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AN ANALYSIS OF THE GENDER GAP IN UTAH POLITICS

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ABSTRACT

Utah ranks last for female political participation in the United States, according to the Institute for Women's Policy and Research. This study seeks to understand what factors contribute to the political gender gap in this state. The primary analysis is based on quantitative models that combine general and primary election data, campaign finance records, census data, and Utah voter registration information to test for differences in outcomes between male and female candidates. The results of this study fail to support the claim that female candidates face bias in elections. Instead, the most measureable barriers to equal representation in Utah are the lack of female candidacy and the large number of male Republican incumbents.

INTRODUCTION

Utah ranks last for female political participation in the United States, according to the Institute for Women's Policy and Research. This group's political participation index combines female voter turnout, women in elected office, and access to institutional resources from 2004 to 2015. They generate a composite score for each state. Utah's dismal performance in each area highlights the need for a deeper understanding of the status of women in Utah politics. In 2021, only a quarter of the state legislature is female, and only one woman - lieutenant governor Diedre Henderson - holds a statewide executive or congressional seat. Despite Utah's conservative lean, Republican women fare the worst in terms of representation. For instance, in the state legislature, about 70% of Democratic representatives are female versus only 11% of Republicans. This striking disparity indicates a difference in the ability of women in each party to run for office and become elected. This paper seeks to understand what factors contribute to the political gender gap in this state. The primary analysis will be based on quantitative models that combine election data and campaign finance records to test for differences in outcomes between male and female candidates. This is the first Utah-specific dataset of its kind. A brief history of Utah women in politics in addition to interviews with female representatives will provide the context for this study.

Scholarship in this area suggests that a lack of female candidates, large numbers of male incumbents, disparities in campaign contributions and spending, and voter bias contribute to the gender gap in politics (Anastasopolous, 2016). However, the extent to which each of these factors impacts female political participation remains disputed. For instance, papers with electoral models that use historical election data generally find that female candidates actually enjoy a voting advantage, on average, in male female races and face no financial penalty in

campaigns (Anastasopolous, 2016; Black and Erickson, 2003; Seltzer et. al, 1997). Conversely, papers using randomized control trials to understand voting behavior have repeatedly identified a bias against female candidates (Fox and Smith, 1998; Ono and Burden, 2018). Additionally, most of these papers are national studies, rather than in-depth analyses of specific states. Because Utah is conservative, highly religious, and contains one of the only caucus-convention systems for state and legislative nominees in the nation, understanding its unique political and cultural climate is necessary in order to find effective ways to recruit and elect women as well as increase female participation in the political process broadly.

This paper will consider the broad body of literature on women in politics when assessing Utah's political gender gap. The first section will provide an historical analysis of female involvement in Utah politics and explore the state's modern political climate in an attempt to understand what factors impact female engagement in politics in Utah. The second section will use primary and general election data, campaign finance records, the Utah voter registration file, and census data to estimate differences in outcomes for male and female candidates. This analysis will be used to make recommendations for strategies to increase the number of women in office.

DATA

I constructed the dataset for this paper using Utah general and primary election data from the Utah Voter Information site for seats in the state house and senate from 2008 to 2020, which includes candidate name, party, voting district, year, and vote share. I assigned incumbency and gender manually using Google searches. Then, I merged this data with campaign finance data from the Utah Disclosures website that includes a variable for total contributions received by a candidate during each election year. Although there are seven identified political parties in Utah,

the parties of interest in this analysis are the Republican and Democratic parties. District characteristics like median age, median income, and percent of population with a bachelor's degree come from census data organized by IPUMS NHGIS. Voter turnout is based on the entire voting age population and not just registered voters.

LITERATURE REVIEW

Election models contingent on candidate sex have evolved over time. An early study compared the success rates of male and female candidates in state legislatures, the US House of Representatives, US Senate, and governorships from 1986 to 1994 (Seltzer et. al, 1997). After controlling for incumbency, party, and both state and time fixed effects, this paper found no statistically significant difference in outcomes between male and female candidates at any level of office. Because incumbent candidates have upwards of a 90% success rate in elections, Seltzer (1997) argues that the large share of male incumbents is the main reason why female candidates might fare worse in elections.

A number of studies following Seltzer (1997) argue that candidate quality is an important omitted variable in vote-share models (Milyo and Schoseberg, 2000; Black and Erickson, 2003; Fulton, 2012). These papers test the hypothesis that female candidates are, on average, of higher quality than male candidates under the assumption that gender bias holds women to a higher standard in both the party nomination process and in their own decision to run for office. Because quality is difficult to quantify, each of these papers takes a different approach. Milyo and Schoseberg (2000) focus on differences between male and female incumbents in elections, using tenure and number of leadership positions in House committees as measures of incumbent quality. Relevant past career experience is used as a quality measure of candidates who challenge incumbents. Challengers with relevant experience (prior government service or local celebrity

status) are coded as “high quality.” After controlling for the quality, fundraising receipts, and endorsements of challenger candidates, Milyo and Schoseberg (2002) estimate that female incumbents have a 6 percentage point vote advantage, on average, compared to male incumbents, and argue that this advantage stems from differences in quality between female and male candidates. Black and Erickson (2003) combine Canadian parliamentary election data with survey data in order to control for differences in vote-getting ability between male and female candidates. The survey data came from a 1993 study that asked parliamentary candidates about personal attributes and experiences relevant to their candidacy. Using past office-holding experience in both political and non-political organizations as a measure of quality, Black and Erickson (2003) compare relatively inexperienced male and female candidates and estimate that women have a 4 percentage point vote advantage over men. This suggests that, regardless of quality, women have a higher vote-getting ability than men. Fulton (2012), conversely, finds a 3 percentage point gender penalty using a different measure of candidate quality. In addition to incorporating previous office-holding experience, Fulton includes survey data where 2,672 political activists and potential challengers were asked to rate incumbent congressional candidates in 1998 on measures like integrity, charisma, and dedication. Because her measure of quality is based on people’s opinions of candidates, it seems likely that Fulton ultimately reintroduces gender bias into the model. Without this control, the dataset shows no statistically significant differences between male and female candidates.

The different outcomes in these studies demonstrate the numerous challenges that come with trying to build an effective election model. Not only are variables like candidate quality difficult to measure, but candidate gender is endogenous. Broadly, female candidates tend to run in younger, wealthier, more educated, and more Democratic districts (Anastasopolous, 2016). Similarly, female candidates are nearly twice as likely to be Democrats. For example, in 2016,

24.55% of Democratic candidates and 11.22% of Republican candidates for the United States House of Representatives were women (CAWP, 2020). Finally, partisanship acts as an insurance against gender bias (Ono and Burden, 2018). Voters choose candidates based on party over anything else. Using a Regression Discontinuity Design (RDD) for election models provides a chance to eliminate some of these biases. An RDD model imitates experimental design by assigning a cutoff point for a specific treatment. In election models the cutoff point is majority vote share. Anastasopolous (2016) uses close, partisan, male female primary elections for seats in the US House of Representatives to build an RDD model of gender penalty. In this case, the control group is male candidates who win their party's primary and go to the general election, and the treated group is female candidates who win. This model assumes that because the margin of victory is so slim, the candidates on each side of the cut-point differ only by gender and thus that the outcome is random. If these female candidates are truly nominated to the general election by chance, then it is possible to estimate the local average treatment effect of this nomination. Anastasopolous (2016) estimates no bias against women. However, this model is limited by the assumption that gender is the only difference between candidates in the paper's sample. Because it is hard to disentangle gender from other parts of someone's identity, it seems plausible that perceived candidate quality and ideology might still influence the outcome of these close elections.

Instead of relying on an election model to measure bias, Anzia and Berry (2011) argue that the performance of congresswomen in comparison to congressmen provides evidence that female politicians are of higher quality than their male counterparts. They find that congresswomen outperform congressmen in terms of bringing federal dollars to their districts and sponsoring bills. This supports their argument that female candidates are held to a higher standard and thus that gender bias creates a barrier to entry for women in politics (Anzia and

Berry, 2011). Several experimental studies offer further support for this conclusion. For instance, Fox and Smith (1998) presented a sample of university students with a survey containing hypothetical races for US House seats and found that, given two identical candidates who differed only in the gendered name assigned to them, students were less likely to vote for a candidate with a female name. Additionally, the 2018 General Social Survey found that 13% of Americans believe that men make better politicians than women. These studies indicate that there is significant evidence to support the idea that gender bias exists in elections, even if it is difficult to measure using historical data.

Many scholars argue that regardless of gender bias in elections the largest barrier to equal representation in politics is the lack of women who choose to run for office. A 2008 study by the Brookings Institute finds that women are less likely to run for office for several reasons: they are more deterred by the process of campaigning, less likely to receive encouragement to run for office, less likely to feel qualified to run for office, and more likely to handle the majority of family responsibilities than men. Indeed, a survey of male and female state legislators and mayors highlights that 53% of female representatives ran for office because they were recruited, as compared to 28% of male representatives (CAWP, 2008). Whereas men are more likely to launch a campaign on their own, women often need the support of a community leader or organization to feel confident running for office. For instance, the majority of both Democratic and Republican female representatives were involved in a women's, youth, or professional organization prior to candidacy (Sanbonmatsu, Carroll, and Walsh, 2009). Furthermore, the female legislators surveyed highlighted the differences between male and female professional networks as a major barrier to building a campaign (CAWP, 2009). Systems of power remain dominated by men, making it difficult for women to get their foot in the door. These entrenched

inequalities mean that potential female candidates have to work extra hard to get on the same level as their male counterparts.

HISTORY OF FEMALE POLITICIANS IN UTAH

Despite the criticism Utah faces regarding the status of women, it was the site of several watershed moments of national importance for women in politics. The first occurred in 1870, when Utah became the first state to give women the right to vote. At first glance, this was a surprisingly progressive move in a very conservative state. However, this decision stemmed from a desire to improve the reputation of the Church of Jesus Christ of Latter-Days Saints (LDS) and its widespread practice of polygamy (Mackay, 2005). Many outsiders assumed that LDS women felt trapped in polygamist marriages and thus would vote to criminalize the practice. Church leader William Clayton felt confident that the opposite would prove to be true, writing, "There are not many women here but will sustain all the measures of the authorities better than some of the men do" (Mackay, 2005). The church's all-male leadership directed women to support polygamy in elections, which they ultimately did. In response, Congress passed the 1887 Edmunds-Tucker act, disenfranchising LDS women in an attempt to remove the church's hold on political power in the state (Mackay, 2005). Historian Laurel Thatcher Ulrich argues that women continued to support polygamy because it empowered them in "complicated ways" by giving them a strong community of women in which to live, work, and raise children. (Ulrich, 2017). Indeed, throughout the late 19th and early 20th century, LDS women mobilized in support of both polygamy and suffrage.

This mobilization led to subsequent watershed moments in the state. The first occurred in 1896 when seven women ran for positions in the state legislature. One, Democrat Dr. Martha Hughes Cannon, became the first female state senator in the US, beating her own husband in the

election (CAWP, 2020). Cannon defied the norm by balancing her roles as a physician, politician, mother, and practicing polygamist. She and many of the women who ran in the 1896 election worked closely in the LDS Relief Society and Utah Women's Suffrage movement, demonstrating that involvement in women's organizations can be an important pathway to involvement in politics (Mackay, 2005). Four years later, Elizabeth Cohen became the first woman elected as a delegate to the Democratic National Convention. Then, in 1912 in Kanab, Utah, five women were elected to the first all-female town council (CAWP, 2020).

Despite these milestones, cultural norms and party practices continued to create significant barriers to entry in the political arena for women. Moreover, instead of prompting significant changes to the status of women in society, the emergence of women's suffrage in 1920 "simply doubled the electorate," splitting female votes down party lines (Mackay, 2005). Women involved in the Republican party tended to do party "housekeeping," working behind the scenes on campaigns and in local government instead of in the spotlight (Mackay, 2005). The first major campaign for Equal Rights Amendment to the US Constitution, in the 1920s, was the next big wave of political activism around the status of women and marked an important division between Democrats and Republicans. Conservatives opposed national support for a law that would undoubtedly catalyze already shifting gender roles. The LDS church also took a hard line against the ERA and asked female leaders of the Relief Society to publicly oppose the amendment (Mackay, 2005).

The early momentum for Utah women stagnated throughout the mid-to-late 20th century, with female political representation in the legislature remaining below 10%. In 2003, however, Republican Olene Walker defied this trend and became the first female governor of the state. Walker's pathway to government follows a similar arc to the ones described in the CAWP and Brookings Institute surveys. In an interview with the Utah Women's Leadership Project, Walker

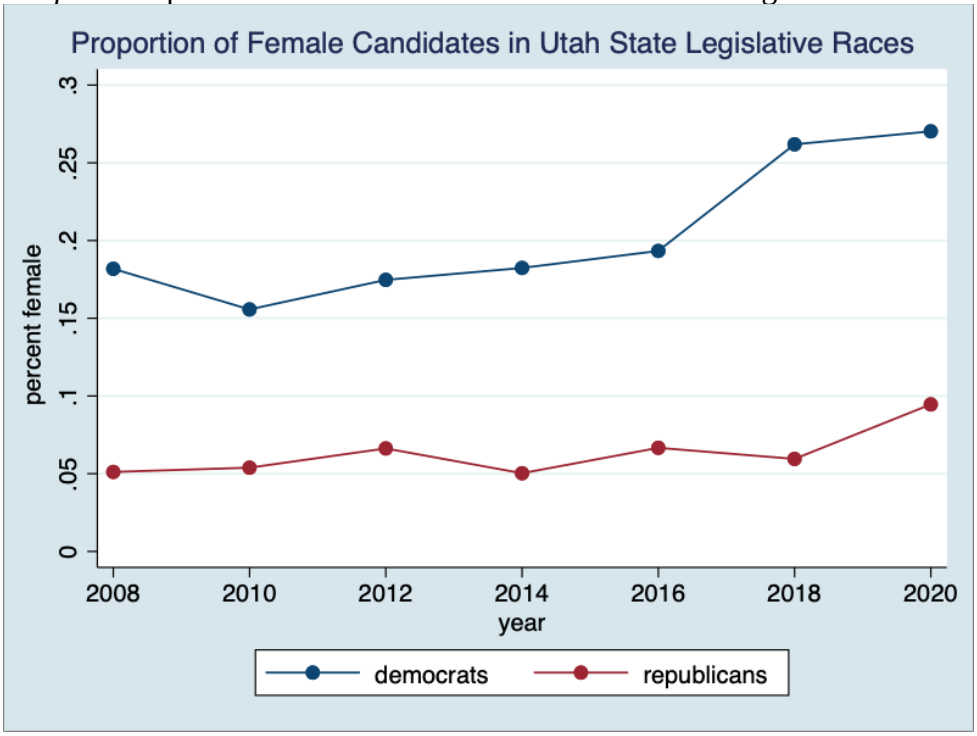
notes that she "doesn't remember even considering most professional occupational options because of the lack of [female] role models or mentors" (Madsen, 2008). It was her experiences in college that inspired her to pursue an undergraduate and master's degree in political science and, after 13 years as a stay-at-home mom, a PhD in educational administration (Madsen, 2008). Walker was eventually recruited, like many women, to run for a seat in the state House of Representatives and after 8 years in office, decided to run for Congress because of housing policy, demonstrating the importance of policy issues in increasing political engagement for women. Her pathway highlights the importance of encouraging women to take on leadership roles from a young age and receive an education. Mike Leavitt picked her as his lieutenant governor in 1991. She served in this role for 11 years before Leavitt resigned to take a position in the Bush Administration and Walker assumed the governorship. While Walker certainly had an impressive and important pathway, it is telling that Utah's only female governor was not actually elected. Even more telling is that, despite leaving office with an 87% approval rating, Walker lost her re-election campaign, coming in 4th at the Utah Republican Convention (Chen, 2015). She is one of only two Utah governors who have lost an intraparty re-nomination. That being said, it's important to note that she had been in office for only 6 months prior to the Convention, and she began her re-election campaign later than her rivals, both factors that likely contributed to her defeat.

THE CURRENT POLITICAL CLIMATE IN UTAH

While female Democrats in Utah have surged into office over the past decade, female Republicans remain severely underrepresented. Graph (1) demonstrates that, in the past two election cycles, more than 25% of candidates have been female Democrats, while fewer than 10% of candidates have been female Republicans. Conversely, 51% of female voters in Utah are

registered Republicans, and only 29% are registered democrats (Pew Research Center, 2014). Thus, Republican women are the key to moving towards equal representation. The influence of the LDS church, access to institutional resources, the large number of male Republican incumbents, and Utah's primary-convention system offer several theories for why Republican women are falling behind.

*Graph 1:*Proportion of Female Candidates in Utah State Legislative Races



The Influence of the LDS Church

The Pew Research Center suggests that the LDS church is the most Republican religious group in the United States, and that the majority of Mormon women identify as Republican. Church doctrine and leadership encourages female members to prioritize family responsibilities over anything else. For instance, the church's website states, "[Women] also have, by divine nature, the greater gift and responsibility for home and children and nurturing there," (The LDS

Church, 2020). The church teaches members that fulfilling their God-ordained roles will lead to a life and after-life full of blessings (The LDS Church, 2020). This rhetoric speaks to the way that many LDS women continue to engage with politics. To many, duties as a mother, wife, and caretaker are more important than any political or career aspirations. This worldview makes it challenging for them to feel they have experience relevant to political office and likely reduces the pool of women interested in running. Additionally, LDS women are withheld from the highest positions in the church. In Utah, church leadership is often a direct pathway to business and political leadership positions in the state, so this could also contribute to the absence of women in state leadership roles (Mackay, 2005).

Candice Pierucci, the representative for Utah House District 52 in Herriman, Utah, is one of several LDS Republican women who balance political goals with family responsibilities, demonstrating that the two are not mutually exclusive. At 27, she became the youngest female legislator in state history, right after finishing a master's degree and having her first child. In an interview for this paper, Pierucci notes that one of the most frequent questions people asked after she announced her candidacy was, "How are you going to do this as a mom?" She never heard anyone ask her male counterparts the same question. In order for the Republican party to recruit more female candidates, Pierucci believes that the party should reframe its rhetoric to be more inclusive. In Utah specifically, she thinks that one of the best ways to reach conservative women is to emphasize that holding political office is an act of public service. Serving others is integral to the LDS religion, and Utah ranks first in the nation for the number of residents who regularly volunteer (Utah Department of Heritage & Arts, 2018). Additionally, Pierucci notes that Utah's non-profit sector "is overwhelmingly female." If conservative women in Utah see running for office as a way to serve their community and their family, they might be more interested. Additionally, Pierucci thinks that it is important for women to know that, outside of the

legislative session, working as a state legislator is mostly a part-time position, making it easier to balance work and family. Ultimately, she feels that as Utah "builds the bench of female candidates," more and more women will realize that they too are capable of running. Indeed, studies have shown that the election of female candidates to office increases both the number of women who run for office and the number of women who are politically engaged (Baskaran and Hessami, 2018). Thus, it is important to highlight the pathways of women like Candice Pierucci who have successfully navigated cultural pressures to become state leaders.

In order to truly understand the extent to which religious values might impact a Utah woman's decision to run for office, a future study could perform a statewide survey of women. Similarly to the 2008 Brookings Institute study, this survey would contain questions about whether a woman has political ambitions and what factors contribute to this ambition, or lack thereof.

Access to Institutional Resources

When the Institute for Women's Policy and Research released its 2015 report on the status of women in each state, Utah ranked 36th in the nation for access to institutional resources. Their index measures access based on the existence of four types of organizations: a statewide commission for women, a campaign training program for women, a women's political action committee (PAC), and a state chapter of the National Women's Political Caucus. At the time the report was published, Utah only had a women-specific campaign training program. Since then, the state has established a women in the economy commission and a women's PAC. It is possible that these organizations contributed to the increase in female candidates in 2018 and 2020 state legislative races. However, these organizations appear to be more accessible to progressive women than conservative women. For instance, the Utah women's PAC states on its

website that its 2020 goal was to “elect additional moderate and progressive candidates statewide.” Similarly, the Utah women in the economy commission supported state ratification of the ERA and an employer tax credit for child care in 2020, two bills run by female Democrats. Thus, the lack of female-specific resources geared toward conservative women may contribute to the disparity between female Democrats and female Republicans in office.

The fact that Republican women are less likely to mobilize around equal representation makes the accessing institutional resources increasingly challenging. For instance, when asked how her gender impacted her political career, Governor Walker responded that “she did not like to dwell on gender barriers” (Madsen, 2008). Similarly, a 2020 *Salt Lake Tribune* article about Republican representatives in Utah notes that these women want people to vote for them “based on their credentials, not because they are female.” That being said, many expressed a desire to increase the number of female representatives in office and cited the Republican primary process as a major hurdle to potential candidates.

Male Incumbents in Utah

Incumbents tend to win both primary and general elections, making it difficult for their opponents to effectively challenge them. Additionally, incumbents disincentivize challengers within their own party at convention, which might contribute to the low number of female Republicans who choose to run for office. From 2008 to 2020, almost half of candidates in races for state legislative seats were incumbents. Of these, 71% were male Republicans. This offers a partial explanation for why the Utah state legislature continues to be male dominated.

Utah's Convention-Primary System

Utah is one of only two states where conventions determine state legislative nominees. Every March, state delegates are elected at neighborhood caucus meetings. In May, these delegates vote in each party's convention. Candidates who receive at least 60% of delegate votes move straight to the general election. If one candidate in a race fails to receive 60% of the vote share, however, a primary election is held to determine who will represent their party at the general election. Additionally, instead of participating at convention, a candidate can gather 1,000 signatures in their district to get on the primary ballot. The Democratic primary is open to any registered voter in the state, whereas the GOP primary is closed, so only registered Republicans can vote in the primary.

In 2011, former director of the Hinckley Institute of Politics, Kirk L. Jowers described Utah's system as "the highest barrier in the nation" for primary candidacy. Because only 24% of delegates in the Utah Republican Convention are female, it seems possible that this barrier might be highest for Republican women. However, there is not public data to test this claim as the parties, not the state, are in charge of running convention races. Additionally, Pierucci believes that the convention system actually makes it easier to run for office because running a convention campaign is less expensive than a primary one. Instead of appealing to an entire district, Pierucci argues, "it was about talking to [her] 112 delegates and nothing else." If the parties made historical convention data public, a future study could analyze the impact of the convention on female candidates. Additionally, it would be interesting to know how many Utahans are actually aware of the convention-primary system, as lack of knowledge could make running for office more "daunting" (Pierucci, 2020).

METHODS

Next, I turn to a quantitative analysis that seeks to understand whether women who do decide to run in Utah face a disadvantage in their ability to win votes or raise money. Table (1) contains summary statistics for candidates who ran general elections from 2008 to 2020. The mean value of each categorical variable highlights the fraction of observations that match the variable name. For example, in this dataset, 24.9% of candidates are female, 55.3% are Republicans, and 45.6% are incumbents. On average, the voting age population turns out at a rate of 44.2%, and 46.2% of registered voters in a given legislative district are Republican. The average candidate raises $34,086 in contributions during an election year.

Table 1: Summary Statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
female	1,111	0.249	0.433	0	1
male	1,111	0.751	0.433	0	1
democrat	1,111	0.446	0.497	0	1
republican	1,111	0.553	0.497	0	1
total contributions ($)	1,111	34,086	37,391	0	229,429
participant in primary	1,111	0.0747	0.263	0	1
incumbent	1,111	0.453	0.498	0	1
open	1,111	0.210	0.407	0	1
challenger	1,111	0.339	0.474	0	1
uncontested	1,111	0.103	0.304	0	1
male/male race	1,111	0.452	0.498	0	1
female/female race	1,111	0.0504	0.219	0	1
male/female race	1,111	0.395	0.489	0	1
race turnout	1,111	0.442	0.148	0.0542	0.919
dollars in race ($$)	1,111	62,311	48,556	1,393	321,163
district population	1,111	34,107	16,557	18,545	87,135
percent of republican voters in district	1,111	0.462	0.123	0.141	0.722
median age in district	1,111	30.89	3.956	18.80	45.50
median income in district	1,111	70,474	19,820	27,475	133,259
percent w/ bachelor's degree in district	1,111	0.212	0.0688	0.0823	0.366

The variable for percent of registered Republicans in a district comes from the Utah Voter Registration Files for 2015 and 2019. In Utah, the Republican party holds a closed primary, which means that only registered Republicans can vote in those elections. The

Democratic primary, conversely, is open, so any registered voter can participate. Because Utah is a conservative state, and because Republican voters have an incentive to register with their party, the percent of registered Republicans offers a measure of how "Republican" a district is. This value ranges from 14.1% to 72.2%. There are a large number of unaffiliated and third-party voters in Utah, so a district with 50% Republican voters does not mean that the other 50% are Democrats. In fact, the highest value for registered Democrats is only 39%. Graph (1) highlights how the proportion of registered voters in Utah State House Districts one through 25 varies by party in 2019. The unaffiliated category includes voters who belong to minor parties.

Graph 1: Registered Voters in Utah State House Districts by Party

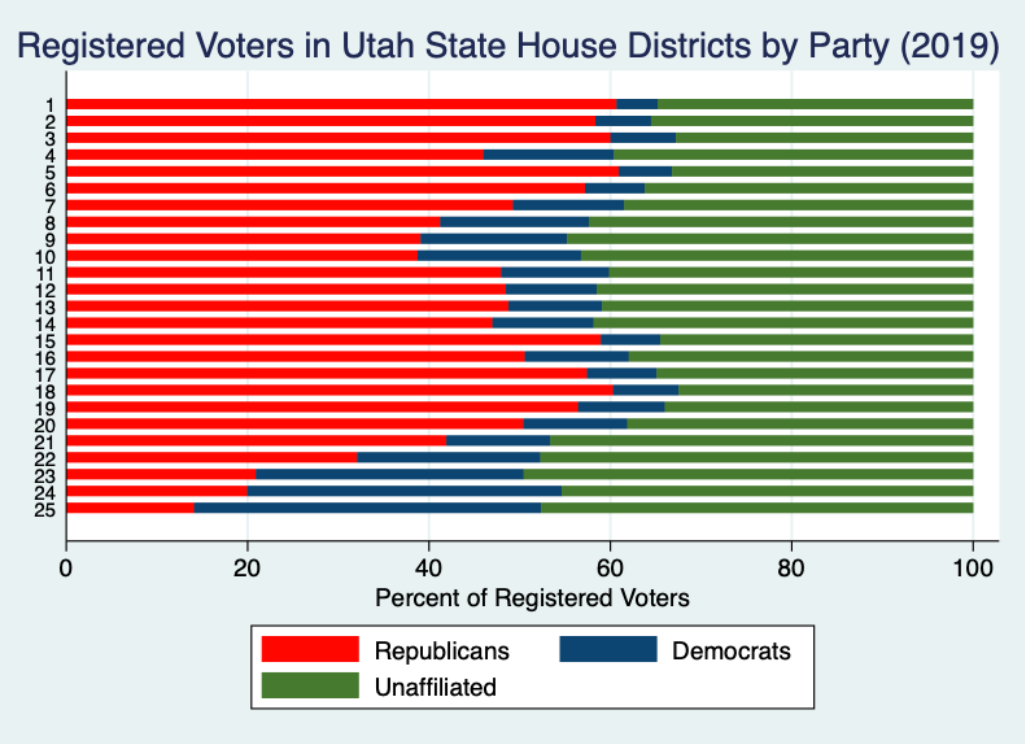


Table (2) breaks down candidate characteristics by gender. Notably, of Democrats, 41% are female candidates, while only 11.8% of Republican candidates are female. Additionally, of the 45.3% of candidates who are incumbents, 80% are men. Another interesting statistic to note, not shown in these tables, is that 38% of female Republicans run against female Democrats. I will discuss this point in the results section.

Table 2: Candidate Characteristics

	Democrat	Republican	Incumbent	Challenger	Open	Uncontested
Female	41.0%	11.8%	19.4%	32.1%	24.8%	11.4%
Male	59.0%	88.2%	80.6%	67.9%	75.2%	88.6%
Frequency	497	614	503	377	233	114

The outcomes of interest in this dataset include whether a candidate wins or loses, candidate vote share, total contributions received, race turnout, and whether a female runs in a given district. I use a multiple linear regression (MLR) model to analyze the impact of candidate gender on these outcomes. The models in this analysis have robust standard errors.

Although primary races are part of the dataset, they are not included in the main analysis because there are only 30 races with female candidates, and the only significant result is that incumbents outperform all other candidate types in primaries. The impact of primary participation on general election outcomes is captured in the following analysis, where the variable "participant in primary" is equal to one when a candidate goes from convention to primary to general and equal to zero when a candidate goes straight from convention to general.

RESULTS

What Factors are Associated with a Female Win?

Table (3) estimates the effect of several factors such as fundraising, incumbency, and party on whether a female candidate wins in male female general election races. The constant describes the probability that a female Republican challenger defeats a male Democrat incumbent. Column (1) suggests that female democrats are 13.6 percentage points less likely to win than female republicans, that incumbency is associated with an 89.1 percentage point electoral advantage, and that challengers rarely win. Column (2) adds controls for fundraising, which decreases the magnitude of the other coefficients. In this model, if we increase total

dollars raised by 1%, we expect to see a 0.000394% increase in the probability that a female candidate wins. Dollars raised by an opponent are associated with a decrease in the probability that a female candidate wins. Column (3) controls for the percent of registered republicans in a district and introduces an interaction term between the percent republican and democrat variables. Column (4) includes district and time fixed effects. In this model, fundraising no longer has a statistically significant impact on whether a female candidate wins. However, when female vote share is the outcome, both candidate contributions and opponent contributions are statistically significant, which suggests that both of these variables correlate with candidate performance, but not necessarily candidate victory. The participant in primary variable is not statistically significant in any model.

Table 3: A Linear Probability Model where female candidate wins is the outcome

	(1)	(2)	(3)	(4)
VARIABLES	Model 1	Model 2	Model 3	Model 3
democrat	-0.136**	-0.101*	0.641***	1.412***
	(0.0534)	(0.0533)	(0.176)	(0.368)
democrat*percentrepublican			-1.882***	-3.909***
			(0.438)	(0.835)
incumbent	0.891***	0.744***	0.615***	0.227**
	(0.0383)	(0.0540)	(0.0675)	(0.112)
open	0.417***	0.353***	0.327***	0.174*
	(0.0742)	(0.0677)	(0.0639)	(0.0880)
participantinprimary	0.0552	0.0171	-0.0459	-0.183
	(0.0984)	(0.0940)	(0.0891)	(0.157)
log(total contributions)		0.0394***	0.0190**	0.0207
		(0.0104)	(0.00872)	(0.0163)
log(opponent contributions)		-0.0237***	-0.0173***	-0.00294
		(0.00804)	(0.00646)	(0.0102)
percentrepublican			0.798***	2.166
			(0.281)	(2.858)
Constant	0.148***	0.0408	-0.0667	-0.571
	(0.0551)	(0.123)	(0.130)	(1.606)
Observations	208	208	208	208
R-squared	0.662	0.691	0.735	0.873
Time FE				yes
District FE				yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The interaction between the variables Democrat and percent of Republican voters describes the marginal effect of that percentage on the probability that a female Democrat wins. The positive coefficient on Democrat suggests that, below a certain threshold of "percentrepublican," among female candidates, Democrats are more likely to win, holding other factors fixed. A simple formula allows for the calculation of this threshold:

$$femalewins = a + 1.412(Democrat) - 3.909(Democrat*percentRepublican) + e$$

Differentiating with respect to Democrat generates an equation for the marginal effect of "percentRepublican" on the probability that a female Democrat wins. Setting this equation equal to zero provides the threshold at which female Democrats lose their advantage:

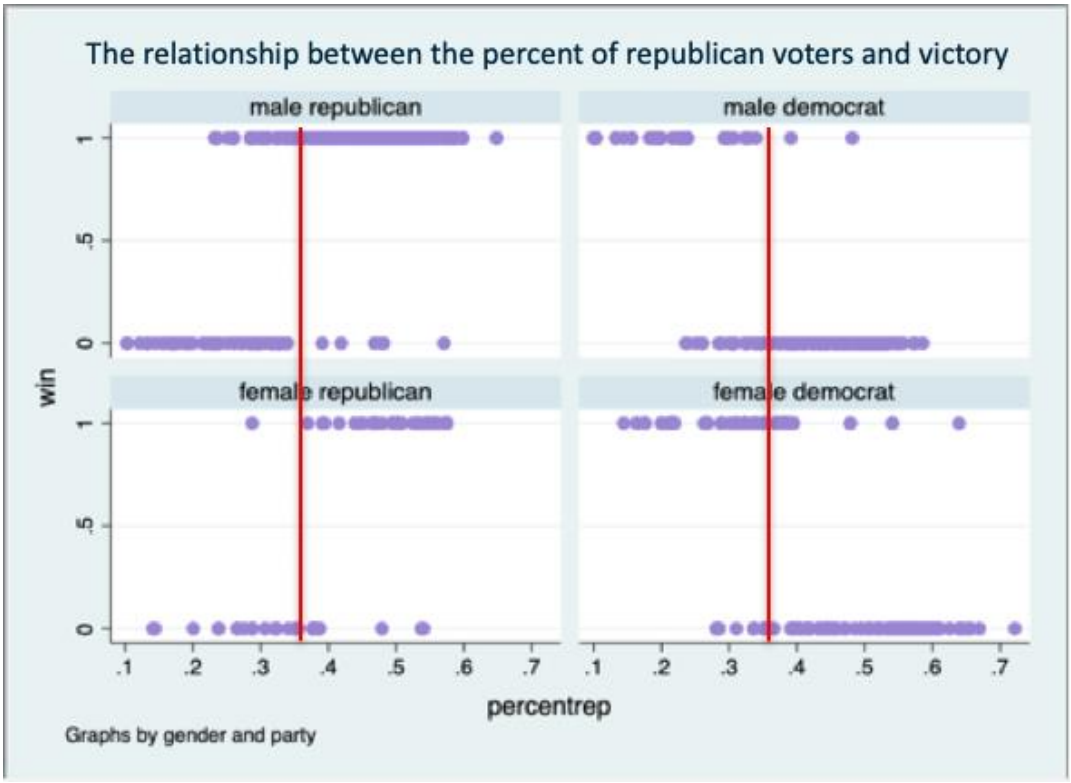
$$0 = 1.412 - 3.909(percentRepublican)$$

$$1.412 = 3.909(percentRepublican)$$

$$0.36 = percentRepublican$$

Thus, in districts with fewer than 36% of registered Republicans, being a female Democrat is associated with defeating a male Republican, holding other factors fixed. Above this threshold, being a female Republican is associated with winning. Graph (2) highlights the relationship between "percentrepublican" and victory. The red line is at the 36% threshold.

Graph 2: The relationship between the percent of Republican voters and victory



Overall, the results from Table (3) suggest that the most important factors associated with a female win are party, the percent of Republican voters, and incumbency. This is consistent with the literature on elections, which has established that partisanship and incumbency are the main determinants of electoral success for a candidate (Milyo and Schoseberg, 2000 ; Ono and Burden, 2018). The high R^2 value - which suggests that the independent variables in this model explain 87.3% of the variation in whether a female candidate wins - provides further support for the power of these two variables, as the addition of an incumbency control and district fixed effects, which control for differences across districts, generated the largest increases in R^2. Additionally, this means that it is unlikely that there is any omitted variable that would significantly increase the R^2 value, reducing concerns about omitted variable bias (Oster, 2017).

Because the majority of female candidates in male-female races are Democrats (168 observations versus 38 observations), the results in these models better explain the factors

associated with a female Democrat win. Similarly, the coefficient on the percentrep interaction term is likely biased because female candidates of both parties in Utah tend to run in more Democratic districts. In other words, the correct threshold for percentrep may be lower than 36%. Additionally, the percentrep variable imperfectly describes the proportion of Republicans in each district in each election year because it is calculated based on data from 2015 and 2019. This inaccuracy is most prevalent in election years 2008 and 2010 because of re-districting.

Do Female Incumbents Receive a Smaller Share of Votes?

Table (4) estimates the impact of being a female incumbent on vote share in male female general election races. Milyo and Schosberg (2000) argue that "because incumbency is such a dominant determinant of fund-raising and electoral success," candidate quality among incumbents is more homogenous than among other candidate types, offering a more accurate estimation of the impact of gender on election results by reducing unobserved heterogeneity across candidates. In this analysis, MLR models estimate whether female incumbents outperform male incumbents in terms of vote share and campaign contributions. The constant describes the average vote share of male incumbents, holding other factors fixed. In Column (1), female is the only explanatory variable, and there is no statistically significant relationship between gender and vote share. Column (2) adds controls for party and fundraising. This model indicates that Democratic incumbents receive a 3.4% smaller vote share than Republican incumbents. Additionally, higher fundraising is associated with a slightly lower vote share. Column (3) includes the percent registered republicans variable and its interaction with democrat, and Column (4) includes district and time fixed effects. Column (4) indicates that being a female incumbent is associated with a statistically significant 3% vote share advantage. Democrat incumbents are associated with having an advantage when the percent of registered Republicans

is below 33% and Republican incumbents above that threshold. Total contributions do not exert a statistically significant impact on incumbent vote share, but opponent contributions do.

Table 4: Incumbency and vote share

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
female	-0.0237	0.00689	0.0198*	0.0341*
	(0.0183)	(0.0160)	(0.0115)	(0.0199)
democrat		-0.0344**	0.504***	0.346***
		(0.0170)	(0.0426)	(0.113)
democrat*percentrep			-1.349***	-1.042***
			(0.111)	(0.274)
ln(total contributions)		-0.0169*	0.00625	-0.00651
		(0.00885)	(0.00651)	(0.0136)
ln(opponent contributions)		-0.0201***	-0.0142***	-0.0120***
		(0.00176)	(0.00132)	(0.00197)
percent registered republicans			0.715***	0.527
			(0.0606)	(0.531)
Constant	0.688***	1.008***	0.360***	0.557
	(0.0107)	(0.0906)	(0.0824)	(0.336)
Observations	182	182	182	182
R-squared	0.009	0.504	0.754	0.901
Time FE				yes
District FE				yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In this case, female incumbents are associated with having a 3% higher vote-getting ability than male incumbents. Milyo and Schoseberg (2020) find that female incumbents have a 6% higher vote-getting ability using a similar model. They use this finding as evidence that female incumbents are of higher quality. However, they do not find this advantage until they account for measures of both candidate and challenger quality. In this case, it is inappropriate to draw conclusions about whether the coefficient on female indicates anything about incumbent quality. First of all, most of the observations in this model are male Republican incumbents, and they exist in a broader range of district types. In other words, while Democrat incumbents almost exclusively exist in districts that are much less Republican than average, there are male Republican incumbents in both districts that are less and more Republican than average. In less

Republican districts, they win less of the vote share. Because the coefficients on the percent rep variable and interaction term are not informed by data-points where Democrat incumbents run in more Republican districts, they are biased, thus threatening the validity of the model. Additionally, neither a regression comparing fundraising nor one comparing challenger fundraising across male and female incumbents yielded statistically significant results. If, for example, female incumbents also out-performed male incumbents in terms of fundraising, there might be a more compelling argument in support of a female incumbent advantage.

Do Female Candidates Raise Less Money?

Table (5) estimates the impact of being female on fundraising in male female general election races. The constant in column (1) describes the natural log of total contributions received by male candidates. The constant in columns (2-4) describes the natural log of total contributions received by male Republican challengers. Female is statistically significant in the first model, likely because almost half of female candidates are challengers to incumbents, which puts them at a fundraising disadvantage. In column (2), after controlling for party and incumbency, the female coefficient loses its statistical significance. Every other variable in this table is statistically significant. Column (3) adds the percent of registered republicans term and its interaction with Democrat, which reduces the magnitude of the coefficients on the other explanatory variables. Column (4) includes district and time fixed effects. The interaction between Democrat and percent Republican indicates that Democrats have a fundraising advantage in districts where fewer than 32.6% of registered voters are Republicans, and Republicans have an advantage above that threshold. According to column (4), incumbents outraise challengers by 135.6% and candidates in open races outraise challengers by 113.2%, on average, holding other factors fixed. Additionally, participation in the primary is associated with

a 58% increase in fundraising. This makes sense, as candidates who go through the primary process have an incentive to raise more money because they participate in three races, whereas candidates who go straight from convention to general only participate in two.

Table 5: A regression where the natural log of total contributions ($) is the outcome

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
female	-0.519***	0.353	0.388	0.340
	(0.193)	(0.258)	(0.248)	(0.239)
democrat		-0.629**	2.398***	2.471***
		(0.263)	(0.816)	(0.809)
democrat*percentrepublican			-7.505***	-7.568***
			(1.843)	(1.840)
incumbent		2.030***	1.325***	1.356***
		(0.220)	(0.260)	(0.259)
open		1.409***	1.109***	1.132***
		(0.266)	(0.264)	(0.297)
primarytogeneral		0.643***	0.389**	0.580**
		(0.180)	(0.167)	(0.277)
percentrepublican			1.885*	1.024
			(1.091)	(9.631)
Constant	9.826***	8.476***	8.107***	7.615
	(0.129)	(0.244)	(0.541)	(5.619)
Observations	439	439	439	439
R-squared	0.016	0.258	0.307	0.547
Time FE				yes
District FE				yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Again, the results from this model are consistent with findings from other studies, suggesting that female candidates face no fundraising disadvantage in comparison to male candidates (Anastasopolous, 2016; Black and Erickson, 2003; Seltzer et. al, 1997). However, the model suffers from similar biases to the model in table (3), as most of the candidates are either male Republicans or female Democrats. The percentrep variable also maintains the same inaccuracies. Additionally, omitted variables like candidate quality and candidate tenure are likely important in explaining how much money a candidate raises. For instance, it is reasonable

to think that an exceptionally charismatic, well-known, or qualified candidate could outraise a relatively boring, unknown, or inexperienced candidate. Similarly, wealthier candidates can hire more skilled fundraisers than less wealthy candidates. I ran another version of this model to see if district characteristics like median income or median age impacted fundraising, but they were not statistically significant after district fixed effects were taken into account.

Is Race Turnout Different in Races with Female Candidates?

Table (6) estimates the relationship between female candidates and race turnout. The constant describes race turnout, on average, for races with two male candidates holding other factors fixed. The statistically significant coefficients on female/female in column (1) suggests that female candidates tend to run against female candidates in districts with higher turnout. In column (2), district characteristics like median age, median income, and percent of registered republicans have a statistically significant association with race turnout, but adding district and year fixed effects in column (3) removes that statistical significance. The coefficients on "mf" and "ff" in column (3) allow for an estimation of the marginal effect of the presence of a female candidate on turnout but are not statistically significant. This table indicates that turnout is higher in wealthier, more Republican districts and in races with higher total fundraising between candidates. For instance, if total dollars raised increases by $10,000, voter turnout should increase by .00378 percentage points. Turnout is also higher in presidential election years.

Table 6: Factors that impact race turnout

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
mf	0.00998	0.0123	0.00260
	(0.0122)	(0.00952)	(0.00564)
ff	0.0768**	0.0417	0.0204
	(0.0350)	(0.0256)	(0.0152)
open		0.0102	-0.000681
		(0.0112)	(0.00594)
dollarsinrace		1.25e-07	3.78e-07***
		(9.10e-08)	(8.08e-08)
medianincome		3.64e-06***	1.05e-06*
		(2.65e-07)	(5.61e-07)
medianage		0.00876***	0.00635
		(0.00135)	(0.00392)
percentrep		0.258***	0.399*
		(0.0377)	(0.222)
Constant	0.431***	-0.226***	-0.00950
	(0.00750)	(0.0458)	(0.169)
Observations	632	632	632
R-squared	0.011	0.431	0.890
Time FE			yes
District FE			yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

This table suggests that district, year, and race characteristics, not candidate characteristics, are the most important factors associated with race turnout. If the voter registration file contained a voter gender category, it would be interesting to see whether male and female voters turnout at different rates when a female candidate is running.

What Types of Districts do Female Candidates Run In?

Table (7) estimates the impact of district characteristics on whether a female candidate is present in a race. The percent of registered Republicans is the only statistically significant characteristic. It suggests that the presence of a female candidates is correlated with less Republican districts. Additionally, the year fixed effects show that more women ran for Utah state house and senate seats in 2018 and 2020 than in any other year in this study.

Table 7: District characteristics associated with the presence of a female candidate

VARIABLES	(1) Model 1
median income	-1.31e-06
	(1.48e-06)
median age	0.000782
	(0.00571)
percent with bachelors degree	0.488
	(0.361)
percent registered republicans	-0.584***
	(0.179)
total population	-1.17e-06
	(1.18e-06)
2010	-0.0812
	(0.0745)
2012	0.00941
	(0.0720)
2014	0.0333
	(0.0752)
2016	0.0316
	(0.0825)
2018	0.153**
	(0.0766)
2020	0.265***
	(0.0804)
Constant	0.733***
	(0.214)
Observations	602
R-squared	0.058

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Nationally, female candidates tend to run in more progressive, wealthier, more educated districts (Anastosopolous, 2016). In Utah, less Republican districts are correlated with a lower median income and a less educated population. Because most of the female candidates in this dataset are Democrats, the negative coefficient on percent of registered Republicans suggests that female candidates might choose to run in districts where they have a better chance of winning. Interestingly, 40% of female Republicans run in this dataset run against female Democrats, which suggests that female Republicans might feel more comfortable running against

another woman. There are also a number of districts where no female candidates have run in the time frame of this study. A future study could investigate whether the presence of a female candidate in a given district in a given year inspires more women to run in future years. The fact that more women ran in 2018 and 2020 in both Utah and across the nation supports the hypothesis that, as more female candidates are elected, more women run for office (Baskaran and Hessami, 2018).

CONCLUSION

The results of this study fail to support the claim that female candidates face bias in elections. However, because these regressions are non-experimental, it remains possible that bias does exist but is just not evident. That being said, these results are consistent with the literature on women in politics, which generally suggests that female candidates perform as well as male candidates in elections. Assuming this phenomenon holds true in Utah, the most measureable barriers to equal representation in Utah are the lack of female candidacy and the large number of male Republican incumbents. Scholarship in this area suggests that effective ways to increase the number of women who run include active recruitment by political parties, expansive childcare policies, and community organizations designed to help women build leadership skills and network (Lawless and Fox, 2008). In Utah specifically, conservative organizations need to step up and increase access to institutional resources for Republican women. Additionally, a policy introducing term limits for state house and senate seats could help make way for more female representation. Future research could investigate the impact of Utah's primary-convention system on prospective female candidates, follow pathways to office of female representatives, and survey women across the state to understand what drives or dampens political ambition. Collecting election data across a broader time range and developing measures of candidate

quality could allow for more sophisticated analysis of a gender penalty. In addition, collecting gendered voter registration data would help answer questions about how the presence of female candidates impacts the engagement of female voters. Finally, analyzing the performance of female legislators in comparison to male legislators in Utah could provide interesting insight into whether women in politics are held to a higher standard.

Policy changes and research can certainly help, but the path to equal representation will likely require a broader cultural shift in Utah, especially given the decision to run for office has to come from women themselves. Hopefully, as conservative women see figures like Representative Candice Pierucci, Lieutentant Governor Deidre Henderson, and other female Republicans take office, they will feel inspired . Based on the number of women who ran in the past two election cycles, it seems Utah is building momentum in the right direction.

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