INTRODUCTION[1]

Just over twenty years ago, on September 5, 1995, First Lady Hillary Clinton stood before the United Nation's Fourth World Conference on Women in Beijing, China, and declared that "human rights are women's rights, and women's rights are human rights." Her speech marked a key point in the steady climb of women's representation in elective office in the United States, which started to gain speed in the early 1990s with the Year of the Woman in 1992 and hit a historic high after the 2014 election, with women making up 19% of Congress at that time. However, since then the progress towards greater female political participation in elected office became stagnant until the 2018 elections. The 2016 election marked the first year with no net increase of women's participation in Congress since the 1970s. Further, the proportion of women in the U.S. Congress is also only half of the global average for national legislatures.

Following years of increase in women's representation in Congress, one must wonder about the causes of stagnation. In previous decades, women were less likely to be recruited by political parties and were frequently marginalized by being assigned to volunteer roles (Dolan, Deckman, & Swers, 2017). Further, parties often offered up women as "sacrificial lambs" by having them run as candidates in districts where they had little chance of winning, such as a district with a strong incumbent from the other party. However, since the late 1980s to early 1990s, this party bias against women has nearly disappeared. Interviews with major political party players in states across the country confirm that gender no longer plays a role in the recruitment of potential political candidates (Sanbonmatsu, 2010).

Recent studies show that women are just as likely to be elected as men when they do run for office, so their ability to compete in the political arena is not the source of the underrepresentation of women in political office (Lawless & Fox, 2012). Democratic women even have a very slight edge on Democratic men in primary competitions, winning 56% of the time compared to Democratic men winning 55% of the time (Lawless & Pearson, 2006). Some researchers have asserted that the disparity in representation may result from women having much lower ambition to run for political office than men do. These lower levels of ambition evident for women stem from a multitude of sources including gender norms, a confidence gap, self-perception, and family roles (though this research is not without its critiques; see for instance, Lawless & Fox, 2005; Dolan, Deckman, & Swers, 2017; Clark, 1991; Rule, 1981; Kanthak & Woon, 2013). Fewer women running for office ultimately results in fewer women holding an elected position.

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The lack of women holding elected office affects the way, and to what extent, female constituents are represented in the legislature. Descriptive representation, the extent to which female representatives stand for other women, is the most obvious type of representation, but not the only one (Pitkin, 1967; Bayer & Mishler, 2005). Substantive representation for women, the actions taken by representatives on behalf of their constituents, can increase when women are in office because they often emphasize the policy priorities of women (Ladam, Harden, & Windsett, 2018). Research indicates that the sex of legislators has a distinct impact on their policy priorities. There is also strong evidence that as more women are elected to office, there is a corollary increase in policy making that emphasizes quality of life and reflects the priorities of families, women, and ethnic and racial minorities (Volden, Wiseman, & Wittmer, 2010). Women in office also increase the symbolic representation of other women as they serve as a role model for the represented female constituent and may actually animate the process of both connecting female politicians to female candidates and encouraging other women to run for office (Ladam, Harden, & Windsett, 2018).

While multiple studies have been done that examine factors such as gendered media bias, cultural and society gender norms, and institutional factors in explaining the dearth of female candidates, there is little research on how different demographic elements of congressional districts effect a woman's decision to run in a primary election. Hence, I examine the various sociopolitical factors of congressional districts that are unique to a district, such as unemployment rate, high school and college graduation rate, median household income, and a variety of other political variables to determine if they have any effect on the presence of a female candidate within that respective district's primary election. This potential relationship will be studied by collecting data on the number of women who ran in either the Democratic or Republican primary during the 2016 election (the first year with no increase in the number of women in Congress in the past decades). I will also study if any of the district variables have varying effects across party lines, for example, if median household income shows an increase in women in the Democratic primary versus women in the Republican primary. Women are much more likely to identify with the Democratic Party than men, and women, in general, are likely elected in different districts than men. For example, Palmer and Simon (2008) found that in the 1970s women were much more likely to run and win in districts that were more ethnically and racially diverse and that Democratic women, specifically, are more likely to run in districts that "lean" more to the left, becoming increasingly Democratic, than those where men primarily run (see also Rule, 1981).

The 435 House district primary competitions from the 2016 election serve as my cases for this research. After the 2016 presidential election of Donald Trump, 2018 saw a surge of women running for elected office. The 2016 primary election was chosen because of the atypical nature of the 2018 primaries and the stagnation seen during the 2016 primaries. Examining the cultural, political, and economic factors that may impact that presence of women candidates is fundamentally important because a democracy should be representative of its people (Clark, 1991). When women are not proportionally represented in Congress in regard to their share of the population then, in turn, the entire female population of the United States is not duly represented descriptively, substantively, or symbolically. The findings of this study will uncover what socioeconomic and political factors of individual congressional districts may affect women's decision to run for political office.

LITERATURE REVIEW

One substantial development in the study of women in positions of political power has been the increased attention paid to female political ambition and the desire to seek office. The decision of potential candidates to seek political office is often based upon a cost-benefit analysis; the costs for women regularly seem to outweigh the benefits of perceived likelihood of victory for a female candidate. Previous research has namely centered on self-perception (Kanthak & Woon 2013; Clark, 1991), socialization (Lawless & Fox, 2012), and role conflict (Sapiro, 1982) on the cause for the gender gap in political ambition. Rarely has research focused on the demographics of the districts themselves that women run in and if they have any profound effect on that decision.

The fundamental reason for women's underrepresentation in elected office is simply that they do not run, but what accounts for this gender gap in ambition to run for political office? Previous research on the topic of gender disparity in political ambition can be separated into two main categories: internal and external factors. Self-perception of abilities and qualifications, levels of risk aversion, and the lower levels of competitive drive present in many women constitute the internal factors that have been studied. External factors have been more widely studied and include numerous variables that can be further categorized into cultural and social/institutional elements. In this study, I am interested in the external factors that affect women's choice to run for political office, but before we proceed, an examination of the internal factors is warranted due to their importance in the presence of women candidates as well.

Internal Factors

Research has shown that women play fewer competitive sports in their adolescence and become less competitive and more risk averse as adults than men (Lawless & Fox, 2012). Increased exposure to organized sports increases the will to win (and reduces the fear of loss) and plays an important role in preparing future potential candidates for political activism by giving them the civic skills necessary to do so. When women play junior or varsity sports, they are significantly more likely to say that they have considered running for office one day compared to women who do not (Lawless & Fox, 2012). Also, local political culture can be seen by potential female candidates as more or less encouraging of their political candidacies, but this will be discussed later in the paper along with other external factors of potential influence.

Women are often "trained" to be more passive and home oriented, where men are taught to be independent, assertive, and achievement oriented, qualities that prepare them well for political competition (Clark, 1991). This gender stereotyping negatively affects women since people tend to identify leadership with masculine traits (Hughes et al., 2007). Women often cite that familial responsibilities limit their political participation, particularly running for office, much more than men, showing that women place more emphasis on family relations over occupation than men do (Clark, 1991; Sapiro, 1982). Even in the 21st century, women still conform to gender roles at home, being responsible for the majority of childcare and household tasks. The Women's Bureau of the United States Department of Labor found that in 2016 only 70.5% of women with children under the age of 18 participated in the labor force compared to 92.8% of men with children under the age of 18 (United States Department of Labor, 2016). Women in what typically constitutes the eligible candidate pool, those who are lawyers and business executives, are less likely than similarly situated men to be married and have children, showing that women who are in top-level professions tend to de-emphasize family life (Lawless & Fox, 2012). However, even women in these professions are significantly less likely to run for office because of the potential consequences on their family life, such as having to spend less time with them (Lawless & Fox, 2012). Many women who have children and do eventually run for office tend to wait to do so until their children are older. Sapiro (1982) notes that as their children get older, male and female ambitions begin to equalize. As most men say that their spouse is responsible for most of the household responsibilities, household division of labor has no effect on men's likelihood to consider running for office, but as a woman's familial responsibilities increase, we often see a decline in her interest in running for office. (Lawless & Fox, 2012).

In the business world, we see that women are far less likely to ask for raises or other tangible rewards for high performance, and this same lack of confidence in their abilities is shown in other research (Lawless & Fox, 2012, 2005). Women tend to underestimate their intelligence and abilities to lead while men tend to overestimate theirs, and women, in turn, are unsure of how to convince voters that they are qualified for the office they are seeking (Lawless & Fox 2012; Clark, 1991; Rule, 1981; Kanthak & Woon, 2013; Kahn; 1996). By over 20 percent, women rate themselves less qualified than men to hold office, and this is the same response when asked whether they believed they would win their first election (Fox, 2001). Additionally, a study done by Kanthak and Woon (2013) shows that women are also more election averse while men are not. This difference arises not from disparities in risk aversion or beliefs in abilities but rather the context and competitiveness of campaigning and elections. This means that women, even if they have the same qualifications, ambitions, incentives, and voter base as men will be less likely to be candidates for office because of the risk of putting themselves forward in a competition with the chance to lose. An important note is that the gender gap in self-perceptions of qualifications for office does not stem from a disparity in exposure to political activities (Lawless & Fox, 2012; Kanthak & Woon, 2013). Women are just as likely as men to participate in actions such as voting, attending a protest or rally, blogging or posting on social media about a political event and are even more likely to perform volunteer services (Lawless & Fox, 2012; Kanthak & Woon, 2013).

Cultural External Factors

Political culture, socialization by family and peers, and role conflict have all had an impact on women's representation in office and their ambition to run. Historically, politics have been seen as a "man's world" and a place where women are not needed. For a large period of time, women's needs and priorities were encompassed by the men in their lives (under the English common-law practice known as coverture). As such, there was no need for women to participate in politics even as voters, much less leaders, as they were expected to follow the lead of the head of their household, either their father or husband. These views have largely changed, but stereotypes are often invoked in the campaign or by voters. It should be noted that not all stereotypes are harmful to women; stereotypes can actually work in their favor. Depending on what policies are emphasized during the election, women may have an advantage over men in certain policy debates as they tend to be seen as better advocates of health care, education, and poverty as these issues are most consistent with the traditional female gender roles of being a nurturer (Kahn, 1996; Rule, 1981). Women are also often recruited for office from districts that are the most advantaged by social welfare programs (Rule, 1981).

Multiple studies have shown that women are much less likely than men to receive the suggestion to run for office from family and peers; encouragement by these entities have been shown to have a significant impact on political ambition (Lawless & Fox; Palmer & Simon; Rule, 1981; Matland & King, 2002). While both males and females are equally as likely to grow up in households where political conversation is encouraged and with exposure to politics and news, more men report that they were encouraged to run for office by loved ones (Lawless & Fox, 2012). Men are also more likely to be exposed to politics during college education through classes and political organizations, and this is where the gender gap really becomes apparent. The gender disparity in political ambition is the largest between college-age men and women even though it has been shown to emerge from the elementary school age. (Lawless and Fox 2012). Men not only receive more encouragement to run for office from non-political actors, such as family and peers, but also from political actors, such as party leaders or other politicians, causing many scholars to argue that political parties discriminate against women in recruitment efforts (Lawless & Fox, 2012; Rule, 1981; Harden et al., 2016). Multiple studies show that these cultural factors, especially socialization by family, are key factors that contribute to the desire to run for office. Women are less exposed than men to these factors that drive the desire to run for office, and they ultimately tend to not have the same amount of ambition.

Lastly, state location and the culture of the state can also affect women's ambition to run for office. Women may be more likely to decide to run if they come from states with political cultures that support women in politics. Researchers have found that women's representation is lower in individualistic state cultures, those that stress the needs of the individual over the needs of the group as a whole and where social behavior tends to be dictated by the attitudes and preferences of individuals, where the competition for office is great. Women's representation in political office is at its lowest in traditionalistic states (states with a dominant political culture that asserts that tradition should guide governmental action and also that emphasizes the continuance of elite control, control that has usually been held by men) (Clark, 1991). The traditionalistic political culture was widely prevalent in the South and modeled on the feudal system where women traditionally occupied a lower level than men regardless of their status in society. Traditional family roles hinder women's emergence into the political sphere, and women are less likely to run in states with these traditional familial roles (Lawless & Fox, 2005). Western states such as Colorado, which has hosted numerous women in primary competitions each election cycle, have been friendlier to women politicians by having a political culture that encourages participation for all (Dolan, Deckman,

& Swers, 2017). A study by Paxton and Kunovich (2003) found that ideological beliefs, measured by asking a series of questions about men and women's roles in both life and politics, are a strong predictor of differences in the number of female legislators in a country. In the United States, women have tended to be recruited more from districts outside of the South (Rule, 1981). This theory is backed up by Lawless and Fox's (2005) findings that southern states are much more likely than northern states to hold notions of traditional family roles, where women stay at home while men go to work and are the primary breadwinners. In 2004 women composed 30% of state legislatures in California, Colorado, Maryland, Vermont, and Washington, but less than 15% of state legislatures in Alabama, Kentucky, Mississippi, Oklahoma, and Virginia among others (Norrander & Wilcox, 2005). The northeast stands out as the early leader in women's representation in political office, starting back in the 1980s. On the other hand, southern states, notably those that were the original Confederate states, have the fewest female state representatives (Norrander & Wilcox, 2005). Liberal states presumably have voters with more egalitarian gender attitudes, translating to more liberal states having more women serving in legislatures.

Institutional External Factors

The gendered media bias towards female politicians and the spotlight on their gender and femininity can have a profound effect on the potential female candidates' desire to run for office. Female political candidates, especially those campaigning on a national scale in campaigns that receive widespread media coverage, are hypersexualized by the media which focuses on their physical appearance, their attractiveness, and their sexuality as women. While studies show that gendered media has little to no effect on voter choice, the media coverage of prominent female politicians, like Hillary Clinton and Sarah Palin, showed women what they could be faced with when running for office (Lawless & Fox, 2012). According to the Lawless and Fox study (2018), almost 70% of the women surveyed, those from the eligible candidate pool, believed that Clinton and Palin experienced sexist media coverage during the 2008 campaign. The media emphasizes the cultural gender norms that women still face, acting as a mirror of society, by emphasizing their physical traits, such as their appearance, their voice, their marital status, etc. (Ryan 2013). This gendered news coverage weakens women's authority and experience in other areas such as policy matters and puts them at an uneven playing field with male candidates because men get coverage on substantive issues, which play into voter's decisions, instead of superficial issues, like appearance. While voters do not seem to alter their vote choice due to the biased media coverage that female candidates receive, female political ambition may be negatively affected by their perception that voters actually *do* vote differently due to gendered media bias.

Another institutional factor that causes a lack of political ambition in women is the small number of women holding political office that can act as role models. Women in office act as role models to potential female candidates, validating the input of women in the political arena. Women living in states with statewide female elected officials have higher levels of political knowledge, interest, efficacy, and activity, often leading to a greater general interest in politics (Ladam, Harden, & Windsett, 2018). The success of a woman winning an election to a federal office can demonstrate to other women that she was able to neutralize any gender stereotypes or make them work to her advantage (Palmer & Simon, 2008). This cues other women that they can compete successfully in that district as the success rate for women candidates in districts with a female incumbent exceeds the rate of success in districts with a male incumbent (Palmer & Simon, 2008). Other studies have argued that having women in office creates a backlash effect on potential female candidates, stating that their position actually decreases female ambition to run for office by reducing motivation to run because women may feel that they, collectively, have gained enough representation (Harden et al., 2016). However, many studies contradict this argument, finding that having women elected to a prominent political office has only a positive effect on women's political ambition. However, the impact of role modeling may be limited by the fact that female candidacies are disproportionately concentrated in districts that are already represented by women. This means that even if these districts see an increase of women running for that office, the net change of representation in Congress is zero because a woman already represented that district.

An additional very important factor is the effect of incumbency. Women are less likely to run for office in districts where there is an incumbent, as the presence of an incumbent makes it difficult for women to compete for resources and get adequate media attention (Fox, 2001). Men and women alike are less likely to run for an office when there is an incumbent running for reelection due to the advantages of incumbency when it comes to money, name recognition, and media attention; this dynamic is especially important for strategic candidates who are the most electorally competitive. The incumbency advantage is one of the most substantial obstacles to increasing female representation in politics office because incumbents win reelection over 90% of the time (Lawless & Fox, 2005). With the majority of incumbents being men, this advantage has emerged as a male advantage that could hinder women's ambition to run for office (Schwindt-Bayer, 2005). This structural barrier restricts the opportunities that women and other excluded groups, such as minorities, have for elected office, and it can affect their political ambition. The Year of the Woman, the 1992 election cycle, owes much of its success to the

redistricting that caused many incumbents to retire and allowed women to run in a large number of the open seats available (Dolan, Deckman, & Swers, 2017). When incumbency is controlled, women are just as likely to be elected as men, but women are much less likely than men to be incumbents, a result of centuries-long male overrepresentation in elected office (Clark, 1991). Open seat primaries are often the most welcoming to potential female candidates because the potential of victory for newcomers is the greatest in those races (Burrell, 1994). Ondercin and Welch (2009) find that the "presence of open seats, a key opportunity factor, is strongly, positively, and significantly related to the presence of women candidates for both Democrats and Republicans" (603).

There is also a notable gender gap in partisanship and ideology, with women identifying at a higher rate with the Democratic Party and self-identifying as more liberal than men. This translates to the fact that Democratic women are much more likely to run for office than Republican women as the Democratic Party's culture is also friendlier to potential female candidates. Burrell (1994) states that "one has to assume that the conflict between feminism and the cultural conservatism of the right wing of the Republican Party has dampened the enthusiasm of at least some potential female candidates to mount a campaign" (146). Women running in congressional primaries are disproportionately Democratic, comprising 60% of the total pool of female candidates between 1958 and 2004 (Lawless & Pearson, 2006). This is mainly due to the culture of the Democratic Party being more supportive of challenges to leadership and more supportive of diverse candidates, whereas the Republican Party culture stresses greater deference to party leadership (Burrell, 1994).

Theory

While Jennifer Lawless, Richard Fox, and others have done considerable research on internal factors and external factors such as peer and family influence, much less research has been done examining the significance of the demographic characteristics of the district where women seek political office. Burrell (1994) and Palmer and Simon (2008) have done the most extensive research in this area. Following the ground-breaking research of Rule (1981) and Burrell (1994), studies mainly focus on the incumbency factor and district partisan voting index (PVI) (a measurement of how strongly a United States congressional district leans toward the Democratic or Republican Party, compared to the nation as a whole) and also touch on diversity and median income of the district. Palmer and Simon's (2008) findings on "women-friendly" districts exhibit the effects of the diversity of the district, measured by the percentage of ethnic minorities, the education level, median income, and the PVI of the district. These analyses have created the basis for my research, which I will expand upon by quantitatively studying the effect of these district demographic variables along with other relevant variables.

Multiple scholars have found that the social sphere women grow up in and the influence exerted on them by the people in their lives have a profound effect on their ambition to run for office, and I believe that congressional district demographics do the same. District demographics can simply be categorized also as cultural and institutional external factors, just on a broader scale and less directly connected to the individual than friends and family. The demographics of the district that one lives in plays a key role in shaping the culture of that district, and it is the culture of our surroundings that plays a large role in our considerations to run for office.

Each of the independent variables that I am measuring has been carefully chosen as being hypothesized to impact the presence of a female candidate in an election. Some of my independent variables have also been included because they have shown a gender gap in partisanship, as I also look at the independent variables' impact on the emergence of female candidates by political party (examining the factors that impact the presence of Democratic or Republican women). For example, the median age of the district, the median household income, and high school and college education levels are all variables that have shown a gap in partisanship over the years. Some of these variables have also shown a gendered gap in partisanship. For example, the millennial generation has identified more with the Democratic Party and older generations have identified more with the Republican Party (Cohen, Fowler, & Medenica, 2018). Women are more likely to identify with the Democratic Party than men, meaning that we can speculate that the younger generations may identify with Democratic women rather than Republican women.

Income has a simple bivariate relationship with partisanship and ideology; increased income is associated with an increased PVI with the Republican Party, but the relationship between income and vote choice was weaker in 2016 than in past Presidential election years. However, when one examines this variable along with other relevant variables in multivariate analyses, a more nuanced relationship emerges. Controlling for education is very important as education can intervene in the relationship between partisanship and income. For example, some people who are both wealthy and high educated are often more liberal ideologically, especially on social issues like LGBTQ rights, and, as such, are more supportive of Democratic policy options. Moreover, the relationship between education and party identification (ID) is often gendered. While men show a nonlinear relationship between education level and party ID, women have a linear relationship, meaning that as their education level increases so does their preference to align with the Democratic Party.

The independent variables of PVI, presence of an incumbent, and whether a woman has held the district seat in the previous six years are other

variables that I believe will significantly affect the presence of a woman running for office. One often identifies conservative values and traditional gender roles with the Republican Party because of their history of voting on marriage, abortion laws, etc. Many believe that the Democratic Party is more "welcoming" to women, and there is evidence for this as more women run for office and win within the Democratic Party compared to the Republican Party.

DATA AND METHODS

I will be using a cross-sectional analysis to test my research question of the impact between socio-economic and political factors of congressional districts and the presence of a woman candidate in each district's primary. I will be studying the 435 United States House of Representative districts during the 2016 primary election. The most recent 2018 primaries were not chosen to be studied because of the effect of the 2016 presidential election. The 2018 primaries saw a surge of women, especially from the Democratic Party, register to run in their party's primary election, and many have stated that their motivation to run for office resulted from President Trump's win in 2016. For example, by February 2018, a record number of 430 women were registered to run in a primary election, and at this point in 2016, there were only 212 (Kurtzleben, 2018). I decided that because of the atypical nature of the 2018 primaries that studying the 2016 primaries would be more indicative of an average election cycle. Moreover, 2016 is an interesting year to study, as previously noted, because it represents the first time in decades where there was no growth in the number of women elected to Congress.

The data for this research is gathered from three different sources. First, Ballotpedia.org is used to collect data on the 2016 primary elections as well as the district's PVI, high school graduation rate, college graduation rate, the percentage of females in the district, and the percentage of minorities in the district. Data on district PVI was from 2018 while data on the other demographic variables were collected from the 2010 Census data. The 2010 Census data was chosen for these variables because they are very unlikely to significantly change between 2010 and 2016. The "My Congressional District" section of the United States Census Bureau's website is also used to gather the median age of the district, median household income, unemployment rate, and population size. This data was retrieved using the 2017 American Community Survey 1-Year Estimates. The 2017 data was chosen because the median household income, unemployment rate, and population of the districts were the variables that showed the most significant change between 2010 to 2017. Partly due to the financial crisis of 2008, many states such as Florida, New York, and Texas showed

a substantial drop in many district's unemployment rate and a substantial increase in median household incomes over the 7-year span. The 2017 estimates were chosen because they would most closely resemble the characteristics of the district during the 2016 election. Lastly, the 2010 American Community Survey data conducted by the United States Census Bureau is used for the Gini coefficient of the states which measures the income variation of the state.

ANALYSIS

My study is a quantitative cross-sectional study that uses bivariate and multivariate analyses. I will use a bivariate logistical regression to explore the relationship between each individual independent variable and the three dependent variables (more below). Then, logistical multiple regression is employed to explore the relationship of the 12 predictive independent variables as they relate to the dependent variable, the presence of a woman running in the district primary.

My first dependent variable is the presence of a woman running in the primary election. I determine whether a woman ran or not in the district's primary, if so, how many women ran, and whether she ran in the Democratic or Republican primary. My second and third dependent variables are the presence of a Democratic woman running in a primary and the presence of a Republican woman running in a primary. The dependent variable of a woman running in the primary of either party and is a dichotomous variable (coded as "Yes" = 1 or "No" = 0). If only one woman was running, I determined whether or not she was the sitting incumbent (coded as "Yes" = 1 or "No" = 0).

My independent variables are the various socioeconomic and political demographics of the congressional district: median age, district PVI, median household income, percentage of females in the district, percentage of ethnic minorities in the district, presence or lack thereof of an incumbent, whether a woman has held the seat in the previous six years (from 2010 to 2016), high school graduation rate, college graduation rate, and population size, whether the district is in a state that was one of the 11 original Confederate states, and the wealth distribution of the state (measured by using the Gini coefficient). The district PVI variable is coded by defining Republican districts as positive numbers and Democratic districts as negative numbers. For example, a Republican district with a PVI of R+20 (a generic Republican presidential candidate would be expected to receive 20 percentage points more votes than the national average) is coded as 20. A Democratic district with a PVI of D+20 is coded as -20. The presence of an incumbent in the 2016 primary election in a district is coded as "Incumbent Running" = 1 or "Incumbent Not Running" = 0.

The variable of a previous woman in the seat since 2010 is coded as "Yes" = 1 or "No" = 0.

My three hypotheses are as follows (see appendix for detailed hypotheses of all bivariate relationships):

Hypothesis 1 (H1): The presence of a female candidate, from either major political party, in a 2016 primary election is influenced by the median age of the district, district PVI, median household income of the district, the percentage of females in the district, the percentage of minorities in the district, the presence or lack thereof of an incumbent in the primary election, whether a woman has held the district seat in the previous six years (from 2010 to 2016), the high school graduation rate of the district, the college graduation rate of the district, the college graduation rate of the district, population size of the district, if the district is in a state that was one of the 11 original Confederate states, and the wealth distribution of the state.

For my second and third hypotheses, I separate my dependent variable by political party. It is important to control for the partisanship of women because there is a difference in the characteristics of voters that vote for each party and the districts held by each party. Democratic candidates are more likely to run in districts that are urban, diverse, and younger, and Democratic districts that are more likely to elect women tend to be smaller, more urban, more diverse, and wealthier than those won by Democratic men (Palmer & Simon, 2008). On the other hand, core Republican districts tend to be older, more rural, and more religiously conservative. Female Republicans tend to win in Republican districts that are less conservative, more urban, and more diverse than those won by Republican men (Palmer & Simon, 2008).

Hypothesis 2: The presence of a female candidate from the Democratic Party in a 2016 primary election is influenced by the 12 independent variables stated in H1.

Hypothesis 3: The presence of a female candidate from the Republican Party in a 2016 primary election is influenced by the 12 independent variables stated in H1.

RESULTS

See appendix (Tables A1-A7) for the frequency tables of all dichotomous dependent and independent variables. A bivariate correlation was run to examine bivariate relationships and to test for multicollinearity (see appendix Table A8). It was found that the unemployment rate of the district is highly correlated with a majority of the independent variables measuring the district demographics, namely median household income, high school graduation rate,

and college graduation rate. The gender of the incumbent was highly correlated with the "previous woman in seat" variable. For these reasons, the variables of district unemployment rate and the gender of the incumbent were excluded from the multivariate analysis so the independent impact of each variable can be assessed without being diluted by problems with multicollinearity.

Hypothesis 1

First, a bivariate logistic regression was run between each previously specified individual independent variables and the dependent variable, the presence of a female candidate in a 2016 primary election, on each independent variable. The independent variables of population size, the presence of an incumbent, incumbent gender, a previous woman in the seat, minority percent of the district, and district PVI are all statistically significant in predicting the presence of a woman candidate in a primary election. The presence of an incumbent and an increasing district PVI (as a district leans more Republican) both decrease the likelihood of a female candidate in the primary. An increasing population size, a female incumbent, a previous woman in the district seat, and an increasing minority percentage of the district all increase the likelihood of a potential female candidate in the district. The presence of an incumbent, incumbent gender, and a previous woman in the seat show the highest levels of significance. Given the fact that a number of variables were significant in the bivariate analysis, a multivariate analysis was run to examine the separate effect of each independent variable while simultaneously controlling the impact of the other independent variables to better simulate the actual dynamics present.

Table 1—Bivariate Binary Logistical Regression
Presence of a female candidate, from either major party, in a 2016 primary

Independent Variables	Presence of Female Candidate in District
Confederate State	.050(.113)
Population	.000(.000)*
Median Age	-.038(.027)
Presence of Incumbent	-1.489(.393)***
Incumbent Gender	5.071(1.012)***
Wealth Distribution	-2.333(5.041)
Previous woman in seat	2.201(.269)***
College graduation rate	.017(.009)
High school graduation rate	.000(.014)
Minority Percentage	.012(.006)*
District PVI	-.018(.006)**
Female Percentage	-.074(.092)
Median household income	.000(.000)
Unemployment Rate	-.028(.058)

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

Given the dependent variable is dichotomous, multivariate logistic regression was used. Population, the presence of an incumbent, a previous woman in the seat, and district PVI are statistically significant in this model (see Table 2). The coefficient for the population variable signifies that as a population gets larger, or grows faster, the likelihood of a female candidate in that primary increases. The direction of the incumbent variable coefficient shows that the presence of an incumbent in a primary election significantly decreases the likelihood of a female candidate in that primary. This result is expected as previous research shows that women are much more likely to run in an open primary than face an incumbent challenger. The previous woman in the seat variable tests the role modeling dynamic and shows that it is strong and pos-

itive; the presence of a woman in the district seat in the past six years significantly increases the likelihood that a female candidate will run in that primary. Whether this is role modeling or simply that other women see the district as hospitable to people like them, the impact is significant. Lastly, the district PVI variable indicates that as a district becomes more Republican, it decreases the likelihood of a female candidate.

There are some variables that past research indicated would be significant that are not. The education variables, median household income, and minority percentage have all been shown in past research to be significant in predicting the presence of a woman in the district, but none are significant in this model. Higher levels of these variables are theorized to lead to an increased likelihood of seeing a female candidate, but this model provides no evidence to support these relationships for the 2016 primary elections.

Table 2—Multivariate Binary Logistical Regression (DV: Presence of a female candidate, from either major party, in a 2016 primary election)

Independent Variables	Presence of Woman Candidate in a District
Confederate State	.161(.205)
Population	.000(.000)**
Median Age	-.036(.042)
Presence of Incumbent	-1.708(.435)***
Wealth Distribution	-11.189(7.240)
Previous woman in seat	2.434(.298)***
College graduation rate	-.012(.024)
High school graduation rate	-.036(.032)
Minority Percentage in district	-.005(.011)
District PVI	-.023(.011)*
Female Percentage in district	-.080(.129)
Median household income	.000(.000)
Constant	2.721
Adjusted R-square	.335

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

Hypothesis 2

Next, I examine if the same factors impact the presence of Democratic and Republican women. First, I examine Democratic women using bivariate regression (see Table 10). The presence of an incumbent, incumbent gender, a previous woman in the seat, college graduation rate, minority percent of the district, district PVI, and median household income are all statistically significant in predicting the presence of a Democratic female candidate in the 2016 House primaries. None of the other variables reached statistical significance.

Table 3—Bivariate Binary Logistical Regression
(DV: Presence of a Democratic female candidate in a 2016 primary election)

Independent Variables	Presence of Democratic Woman in District
Confederate State	.010(.116)
Population	.000(.000)
Median Age	-.015(.028)
Presence of Incumbent	-1.209(.346)***
Incumbent Gender	2.459(.299)***
Wealth Distribution	1.014(5.265)
Previous woman in seat	1.668(.233)***
College graduation rate	.022(.010)*
High school graduation rate	.005(.015)
Minority Percentage	.014(.006)*
District PVI	-.030(.006)***
Female Percentage	.020(.095)
Median household income	.000(.000)*
Unemployment Rate	-.023(.061)

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

The multivariate logistical regression finds that the population size, presence of an incumbent, a previous woman in the seat, high school graduation rate, and district PVI are statistically significant in predicting the existence of Democratic women candidates (see Table 4). Incumbency, a previous woman in the seat, and district PVI show the highest levels of significance. The variables measuring the presence of an incumbent and previous woman in the district variables exhibit the same effect on Democratic women as women in general (shown in Tables 2 and 4), with the presence of an incumbent decreasing the likelihood of a female candidate and a previous woman in the seat increasing the likelihood. As a district population decreases, the likelihood of a Democratic female candidate in the primary also decreases. This is not an unexpected result as Democratic districts tend to be more densely populated, leading to the theory that larger districts would cause an increase in female Democratic candidates. The coefficient of the PVI variable indicates that as a district becomes more Republican, then the likelihood of a female Democratic candidate decreases. This is what one would expect to see as a Democratic female candidate would most likely rather run in a Democratic district than a Republican district since research shows they are strategic and less risk averse.

This model also did not yield statistically significant results for variables that, based upon previous research, are thought to affect the presence of a female Democratic candidate. Democratic districts are usually more diverse, have a higher percentage of minorities, lower incomes, exist outside of the south, and are younger, hence, I hypothesized that these variables would be significant in affecting the decision of a Democratic female to run for political office. However, these variables are not statistically significant in predicting the presence of a Democratic woman candidate for the 2016 primary elections. This may mean that Democratic women take cues from the external variables of a district—PVI, the presence of an incumbent, whether or not a woman has run and won there in recent years—rather than the variables of location, age, and income.

Table 4—Multivariate Binary Logistical Regression (DV: Presence of a Democratic female candidate in a 2016 primary election)

Independent Variables	Presence of Democratic Woman Candidate in a District
Confederate State	.175(.169)
Population	-.050(.000)*
Median Age	-.012(.041)
Presence of Incumbent	-1.483(.393)***
Wealth Distribution	-6.051(.773)
Previous woman in seat	1.738(.260)***
College graduation rate	-.036(.022)
High school graduation rate	.066(.032)*
Minority Percentage in district	-.013(.010)
District PVI	-.050(.011)***
Female Percentage in district	-.028(.129)
Median household income	.000(.000)
Constant	-4.341
Adjusted R-square	.281

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

Hypothesis 3

Next, I use the same procedures to examine the variables that predict the presence of a Republican woman in a primary. First, bivariate regressions were run to test the relationships between the dependent variable, the presence of a Republican female candidate in a 2016 district primary, and the various socio-political variables examined in the other models (see Table 5). The presence of an incumbent, the incumbent gender, a previous woman in the seat, college graduation rate, the minority percentage of the district, district PVI, and median household income are all statistically significant in predicting the presence of a Republican women (the dependent variable). Incumbent gender, a previous woman in the seat, the college graduation rate, minority percent of the district, district PVI, and median household income all have a positive effect, with higher levels increasing the likelihood of a female Republican candidate.

Table 5—Bivariate Binary Logistical Regression
(DV: Presence of a Republican female candidate in a 2016 primary election)

Independent Variables	Presence of Republican Woman in a District
Confederate State	.003(.144)
Population	.000(.000)
Median Age	-.055(.036)
Presence of Incumbent	-1.195(.357)***
Incumbent Gender	1.452(.276)***
Wealth Distribution	-16.074(6.659)
Previous woman in seat	1.308(.261)***
College graduation rate	.009(.012)*
High school graduation rate	.020(.020)
Minority Percentage	.003(.007)*
District PVI	.012(.008)***
Female Percentage	-.219(.126)
Median household income	.000(.000)*
Unemployment Rate	-.060(.079)

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

The multivariate logistical regression finds that population size, the presence of an incumbent, a previous woman in the seat, college graduation rate, district PVI, and median household income are statistically significant in predicting the presence of a Republican female candidate in a district primary election. The incumbent and female role model variables (a previous woman in the seat) have the same effect as in the previous two models. This model also shows that as the college graduation rate of the district increases and as the median household income of the district increases the presence of a Republican female candidate in a primary also increases. Past research finds that higher income households are more likely to vote Republican. Higher education levels are often correlated with higher income levels, so this may be why these two variables are statistically significant. The effect of district PVI is what we would expect to see; as a district becomes more Republican, the likelihood that a female Republican will run in that district increases. Hence, Republican women, like Democratic women, appear to be strategic in selecting the districts in which they will run.

Figure 1

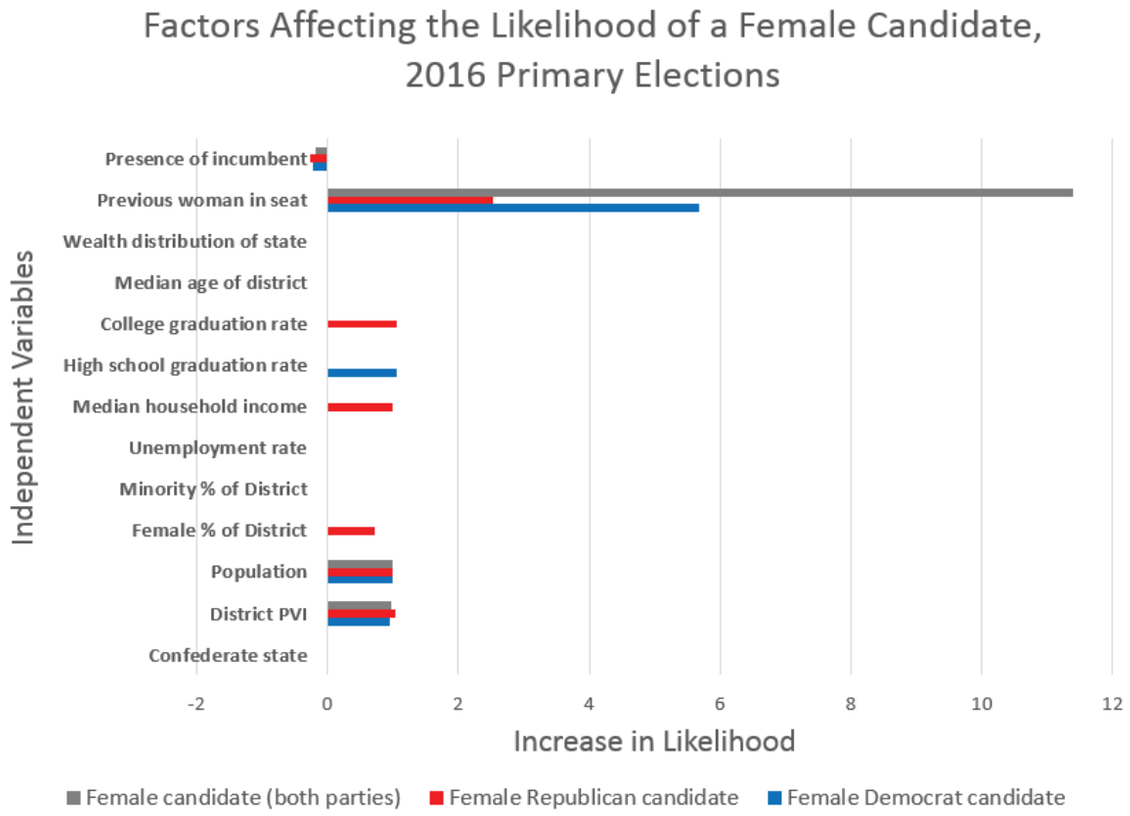


Figure 1 displays the relationship between the several independent variables and the three dependent variables (visually depicting the relationships discussed above). Further, the figure shows the extent to which the independent variables may increase the likelihood of the dependent variable. The presence of an incumbent, population size, and district PVI all have approximately the same effect on potential female candidates in general and by party. A previous woman in the seat in the past six years is the most influential variable in this study, increasing the likelihood that a female candidate runs in that district by almost twelve times. The figure also indicates that Republican women are influenced by more district variables than are Democratic women. Perhaps this means that Republican women are even more strategic than Democratic women when deciding where to run for office; a fact that appears to be necessary given the demographics of Republican women running for office.

CONCLUSION

The purpose of this research was to build on previous literature studying the reasons why women decide to run for political office. Much research has been done on the internal factors of influence and how our friends, family, and upbringing influence this decision, but considerably less research has been completed on the possible effect of congressional district demographics. This research helps to fill that gap.

There are a few conclusions that can be made from the data and statistical analysis. First, I can confirm what has been previously theorized—that women are strategic in deciding where to run for office. Women are more likely to run in open primaries than challenge a sitting incumbent. Women are also more likely to run in districts that are extremely friendly to their party and where a woman has run and won the district seat in the recent past. Previous research has been opaque as to the impact role modeling has upon other women. Some have found it acts as a motivator to potential female candidates, while others assert that it could act as an inhibitor. Through this research, a female role model is a clear motivator for potential female candidates and is the most influential variables of those studied.

Second, I can conclude that Republican women are influenced by more congressional district demographics than Democratic women, perhaps meaning that they take into account more factors before deciding to run for office. This may also be a result of the difference in the cultures of the two parties. The Democratic Party has been known as the party that is more welcoming and friendly to potential female candidates. Republican women that may not receive the encouragement from party leaders that Democratic women do may rely on more factors in the district where they live to influence their decision.

Third, the United States may be changed and may be friendlier to potential female candidates than was previously thought. Much of the research on women running in primary elections is dated, published before the 2000s and using late 1900s elections as case studies. District variables that influenced women in these elections—income level, unemployment rates, whether a district was in a southern state—were not significant in predicting women running in 2016 primary elections. For example, in the 1980s, women, especially Democratic women, ran predominantly outside of southern states. However, whether a district is in a southern state is no longer an influential factor in a woman's decision to run in that district. An avenue for future possible research is to examine if woman are also winning in these districts that they never would have run in forty years ago.

Lastly, women are likely more influenced by the "big picture" variables of a district (district PVI, the presence of an incumbent, a female role model) than the smaller variables (education, income, and racial diversity). This means that there are two pathways we can take to further increase women's representation in Congress. First, by looking at the results of this research, incumbency is one of the biggest challenges to women running for office. The best way to combat incumbency is the implementation of term limits, but this could have an adverse effect on women in Congress. Term limits for members of Congress would limit the number of incumbents running for reelection, opening the door for women to run in open primaries, but would also limit the number of female incumbents, who act as role models to other women, to stay in office. Consequently, one could reasonably argue that limiting the institutional advantages members of Congress have (such as franking privileges) might be a reasonable reform to promote a more demographically diverse legislature. Second, we look back on the internal factors of influence. Previous research shows that traditional gender roles and support from family and peers are two of the biggest motivators for potential male candidates and two of the biggest inhibitors for potential female candidates. Since the gender gap in political ambition emerges even before the college age, changing how we raise young women and encourage them to be leaders in their communities is likely to be the most influential in changing those traditional gender roles that often discourage women.

The 2018 primary elections saw an influx of women candidates and an influx of minority women candidates. While the 2016 primaries were the norm for women in the United States for the prior decades, I hope that the 2018 primaries will become the new norm. This research has proven that having a female role model is a vital factor in a woman deciding to run for political office. The 2018 primaries have given women of different ages, races, ethnicities, and religions, from all over the country, role models to which they can aspire.

TABLES

The statistical tables show the effect of the independent variables (left column) on the dependent variable (right column); they show if a certain independent variable affects the presence of a woman in that congressional district. Numbers outside of the parentheses are the standard errors associated with the coefficients. Numbers inside the parentheses indicate how an increase of 1 in an independent variable affects the dependent variable. The direction of the relationship is detonated by whether the number outside of the parentheses is positive or negative. Positive values increase the likelihood of a female candidate; negative values do the opposite.

Table 1—Bivariate Binary Logistical Regression
(DV: Presence of a female candidate, from either major party, in a 2016 primary election)

Independent Variables	Presence of Female Candidate in District
Confederate State	.050(.113)
Population	.000(.000)*
Median Age	-.038(.027)
Presence of Incumbent	-1.489(.393)***
Incumbent Gender	5.071(1.012)***
Wealth Distribution	-2.333(5.041)
Previous woman in seat	2.201(.269)***
College graduation rate	.017(.009)
High school graduation rate	.000(.014)
Minority Percentage	.012(.006)*
District PVI	-.018(.006)**
Female Percentage	-.074(.092)
Median household income	.000(.000)
Unemployment Rate	-.028(.058)

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

Table 2—Multivariate Binary Logistical Regression (DV: Presence of a female candidate, from either major party, in a 2016 primary election)

Independent Variables	Presence of Woman Candidate in a District
Confederate State	.161(.205)
Population	.000(.000)**
Median Age	-.036(.042)
Presence of Incumbent	-1.708(.435)***
Wealth Distribution	-11.189(7.240)
Previous woman in seat	2.434(.298)***
College graduation rate	-.012(.024)
High school graduation rate	-.036(.032)
Minority Percentage in district	-.005(.011)
District PVI	-.023(.011)*
Female Percentage in district	-.080(.129)
Median household income	.000(.000)
Constant	2.721
Adjusted R-square	.335

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

Table 3—Bivariate Binary Logistical Regression
(DV: Presence of a Democratic female candidate in a 2016 primary election)

Independent Variables	Presence of Democratic Woman in District
Confederate State	.010(.116)
Population	.000(.000)
Median Age	-.015(.028)
Presence of Incumbent	-1.209(.346)***
Incumbent Gender	2.459(.299)***
Wealth Distribution	1.014(5.265)
Previous woman in seat	1.668(.233)***
College graduation rate	.022(.010)*
High school graduation rate	.005(.015)
Minority Percentage	.014(.006)*
District PVI	-.030(.006)***
Female Percentage	.020(.095)
Median household income	.000(.000)*
Unemployment Rate	-.023(.061)

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

Table 4—Multivariate Binary Logistical Regression (DV: Presence of a Democratic female candidate in a 2016 primary election)

Independent Variables	Presence of Democratic Woman Candidate in a District
Confederate State	.175(.169)
Population	-.050(.000)*
Median Age	-.012(.041)
Presence of Incumbent	-1.483(.393)***
Wealth Distribution	-6.051(.773)
Previous woman in seat	1.738(.260)***
College graduation rate	-.036(.022)
High school graduation rate	.066(.032)*
Minority Percentage in district	-.013(.010)
District PVI	-.050(.011)***
Female Percentage in district	-.028(.129)
Median household income	.000(.000)
Constant	-4.341
Adjusted R-square	.281

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

Table 5—Bivariate Binary Logistical Regression
(DV: Presence of a Republican female candidate in a 2016 primary election)

Independent Variables	Presence of Republican Woman in a District
Confederate State	.003(.144)
Population	.000(.000)
Median Age	-.055(.036)
Presence of Incumbent	-1.195(.357)***
Incumbent Gender	1.452(.276)***
Wealth Distribution	-16.074(6.659)
Previous woman in seat	1.308(.261)***
College graduation rate	.009(.012)*
High school graduation rate	.020(.020)
Minority Percentage	.003(.007)*
District PVI	.012(.008)***
Female Percentage	-.219(.126)
Median household income	.000(.000)*
Unemployment Rate	-.060(.079)

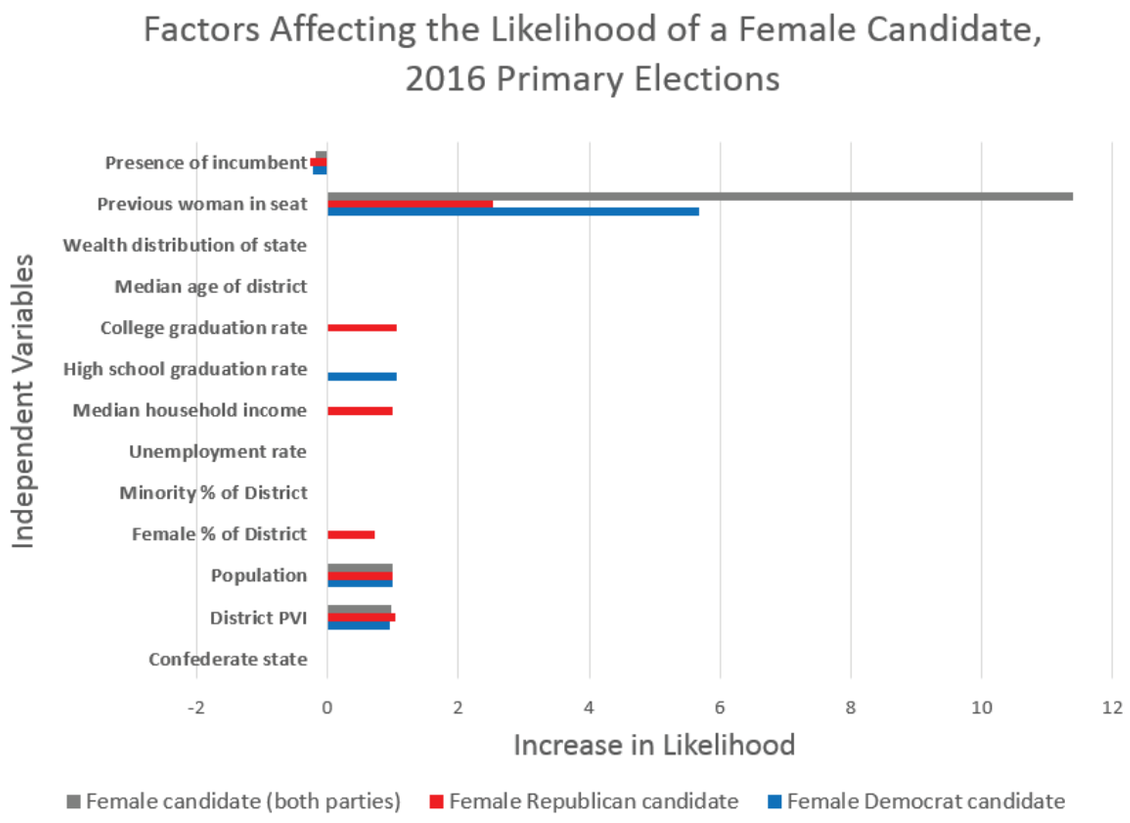
All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

Table 6—Multivariate Binary Logistical Regression (DV: Presence of a Republican female candidate in a 2016 primary election)

Independent Variables	Presence of Republican Woman Candidate in a District
Confederate State	-.144(.171)
Population	.000(.000)**
Median Age	-.052(.050)
Presence of Incumbent	-1.340(.402)***
Wealth Distribution	-15.967(8.845)
Previous woman in seat	1.842(.316)***
College graduation rate	.059(.030)*
High school graduation rate	.009(.040)
Minority Percentage in district	.021(.013)
District PVI	.039(.014)**
Female Percentage in district	-.204(.171)
Median household income	.000(.000)*
Constant	10.520
Adjusted R-square	.266

All probabilities are based on a two-tail test
p = p-value
* p = .05 **p = .01 *** p = .001

Figure 1


Factors Affecting the Likelihood of a Female Candidate, 2016 Primary Elections
Independent Variables
Presence of incumbent
Previous woman in seat
Wealth distribution of state
Median age of district
College graduation rate
High school graduation rate
Median household income
Unemployment rate
Minority % of District
Female % of District
Population
District PVI
Confederate state
-2
0
2
4
6
8
10
12
Increase in Likelihood
Female candidate (both parties)
Female Republican candidate
Female Democrat candidate

APPENDIX 1
HYPOTHESES OF BIVARIATE RELATIONSHIPS

Hypothesis 1a: As the median age of a district increases, the likelihood of a female candidate running in a district's Congressional primary decreases.

Hypothesis 1b: As the PVI of a district increases, leans more Republican, the likelihood of a female candidate running in a district's Congressional primary decreases.

Hypothesis 1c: As the median household income of the district increases, the likelihood of a female candidate running in a district's Congressional primary increases.

Hypothesis 1d: As the percentage of females in the district increases, the likelihood of a female candidate running in a district's Congressional primary increases.

Hypothesis 1e: As the percentage of ethnic minorities in the district increases, the likelihood of a female candidate running in a district's Congressional primary increases.

Hypothesis 1f: The presence of an incumbent running in the district primary decreases the likelihood that a female candidate will run in a district's Congressional primary.

Hypothesis 1g: If a woman has held the district six in the previous six years, the likelihood of a female candidate runs in a district's Congressional primary increases.

Hypothesis 1h: As the high school graduation rate of the district increases, the likelihood of a female candidate running in a district's Congressional primary increases.

Hypothesis 1i: As the college graduation rate of the district increases, the likelihood of a female candidate running in a district's Congressional primary increases.

Hypothesis 1j: As the population size of the district increases, the likelihood of a female candidate running in a district's Congressional primary increases. \

Hypothesis 1k: If the district is located in one of the original 11 Confederate states, the likelihood that a female candidate runs in a district's Congressional primary decreases.

Hypothesis 1l: As the wealth distribution of the state increases, the likelihood of a female candidate running in a district's Congressional primary increases.

Hypothesis 2a: As the median age of a district increases, the likelihood of a Democratic female candidate running in a district's Congressional primary decreases.

Hypothesis 2b: As the PVI of a district increases, leans more Republican, the likelihood of a Democratic female candidate running in a district's Congressional primary decreases.

Hypothesis 2c: As the median household income of the district increases, the likelihood of a Democratic female candidate running in a district's Congressional primary increases.

Hypothesis 2d: As the percentage of females in the district increases, the likelihood of a Democratic female candidate running in a district's Congressional primary increases.

Hypothesis 2e: As the percentage of ethnic minorities in the district increases, the likelihood of a Democratic female candidate running in a district's Congressional primary increases.

Hypothesis 2f: The presence of an incumbent running in the district primary decreases the likelihood that a Democratic female candidate will run in a district's Congressional primary.

Hypothesis 2g: If a woman has held the district six in the previous six years, the likelihood of a Democratic female candidate runs in a district's Congressional primary increases.

Hypothesis 2h: As the high school graduation rate of the district increases, the likelihood of a Democratic female candidate running in a district's Congressional primary increases.

Hypothesis 2i: As the college graduation rate of the district increases, the likelihood of a Democratic female candidate running in a district's Congressional primary increases.

Hypothesis 2j: As the population size of the district increases, the likelihood of a Democratic female candidate running in a district's Congressional primary increases.

Hypothesis 2k: If the district is located in one of the original 11 Confederate states, the likelihood that a Democratic female candidate runs in a district's Congressional primary decreases.

Hypothesis 2l: As the wealth distribution of the state increases, the likelihood of a Democratic female candidate running in a district's Congressional primary increases.

Hypothesis 3a: As the median age of a district increases, the likelihood of a Republican female candidate running in a district's Congressional primary decreases.

Hypothesis 3b: As the PVI of a district increases, leans more Republican, the likelihood of a Republican female candidate running in a district's Congressional primary increases.

Hypothesis 3c: As the median household income of the district increases, the likelihood of a Republican female candidate running in a district's Congressional primary increases.

Hypothesis 3d: As the percentage of females in the district increases, the likelihood of a Republican female candidate running in a district's Congressional primary increases.

Hypothesis 3e: As the percentage of ethnic minorities in the district increases, the likelihood of a Republican female candidate running in a district's Congressional primary decreases.

Hypothesis 3f: The presence of an incumbent running in the district primary decreases the likelihood that a Republican female candidate will run in a district's Congressional primary.

Hypothesis 3g: If a woman has held the district six in the previous six years, the likelihood of a Republican female candidate runs in a district's Congressional primary increases.

Hypothesis 3h: As the high school graduation rate of the district increases, the likelihood of a Republican female candidate running in a district's Congressional primary increases.

Hypothesis 3i: As the college graduation rate of the district increases, the likelihood of a Republican female candidate running in a district's Congressional primary increases.

Hypothesis 3j: As the population size of the district increases, the likelihood of a Republican female candidate running in a district's Congressional primary decreases.

Hypothesis 3k: If the district is located in one of the original 11 Confederate states, the Republican likelihood that a female candidate runs in a district's Congressional primary decreases.

Hypothesis 3l: As the wealth distribution of the state increases, the likelihood of a Republican female candidate running in a district's Congressional primary decreases.

APPENDIX 2
DICHOTOMOUS VARIABLES

Table A1—The presence of a woman running in a 2016 primary election

Presence of a Woman in a District Primary	Frequency	Percent
Yes	200	46.0%
No	235	54.0%
Total	435	100%

Table A2—The presence of a Democratic woman running in a 2016 primary election

Presence of a Democratic Woman in District	Frequency	Percent
Yes	152	34.9%
No	283	65.1%
Total	435	100%

Table A3—The presence of Republican woman running in a 2016 primary election

Presence of a Republican Woman in District	Frequency	Percent
Yes	78	17.9%
No	357	82.1%
Total	435	100%

Table A4—The presence or lack thereof of a woman in the district seat in the six years prior to the 2016 primary elections (from 2010-2016)?

Presence of a Woman in District Seat from 2010-2016	Frequency	Percent
Yes	115	26.4%
No	320	73.6%
Total	435	100%

Table A5—The presence or lack thereof of an incumbent running in the district's 2016 primary election

Presence of Incumbent in District	Frequency	Percent
Yes	396	91.0%
No	39	9.0%
Total	435	100%

Table A6—Incumbent Gender

Incumbent Gender	Frequency	Percent
Female	82	18.9%
Male	353	81.1%
Total	435	100%

Table A7

Bivariate Correlations

		Confederate State	District PVI	Population	Female %	Minority %	Unemployment rate	Median household income	High school grad. Rate	College grad. Rate	Median age	Wealth distribution	Incumbent gender	Presence of incumbent	Previous woman in sea	Presence of woman
Confederate state	Pearson correlation	1	.141**	.202**	.083	.105*	.022	-.144**	-.135**	-.132**	-.062	.081	-.016	-.099*	-.052	.021
District PVI	Pearson correlation	.141**	1	.015	-.264**	-.649**	-.307**	-.141**	.285**	-.224**	.292**	-.236**	-.262**	-.057	-.221**	-.145**
Population	Pearson correlation	.202**	.015	1	-.028	.108*	-.164**	-.172**	.003	.156**	-.225**	.011	-.022	-.021	-.079	.119*
Female %	Pearson correlation	.083	-.264**	-.028	1	.350**	225**	-.085	.074	.124**	.203**	-.309	.086	.039	-.018	-.039
Minority %	Pearson correlation	.105*	-.649**	.108*	.350**	1	.512**	-.008	-.427**	.019	.255**	.099*	.190**	.005	.172**	.099*
Unemployment	Pearson correlation	.022	-.307**	-.164**	.225**	.512**	1	-.463**	-.498**	-.464**	-.238**	0.255*	.029	.014	.052	-.023
Median household income	Pearson correlation	-.144*	-.141**	.172**	-.085	-.008	-.463**	1	.422**	.754**	.098*	.071	.09*	.042	.065	.072
High school grad	Pearson correlation	-.135**	.285**	.003	.074	-.367**	0.498**	.422**	1	.611**	.459**	-.302**	-.065	.008	-.095*	.001
College grad	Pearson correlation	-.132**	-.224**	.156**	.124**	.019	-.464**	.754**	.611**	1	.111*	.022	.109*	.046	.070	.088
Median age	Pearson correlation	-.062	.292**	0.225**	.104*	-.427**	-.238**	.098*	.459**	.111*	1	.053	-.071	-.045	-.001	.053
Wealth distribution	Pearson correlation	.081	-.236**	.011	.203**	.255**	.255**	.071	-.302**	.022	.053	1	.073	-.016	.130**	-.022
Incumbent gender	Pearson correlation	-.016	-.262**	-.022	.086	.190**	.029	.098*	-.065	.109*	-.071	.073	1	-.013	.777**	.511**
Presence of incumbent	Pearson correlation	-.099*	-.057	-.021	.039	.005	.014	.042	.008	.046	-.045	-.016	-.013	1	-.031	-.195**
Previous woman in seat	Pearson correlation	-.502	-.221**	-.079	-.018	.172**	.052	.065	-.095*	.070	-.001	.130**	.777**	-.031	1	.430**
Presence of woman	Pearson correlation	.021	-.145**	.119*	-.039	.099*	-.023	.072	.001	.088	-.068	-.022	.511**	-.195**	.430**	1

(all probabilities are based on a two-tail test) * p = .05 **p = .01 *** p = .001

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