the population that lies below the poverty line.

Lastly, wage and number of establishment data was gathered from the BLS. This data gave average weekly wages as well as the number of establishments by county. The difference in average wages for Missouri and Nebraska was found to be small, representing only a \$16.22 difference. However, for better comparison and interpretation, wages will be logged. The number of establishments tracks the number of “economic” units, any physical location which produces goods or services (BLS, 2022). This measure is also used as another economic indicator at the county level as a large (small) number of establishments is likely correlated with stronger (weaker) economic growth. We do see a fairly large difference in the mean number of establishments between Missouri and Nebraska. However, it is also important to note that Missouri has a larger population relative to Nebraska, giving them an inherent advantage in this metric.

Therefore, the final dataset holds election results, demographics and economic indicators at the county level for Nebraska and Missouri for 6 election cycles, 2000 to 2020.

Table 1: Data Summary

	Description	Count	Mean	std	Min	Max
Total Votes	Total votes per county	1243	16661.07	47200.27	262	559854
Total Population	Total population per county	1243	37118.09	100823.1	338	1016330
Median Age	Median age in each county (years)	1243	41.771	5.018	26.6	59.5
Vacancy Rate	Percentage of houses that are vacant	1239	0.171	0.085	0.039	0.603
Non-White	Percentage of population that's not white	1243	0.047	0.072	0.00	0.63
%Voted Democrat	Share of votes for Democrats (percentage)	1243	0.284	0.113	0.047	0.837
Number of votes for Democrats	Number of votes for the Democratic Party	1243	6911.134	25667.09	14	333123
Number of votes for Republicans	Number of votes for the Republican Party	1243	9345.599	21466.13	217	244969
Poverty Rate	Percentage of population below poverty line	1243	0.143	0.052	0.034	0.31
Number of Establishments	Number of economic units in each county	1243	1088.818	3239.102	11	41265
Log Average Weekly Wage	Average weekly wages, logged in each County	1243	547.706	155.107	240	1368
Democrats Win	Binary variable: 1 if Democrats win in a County, 0 otherwise	1243	0.035	0.185	0.00	1.00

Notes: Data pulled from the United States Census Bureau, BLS, CDC, and MEDL. The summary statistics for the variables which will be used in the models are displayed above. Economic units are described as any physical unit that supplies goods or services.

The Model:

To implement this study, two difference-in-differences models will be used. The first model will track, what we will call, the extensive voter margin. In other words, the first model will track whether the enacted policy will lead to a change in the probability that Democrats win in the counties of Nebraska. This will be accomplished by using a linear probability model, which holds that the dependent variable is binary; equaling 1 if Democrats win in a county and 0 otherwise.

$$\begin{aligned} DemocratsWin_{ijt} = & \beta_0 + \beta_1 policy_i + \beta_2 time_t + \delta(policy * time)_{it} \\ & + X'_{jt} \Pi + \epsilon_{ijt} \end{aligned} \quad (1)$$

The second difference-in-differences model will be used to measure the intensive voter margin, or the change in the proportion of votes given to the Democratic party for any given county.

$$\begin{aligned} \%VotedDemocrat_{ijt} = & \beta_0 + \beta_1 policy_i + \beta_2 time_t + \delta(policy * time)_{it} \\ & + X'_{jt} \Pi + \epsilon_{ijt} \end{aligned} \quad (2)$$

In both equations, subscript, i , represents the state, j , represents the county, and t , the time period. The *policy dummy* variable represents the treatment group, the counties in Nebraska and the *time dummy* variable represents the periods post policy, 2012 to 2020. The interaction of the *policy* and *time* variable then captures our difference-in-differences effect of the policy on voter behaviour, our variable of interest. Both types of difference-in-differences models have been used in other economic voting papers. The first model (linear probability model) is similar to the one used in Elinder, Jordahl, and Poutvaara's (2015) work on Swedish childcare policy, where they also used a binary variable to track whether individuals voted for the Swedish Left Bloc party. Our model which tracks the intensive margin, follows the work of Kessner and Warshaw (2019) in their difference-in-differences model on whether the presidential party is held accountable for the state of the economy.

The X'_{jt} variable is our vector of controls, which can be divided into two main categories. The first set of controls represent economic controls and include: *vacancy*

rates, poverty rates, logged weekly wages, and number of establishments. The second set of controls represent demographic controls and include: *percentage of non-white population, total population, and median age.* Given the two models and the two sets of controls, there will be a total of four iterations, where each model will be run with just economic controls, and then with both economic and demographic controls.

When running all four models, standard errors will be clustered at the county level. This will be done as there is no doubt there are individual variations related to each county, which should be clustered and accounted for. If clustering was not present, the resulting standard errors may be lower they should be, leading to false rejections of the null. We have also explicitly decided to only cluster at the county level, rather than at the county and time level. Although it is safe to assume that variation between counties is independent, it would be unrealistic to assume that variation for each county over time is independent. It is likely that a county's variation over time is serially correlated, and thus we do not cluster at the time level.

Expected Results

Considering our models, previous work and intuition would lead us to some expected results. For both models (extensive and intensive), we would expect to see a positive coefficient on our policy effect variable (*policy * time*) following the incumbency theory, as the incumbent party during the implementation of the policy was the Democrats, under Barack Obama. Other supporting factors for this result also come from the fact that the policy was granted at the federal level, creating a link between the Democratic presidency and the policy. A positive result would also align with much of the work from above, including the works of Kessener and Warshaw (2019), which found that the state of the economy does reflect on the performance of the presidency rather than officials at lower levels of government. Following the intuition of prospective voting, we would expect to see a negative sign on the policy effect variable (*policy * time*). This would be the case because the enactment of the NESL, would mean a more stable labour market for Nebraska. Then, by following the results from Pařtor and Veronesi (2019), we can deduce that a more stable labour environment leads to lower risk, and therefore, preference for Republicans.

Results:

From Table 2, the results of the four models are shown. The first two columns represent the extensive (linear probability model) and intensive (OLS) models, only including economic controls. The latter two columns present both models with economic and demographic controls.

From the extensive model, we can quickly see that the effect of being in the treatment group (*policy dummy*) would on average decrease the probability of Democrats winning post-policy in any given county in Nebraska by 0.087 percentage points, holding all else constant. However, this result is not significant. The *time* dummy tells us that the control group in the post-policy period would have likely seen a -6.68 percentage point decrease in the probability of Democrats winning on average, if all else was constant. This result is also significant at the 99% confidence level. This leaves the constant (-0.556) as the voting behaviour of the control group before policy implementation, which is significant at the 95% confidence level. The effect of the policy is about 3.28, implying that the policy increased the probability of Democrats winning by 3.28 percentage points, holding all else constant. Although only this result is only significant at the 90% confidence level, it does shed some light on the average effect that policy had in favouring votes for the Democratic party. Moreover, the positive effect of the policy on voting for Democrats highlights the effects of retrospective voting. In other words, the enactment of the NESL led to a higher chance of voters favouring Democrats, as the NESL was granted by the Democratic party. This result also aligns with the theoretical works of Fair (1978) and empirical results of Elinder, et al. (2015).

For the economic control variables, we can continue to see some interesting results. Log average weekly wages holds a coefficient of 0.085, which means that a 1 percentage point increase in weekly wages will lead to 0.085 percentage point increase in the probability that Democrats win, all else constant. This result is significant at the 5% significance level and gives some insight in the fact that richer counties tend to be more Democratic. The coefficient on the number of establishments is very small and significant at the 99% confidence level. This result aligns with the result on wages and seems to imply that counties with more establishments – more economically developed – tend to also be more Democratic. The vacancy rate holds a negative sign (-0.006), which implies that, all else constant, counties with higher vacancies tend to lean more Republican, however, this result is insignificant. Interestingly, we see that the poverty

but insignificant. More importantly, our variable of interest, the *policy effect*, shows that the implementation of the NESL on average caused a 6.41 percentage point increase in the voter share that favoured Democrats, holding all else constant. This result is also significant at the 99% confidence level. Similar to the extensive model, this result shows

Table 2: Model Output

VARIABLES	(1) Extensive Margin Model (1)	(2) Intensive Margin Model (2)	(3) Extensive Margin Model (1)	(4) Intensive Margin Model (2)
Policy Dummy	-0.000877 (0.0243)	-0.101*** (0.0126)	-0.0130 (0.0212)	-0.101*** (0.0108)
Time Dummy	-0.0668*** (0.0204)	-0.135*** (0.00682)	-0.0658*** (0.0208)	-0.129*** (0.00676)
Policy Effect	0.0328* (0.0185)	0.0641*** (0.00659)	0.0348** (0.0172)	0.0675*** (0.00579)
Vacancy Rate	-0.00615 (0.0564)	-0.260*** (0.0527)	0.0248 (0.0525)	-0.161*** (0.0600)
Log Weekly Wages	0.0855** (0.0419)	0.0657*** (0.0246)	0.0393 (0.0319)	0.0189 (0.0215)
Number of Establishments	2.48e-05*** (4.22e-06)	8.59e-06*** (1.99e-06)	4.35e-05** (2.09e-05)	1.61e-06 (8.83e-06)
Poverty Rate	0.440** (0.222)	0.256** (0.122)	0.166 (0.141)	0.0679 (0.0933)
Non-White			0.532*** (0.172)	0.375*** (0.0712)
Total Population			-7.40e-07 (7.69e-07)	1.51e-07 (2.99e-07)
Median Age			-0.000485 (0.00188)	-0.00202* (0.00111)
Constant	-0.566** (0.276)	-0.0326 (0.163)	-0.235 (0.203)	0.337** (0.149)
Observations	1,239	1,239	1,239	1,239
R-squared	0.261	0.539	0.293	0.584
Clustered SE	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Extensive margin represents the Linear Probability model, and the Intensive margin represents the OLS model. Columns (1) and (2) only contain economic control variables, whereas (3) and (4) include economic and demographic control variables.

that the incumbency effect (retrospective voting) tends to have a dominating effect in this study, as prospective voting would induce a negative coefficient. Once again,

column 2 shows the estimates for the vacancy rate (-0.260), weekly wages (0.065), number of establishments (close to zero), and the poverty rate (0.256), which are all significant and follow the same intuition as before.

In column 4, adding demographic variables, the *policy dummy* and *time dummy* change again, but remain significant. The *policy effect* increases to 0.067 , from 0.064 , and is still significant at the 99% confidence level. Again, similar to the results in column 2, most of the economic variables lose significance, except for vacancy rate (-0.161). Of the demographic variables, only *Non-White* and median age hold any level of significance. *Non-White* shows a 1 percentage point increase in the non-white population will lead to a 0.375 percentage point increase in votes for Democrats, holding everything else constant. The median age estimate of -0.002 implies that a one-year increase in the median age for any given county, will lead to a 0.2 percentage point decrease in votes for Democrats. Once again, these results follow the intuition stated above.

Discussion/Limitations:

Although the difference-in-differences model has shown significant findings regarding retrospective voting, for these results to hold, the assumption of parallel trends must be satisfied. In essence, parallel trends require that the variations between voting patterns for Missouri and Nebraska are constant until the implementation of the policy. This assumption allows for causality, as without it only correlation can be determined.

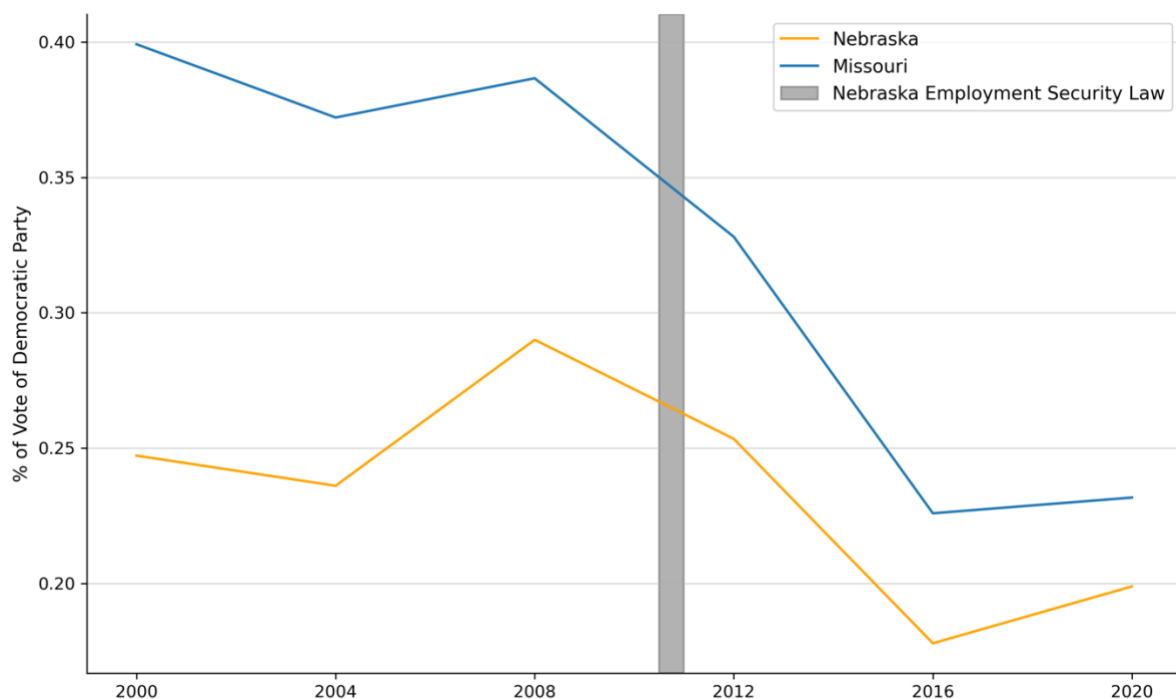
To test for parallel trends, a visual observation can be done, look to Figure 2, and a placebo test can be used. Figure 2 would suggest some parallel trending between the two states, but a placebo test will be conducted to get a concrete answer. The placebo test will essentially, implement a fake – or placebo – policy in place of the real one. All observations past the actual implementation of the policy (2012) will also be dropped. For the parallel trends to hold, the policy effect must be insignificant, a $p\text{-value} > 0.1$, instigating that the real policy had a real effect on voting.

The placebo treatment will be introduced in 2004, leaving the year of 2000 as the pre-treatment period, and 2008 as the post treatment period. After running the placebo test for both models, extensive and intensive, we find that the p -values for both policy effects to be significant at the 99% confidence level. This result would strongly suggest

that the NESL, the real treatment, did not have a causal effect on voting. This result can also be visually observed by the lack of change in the voting share for Democrats in Nebraska (the yellow line in Figure 2) after the policy (the grey bar in Figure 2). Therefore, there must be other underlying reasons for the significant effects on voting for Democrats.

One big reason for failing the placebo test is likely from the fact that the employment policy instated in Nebraska was not large enough. Or that the policy was not distinct enough to have any real impact on voting behaviour. Another potential reason for this result is the residual effects from the success of Obama's presidency. Looking at Figure 2, Obama clearly had a strong impact on votes for the Democrats in 2008 for both states, but especially so for Nebraska. Therefore, the success from Obama's presidency may have had residuals effects on our models, leading to significant results with all the data and with the placebo test.

Figure 2: Voting Trends for Democrats



Notes: The percentage of the voter share for the Democratic party over time. The yellow line represents mean of all counties in Nebraska. The blue line represents the mean of all counties in Missouri. The grey bar indicates the time of the policy (NESL) introduction.

Conclusion:

Following much of the theoretical work from Fair (1978) as well as the empirical methods of Elinder, et al. we fail to find casual evidence that changes to labour market stability, our proxy for the economy, affects voting. Although our models shows that the policy effect is significant, the results from the placebo test promptly show that we can falsify parallel trends. By failing to hold the assumption of parallel trends, we cannot take the significant policy effects as a casual relationship. The significant results from the placebo test reveal that there are other underlying reasons for the positive and significant effects of the extensive and intensive models. Visual inspection of voting trends (Figure 2) also indicates the lackluster response from Nebraskan voters in presence of the NESL. Therefore, even visually we can see that the policy chosen was not very stimulating in terms of increasing votes for Democrats.

For our future research direction, we would likely implement two major changes. The first change would be to use a more impactful policy than the NESL, as a policy with a broader reach would allow us to see a greater impact on the variation of voting behaviour between states that could be captured in our difference-in-differences model. Secondly, we would expand on our control group by adding more states to our regression. This expansion again would be helpful for our model, as with a larger control group, we could more accurately discern the impact of the state policy on voting behaviour.

References

- Bridged-Race Population Estimates 1990-2008 Request*. (n.d.). Wonder.cdc.gov. Retrieved April 17, 2022, from <https://wonder.cdc.gov/bridged-race-v2008.html>
- DE BENEDICTIS-KESSNER, J., & WARSHAW, C. (2020). Accountability for the Local Economy at All Levels of Government in United States Elections. *American Political Science Review*, 114(3), 660–676. <https://doi.org/10.1017/s0003055420000027>
- Explore Census Data*. (2022). Data.census.gov.
<https://data.census.gov/cedsci/table?q=United%20States&t=Voting%20and%20Registration&g=0400000US29%240500000>
- Fair, R. C. (1978). The Effect of Economic Events on Votes for President. *The Review of Economics and Statistics*, 60(2), 159–173. <https://doi.org/10.2307/1924969>
- Kahane, L. H. (2009). It's the economy, and then some: modeling the presidential vote with state panel data. *Public Choice*, 139(3-4), 343–356. <https://doi.org/10.1007/s11127-009-9397-z>
- Local Area Unemployment Statistics Map*. (2022). Data.bls.gov.
<https://data.bls.gov/lausmap/showMap.jsp>
- MIT Election Data and Science Lab. (2018). "County Presidential Election Returns 2000-2020.", <https://doi.org/10.7910/DVN/VOQCHQ>
- Harvard Dataverse, V10, UNF:6:pVAMya52q7VM1PI7EZMW0Q== [fileUNF]
Nebraska Department of Labor Unemployment Insurance Program Annual Report. (2009).
https://dol.nebraska.gov/webdocs/Resources/Items/Annual%20Report%20PY10_reformatted_Web.pdf
- Pastor, L., & Veronesi, P. (2019, May 26). *Political Cycles and Stock Returns*. Papers.ssrn.com.
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2909281
- Pew Research Center. (2018, August 9). *An Examination of the 2016 electorate, Based on Validated Voters*. Pew Research Center - U.S. Politics & Policy; Pew Research Center.
<https://www.pewresearch.org/politics/2018/08/09/an-examination-of-the-2016-electorate-based-on-validated-voters/>
- Quarterly Census of Employment and Wages*. (2015, October 5). Bls.gov.
<https://www.bls.gov/cew/>

Group Contributions:

Kelston Chen:

Kelston oversaw the majority of the empirical work in the paper through cleaning the data, building the model and running regressions and empirical tests, interpreting model results, finding and analyzing data, discussing limitations, and working on literature reviews and concepts used in the paper.

Seth Abelson:

Seth found the Nebraska policy that was used in our model, helped introduce the topic, helped come up with what indicators and controls to use, worked on literature reviews, developed intuition behind our expected results, and interpretation of model results.

Nolan Shin:

Nolan found micro-level voter data, did literature reviews, helped interpret results and motivated the future research section for the paper and the limitations of the model.

Evan Murray:

Evan worked on control-set data collection, literature reviews, and the motivation behind our topic. He helped with expected results, and many of the concepts used in the paper.