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Factors Influencing the Likelihood of Women Winning Elections

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Factors Influencing the Likelihood of Women Winning Elections

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24 April 2020

Williams Honors College

Abstract

This study analyzes variables that increase the likelihood of women winning an election for the United States Congress spanning from 1970 to 2020. This study analyzes the relationship between how liberal the United States is and the likelihood of women winning elections. A dependent relationship was found between the level of liberalism rising in the US and women winning elections. Some of this study is also used to analyze a possible relationship between women being more likely to win open seats or those with incumbents seeking reelection. A possible relationship was found between those two variables, but it was decided that more research is needed for a more comprehensive conclusion.

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Introduction

As the political climate in America changes, attention has been brought to the number of minorities who run for public office. This project will explore various variables that affect the number of women who win elections in the United States Congress. These variables include how liberal the nation as a whole is and whether the seat a woman is elected to was incumbent-challenged or open. The overall goal of this project is to find correlations between what does or does not increase the number of women who have won elections. The US Congress from 1970 to 2018 will be analyzed for the effects of the level of liberalism while 1980 to 2020 will be analyzed for the effects of seat competition (incumbent-challenged or open).

The correlation between these variables and women winning elections is important because the number of women in office has increased with time, so these variables can help explain why that is. By knowing what increases the likelihood of women winning an election, it can also open doors for women in the future. That is the motivation behind this project: getting more women in office nationwide. Even further, this study could bring attention to other minorities and increase their representation through winning elections. By extending diversity and inclusivity among officeholders nationally, there also could be an increase in political participation and awareness in policy of all domains. So many Americans feel a low amount of voter efficacy, but I believe by having a more diverse elected body more voters will see their votes visually in a way.

Some limitations from past studies and this study is that the number in elected office especially on the national scale has just dramatically increased in the last few years. This could show a slight skew in data but will be able to be explained in a larger capacity if this trend continues for a few decades. With that being said, I will use data spanning a total of 48 years for my first

hypothesis and 40 years for my second hypothesis which allows long term trends to be seen in what a relatively new topic of study is (women could only vote in this past century). All in all, studying what increases the chances of women winning elections is important in order to get more women in office in the future as well as other minorities in the long run.

Literature Review

In order to increase inclusivity in the United States, diversity in the US's government must also increase. The correlation of factors that have influenced women winning elections for public office has been studied many times in the past handful of decades. This discussion focuses on past studies that analyze what encourages women to run for public office and what leads to more women winning elections. It should be prefaced that this subject of study is ever-changing as social norms and political climate have altered throughout the past century. The relationships between women and overall recruitment to run has been deliberated and may play a role which would mean if they are not among the general recruitment pool then their chances of winning elections diminish. Another relationship that has been studied and correlates with whether women win or lose elections is if it is an open versus incumbent seat. Liberal versus conservative districts have also been called upon to be some of the most extensive and possibly correlated relationships surrounding the question of how to get women to run. My first and primary hypothesis, if the nation is more liberal then more women will win elections, is supported by studies which will be explored later in this review. My second hypothesis, if it is an open seat then women are more likely to win, is supported through past studies.

First, women need to run in order to win elections. In regard to the specific relationship between women and lack of recruitment, some research has shown that throughout American history, women have often been discouraged to be politically active (Welch 373). The 1978 study highlights the relationship between women becoming politically active and part of the sex role explanation. An essential feature of the sex role explanation is women historically have been directed to not pursue "male" occupations such as law, business, and medicine (Welch 373). This in turn decreases the number of women in the recruitment pool; Welch argues women are

underrepresented in those who hold an elected office because they are underrepresented in the eligible recruitment pool (373).

A 2008 study by the Brookings Institution analyzed whether men and women in the same specific professional tier (professional tier meaning similar income, professional status, political interest, age, and education) were equally as likely to be recruited or encouraged to run. Specifically, the study asked if the men and women in the sample had been suggested to run by a party official, elected official, non-elected political activist, co-worker, friend, spouse/partner, family member, or religious connection, and in every category, they found men more likely to be approached to seek an elected office (Lawless & Fox 5). Interestingly, twenty six percent of women in the study had been reached out to by a women's organization asking if they would be intrigued by seeking an elective office in the future (Lawless & Fox 9). These two studies combined show that although attitudes about women in the professional world may change, there is still a clear disadvantage for women in the recruitment stage of seeking an elected office.

Other relationships to consider are which seats women may choose to run for and whether the likelihood of winning plays a role in making this decision. An example would be whether women are more likely to seek an office on the state or federal level. A 2006 study highlights the ambition to hold an office and the decision to run; in the end, the study concluded female state legislators are just as likely as male state legislators to seek a seat in the US House of Representatives even though it measured women to have lower ambition than men. This lowered ambition was offset because women lay greater emphasis on the expected benefits and outcomes of seeking and holding an elected office making women possibly more "strategic" (Fulton et al 245). Similarly, the characteristics the electorate wants of those who hold offices may play a role in whether women win a specific election. Leonie Huddy and Nayda Terkildsen

conducted a study in 1993 that found whether the stereotypes are accurate or not, they found the electorate prefers “male” characteristics the higher the office is (503). Therefore, women may not be as likely to win seats where that specific electorate wants “male” characteristics. These two studies conducted by Fulton et al and Huddy and Terkildsen create a complicated aspect that should be studied in the future of how women measure the possible net sums in hand with the perceived stereotypes the electorate holds. In the end, it is hard to clearly distinguish which seats women are more likely to be drawn to run for, but level of ambition and the perceived stereotypes may play a role in that decision.

Moreover, there may be a correlation between women winning urban seats rather than those that are more rural. This correlation is more so a correlation of the number of women in the workforce in urban areas versus that of rural areas. One study conducted in 2015 found women to be more likely to run for offices near the state capital. The author, Rachel Silbermann, found this to be because women are more heavily involved in childcare and housework, so commuting for women can be a larger challenge than for men (123). As of 2016, Pew Research determined mothers spend fourteen hours a week outside of work on childcare (although fathers are on a rise as well with their time spent on childcare at eight hours a week) (Geiger). According to the United States Census, there are higher rates of working women in urban areas than in rural areas from ages twenty to sixty-four (US Census Bureau). Applying the concept of the recruitment pool, there would be more women in the pools for urban areas than rural areas which would also increase the greater correlation of women in urban districts.

Similarly, women are more likely to win liberal districts than those that are conservative. A Pew Research Center study from 2018 compared Republicans and Republican-leaning voters who are male with those that are female to see if both sexes thought gender discrimination was a

major reason why there were not more women in high political offices. The study specifically found fourteen percent of the male Republican voters thought there were not enough whereas forty eight percent of female Republicans thought there were too few with thirty percent of the total Republican pool saying it a major reason (Horowitz et al). On the opposite side, seventy nine percent of Democrats and Democratic-leaning voters found gender discrimination to be a major reason there are not more women in high political offices (Horowitz et al). This simple study shows how differing the parties are when it comes to gender discrimination, and this showcases a specific thought process among the Republican men: women do not face extra hurdles to get elected.

The Republican party has also moved away from centrist, pro-women's rights issues and further right over the past forty decades. Welch's 1985 study calls attention to the trend that was surfacing at that time of women being more liberal than men with female officeholders putting a heavy emphasis on women's issues (Welch 125). Her study found women were more likely to vote as Democrats than Republicans, and the study credits a few different things for that. Among those reasons she accredits to women are favoring other minorities, less pro-military, and not traditionally playing the "careerist game" to the extent men do (Welch 127). Of course, this study was conducted in 1985, so it was just starting to show the trends of female voters more regularly being more liberal. Trends showing which ways women tend to vote also explains which platform women who do win will typically fall under. This could explain why numbers of women in Congress have exponentially increased but much more dramatically for the Democratic Party ("Women in the US Congress 2020").

With that being said, it is important to link how women vote and for who women vote. A study in 1998 found women are more likely to support women candidates than men (Dolan 272).

This is important to distinguish because otherwise women may vote one way but may not actually vote for women; by showing a link between the two there is a link between women voting for women and women candidates winning elections as Democrats. Therefore, women have a higher chance of winning as Democrats than winning as Republicans.

These studies all in all favor the concept of women being more likely to win open, urban, seats rather than those that are challenged by an incumbent and in a rural district. These characteristics being outlined and empirically supported are important to understand what leads women to winning more elections and what needs to happen in order to have more women win for high political offices in the future. This data can also outline what regions in the future could be swing districts in tight races with female candidates theoretically. I will explore current data in my own methodology and conclusion that should reflect my first hypothesis positively.

Another aspect that some research has been conducted in is whether women are more likely to win in areas where childcare is cheaper or subsidized. In order to increase women in office, it has been suggested that subsidized childcare could have an effect amongst women and mothers. Alaska's state legislature approved a childcare center to be built right next to the Capitol in 2009; even though this center was unsubsidized, it was approved in hopes of alleviating some of the struggles parents in the legislature face (Silberman). This is just one in the movement to make officeholding easier for women. A survey amongst Yale University undergraduate students found "students who wanted to work part-time after having children were 5 percentage points less interested in running for Congress than other students. Female students were twice as likely to want to work part-time after having children than male students were" (Silberman). This shows the relationship that exists between ambition, having children, and running for office/labor participation.

Fulton et al also explored this relationship. Their study found the predictability of being “somewhat” to “extremely” ambitious without children in the household to those with children amongst state legislators. The female state legislators without children had a predictability level of 48% (while the level amongst the male state legislators was 49%). Meanwhile, the women with children in the household had a predictability level of 33% (while the men’s was 58%). This shows the flip in dynamics between the genders with and without children and how women have a lower predicted ambition level if there are kids in the household while it increases for men (241). Although this study does not take childcare subsidies into consideration, it makes it clear that women are at a lower probability of ambition in regard to holding public office.

Similarly, a study from 2011 concluded childcare subsidies increase the amount of all women in the labor force (Haan and Wrohlich). Although this is not specific to whether women will win public office, this does correlate childcare costs with female participation in the professional world. This relationship feeds into the point Welch made that women are largely not represented in the recruitment pool (373); by providing childcare, women are more likely to be active participants of the labor force which will then supply more women in the recruitment for public office. These studies are not specific to childcare subsidies for women in office, however they may lead to the correlation of the two. Overall, there is not clear support for my third hypothesis, but there are studies that may relate in a distant manner, but more research is needed to clearly define where my hypothesis falls.

Through past studies, my primary hypothesis, if the nation is more liberal then more women will win elections, is supported. In regard to my second hypothesis, if it is an open seat then women are more likely to win, it is supported through past studies. Of course, this aspect of social and political science as well as social norms are quickly changing, so these various

relationships are also subject to change. By summarizing past studies and how they relate to my hypotheses, I am able to more clearly move forward with my study and data collection while keeping in mind my results may differ based on the current social norms and political climate in the United States. Looking at past studies also has helped shape my methodology; the various studies mentioned throughout this literature review have used different methods of data collection. Many of the studies utilized regressions which is partially why I have chosen to use a regression with my main and primary hypothesis. These studies and research are vital to understand the past and future participation of women holding public office.

Variables

Dependent:

- Number of women in Congress

Independent:

- Percent of liberalism in the US
- Open vs incumbent-challenged seat
- Member of Democrat Party vs Republican Party

Hypotheses

Hypothesis 1:

If the nation is more liberal, then more women will win elections.

This is the main and primary hypothesis of this research. The independent variable, the level of liberalism nationwide, will affect how many women win elections because both the number of women in Congress and the amount of liberalism in the US have increased over the past fifty years. A higher level of liberalism leads to more women being elected similarly to how women are more likely to identify with the more liberal Democratic Party as discussed in the literature review above. In my research through the literature review, the relationship between women being more liberal is linked to women favoring other minorities, being less pro-military, and not looking at being long-term, career politicians like men tend to. The fact that women tend to be more liberal will therefore bring more women to win elections nationwide as they identify with the larger, liberal majority than many men. My analysis from this study suggests this relationship is dependent upon each other, and with increased levels of liberalism nationwide, there will be increased levels of women winning elections nationwide.

Hypothesis 2:

If it is an open seat, then women are more likely to win.

Based on my literature review, research suggests women are more likely to run for open seats than those with an incumbent seeking reelection. This leads to the suggested relationship between women winning more open seats than those that win incumbent-challenged seats.

Historically, studies have shown women to be less ambitious professionally and electorates often want “male” characteristics in candidates, so logically women may not want to challenge a male incumbent for those reasons. If more women win open seats, then it shows the possible discrepancy in recruitment of women to challenge male incumbents. Since studies suggest less women challenge incumbents, women are more likely to win open seats.

Methodology

For this study, I am focusing on women who are in the United States Congress ranging from 1970-2020. I will also be using a measurement of how liberal the United States is in that same time range. By choosing a measurement of the whole nation rather than a measurement of the political trends in Congress itself, I am able to measure if how liberal the nation is has a direct relationship with how many women win legislative elections. For my second hypothesis, I will use the women of the Senate, and if they faced an incumbent or an open seat (or were appointed). By analyzing this relationship or lack thereof, I can see if women are more likely to win an election based on if there is or is not an incumbent looking to keep that seat.

For my first hypothesis which centers around how liberal America is, I gathered the number of women in Congress from 1970 to 2018 because there was a single, reliable study done by political scientist James Stimson. His study ranges from 1952-2018 and focuses on American's sympathy to liberal economic policy. His index indicates America has become more liberal over time and as of 2018 was as liberal as the nation had ever been (Stimson). Through this study, I gathered how liberal the nation was every year in the form of a percent, and I used that as my independent variable. For my dependent variable, I converted the number of women in Congress to a percentage, and from there I created an OLS regression model.

This model tells me if my hypothesis of women being more likely to run when the nation is more liberal is correct or not. For this test, I want a Significance F less than 0.05, as this would ultimately determine if the test is even a reliable test for this relationship. If my hypothesis is correct then the Pearson's Correlation Coefficient will be a positive integer; this value indicates a stronger statistical relationship the closer to 1 or -1 it is. I also will analyze the standardized coefficient (beta) from the regression. This value tells me the effect of every year used on the

percent of women in Congress over the measured time. If this number is positive, then it shows that there is indeed a positive linear relation and negative vice versa.

For my secondary hypothesis, which states women are more likely to be elected through open seats than through incumbent-challenged seats, I gathered data on women in the United States Senate from 1980-2020. I broke down the 41 women of the Senate to those who were elected to an open or incumbent-challenged seat or appointed, and I used a chi square test to measure whether my hypothesis was correct or not. For the chi square, I made the hypothesized proportions $\frac{1}{3}$ as my null hypothesis states there will be no difference between the three seat options (open, incumbent-challenged, appointed). I then calculated the expected values which were 13.667 ($\frac{1}{3}$ of 41) and from there used the chi square test function in Excel to find the P-value and test statistic.

Through this test, I am able to see if the 41 women in the US Senate during that time period are more likely to win an election by which seat type they are running for. I want a P-value that is less than alpha (0.05), so it can be determined if the test is reliable and if the null hypothesis should be rejected. I want a smaller test statistic as that explains a good fit to the population whereas a larger test statistic tells me the observed data does not fit the expected data very well. I chose to only analyze the women of the US Senate for the second hypothesis because I simply did not have the time and resources to go through elections of every female of the US House for 1980-2020. Although the Senate only had 41 women in it for that time period, this data offers a statistical glance into what makes women more likely to be elected.

The regression for my first hypothesis and the chi square for my second hypothesis will tell me whether my hypotheses were correct or if they should be rejected. These are two reliable ways to measure a relationship, but the regression is a stronger, clearer indicator. I will not do a

regression for my second hypothesis because it is a categorical variable with too small of numbers to break down year by year. If I had the time to include the House in this hypothesis then I would probably also run a regression because there would be more women in the mix, but as stated above, that is not compliant with the timeline of this research. Overall, the regression and the chi square will be the basis for my conclusion and inferences drawn from this study.

Research Design

For my first hypothesis, I used an OLS regression as stated above. Through this regression, I could see the relationship between women in Congress and how liberal the United States is overall. For how liberal America was during the given years, James Stimson's liberalism in American estimate provides exact percentages per year. These percentages could then be used alongside the percent of women in the United States Congress. To get the percent of women, I simply took the number of women, divided it by 535 (for the total number of Congress members), and multiplied it by 100 to get the percentages I used.

I found the Pearson's Correlation Coefficient to be 0.4979 which shows a positive linear relationship. The coefficient of determination (R Square) is 0.2479 meaning the data could have fit the regression trendline decently better, but nonetheless there is a relationship between the two variables. Similarly, the standardized coefficient (beta) is 0.7061. This is important because it is a decently high coefficient, and it tells me that the overall percent of liberalism in the United States does have an effect on how many women win elections for the US Senate. The P-value for this regression was 0.00027, which is well below alpha (0.05), which means I should reject my null hypothesis and recognize a positive relationship.

Year	Number of Women	Percent of Women	Percent Liberal
1970	11	2.056074766	60.125
1971	15	2.803738318	64.024
1972	15	2.803738318	63.459
1973	16	2.990654206	58.216
1974	16	2.990654206	57.272
1975	19	3.551401869	57.02
1976	19	3.551401869	56.557
1977	20	3.738317757	54.614
1978	20	3.738317757	54.258
1979	17	3.177570093	54.287
1980	17	3.177570093	51.209
1981	23	4.299065421	53.187
1982	23	4.299065421	53.329
1983	24	4.485981308	58.195
1984	24	4.485981308	58.694
1985	25	4.672897196	58.544
1986	25	4.672897196	59.756
1987	25	4.672897196	62.371
1988	25	4.672897196	64.203
1989	31	5.794392523	65.821
1990	31	5.794392523	64.166
1991	32	5.981308411	65.157
1992	32	5.981308411	65.188
1993	54	10.09345794	61.864
1994	54	10.09345794	57.51
1995	57	10.65420561	55.432
1996	57	10.65420561	56.132
1997	63	11.77570093	58.595
1998	63	11.77570093	58.896
1999	65	12.14953271	60.374
2000	65	12.14953271	60.579
2001	72	13.45794393	59.381
2002	72	13.45794393	63.72
2003	74	13.8317757	66.22
2004	74	13.8317757	64.996
2005	82	15.3271028	66.8
2006	82	15.3271028	66.233
2007	88	16.44859813	66.022
2008	88	16.44859813	65.861
2009	90	16.82242991	64.924
2010	90	16.82242991	61.435
2011	90	16.82242991	61.841
2012	90	16.82242991	60.891
2013	100	18.69158879	60.434
2014	100	18.69158879	59.506
2015	105	19.62616822	60.155
2016	105	19.62616822	62.589
2017	110	20.56074766	67.169
2018	110	20.56074766	69.149

Above, there is the set up for the percent of women and percent of liberalism in America broken down by year.

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Pearson's Correlation Coefficient	0.49793464							
R Square	0.2479389							
Adjusted R Square	0.2319376							
Standard Error	5.33942957							
Observations	49							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	441.752617	441.752617	15.4949224	0.00027204			
Residual	47	1339.94688	28.5095081					
Total	48	1781.6995						
<i>Coefficients</i>								
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-32.952499	10.9224105	-3.0169622	0.00411255	-54.925555	-10.979443	-54.925555	-10.979443
Percent Liberal	0.70609346	0.1793773	3.93635903	0.00027204	0.34523288	1.06695405	0.34523288	1.06695405

Above is the summary output from my regression for my first hypothesis analyzing the relationship between women winning elections to the US Congress and how liberal the US is.

For my second hypothesis, I gathered the seats women won or if they were appointed and how many of each. I found 3 of the female senators to have been appointed, 10 won seats that were incumbent challenged, and 28 won open seats. Then I used a chi square test to test the relationship between women in the US Senate and whether they were elected through an open or incumbent-challenged seat or were appointed. This test resulted in a P-value of 5.17986E-06 which is much smaller than alpha (0.05). This means my null hypothesis (that if it is an open seat then women are less likely to win) can be rejected with a 95% confidence, and there is indeed a dependent relationship between the two variables.

Seat Type	Hypoth Propor	Observed	Expected
Appointed	0.333333333	3	13.6666667
Incumbent	0.333333333	10	13.6666667
Open	0.333333333	28	13.6666667
		41	
p value	5.17986E-06		
Test Stat	24.34146341		

Below is the set-up of the chi square test as well as the results from the test.

Name	Open/Incumb
Martha McSally	A
Kelly Loeffler	A
Kirsten Gillibrand	A
Carol Moseley-Braun	I
Tammy Duckworth	I
Elizabeth Warren	I
Claire McCaskill	I
Jacky Rosen	I
Jeanne Shaheen	I
Maggie Hassan	I
Kay Hagan	I
Kay Bailey Hutchinson	I
Maria Cantwell	I
Lisa Murkowski	O
Blanche Lincoln	O
Krysten Sinema	O
Dianna Feinstein	O
Barbara Boxer	O
Kamala Harris	O
Paula Hawkins	O
Mazia Hirono	O
Joni Ernst	O
Nancy Landon Kassebaum	O
Mary Landrieu	O
Susan Collins	O
Olympia Snowe	O
Barbara Mikulski	O
Debbie Stabenow	O
Amy Klobuchar	O
Tina Smith	O
Cindy Hyde-Smith	O
Deb Fischer	O
Catherine Cortez Masto	O
Kelly Ayotte	O
Elizabeth Dole	O
Heidi Heirkamp	O
Hillary Clinton	O
Marsha Blackburn	O
Patty Murray	O
Shelley Moore Capito	O
Tammy Baldwin	O

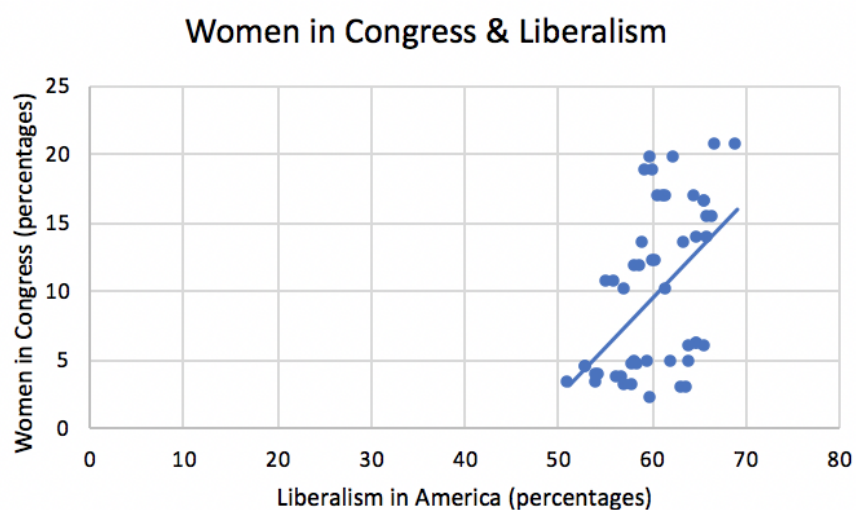
To the left is a list of all 41 female Senators and whether they were appointed (A), were elected to An open seat (O) or an incumbent-challenged seat (I).

Conclusion

In conclusion, I found my primary hypothesis to be supported which means women are more likely to win if there is a higher percentage of liberalism nationwide. I found this through my linear regression analysis. I also concluded my second hypothesis, women are more likely to win open seats than those that are incumbent-challenged, to be true which I discovered through my chi square test. With that being said, my hypotheses and study did have some limitations whether they be time related or resources being scattered especially those involving election results. Although I found both of my hypotheses to be correct, there is always room for further study whether it be a larger sample size or with a longer sample period since women winning elections in large numbers is somewhat of a new phenomenon. This study focused exclusively on the United State Congress, so this relationship should be explored on the state level in the future as this may bring about different results based on demographics and socioeconomic statuses within the various states' electorates. In the end, by both of my hypotheses being supported, I hope these relationships lead to the discovery of other relationships that all in all can be used to increase the diversity among representation in America.

Through my regression analysis, I discovered a linear relationship between the number of women in Congress and the percentage of liberalism in the United States nationwide. The percentage of liberalism was found by political scientist James Stimson and was based on American's attitudes towards liberal economic policies. I found that as the attitude towards liberal policies became more positive, there were more women being elected specifically to the United States Congress. The Pearson's Correlation Coefficient is measured at 0.4979 meaning there is a positive level of correlation between the two variables. The value of the standardized coefficient (beta) is 0.7061; this value offers a standardized view of the relationship as if the

variances of both variables were 1. This value allows the study to be compared to other similar studies that ran regressions, so if a similar study were to be conducted in twenty years, this number could be used to compare how the relationship has changed in a standardized fashion. The regression's P-value of 0.00027 tells me the null hypothesis of there being no difference or an inverse relationship existing can be refuted. This value quickly shows my primary hypothesis is supported.



Above, liberalism on the rise in America with women winning elections in America are increasing as well.

Limitations regarding this part of the research revolve around the lack of women that have been in politics at this point. The sample size is not incredibly large, and that naturally causes some limitations. The nation saw a major increase in women running and winning elections in 2018, so that was a slight limitation; I believe there is a major shift taking place in the current political atmosphere in the United States, and women are in center of it all. To have a study take place in twenty years or so from now would have been preferable, as there is a new trend starting to take place in this country. Just by simply having more data whether there ends up being a new trend or not still provides more credibility to a study, nonetheless. With that being said, I do believe this regression leads into the question of whether women are more likely to win an election as a Democratic candidate or a Republican one, but a future study based on what makes women run for candidates as either party would have to be done, as more women run as Democrats than Republicans in state legislatures (Carroll & Sanbonmatsu).

In general, the number of women has increased drastically over the last fifty years. In my study, I did not include 2019 in which there were 127 women in Congress because Stimson's study stopped in 2018. It would be interesting to see how that year as well as the next ten to twenty years go in terms of the number of women winning elections after there have been more ultra-conservative leaders being elected globally. Similar to how firearm bans increase firearm sales, I think it would be interesting to see if there is a relationship between the anti-women language to the number of women winning elections (Aisch & Keller). This would definitely be a strong point of future studies and research. A state by state comparison of women winning elections in relation to the socioeconomic status, race, ethnicity, and liberalism would also be a good topic of future research, as it would offer a more in depth look at what regions of the country women have better chances of winning elections in.

My second hypothesis, if it is an open seat then women are more likely to win, is somewhat supported by the chi square test discussed in the Research Design section. The P-value from the chi square of $5.17986E-06$ provides more than enough reason to reject the null hypothesis, if it is an open seat then women are less likely to win. While this is not my main hypothesis and the data is categorical, I only ran a chi square test. This test says the variables are not independent, but further testing would be needed in order to confidently state the relationship of women winning open seats and likelihood of winning; this is why I stated the hypothesis only being somewhat supported by the test.

Future research should include the US House since the Senate only offers a small fraction of women. If that were to happen though there would have to be a way to not include women in the Senate who have been appointed, as the House holds special elections to fill vacant seats. As stated above, the Senate includes only a small number of women, but there was not enough time to dedicate to go through every House race over the last 40 years that a woman has won in order to see whether there was an incumbent challenging or not. This is another reason I state the hypothesis as only being somewhat supported. I found the results from this hypothesis to show there is room for further research in this specific topic as there may be a relationship between women winning elections and whether the seat was open or incumbent-challenged. Another area of future study could be factors that influence the gender of appointees to the US Congress, as it was clear women were not likely to be appointed from my own data collection.

With the results from the regression and chi square test for my two hypotheses, I can conclude that women are more likely to be elected as America becomes more liberal and possibly to seats that do not have an incumbent seeking reelection. I infer this to mean women are more likely to be elected in a specific district that is more liberal than one that is less liberal.

According to the trends that James Stimson found, America is generally becoming more liberal with time; therefore, the number of women being elected will increase as time goes which is a trend that is already being seen. Through this study and conclusions, I believe it can be used to better understand what affects the chances a woman will be elected. Of course, further studies should be done on this subject, but there is now a known relationship between women winning elections and how liberal the United States is.

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