

State Population and Candidate Quality

I. Introduction

In this paper, I ask the following question: Is there a relationship between a state's demographic characteristics and the quality of representatives serving that state? In Federalist no. 10, Publius outlines a theory that democracies with a large population will produce better representatives for that democracy. I test this theory by looking at Senate members of the 114th Congress. I will look at four different independent variables relating the state demographics and give a detailed explanation of how to measure quality of senators. These variables are the state's population, education level, median earnings, and median age. I will argue that states that are more populated, aged, educated and wealthy will be more likely to elect more qualified senators.

Motivations Behind Paper

In the framing of the nation there were two different ideas as to what created a quality representative for a republic. I will describe the two theories as the small republic vs. the large republic. The large republic was the inspiration for this paper and is heavily discussed in Federalist no. 10. Publius, who was the three writers of James Madison, John Jay, and Alexander Hamilton, wrote *The Federalist Papers* as a response to criticism made in publications regarding the ratification of the United States Constitution. Federalist no. 10 has been accredited by scholars to be written by James Madison. Federalist no. 10 discusses the issue of factions within a republican form of government. Factions are the "number of citizens... that are united... by some common impulse of passion."¹ For Publius, these groups are the potential downfall of democracy for their passion gets in the way of governing. The factions are self-interested and not looking out for what's best for the whole. Publius does not believe that it is best to control for the causes of faction, for they are much more harmful than the problem of factions themselves. Instead he believes that the effects of factions should be controlled, which is where the large republic solution comes into play. He argues that one method of encouraging a better republic is using the number of factions as a solution. In the small republic, a faction is more likely to gain a greater control on government than the other factions. The idea is that if in a small town the majority of persons work for the local farm, then that farm will have a tyrannical control on public decisions that are unfair to the rest of the community. This small community will be strongly influenced by one faction and not interested in the issues surrounding the whole community. The solution to this problem is increasing the number of factions in a republic. Publius argues that by having multiple factions, not one will have full control over the community. As a result, the factions will have to work together in order to facilitate a functioning community. This idea extends to those who are selected to represent the community. He states that:

As each representative will be chosen by a greater number of citizens in the large than in the small republic, it will be more difficult for unworthy candidates to practice with success the vicious arts by which elections are too often carried; and the suffrages of the people being more free will be more likely to center on men who possess the most attractive merit and the most diffusive and established characters.²

In this view, a larger society is more likely to better screen candidates for public office. This is for two reasons. The first reason is since there are a plethora of factions within the community; the

¹ Alexander Hamilton, James Madison, and John Jay. *The Federalist Papers* (New York, New York: First Mentor Printing, 1961), 46.

² Ibid, 51.

candidate will have to appeal to more than just a special interest. Not only that, but the candidate will have to be widely known throughout the community for doing something great before he ran for office. In smaller republics it may be possible to run candidates who don't have much in qualifications to be successful. One of the reasons for this is a community might not have much in terms of candidate choice. A smaller community is less likely to have qualified candidate because of its size. Statistically speaking a community that is larger is far more likely to have a greater pool of qualified candidates than a community that is smaller. For Publius, the great fear of electing a candidate whose interest is in a faction and not the community is best eliminated by creating a large republic.

II. Dependent Variable: Candidate Quality

Education

One method of evaluating congressmen is the use of tapping into their expertise. The theory behind this method of evaluation is to view each congressman as having a set of skills he brings to Washington. With these skills, he is able to bring a unique perspective that the other members were unaware of before his arrival. One article argues that this is how state legislative committees operate, allowing a greater field of knowledge to be applied on a committee.³ The difficulty in this research approach is that in a broad study, objective measures are difficult to find. What most researchers have done to find objective measures is view educational experience in comparison to a specific vote. One article looks at those congressmen who had graduated with a Bachelor's in Economics to view how they would vote on a minimum wage proposal.⁴ The field of economics has almost a consensus on the view that the minimum wage is bad policy. The study found that those with a Bachelor of Economics were more likely to vote against the proposal, furthering the idea that having an Economics degree made some representatives more qualified to be in office. This is because those representatives demonstrate an area of expertise in the area of economics that they gained from their education. A problematic example of one's background influencing the vote is in the instance of tort reform. One article argues that tort lawyers who are representatives overwhelmingly vote against any form of tort reform.⁵ This seems to indicate that lawyers are not in favor of tort reform because they have an experience bias that prevents them from doing what's best for the public. The problem with that analysis is that maybe lawyers know tort better than the general public and tort reform is simply unnecessary, just like economic majors know the minimum wage is bad policy. However, what if each member is voting against these reforms because they simply have an individual preference. Isn't it plausible that an economics major could be biased against a minimum wage bill in a way that wasn't objective? Maybe the minimum wage is bad according to economists, but there may be another course of reason that it may be good policy for the representative's constituents. This area of quality method leaves open an area of subjectivity. In order for a representative's experiences in their best to be of a good quality, one must have already determined that those experiences were good and others were not. The economics study had already presumed that having a background in economics was an inherently good quality to have in terms of quality while the Tort Reform article took the opposite view on their representatives' experience. These areas can be difficult to find a completely objective measure, which is why this perspective is less desirable.

³ Keith E. Hamm, Ronald D. Hedlund and Stephanie Shirley Post. "Committee Specialization in the U.S. State Legislatures during the 20th Century: Do Legislatures Tap the Talents of Their Members?" *State Politics and Policy Quarterly* 11, no. 3 (September 2011): 229.

⁴ J. Brian O'Roark and William C. Wood. "Determinants of congressional minimum wage support: the role of economic education." *Public Choice* 147, No. ½ (April 2011): 209-225.

⁵ Ulrich Matter and Alois Stutzer. "The Role of the Lawyer-Legislators in Shaping the Law: Evidence from voting on Tort Reforms." *The Journal of Law & Economics* 58, No. 2 (May 2015): 357-384.

Previous Political Experience

Another method in evaluating the qualifications of a congressman is their previous political experience before entering their current office. The inspiration for reviewing this variable comes from the literature regarding quality challengers. In the quality challenger literature, the objective of the researchers is to evaluate the qualities that make a candidate better able to win against incumbents. This paper has a very different objective in reviewing what makes a quality representative. A quality challenger is defined as a candidate who can win an election. A quality representative is defined as a candidate is qualified for the seat.

Reviewing the literature on what makes a quality challenger is a good place to start in possibly finding potential measurements of what makes a quality representative. In an article by Squire detailing Senate challengers, he finds evidence that supports the idea that the higher the quality of challenger the more likely he is to do better in the election.⁶ In this study, the factors that were found to be significant were “the size of the quality challenger pool and the size of the state’s population.”⁷ In another paper by Squire, he uses a different measure of challenger quality. Using empirical evidence of success of former governors, U.S. representatives, statewide officeholders, local elected officials, and no political office; he used a point system scoring governors 6, U.S. representative 5, statewide officeholder 4, state legislator 3, elected government officeholder 2, other political positions 1, and no political office 0.⁸ What Squire’s paper finds is a relationship between a challenger’s quality and being in contact with voters when measured with his profile, campaign expenditures, party identification, interest in politics, and state population.⁹ The fact that these variables have an effect on voter contact with candidates is unsurprising. The variable from the study that shows interesting findings is state population. As a state’s population decreases the less likely the challenger will be able to be in contact with voters. This relationship is also found later in the study in regards to voters’ ability to recall and recognize challengers.¹⁰ These findings are in contradiction with the theory presented in Federalist no. 10. In Squire and Smith’s paper they discuss their challenger quality test with other papers. They find that their measures have stronger values of statistical significance compared to other measures used in other papers.¹¹ Individuals who seek public office potentially are truly looking to serve the public interest. Individuals who are able to leave office to run for a higher one are potentially more qualified from the experience. It is possible though that individuals who are career politicians lack a certain expertise by being absent from the private sector. A common criticism of career politicians is they are out of touch with their constituents, a criticism that reflects on their performance in representing the people with whom they are supposed to be in touch. Despite this potential issue, I would argue that political experience is a positive feature of a candidate given that having experience is never a negative. From the perspective of the literature, the previous political experience provides a backbone as to a measurement of what makes a quality challenger. It can be argued that this measurement of a quality challenger can also be applied to quality representative. An

⁶ Perverill Squire. “Challengers in U.S. Senate Elections.” *Legislative Studies Quarterly* 14, no. 4 (Nov., 1989): 531-547.

⁷ *Ibid*, 536.

⁸ Perverill Squire. “Challenger Quality and Voting Behavior in U.S. Senate Elections.” *Legislative Studies Quarterly* 17, no. 2 (May, 1992): 248-49.

⁹ *Ibid*, 253.

¹⁰ *Ibid*, 255.

¹¹ Perverill Squire and Eric R. A. N. Smith. “A Further Examination of Challenger Quality in Senate Elections.” *Legislative Studies Quarterly* 21, no. 2 (May 1996): 235-248.

individual with previous political experience will also have qualities that make them a quality representative.

Campaign Spending

The challenger quality research shows the difficulty in evaluating candidates for elections. The literature on quality challenger reviews the ability of challengers to manage campaign finances as a measure of quality. The variable of campaign financing demonstrates a candidate's ability to run an election. In his paper, Jacobson argues that the role campaign funds provide for the challenger are to gain voter awareness.¹² The difficulty challengers have in elections against incumbents is a lack of name recognition. When a challenger runs against an incumbent, their primary objective is to capture the attention of the public. Voters who are unaware of a candidate's existence are not going to vote for that candidate. It is not a surprise that campaign spending is related to the success of a challenger. As challengers are better able to spend on their campaigns they are more likely to win against incumbents. What information this variable gives about candidates is their ability to run elections effectively. This measurement accurately captures what it means to be a quality challenger, but it does not capture what it means to be a quality representative. For this paper, a quality representative looks to measure how effective the representative is in office. Being able to garner attention for oneself during election years is helpful for obtaining the position of representative but not necessarily an indication of being qualified for the position itself.

Legislative Activity

Another measure for a quality candidate is a measure that shows an individual who will perform the functions in the legislature well. While in office representatives have responsibilities to those they represent. There are two types of responsibilities that representatives in a legislature have, those in the legislature and those at home. While in the legislature, representatives have a role in insuring their constituents' needs are being met. This requires the representative to push legislation that is of the interest of the voters. These activities range from meeting with special interest groups to discuss information on issues, collaborating with other members of the legislature to create legislation, to voting on bills for passage. The other responsibility representatives have is going back to their constituents and discussing with them the issues that pertain to them. This involves town halls, e-mails, letters, individual meetings, etc. It's this communication that provides the backdrop of what a legislator will put into legislation. The legislative activity, the duty of the representative in action, is an important measurement of their quality. A representative who shirks in passing legislation and being active in the legislative process is not as qualified as a representative who is active in passing legislation. This is because an active representative is actively engaging in the issues that matter to their constituents. Representatives who are not as active are simply not as highly functional in their position.

III. Data and Analysis

Data Collection

The data was collected from a variety of sources. The data for the dependent variable was collected for four different measurements: education, political experience, legislative activity, and previous occupation. These variables were collected using the govtrack.us website and the Bioguide from the U.S. Congress website. Govtrack.us is a privately owned project with the purpose of keeping citizens

¹² Gary C. Jacobson. "The Effects of Campaign Spending in House Elections." *The American Political Science Review* 72, no. 2 (Jun., 1978): 469-491.

informed as well as allowing more information to be available to the public. This resource collects information about how each member of Congress votes, what bills they sponsor, how many votes are missed, committee standing, etc. This resource was used to collect information on the number of votes missed as a percent by each senator as well as information on how many bills were sponsored and enacted into law. This data was collected and put into a spreadsheet.

There were a number of methods used to collect data on legislative activity. There was originally the intent to collect data on committee membership as well but an effective measure of legislative ability was not able to be used when using this measure. This is due to the fact that all members of the U.S. Senate are on committees and generally chair or are ranking members of at least one committee. A difference between having a seat on one committee over the other is the topic of the committee. For example, a senator sitting on the Committee on Intelligence will have a greater effect on policy than a member on the Airland Subcommittee. Measuring the difference between a senator in one committee over another may be elusive. Potentially a senator who contributes substantially to the Airland Subcommittee could pass more of their amendments that otherwise wouldn't be passed if they were on a committee whose subject they had less knowledge. In this way, committee seating could be more problematic of a measure than it's worth. However, it may have been of use in terms of creating another measure of legislative activity. Of the measures that were recorded, the use of number of votes missed is less than ideal. Generally senators miss votes due to heavy campaign seasons. An example is John McCain who missed over half of his votes during his campaigns for president in 2000 and 2008. Many of his other years he never missed a single vote. Over his entire Senate career, his vote absence is above the median average of missed votes because of those campaigns. I would argue that Senator McCain's absence during those campaign years doesn't indicate that he's a bad candidate for his state of Arizona. This argument especially applies to candidates who were campaigning for their seat in the Senate. In order to appeal to their constituents, senators have a responsibility to address voters during election cycles. For this reason, missed votes are not a perfect indicator of candidate quality in regards to legislative activity. The data that was used as a measure was the number of bills sponsored. The idea behind this measurement is that candidates are able to create a bill regardless of whether they are senior members in the Senate or not. A candidate who is willing to put in the energy to place as many bills as possible during their career indicate a willingness to perform as a high functioning legislator while in office. Creating legislation is one of the key responsibilities of a senator which why it makes sense to use it as a measurement of quality. One problem when using this measure is that over a senator's career, they are more likely to create bills over longer stretches of time than in shorter careers. Since not every senator has the same length in career, one way to eliminate this discrepancy is to average the number of bills sponsored per year. This allows candidates who have been in office for a short period of time to have the same measurement of quality as members who have been in office for decades. Another measurement that was considered was number of bills enacted. The problem with using this measurement is that once a bill is sponsored it takes a life of its own when going through Congress. The vast majority of pieces of legislation do not get passed and it's likely that a certain bit of luck plays role in the passage of many bills. Also many bills require the signature of the President which will determine the failure of many bills because of the party who holds the Presidency. This would bias the quality of members of the Senate as having a higher quality rating simply because the President is of the same party. For that reason, enacting legislation is not ideal for measuring candidate quality in regards to legislative activity. I believe the best measure for legislative activity was the use of bills sponsored averaged by the years served.

The Bioguide was used for the senators' education, previous political experience, and private career. The Bioguide comes straight from the U.S. Congress's website which ensures a level of credibility to the accuracy of the information. The source is far from perfect, however, since there is vagueness in the information that is given. For example, each senators' level of education was obtainable and recorded. This information was recorded by cataloging their achievement in obtaining a bachelor's

degree, master's degree, or professional degree. What type of bachelor degree each senator achieved was not available. Political experience was expressed in much detail, from director positions on committees, to chairmanships for parties, and to electable positions. This was incredibly helpful in documenting the political past of each senator. The difficulty is in the private careers of each senator. Some were rather detailed, explaining the years spent in military service, clerkships, or working in practices in specific cities. Other biographies were more limited, only stating the owning of a private law practice or holding a teaching job. This area provides the greatest weakness of the sources, which forget to highlight the greater accomplishments of senators before their introduction into political life. Nevertheless, this information is valuable in compiling a dataset on the biographies of the senators before they entered office.

On the independent variable side, the objective was to find variables that show qualities of common voters within the state. This data was collected by the U.S. Census Bureau's website which creates spreadsheets of the data. This tool is called FactFinder and is used to compile a plethora of pieces of data about demographics across the United States. The Census information taken was for the 2010 Census and was created by a state basis. This means that every piece of demographic information is associated with a state. Of course District of Columbia and Puerto Rico were eliminated from the data set since they do not have voting members of the U.S. Senate. For this study, four independent variables were collected: the state population, median age of state population, population without a high school diploma, and the median earnings of the state's population. The state population is needed to determine the question of whether or not a large or a small state population will influence the quality of a candidate that is elected. The idea with each of these variables is each of them is related to a demographic that is likely to vote in a Senate election.

Two control variables were collected: the length in office and campaign contributions from the last Senate election. Length in office data was taken from the govtrack.us website by finding the year each senator entered the U.S. Senate. Length in office data is used to control for incumbency, which can be a significant factor in affecting the relationship between the dependent and independent variables. This is because incumbency has a huge factor on the success of candidates in elections. Another variable controlled for is campaign contributions. This variable was collected from the Federal Election Commission's website. The contributions that were recorded were contributions made directly to the candidate's campaign during their last election cycle. If a candidate is up for reelection for 2016, the data for 2010 was used since all the data for the 2016 election cycle hasn't been recorded yet. This variable may influence the results because campaign contributions have a significant effect on the success of a candidate running for office. By controlling for this variable it may be more likely to see the potential relationship between a quality candidate and state population as well as demographic features of the state's population.

Using these sources and these methods, the variables have been collected into a spreadsheet. The analysis of the data was done using Gretl, a free statistical software program that allows for the use of linear regressions. This software compared the dependent variable to the independent variables.

Dependent Variable Index

Candidate quality is dependent on a variety of different factors. They range from subjective qualities like physical appearance to objective qualities like political experience. For this paper, four measures (education, political experience, legislative activity, and previous occupation) were used to determine candidate quality and each was compiled to create an index for each senator. For the quality of education, each senator was given a score for each degree they achieved. For bachelor degrees a score of 1 was received, masters a score of 2, and for professional a score of 3. The scale was created under the idea that a professional degree is more valuable than a master's, and a master's is more valuable than a bachelor's. An example would be Roy Blunt who earned a bachelor's degree and a master's scoring a

total of 3. For political experience, values were used from Squire's paper regarding Senate Challengers.¹³ In his paper, he gave values to different political experiences: Governors received 6, U.S. House members received 5, Statewide Offices received 4, State Legislators received 3, Elected Gov. Officeholder received 2, and Other Political Positions received 1. For legislative activity, the average number of bills sponsored per year in the Senate was used. For private career, finding an objective measure between occupations was difficult. In researching, sociologists use a measure of prestige within an occupation.¹⁴ What the researchers did was create an index of values for occupations based on the public's perception of those occupations. The occupations were scored from values ranging 0 to 100 in terms of prestige. The strength of this measure is that prestige is an important value for a public figure. For a candidate who is running for office, it is important that their career is respected among the community that elects them. Unfortunately this measure has a few problems. One major issue is that just because an occupation is considered prestigious does not necessarily mean that the individual who performed that occupation received antequite experience that translates to effective work in the Senate. Being an actor may be a fantastic occupation in terms of prestige but not a very rewarding one in terms of gaining effective knowledge to work as a senator. Another issue was how to calculate each senator's score based on the plethora of occupations held by them in the past. From my understanding, the researchers used this index to value an individual's current occupation. An occupation may have a different prestige value if it was a past occupation. Another issue is the fact that the data received from the U.S. Congress biographies may not be a full list of the occupations of the senators. Another important issue is the length within each occupation isn't taken into account. Of course that data isn't available for all senators, but if it was the value of an individual working as a private practice lawyer would be worth more the longer that occupation is worked. Nevertheless, this data is used to calculate an objective value for each senator's private careers. For every mention of an occupation like lawyer, the NOVA value is given and then added into the total value of the occupations that senator held. Public career occupations are not added to the total value. Teachers and social workers were considered to be a part of the private careers of the senators since they are not political in nature. These four pieces of data individually were collected and then used to create an index.

The index was created by giving each score a percentile ranking within each measurement. For example, a senator scored a value of 9 within political experience which ranked him at the 91st percentile. This 91 was his rank. Within the four measurements, all the senators were ranked using this method. There was clear variety amongst legislative activity and private career to not have repeat scores. For political experience there were some repeats but for education there were many. The reason for the repeated numbers in education is the large number of senators with similar educational experiences in obtaining a Law degree. This is potentially problematic in that senators will not have many differences in values for this measure. To compile the index, each of the four values was weighted for candidate quality. The past political experiences was given a 40 percent weight, legislative activity was given a 30 percent weight, education was given a 20 percent weight, and private career was given a 10 percent weight. These values were given based on what I perceived to be the ranking of what makes a qualified candidate. I would argue that political experience is the most important quality in determining if a candidate is qualified. In the literature over quality challenger, this is the most effective measure in determining a quality challenger. The legislative activity of a senator is the only measure of their current job performance that is measured. This deserves a high weight as the second most valuable determinant of candidate quality as it is a direct measure of their performance. This measure isn't perfect however, given the fact that senators can be effective in the performance of their job in other ways other than introducing as many bills into Congress as humanly possible. Nevertheless it encompasses an important

¹³ Squire 1992.

¹⁴ Keiko Nakao, "The 1989 Socioeconomic Index of Occupations: Construction from the 1989 Occupational Prestige Scores," *GSS Methodology Report*: no. 74 (May 1992).

aspect of a senator's job that needs to be taken into account. Education would be the third most important value because a senator's background in education has an influence on areas of expertise and how they will vote. This is according to the literature on economic and business majors and their likelihood to not vote on minimum wage legislation that was mentioned in the literature review. Private careers received the lowest weight in the index. Since the U.S. Congress didn't emphasize these parts of senators' careers, I believe the senators themselves don't have the perception that this part of their biography holds much value to their success as a candidate. This might be a faulty assumption and this value may be more important than the weight given to it, but there isn't literature that I've seen that suggests that this value ought to be higher than the other measures. From this weighted index a value was created for each senator. This value is the senators' overall quality rating for the dependent variable.

Data Analysis

1. State Population

This paper's inspiration was to review the relationship between a state's population and its quality of senators representing the state. There are two competing theories as to how this relationship will play out which is discussed in the motivations section of the paper. The theory that is pushed by this paper is found in Federalist no. 10 which argues that larger republics will have better qualified candidates. The expectation is that states with larger populations will have a larger pool of candidates to choose from and will have a plethora of factions which will diminish special interests. Having a larger pool of candidates will allow states a greater potential to find a representative that is of a higher quality than states that have less candidates to choose from. From this theory, the hypothesis for the expected relationship for these variables is:

As a state's population rises, so will the quality of Senator representing that state.

2. Age

This paper looks to find a relationship between the median age of the state and the quality of representative of that state. The theory behind this relationship is that as populations in a state age they will more likely have formed relationships with candidates that inhabit good qualities for representation. Senators who make face to face contact with their constituents are far more likely to obtain their vote. As citizens of a state age they are much more likely to have established contact with those who are running for office. Older voters may know their candidates at this personal level because they have greater opportunities to be exposed to the candidate's in their private lives and public lives. For example, Senator Tom Coburn who was a doctor in the state of Oklahoma provided his private service to many families in his state. When he ran for election his private career helped him establish a relationship with potential voters. This relationship would more likely be affected by older voters because they are more likely to have had contact with him in his multi-decade private career. This logic also applies for a candidate's public profile. Individuals who are familiar with the name of a candidate are much more likely to vote for that candidate. Since older voters are more likely to have participated in past elections, they are more likely to recall candidates who represent them in other seats. These candidates with a public service background to have exposure to older voters, thus more qualified candidates will be better known to older voters. A higher aged state will also have a larger pool of more qualified candidates to choose from. This is because individuals who are older will have more time to build a career of accomplishments, from attaining education to acquiring political experience. From this theory on the role of older voters, the expected relationship between the two variables is:

As a state's median age rises, so will the quality of senator representing that state.

3. Education Level

The third variable that has an expected relationship to candidate quality is the education level of the state. Citizens of a state that are more educated tend to be more active in the political process. This could be for a variety of reasons. One reason may be the likelihood of educated persons being more involved in their communities. Community involvement would allow educated persons to have more contact with their representatives than non-active community members. This would allow educated persons to be better able at assessing the qualifications of those running for office. More educated voters will also be more likely to be informed as to what is happening in their communities. This knowledge will allow these voters to be better able to sift through which candidates they recall being involved in previously electable positions and which ones did not. A higher educated state will also have a higher qualified pool of candidates to choose from. From this theory on educated voters, the expected relationship between the two variables is:

As a state's educational level lowers, the quality of senator representing that state will be less qualified.

4. Earnings

The last variable tested against quality candidates looks at the median earnings of a state. Individuals who earn a higher income are more likely to be a part of the political process. States with higher paid workers will benefit from voters who have more access to information about the political process and are more motivated to participate. Higher earnings of a state will mean more job opportunities that allow for better candidates in the state. From this theory on earnings in a state, the expected relationship between the two variables is:

As a state's median earnings rise, so will the quality of senator representing that state.

Results

For model 1 I compared the dependent variable, which I listed as Weighted Total, to the four independent variables using an ordinary least squares model. This is a linear regression that looks to compare values to find correlative relationships between the dependent and independent variables. This model will not show a causal relationship between variables because there could be other factors involved in such a relationship. The first model in the Appendix shows the relationship between the dependent variable when controlling for campaign contributions in comparison to State population, the median age of the population, the population with less than a high school diploma, and the median earnings. Originally the senator's length in office would be used as a controlling variable, but the relationship between that variable and the dependent variable showed a negative relationship and raised p values of the independent variables. What this indicates is a bizarre finding that incumbency isn't related to candidate quality as measured in this paper. This can possibly be explained because the more recently elected senators may happen to have more qualifications than previous years of senators. They may also be more likely to list their previous accomplishments in regards to their private careers than senators who have been in office for decades. For these reasons, the incumbency status doesn't act as proper control for the dataset in model 1. For the other control, campaign contributions lower the p-values of the independent variables. As expected, campaign contributions have a negative relationship with candidate quality, which at first seems counter intuitive. This is because more qualified senators are less likely to face qualified challengers to their seats. This phenomenon means that qualified senators need to raise less money to stay in office compared to their less qualified counterparts.

The results of model 1 show that state population does not have a statistically significant relationship with quality of candidate representing that state. With a p-value of .7978, there does not appear to be a relationship between state population and quality of candidate. For the other three variables there is statistical significance at the .05 level. For median age the p-value is .0422, for less than

high school diploma the p-value is .0364, and for median earnings the p-value is .0249. These p-values suggest a relationship between the dependent and independent variables. For the median age, the relationship between the two variables is positive. The data supports the hypothesis of a positive relationship. For less than high school graduate, the relationship is also positive, which does not support the hypothesis. There is a potential problem is using this variable as a metric since a state could also have more highly educated persons. There could be a bimodal distribution of educated persons where a state has a high level of highly educated and a high level of low educated persons. Finding data on higher educated persons for each state would be the next step in testing that idea. For median earnings, the relationship supports the hypothesis of a positive relationship. This means that median earnings have a very small effect on candidate quality. The surprise from model 1 is that state population didn't have significance. This led me to use other models to see a relationship between other factors used for the creation of the dependent variable and state population.

IV. Conclusion

This paper fails to find a statistically significant relationship between state population and Senator quality. Among other variables there is a statistically significant relationship between median age, less than high school graduate education, and median earnings with senator quality when controlling for campaign contributions.

V. Appendix

Model 1: OLS, using observations 1-100
Dependent variable: Quality of Senator

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	-75.7775	42.3636	-1.7887	0.0769	*
Campaign Contributions	-4.12728e-07	3.49744e-07	-1.1801	0.2409	
State Population	7.66784e-08	2.98443e-07	0.2569	0.7978	
Median Age	1.76459	0.856817	2.0595	0.0422	**
Education Level	1.32678	0.624948	2.1230	0.0364	**
Median Earnings	0.00111738	0.00049035	2.2787	0.0249	**
Mean dependent var	47.10800	S.D. dependent var	18.06830		
Sum squared resid	29274.35	S.E. of regression	17.64736		
R-squared	0.094231	Adjusted R-squared	0.046052		
F(5, 94)	1.955838	P-value(F)	0.092421		
Log-likelihood	-425.8587	Akaike criterion	863.7174		
Schwarz criterion	879.3484	Hannan-Quinn	870.0435		