

Political Donor Motivations and Public Support of Policies: A Time Series-Analysis

The two predominant theories of political donor motivations are the access-oriented model and the consumption model. This paper combines political donation records and social media posts from politicians to test whether either behavior is observed. In the access-oriented model, individual political donors and political action committees (PACs) are assumed to contribute to campaigns in an effort to acquire access and influence politicians into supporting specific policy issues. In this study, the access-oriented model of donors predicts that donations from specific groups of donors will precede public support of certain policies. The consumption model of donors views political contributions as being an extension of voting along a participatory spectrum, and that donors support candidates who they already know support policy issues that the donors care about or are ideologically motivated. In this research, the consumption model predicts that donations from various groups of donors will lag in response to public support of certain policy issues. Historically, these two models have treated political donors as all having the same motivations. More recent studies in campaign finance have found that both motivational models can exist in different groups of donors. However, these studies categorize groups of donors in broad strokes, generally as either small-dollar donors and large-dollar donors as well as PACs. This paper statistically derives coalitions of similar donors and tests the competing models of political donor motivations on these more granular groups of donors who support similar candidates.

Introduction

The amount of money raised and spent by political campaigns in the United States continues to rise with each election cycle (Goldmacher 2020). However, the explanations of the motivations of political donors, the psychological reasons why political donors decide to make a contribution, remain divided. The predominant theories of political donor motivation fall into two broad categories, the access-oriented model or the consumption model. In the access-oriented model, contributions are given in exchange for access and political favors that presumably materialize in altered government policy. The consumption model of donations sees donors as participants in the political process who seek to alter election probabilities in a way that helps one's preferred campaign, similar to how voting seeks to help a campaign achieve election.

The prevalence of the two theories in political science literature changes throughout time. In the twentieth century, the bulk of academic inquiry into the motivations of political donors focused on the access-oriented model, particularly around Political Action Committees (PACs) and interest group politics (e.g., Herndon 1982). In the early- to mid-2000s, political scientists shifted their focus to and found evidence of the consumption model of donor motivations (e.g., Ansolabehere, Figueiredo, and Snyder 2003). In response to the *Citizens United* U.S. Supreme Court case in 2010, research focus again shifted back to the effects of the increased amount of money being donated to political campaigns and causes (e.g., Fourniaies 2018). This study does not take a zero-sum view of the motivations of political donors. Instead, the two predominant models are both investigated and allowed to exist together. While much of the research history of political donor motivations has either pitted the two models of motivation against one another (Welch 1980) or operated exclusively in the domain of one and not the other (Fellowes and Wolf 2004), recent scholarship has developed a more nuanced view of the motivations of political donors in that they are not a monolith and different donors can have different motiva-

tions.

This emerging, more nuanced view on the motivations of political donors is that donors are unique actors. Different donors may have different motivations, intents, and goals in making a political contribution. This recent scholarship has divided political donors into different groups and studied the two models, access-oriented and consumption, within these different groups. One way to divide political donors is into PACs versus individuals, with PACs' behavior being inline with the access-oriented model and individuals broadly being found to exhibit behavior consistent with the consumption model (Barber 2016). Another way to group individual donors is into frequent or infrequent donors, with frequent donors having been found to be access-oriented where infrequent donors are consumption-oriented (Heerwig 2016). Even more granularly, individual donors can be characterized into further specific descriptive categories with different categorizations showing different types of motivation for making a contribution (Rhodes, Schaffner, and Raja 2018).

This paper employs a novel clustering approach to find statistically similar political donors and layers in politicians' social media data to advance our understanding of the distinct motivations of political donors, including the policy issues that may motivate them to make a contribution. Instead of making a descriptive distinction between donors, such as PACs versus individuals (Barber 2016), frequent versus infrequent donors (Heerwig 2016), or other heuristics (Rhodes, Schaffner, and Raja 2018), donors are clustered together based on their network connections. This type network-based approach has started to emerge among computer science and machine learning researchers (Wahl and Sheppard 2018) who then make descriptive summaries of the statistical communities. We add a theoretical political psychological component to this approach by layering in an additional unique dataset, social media data from politicians, to identify behaviors and potentially the underlying reasons why donors are in the same statistical community. This paper combines these two datasets to test theories of motivations in clusters of political

donors.

In a network-based approach, donor clusters act as a *latent coalition* where different coalitions can have a distinct motivation. Previous network studies have concluded that this type of network clustering has been highly predictive for other types of political analysis, including voting behavior in the U.S. House of Representatives and Senate (Wahl, Sheppard, and Shanahan 2019). Instead of focusing on the clusters in the campaign finance networks that legislators belong to, this study examines the donors themselves and their statistically-derived clusters. This paper's approach in using latent coalitions of donors continues down the granularity spectrum established by other political donor researchers in parsing out the motivations of political donors.

In addition, this paper adds a dimension of policy issues. Are there certain policy issues that have donors who exhibit behavior inline with the access-oriented model or consumption model? Hypothesizing different issues are related to different groups of donors, this paper also considers policy-specific motivations. Most research into the motivations of political donors focus on ideological proximity instead of specific policy issues (Ensley 2009), or specific policy motivations are briefly discussed but not the focus of the paper (Bonica 2014). But when they are the focus of the paper, individual-policy preferences are an integral component of the campaign finance system (Bonica 2019). For example, perhaps pro-environmental donors are driven by the access-oriented model and anti-abortion groups are driven by the consumption model of politics. This paper combines donation records with social media data collected in Wisconsin during the 2016 election cycle to measure whether campaigns' support of certain policy issues respond to donations from clusters or whether donations from coalitions respond to public support of policy issues. Previous studies have used social media posts as a proxy for public appeals and the connection these appeals have to fundraising (Fu and Howell 2020). Particularly with the rise of politics online, adding in social media data provides a valuable variable in understanding the information ecology that political donors experience and

how the information ecology relates to their donation motivations. The results of this paper suggest that public support of policy issues on social media is both a valuable predictor of, and can be predicted by, political donations from coalitions of donors.

Next, we discuss the literature on the access-oriented and consumption model of political donors and explain the hypotheses for this study that can be derived from the two theories. Then, we will discuss the methods and results, followed by a discussion of the findings.

Access-Oriented Model

Access-oriented political donors are those that attempt to use their contributions to gain access to politicians. Most often, access-oriented motivations are thought to be the reason behind contributions from Political Action Committees (PACs) and donors with business interests. The theory goes that this access can then influence legislative behavior (Francia et al. 2003). The process of influencing legislation is fundamentally a communicative process where those seeking to influence legislators must be able to have direct access to legislators to whom they can take their arguments (Milbrath 1958).

Congress is an information ecology where competing facts and perspectives are everywhere and changing at all times. Political contributions can gain direct access that allows one to cut through all the noise of competing information that the legislator might be encountering (Milbrath 1958). Interviews (Herndon 1982), surveys (Baker 2020a), empirical studies of financial documents (Fouirnaies and Hall 2015), and contribution patterns themselves (Powell and Grimmer 2016) all support the conclusion that interest groups and individuals have the goal of gaining access to politicians through their financial contributions in order to influence government policies. These attempts to buy access are successful in gaining meetings with congressional offices for both special interest groups (Langbein 1986) and individual donors (Kalla and Broockman 2016).

Measuring the direct access that political financiers gain from political contributions

can be a challenging endeavor due to all of the noise in the political ecology. Instead, researchers have treated the “access” component of contributor influence as an implicit assumption and instead look for evidence of “influence” of political contributors on politicians. Many political science papers do not use the explicit term “access-oriented donor” and instead refer to their work as examining the potential “influence” of political donors on politicians. This line of influence research inherently implies a gain of access by political contributors. In order to have influence over public policy, one must first have access to politicians in order to communicate with them because the contribution itself does not carry any intrinsic message (Langbein 1986). In other words, studies that examine the influence of political donors make the assumption of the access-oriented model because influence requires access.

Even though research has suggested there is a connection between political contributions and access, it is unclear if that access actually converts to *influence* in the political process. PAC contributions have a limited effect on roll-call voting (Wright 1985) with about one-third of roll-call votes being impacted by campaign contributions (Roscoe and Jenkins 2005). In these instances, there is an apparent connection between PAC contributions and roll-call votes, but that correlation is potentially due to broader support from larger interest groups (Grenzke 1989). These correlations could be a manifestation of legislators responding to changes in the opinions of the national individual donor class (Canes-Wrone and Gibson 2019). One article went so far as to conclude that “evidence in the article undermines belief in the military-industrial complex model” (Wayman 1985) when studying the effect of defense-related PACs on roll-call voting.

Other lobbying efforts, beside political contributions, can also impact politicians’ behaviors. Donations are just a piece of the broader lobbying effort when trying to influence legislation. Ideologically extreme groups, particularly very liberal groups, are more reliant on PAC contributions than other lobbying methods compared to other interest groups (McKay 2010). These other interest groups can alter the legislators’ perceptions

of the power of the interest group, for example, union membership rates (Finger 2019) which can factor into whether contributions can acquire influence.

Contributions from financial (Hayes 2017), telecommunications (Edwards and Figueiredo 2016), education (Constant 2006), environmental (Hogan 2020) and healthcare interest groups (McKay 2018) have all influenced legislation. Any connection that does exist between campaign contributors and public policy has a stronger impact if the contributions are from organized business interests within a member's district (Hall and Wayman 1990), potentially similar to how members of congress prioritize public opinion of their district over national public opinion (Butler and Nickerson 2011). Further, there is a stronger influence as a result of contributions from individuals with business interests, opposed to PACs, which many other studies focus on (Fellowes and Wolf 2004). While it is "nearly universal" (Bonica 2016) that corporate executives of Fortune 500 firms make political contributions, and there is a significant increase in contributions once the business people are promoted to executive status (Fremeth, Richter, and Schaufele 2013), there is heterogeneity in their political leanings (Bonica 2016). Individual executives all have unique reasons and motivations for contributing to political campaigns.

Potentially, the influence exerted by contributors when making a political contribution is so indirect that it doesn't always materialize in statistical patterns of legislative voting or public policy, but there is evidence of the influence towards the benefit of the financial contributor. Interest groups seek both direct and indirect access to the policy making process (Fouirnaies 2018). Firms that contribute to winning political campaigns have abnormal financial returns after the election (Akey 2015; Cooper, Gulen, and Ovtchinnikov 2010). In addition to immediately-felt financial returns, donors may systematically contribute money to legislative agenda setters, such as chairs of financial committees, in an effort to set future legislative agendas (Fouirnaies 2018). Even business executives understand that political contributions are purchases of "good will" which are positive in return but are not frequent nor universal (Gordon, Hafer, and Landa 2007). For example,

political contributions reduce the punishment for business executives who are sanctioned for committing fraud (Fulmer, Knill, and Yu 2017); increase the number of “sweatheart” contracts rewarded from the government (Ferris, Houston, and Javakhadze 2019); and increase the premium and survivability of Initial Public Offerings (IPOs) (Gounopoulos, Mazouz, and Wood 2021).

There is still only a weak relationship between public policy outcomes and political contributions (Hadani, Bonardi, and Dahan 2017). This weak connection may be more of a signalling of policy preference than anything else (Austen-Smith 1995), in which case the assumption that a contribution itself does not carry a message (Langbein 1986) may have to be reassessed. In addition, this signalling is likely only effective if the contribution is large enough to influence the likelihood of the candidate being elected (Schnakenberg and Turner 2021).

Instead of focusing on direct access or financial outcomes, this research article examines politicians’ public support of policy issues. Under the access-oriented/ influence model of political donor motivations, we would expect to find politicians to be more supportive of certain policy issues after receiving campaign contributions from access-oriented donors. This hypothesis will be tested using a Granger causality model (Granger 1969), which is an econometric methodology to test whether changes in one time series predict future changes in another time series.

H_1 : Donations from various coalitions of political donors will precede, or Granger cause, increased public support of certain political issues from the politicians to whom they donate.

Since access-oriented donors are thought to be wealthier contributors, sometimes seeking access for financial gain, this paper will also examine the amount contributed by members of donor coalitions that are accepted by H_1 .

H_2 : Donors from access-oriented coalitions will on average be *larger* contributors to political campaigns than donors not in access-oriented coalitions.

Consumption Model

While the access-oriented model is centered on donors *influencing* the political process, the consumption model is about donors *participating* in the political process. The consumption model of political donors concludes that political contributions are not vehicles by which donors seek access to politicians but instead are acts of consumption, or in other words, participation (Ansolabehere, Figueiredo, and Snyder 2003). Under this model, individual donors are intrinsically motivated by ideology (Ansolabehere, Figueiredo, and Snyder 2003). People don't receive a direct benefit from making a political donation, but they do experience the indirect benefits of participating in a political campaign that matches their ideology and excites them. Said another way, for consumption-motivated donors, making a contribution is just an extension of voting on a participatory spectrum. Under this approach, donations are a way for individuals to participate and be responsive to their "perception of the stakes in the election" (Hill and Huber 2017).

Ideological proximity, or the spatial distance between the ideology of candidates and donors, is an important component to the consumption model of political donors, (Ensley 2009), even more so than agreement between the donor and the candidate on specific policy issue positions (Barber, Canes-Wrone, and Thrower 2019), such as taxes, global warming, and gay rights. The similarity between a donor's policy preferences and a senator's roll-call votes is a predictor of whether a donor makes a contribution (Barber, Canes-Wrone, and Thrower 2017). It is unclear if this connection between contributors' policy preferences and legislators' votes holds historically or only recently (Canes-Wrone and Gibson 2019). Divergence of ideology among the candidates for an office, such as a more extreme political opponent, does not impact donors' decisions to make a contribution (Ensley 2009). Out-of-state donors display policy-specific motivations in an effort to acquire surrogate representations (Baker 2020b). The theoretical implications for this paper are that consumption-oriented donors will contribute to politicians who already

show support for the policy issues, or are ideologically proximate, to themselves. In other words, donors reward for policy proximity between themselves and candidates.

In addition to individual donors, PACs also sometimes display behavior that can be defined as consumptive. For example, PACs for organized labor unions reduce contributions to members of the U.S. House of Representatives when they supported the North American Free Trade Agreement (NAFTA) (Engel and Jackson 1998), showing that labor PACs responded to perceived changes in ideological proximity of the policy issues they are about opposed to doubling-down on their efforts to potentially influence legislators who have become estranged from the PAC's priorities. While labor unions sometimes "punish" legislators for their votes (Jansa and Hoyman 2018), this punishment is to coax incumbents into changing their position back to being pro-labor (Jansa 2019), suggesting that there might actually be some influence-buying. Other PACs also show behavior that is inline with the consumption model of political donor motivations where PACs contribute to politicians who already agree with their policy preferences (Goldberg et al. 2020) as opposed to coercing a future vote on relevant policy topics (Callahan 2019). Contributions from PACs and individuals that exhibit consumption-oriented behavior are a lagging indicator of politicians' ideology and support of policy issues. Individuals and PACs make contributions between the politicians they are donating to are ideologically proximate to them or support similar policies. These donors reward ideologically proximate politicians, respond to changing ideological spatial location of the politicians, and do not try to necessarily influence policy stances into the future.

All together, under the consumption model of donor motivations we would expect public support of policy issues to attract political donors who care about that policy, which leads to H_3 .

H_3 : Public support from politicians on certain political issues will precede, or Granger cause, donations from various coalitions of political donors.

Individual donors, as opposed to PACs, continue to make up a clear majority of do-

nations to political candidates (Heerwig 2016). These individual donors most often exhibit behavior consistent with the consumption model of donations (Barber 2016; Heerwig 2016). Further, individual donors arguably play an even more central role in politics more recently with the growth in small-dollar individual donors.

With the rise of small-dollar donors on the internet and the assumption that these small-dollar donors are motivated by the consumption model of donor motivations, this paper will examine the amount of money contributed by members of donor coalitions that are accepted by H_3 . H_4 also serves as a measure of face validity for the theory of the consumption motivation model of political donors and this study's measurement.

H_4 : Donors from consumption coalitions will on average be *smaller* contributors to political campaigns than donors not in consumption coalitions.

Rise of Small-Dollar Donors

The growing number of small-dollar donors in the political process suggests that there will be more consumption-oriented donors in the future. The anecdotal examples of the Bernie Sanders and Donald Trump presidential campaigns, both of which received a large number of small-dollar donors (Choma and Voght 2020), illustrate the consumption-oriented model's connection to small-dollar donors. Small-dollar donors likely did not directly access or influence the politics of the Sanders or Trump campaigns. Instead, donors reacted to their messages and decided to move further down the participatory spectrum in those campaigns. Individual contributors are mostly all participants in politics without an ulterior motive besides wanting to support the campaign they are contributing to. Individual donors are "fickle financiers of elections" whose donation habits can be disrupted by little changes to their worlds such as moving to an area that is more or less Democratic or Republican (Kettler and Lyons 2019).

The Democratic Party as a whole has recently grown its proportion of money that is coming from small-dollar donors (Albert and Raja 2020). Incumbents have been able to

sustain their small-dollar fundraising programs (Heberlig and Larson 2020)—suggesting that this trend is not going to go away. This growth in small-dollar donors has created a donorate that is more demographically representative of America but is more ideologically extreme (Albert and Raja 2020) and give indiscriminately to incumbents, challengers, and open seat candidates (Culberson, McDonald, and Robbins 2019). It is conceivable that campaigns that rely on small donors will adopt rhetoric and tout their “outsider” status in an effort to activate these small, more ideologically extreme donors (Arbour 2020). Extremist politicians can leverage polarizing events to raise more money for their campaigns (Oklobdzija 2017). As a result, some have predicted that small-dollar donors will polarize the nation’s politics even further (Oklobdzija 2017). Although legislators who receive a large number of small-dollar donors aren’t more polarized in their voting in the next legislative session, legislators taking up a more polarized agenda does increase the number of small-dollar donors they attract in the subsequent election (Keena and Knight-Finley 2019), providing further evidence for the consumption model of political donor motivations. Other studies have agreed that mass donors are the cause of partisan polarization (Raja and Wiltse 2012), but this conclusion is not definitive (Harden and Kirkland 2016). And so, even though small-dollar donors themselves may not be polarizing, they may provide incentive for politicians to take more polarized positions.

This research paper will also examine the polarization of political donor coalitions and whether consumption-oriented donors and access-oriented donors are in polarized positions in the donor network graph.

H_5 : Consumption-motivated donors will be more polarized in the political donor network than non-consumption donors.

H_6 : Access-oriented donors will be less polarized in the political donor network than non-consumption donors.

This inquiry is not at all meant to make causal claims, as much of the literature does. These two hypothesis will address whether donors are *causal* or *reactive* to polarization.

Instead, this research hopes to add data as to whether this line of thinking is validated in descriptive data.

The rise in small-dollar donors has been driven primarily by technological advancements (Albert and Raja 2020) including growing sophistication with big data analytics (Walker and Nowlin 2018), particularly in modeling political behaviors of individuals (Nickerson and Rogers 2014). Digital firms, including Facebook, Twitter, and Google embed themselves into political campaigns and serve as “quasi-digital consultants” to the campaigns that shape the “digital strategy, content, and execution” of campaigns (Kreiss and McGregor 2018). Along with virtually every other component of political campaigns, fundraising, especially from small-dollar donors, is moving online (Chester and Montgomery 2017). While scholars remain skeptical of the power of data analytics on political campaigns, firms have successfully cultivated their images and businesses around the role of advanced data methods on political campaigns (Simon 2019).

Online Fundraising

The field of non-profit organizational studies (Hazard 2003; DSW 2000; Miller 2009; Raihani and Smith 2015), and not political science, has historically done the most research into online fundraising. The few studies that have researched the connection between social media posts and political fundraising have found a connection between the two (Wang et al. 2020). Before political scientists studied the digital world and donations to campaigns, the internet was seen more broadly as an agora public discussion (Anduiza, Gallego, and Cantijoch 2010; Gennaro and Dutton 2006; Zúñiga, Puig-I-Abril, and Rojas 2009; Valenzuela, Kim, and Gil de Zúñiga 2011; Vesnic-Alujevic 2012), a hub of political organizing (Cogburn and Espinoza-Vasquez 2011; Jost et al. 2018; Levenshus 2010), and a useful predictor of offline political capital (Gil de Zúñiga, Jung, and Valenzuela 2012; Hardina 2005).

Digital communication methods are similar to traditional political communication

and can be extrapolated to offline characteristics. The differences that are seen in online political communication, like lowered costs and eased barriers to entry, represent a “difference-of-degree” and not a paradigm shifting “difference-in-kind” (Karpf 2010). There is a strong connection between online channels of communication in the form of social networks and offline connections and building and maintaining social capital from those offline connections (Cranshaw et al. 2010; Ellison and Steinfield 2006; Liben-Nowell et al. 2005; Scellato et al. 2010). Online social networks have also been used to study offline-based actions and beliefs like opinion polarization (Lee et al. 2014), political polarization (Hanna et al. 2013), political participation (Lawrence, Sides, and Farrell 2010) and political discourse (Kushin and Kitchener 2009).

The bottom line is that online actions and behaviors reflect the offline world, and the online world is frequently extrapolated to explain offline actions and behaviors by prior researchers. This study builds upon these previous uses of online indicators of offline actions and beliefs by combining political administrative records of political donations and politicians’ social media accounts to discern the relationship between political donations and public support of policy issues.

Using social media will allow this paper to analyze the textual and linguistic characteristics of the posts. Previous research has been able to study the connection between digital language and political behaviors such as protests [needcite] but not donations. This paper will be able to use the connections found in H_1 and H_2 to explore textual features, specifically political sophistication (Benoit, Munger, and Spirling 2019) and polarizing language (Goet 2019; Lauderdale and Herzog 2016), to see if different types of language are related to either being influenced by donors in the access-oriented model or attracting donors in the consumption model.

R_1 : Do social media posts from politicians that either Granger cause or are Granger caused by donations from coalitions of donors have unique textual characteristics?

R_1 remains a work-in-progress and will not be answered in this working paper.

Data

Data for this research come from two primary sources: politicians' social media posts and political donation data.

For social media posts, this paper used the Facebook (Barbera, Geisler, and Atteveldt 2017) and Twitter (Kearney 2019) APIs to collect social media posts from all candidates for the Wisconsin State Senate and Wisconsin State Assembly during the 2016 election cycle ($n = 82,851$). A subset, 12,364 posts, or about 15% of the total posts collected, were hand-coded into 27 topical categories. These topical categories included if the post was made in support or opposition to a policy. For example, there is a "voting liberal" category that contains posts that are supportive of repealing voting ID laws and expanding early voting. The category "voting conservative" are posts that are in support of voter ID laws and other conservative voting reforms. Another example is that posts about healthcare were categorized into three different topics: liberal, conservative, and bipartisan.

These 12,364 posts were used to train and test a BERT deep learning transfer model. Of these 12,364 posts that were hand-coded, about 90%, 11,128 were used in the training set and about 10%, 1,236, were used in the test set. This trained model achieved about 82.9% accuracy in categorizing the topic of posts in the test set. This model was applied to the rest of the uncoded corpus that were later used for aggregations and calculations of the topics that politicians were posting about.

BERT, which stands for Bidirectional Encoder Representations from Transformers, is a pre-trained deep learning model that allows researchers to add just an additional output layer, in this case the hand-coded topical categories of the social media posts, onto a large pre-trained neural network (Devlin et al. 2019). BERT is currently the state-of-the-art model and performs at the cutting-edge of Natural Language Processing (Devlin et al. 2019). BERT and other transfer learning models have yet to be widely adopted by political scientists, but are an ideal choice for political science text classification, especially when

compared to traditional text-as-data methods in the discipline (Terechshenko et al. 2020). BERT has been applied to other social media research such as the detection of propaganda (Vlad et al. 2019), misinformation (Jiang et al. 2020), hate speech (Mozafari, Farahbakhsh, and Crespi 2020), stance (Tian et al. 2020), and aggression (Ramiandrisoa and Mothe 2020).

Political donation data for all candidates to the Wisconsin State Legislature during the 2016 election cycle were collected from the Wisconsin Campaign Information System (CFIS). Anonymous contributions were removed, names were made uniform (removed punctuation, made all names lowercase, etc.), and OpenRefine (Ham 2013) was used to stem names to identify people who might be the same person (e.g., Jim Smith and James Smith). To ensure that people who have the same name, but are different people, were not counted as the same individual, their zip code was added to the end of their name to create a unique identifier. Finally, only contributions from donors who contributed to more than one campaign were used. This filtering was done for computational efficiency and also because there were many donors who only made a single contribution which resulted in unequal, and computationally unusable, clusters. These steps left [neednumber] donations.

These donations were used to create a network of political donations with candidates and donors serving as nodes and donations between them as edges. This network was clustered into 13 distinct communities so that donors in each community are most similar to one another based on which campaigns they contributed to. The Louvain method as implemented by Gephi (Bastian, Heymann, and Jacomy 2009) did the clustering, or community detection. The rest of the analysis used these clusters assigned to the donors and are referred to as coalitions, communities, or clusters that donors belong to.

This network is visualized in Figure 1 using the Yifan Hu layout algorithm (Hu 2005) with the two political parties clearly divided with Democratic donors in the left large group of donors and Republicans on the right. The graph is shaded by the statistical

community the donor and candidates are in.

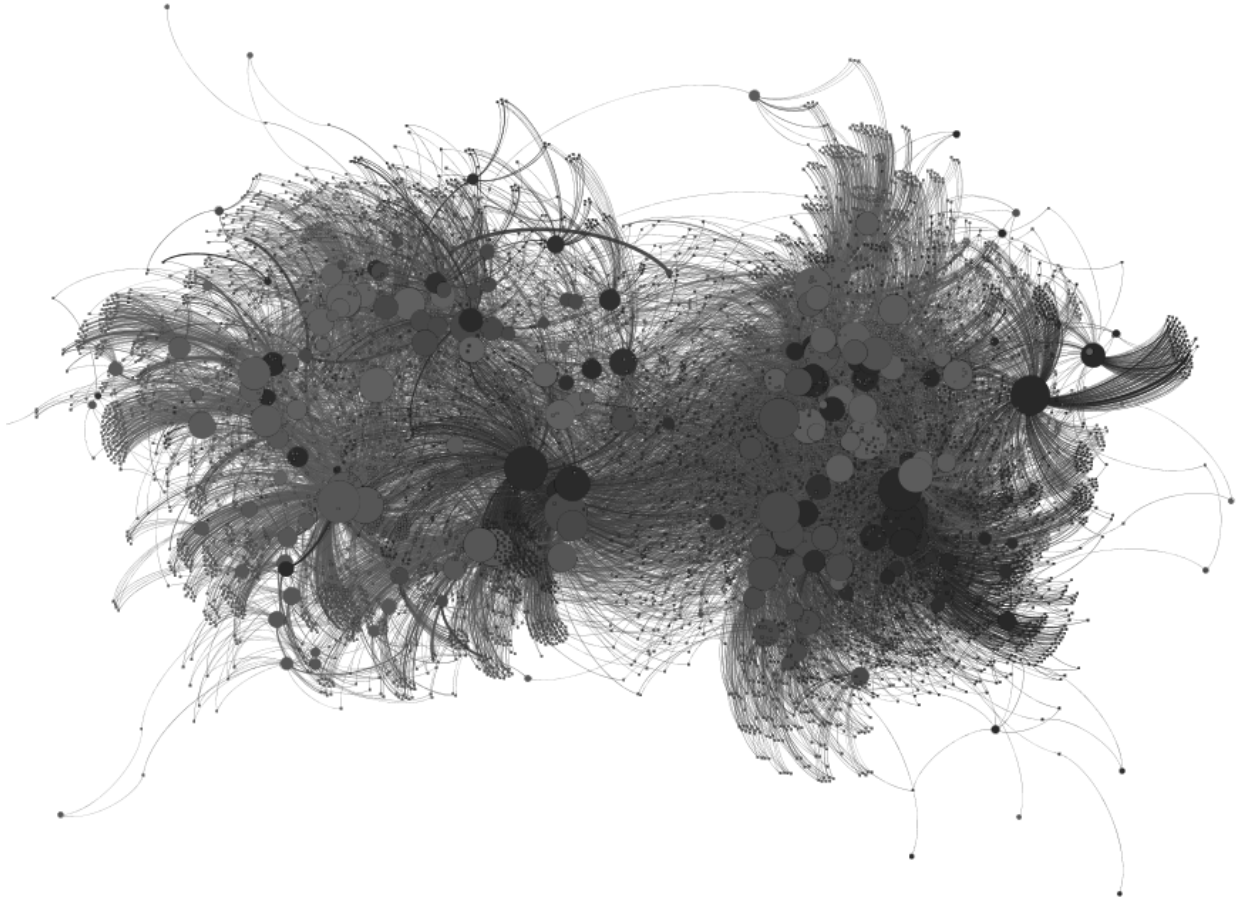


Figure 1: Donor Motivation Models

Methodology

H_1 and H_3 test the relationships between the social media dataset and the political donation dataset. A Granger causality time-series model was used to test the two models of political donor motivations. Other social media studies have used this methodology (Freelon, McIlwain, and Clark 2018; Lukito 2020). Similar to political donations, this methodology has been used to study the relationship between social media and non-social media events such as offline protests (Bastos, Mercea, and Charpentier 2015) and stock prices (Park, Leung, and Ma 2017). Granger causality detects whether movements

in one time series precedes, lags, has a confounding variable, or is not related to another time series (Granger 1969). An abbreviated version of how this methodology works is that one takes two time series variables X and Y . First, a vector autoregression (VAR) model is built to predict the outcome variable Y with Y being the sole predictor of the model. In other words, one only uses Y to predict Y . Then, a second model is built where both variables X and Y are used to build the VAR to predict Y . Effectively, if the second model, with the inclusion of X , does a better job of predicting Y than the first model alone, as measured by an F -statistic, X is said to Granger cause Y . The two variables, X and Y , are also flipped and the same process is done. If the null is rejected in both instances, then there is likely a confounding variable Z . This analysis was conducted in R (R Core Team 2013) with the `lmtest` package (Zeileis and Hothorn 2002). P-values were adjusted with the Benjamin-Hochberg method (Haynes 2013a) since there are multiple p-values being calculated, which is the best adjustment method for the relatively large number of tests being calculated (Haynes 2013b). The optimal lag for each model was calculated using a Bayesian Information Criteria (Ahelegbey, Billio, and Casarin 2016) implemented by the `tsDyn` package (Stigler 2010).

We compare time series of donations from clusters of political donors and time series of the number of social media posts by each topic that were made by campaigns that each donor cluster contributed to. In other words, a time series of donations from a donor coalition was compared to the aggregate count of posts about a given topic made by candidates that the donor cluster contributed to. For example, donations from donor coalition 6 Granger caused politicians that received donations from the coalition to publicly support women's issue and pro-choice policies. Stated another way, donations from coalition 6 predict whether candidates will publicly support pro-women policies. The theoretical connection to political donor psychology is that this behavior is expected under the access-oriented model of political donor motivations. The full results of the Granger causality tests are found in Figure 2.

These results were used to test H_1 and H_3 . Donor coalitions and the topic of social media posts that were accepted by H_1 and H_3 are listed in Table 1. Coalitions of donors that were accepted by only H_1 or H_3 were used to test H_2 and H_4 with a difference-in-means permutation test since the statistical assumptions were not met for an OLS regression. Results to H_2 and H_4 are in Table 2.

To study the polarization of consumption-motivated donors, we extract the x-coordinate position from the donor network (Figure 1). We then rescale the coordinate position to be -1 to 1 with -1 representing the left-most, or most Democratic, node and 1 representing the right-most, or most Republican, node. To test H_5 and H_6 , a difference-in-means permutation test on the absolute value of the rescaled x-coordinate with the coalition category as a variable. A non-parametric permutation test was used since the statistical assumptions for an OLS regression were not met. This absolute value effectively is the level of polarization in the graph, with the nodes that are on the extremes of the graph being closer to 1 and the central-most nodes, representing bipartisan donors, being closer to 0. Results for H_5 and H_6 are in Table 3.

Results

Recent scholarship into the motivations of political donors has developed a nuanced into the psychology of political contributors where different donors can hold different motivations. We find evidence that supports this line of thinking. Different donor coalitions exhibited behavior that is inline with both the access-oriented and consumption model of political donations with policy issues across the ideological spectrum of liberal, conservative, and bipartisan. Example social media posts of the various topics can be found in the appendix.

Three donor coalitions have a policy issue accepted by H_1 show behavior that is consistent with the access-oriented model. In other words, we can predict politicians to publicly support certain policy issues via social media posts after they receive contributions

from these donor coalitions. These three coalitions represent 1,572 individual donors or 21.3% of all donors in the dataset; 6,489 individual donations or 22.4% of donations; and \$654,577.60 or 16.5% of dollars contributed. Each of these three coalitions appear to have unique policy and even ideological positions that they support.

One coalition's donations predicts politicians' support for conservative policies as it relates to abortion and women's health, pro-life policies. Some posts explicitly talk about pro-life organizations and the politicians' support of those organizations (appendix example 1), other posts talk about specific policies and where the legislative process (appendix example 2), and others still are campaign-oriented appeals that use more less explicit language that the BERT model was still able to pickup on (appendix example 3). This donor coalition is one of the smaller clusters of donors with only 252 donors or 3.5% of donors. However, these results do not suggest that there are only 252 donors in this dataset who care about this issue. Instead, this group's donors have a unique statistical relationship where when they contribute money to a political campaign, it predicts that the campaign will publicly support pro-life policies.

Another coalition who fit the access-oriented model make contributions that precede politicians who they donate to publicly supporting liberal policies on race issues. Some social media posts talk about broader cultural issues as they relate to race (appendix example 4) and others discuss evidence and propose policies to address racial issues (appendix example 5). This coalition contains 423 donors or 3.4% of all donors in this dataset.

The final access-oriented coalition of donors show a connection to politicians posting about bipartisan veterans' issues. Veterans' issues were particularly salient during the 2016 election in Wisconsin with Veteran's Affairs hospitals, specific the Tomah, Wisconsin VA Hospital and one Wisconsin-run housing complex, Wisconsin Veteran's Home At King, receiving a lot of public attention for poor management and other issues. Both Republicans (appendix example 6) and Democrats (appendix example 7) publicly supported various policies and initiatives aimed to assist veterans. This coalition contains

the second most donors, 897, or 12.1% of all donors.

In addition to these three access-oriented clusters of donors, five coalitions of donors exhibit behavior that one would expect under the consumption model of donor motivations and are accepted by H_3 . In other words, public support of various policy issues from campaigns predicts donations from these coalitions. The five consumption-motivated clusters of donors contain: 2,702, 36.7% of donors; 11,080, 38.4% of donations; and donated a collective \$1,341,129.70 or 33.8% of money contributed. Similar to access-oriented clusters, consumption-oriented coalitions show significant relationships to policy issues across the ideological spectrum.

One consumption-oriented coalition of donors show a relationship with conservative gun-related policies. In other words, donations from this coalition of donor lag politicians publicly supporting conservative gun-related policies. Social media posts that are categorized as being supportive of conservative policies on gun-related issues range from talking about their relationship to pro-gun interest groups (appendix example 8) as well as specific policies (appendix example 9). This coalition is medium-sized with 605 donors or 8.2% of the total donors.

In addition to a conservative consumption-oriented group, there is a group of donors consumptive group of donors whose donations can be predicted by politicians publicly supporting liberal measure on public infrastructure and roads. Most of these posts are either general support of public infrastructure improvements (appendix example 10) or targeted Republican Governor Scott Walker and Republicans over roads containing a large number of pot holes (appendix example 11). There are 395 donors in the coalition or 5.4% of donors.

There are two different issues that have a significant consumption-motivated relationship with groups of political donors, both of which provide interesting considerations. One coalition (377 donors, 5.1% of donors) have a consumption-oriented relationship with politicians support veterans issues. This topic, veterans issue, had a different

coalition of donors that display an access-oriented relationship with the topic. Both a consumption-oriented and an access-oriented group displaying a relationship to the same topic is noteworthy. In addition, the donor coalition that showed the access-oriented relationship to veterans issues also exhibited a consumption-oriented relationship to another bipartisan issue, drug abuse. While it is just a singular example, this datum suggests that political donors can have different motivations with different policies, for example, they can be access-oriented on veterans issues and consumption-oriented on drug abuse issues. Another coalition of 428 donors, representing 5.8% of donors, also had a significant consumptive relationship with drug abuse. Most posts about drug abuse focused on the opioid and heroine epidemic across Wisconsin (appendix example 12). The implications of these statistical patterns are addressed further in the discussion section.

The output of the bootstrap used to test H_2 , that access-oriented donors are on-average larger donors, and H_4 , that consumption-oriented donors are on-average smaller donors, is in Table 2. Neither the access-oriented donors nor the consumption-oriented donors contributed statistically significantly different amounts of money than donors that were donors that were not only access-oriented and not only consumption-oriented. Therefore, H_2 and H_4 are not accepted. This finding is discussed in the next section of the paper.

Table 1: Difference in Average Donor Size

Hypothesis	Model	T	95% CI	p-value
H2	access	-48.62	-115.4-21.47	0.144
H4	consumption	34.60	-29.21-118.39	0.310

Table 3 shows the output for H_5 , that consumption-oriented donors are more polarized in the network graph, and H_6 , that access-oriented donors are less polarized in the network graph. Both of these hypotheses are accepted. In other words, consumption-motivated donors are on average in more polarized positions (further to the left and right

of the graph) than non-consumption-oriented donors. Similarly, access-oriented donors are on average in less polarized positions (closer to the middle of the graph) than non-access-oriented donors. These results are discussed further in the next section.

Table 2: Difference in Average Donor Size

Hypothesis	Model	T	95% CI	p-value
H5	consumption	0.01	0-0.02	0.014
H6	access	-0.05	-0.06–0.03	<.001

Appendix

Table 3: Social Media Examples

example #	topic	campaign	social media site	post
1	abortion and women's issues: conservative	Ken Skowronski for Assembly	Facebook	Last night I had a great time at the Wisconsin Right to Life Dinner with my fellow colleagues. I am proud to have supported the bold Pro-Life reforms we have put in place and I will continue to defend the rights of those who cannot defend themselves.

Table 3: Social Media Examples (*continued*)

example #	topic	campaign	social media site	post
2	abortion and women's issues: conservative	Friends & Neighbors of Robin Vos	Twitter	An Assembly committee will vote on a bill to ban the sale of aborted children's body parts on Wednesday.
3	abortion and women's issues: conservative	Friends of Chuck Wichgers	Facebook	'I'm glad to know Chuck, who is a solid conservative. He's shown that he understands the principles that secure our freedom and that he will work for them in office. But more than that, I've seen that he is passionate about the God-given dignity of every human life. He knows that every person's right to live and to live freely comes from a much higher source than government.' PATRICK MCILHERAN, FORMER EDITORIAL WRITER, MILWAUKEE JOURNAL SENTINEL
4	race issues: liberal	Bowen 4 Action	Twitter	@JoyAnnReid: #OscarsSoWhite black people can't even get nominated for the movies about black people...

Table 3: Social Media Examples (*continued*)

example #	topic	campaign	social media site	post
5	race issues: liberal	Citizens of the 81st for Dave Conside	Twitter	1 in every 9 African-Americans are disenfranchised because of felony convictions in Wisconsin
6	veterans issues: bipartisan	Sanfelippo for Assembly	Twitter	Welcome Home Veterans Initiative seeks to solve veteran homelessness in state:
7	veterans issues: bipartisan	Citizens for Peter Barca	Twitter	Regionalizing Wisconsin's county veterans service offices remains a concern in vet community
8	guns: conservative	Scott Fitzgerald for Senate	Twitter	Thanks to the Wisconsin Game Preserve Association for the honor of their 2015 Legislator of the Year award!
9	guns: conservative	Kremer for Wisconsin	Facebook	This is a fair interview with Frederica Freyberg discussing the 'Campus Carry Act' in Wisconsin. This aired on public television yesterday morning.

Table 3: Social Media Examples (*continued*)

example #	topic	campaign	social media site	post
10	infrastructure liberal	Friends of Jonathan Brostoff	Facebook	Dr. Mark Stout has written a compelling alternative to the \$1.1 billion highway proposal. This option that would save money and provide a brighter, more progressive, more responsible future for our state. If you haven't yet, please take a look and share widely.
11	infrastructure liberal	Wachs for Assembly	Twitter	WI roads rank 3rd worst in US. Yet Scott Walker isnt ready to put politics aside to solve our infrastructure woes.
12	drug abuse: bipartisan	Michael Schraa for Assembly	Facebook	A great story about the HOPE Agenda and my colleague on Joint Finance, WI State Rep John Nygren's efforts to fight against heroin and opiate addiction.

Method	koRpus	stringi
Word count	6345	6286
Character count	43121	43112
Sentence count	305	Not available
Reading time	31.7 minutes	31.4 minutes

Discussion

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