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Using Facebook and Email to Increase Voter Turnout

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Get @ The Vote:

Using Facebook and Email to Increase Voter Turnout

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Get @ The Vote:

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by

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ABSTRACT

This dissertation investigates the effects of the two most commonly used forms of digital media – email and Facebook – as mechanisms of voter mobilization. The widespread adoption of digital media in America makes it an ideal conduit for voter mobilization, but to date there is minimal research that attempts to use Facebook to increase turnout, and few studies that use email to successfully boost participation. These studies leverage unique affordances of both mediums to increase voter turnout: Facebook increases the visibility of users' behaviors on the platform, and email messages and

Facebook advertisements are inexpensive and easy to send to mass audiences. The results engage with existing literature on the power of social norms and how they can be used to drive behavior changes.

To explore this topic, I conducted four field experiments designed to leverage Facebook and email messages to increase voter participation during the 2014 general election in Texas. These experiments adapt social pressure messaging, which emphasizes the public nature of voting records and attempts to increase the visibility of voting behaviors, for digital communication platforms. In implementing two of the studies, I developed a new method of conducting field experiments on Facebook randomized at the level of the individual that are implemented with the help of confederates. Results were analyzed using logistic regression. The most effective method – directly shaming people for failing to vote in the ongoing election – produced a statistically significant increase in turnout of 22%, which is much higher than what has been obtained through traditional analog methods. Directly praising friends for past participation was also able to raise turnout by 9%. Additionally, seeing others be praised for voting was able to increase turnout amongst new and infrequent voters. The second two studies build on past research by combining the email messages with Facebook advertisements and

sending multiple waves of reminders. They show that multiple rounds of email and social pressure messaging can generate small increases in turnout.

The findings demonstrate that Facebook and email can be used to increase voter turnout, and that the effects of mobilization within peer-to-peer networks are much larger than those obtained from unsolicited mass-email messages. This work contributes to existing theory by demonstrating that voting behavior circulates and can be induced through networks. Furthermore, the heightened visibility of user behaviors within online social networks was able to amplify the effects of the treatments beyond what has been produced in an offline context. Overall, the results show that digital media can be used to increase voter turnout, and offer reasons to be optimistic about the future of democracy in our increasingly digital society.

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Chapter 1: Introduction: Can Digital Media Increase Voter Turnout?

In a democratic system of government, widespread voter participation is crucial to ensuring genuine representation and consent of the governed. However, in America voter participation has largely flat-lined over the past several decades, with national turnout in midterm elections rarely exceeding forty percent (McDonald, 2014). At the same time, Americans have overwhelmingly welcomed digital technologies into their everyday lives, from computers in the home to smart phones in their pocket. Use of the Internet has soared from 1.4 percent of American adults in 1983 to 87 percent in 2013 (Fox & Rainie, 2014; Zickuhr & Smith, 2012). Currently, more American adults are choosing to use the Internet and various forms of interactive digital devices than they are heading to the polls on Election Day. Consider the last Presidential election cycle: in 2012, 81 percent of all American adults were using the Internet, while only 58.2 percent of eligible adults voted in the November general election (Zickuhr & Smith, 2012; McDonald, 2014). If digital communication can be used to increase voter turnout, these findings will help address a major challenge facing American society today: lackluster voter participation even in major elections.

There is reason to be optimistic about the ability of digital media to bolster political participation. Many scholars have already found a positive relationship between Internet use and voter turnout (including but not limited to Bimber 2003; Boulianne, 2009; Brundidge, Garrett, Rojas, & Gil de Zuniga, 2014; Hardy & Scheufele, 2005; Price, Goldthwaite, Cappella, & Romantan, 2002; Tolbert & McNeal, 2003). However, to date

there is scant research exploring whether these widely used Internet-based interactive digital communications technologies can actually be used to generate an increase in voter participation in an actual election. This dissertation presents four experimental studies that utilize two of the most widely used forms of digital communication – Facebook and email – to increase voter turnout. The experimental methodologies detailed herein utilize the technological affordances of digital communications to craft medium-specific mobilization strategies. In the case of Facebook, the ability of the platform to increase visibility of user behavior within networks is leveraged to publicize compliance with the social norm of voting. For the email experiments, the low cost of the medium and ability to layer email messages and targeted Facebook ads are utilized to adapt analog direct mail to a multi-media digital environment. All four studies utilize social pressure messaging, which emphasizes the norm of voting and the public nature of participation records, and often threatens to disclose non-voters after an election. As a whole the studies provide reason to be optimistic about the future of democracy in our increasingly digitally networked society.

Determining new ways to increasing voter turnout is a worthwhile goal in a democratic society. Polls of popular opinion repeatedly show that high voter turnout is considered to be a social good (Blais, 2000; Gerber, Green, & Larimer, 2008; Knack, 1992). However, outside of presidential elections – in which national turnout has still seldom surpassed 60 percent over the last fifty years – rarely do a majority of eligible citizens choose to head to the polls (McDonald, 2014). In Congressional midterm elections, turnout has not exceeded 50 percent since 1912 (McDonald, 2014). Even in these high-profile elections critical to the ongoing welfare of our nation, more than half of voters do

not participate. Scholars have puzzled over the failure of voter participation to even keep pace with gains in education, which is otherwise considered to be a key variable in predicting turnout (Rosenstone & Hansen, 2003). This relative torpor in voter participation over the last four decades has led scholars to grow concerned that America's democratic society itself may be at risk. Some scholars have gone so far as to blame the Internet itself for promoting social or ideological isolation, which is theorized to harm civic or political participation (Putnam, 2000; Sunstein, 2007).

Concerns about the impact of digital media on participatory activities are understandable. This period of waning voter participation has also witnessed a tremendous technological revolution in America, in the form of widespread adoption of computers in the home, the emergence of the Internet, and the growth of Internet-enabled mobile devices. In 1983, in the first-ever survey to inquire about information technology in the home, 10 percent of American adults reported owning a computer (Fox & Rainie, 2014). Now, 84 percent of Americans own a computer, and as of October, 2014 64 percent own a smartphone capable of connecting to the Internet (Rainie & Cohn, 2014; Pew, 2015). Internet users also tend to be more demographically diverse than the traditional American electorate. Members of social networking sites tend to be more ethnically diverse, lower-income, less educated, and younger. For instance, Hispanic and Black Americans use the platform at higher rates than white Americans, and over 90% of Internet users under age 30 use Facebook (Duggan & Smith, 2013). Conversely, participants in the American electoral system tend to be white, wealthy, well educated, and older than the population as a whole (Rosenstone & Hansen, 2003). Users of digital technologies fit the demographics

of Americans adults less likely to vote. Therefore, if there is a way to use digitally mediated communication to increase voter turnout, this offers the potential to not only rejuvenate participation but also produce a more representative American electorate.

In addition to its practical merits, there is substantial theoretical justification for this research inquiry. The Internet and the interaction it enables have been credited with ushering in a new form of citizenship through changing the ways that people can interact and communicate. Bimber, Flanigan, and Stohl (2005) argue that the Internet has altered the very nature of democratic citizenship by making porous the boundaries between public and private life, thus “changing manifestations of collective action” (p. 384). Bennett (2007, 2008) builds on this argument by introducing the notion of “actualizing citizenship,” in which engagement hinges on using one’s peer networks to share information and organize collective action. Bennett, Wells, and Freelon (2011) contrast this model to the previous “dutiful citizenship model” in which information flows from authorities down and individuals have few opportunities to participate other than through structured interactions with formal institutions. Now, motivated citizens can utilize digital tools ranging from text messages to social networking sites to GoogleDocs to generate organic social movements. As such, actualizing citizenship relies on the affordances of interactive and social digital media in which individuals can easily create and share information and opinions, thus manifesting for political purposes what Jenkins (2006) describes as participatory or convergence culture. Interactive and social digital media provide what Castells (2012) describes as a “decentered structure” that “maximizes chances of participation” (p. 220).

Research on the use of digital media for political purposes covers topics ranging from the use of banner ads to engage constituents to write their Congressperson (Howard, 2005) to use of the Internet to recruit volunteers who in turn contact voters (Davis, Baumgartner, Francia, & Morris, 2009). Iyengar (2011) examines the 2008 presidential campaign and finds it "hard to avoid the conclusion that online campaigning had some impact" (p. 142). However, describing past successful political organizing efforts that relied on digital media does not provide a clear answer as to how these information technologies might be used to increase voter turnout. Nevertheless, while the rise of digital communication technologies has changed the nature of democratic citizenship, actual voter participation has largely remained stagnant. This is the challenge taken up in this dissertation.

Definitions of key terms are helpful in delineating the focus of the four experimental studies presented here. The phrase "digital media" can refer to any computer-readable message. In contemporary American society, digital media has become the electronic fabric of everyday life.¹ Digital media can include but is not limited to email, Internet search engine results, posts on social networking sites, profiles on dating apps, text messages, YouTube videos, and Snapchat pictures that vanish after viewing. As Castells (2012) explains, ours is an informational society, a "specific form of social organization in which information generation, processing, and transmission become the fundamental sources of productivity and power because of new technological conditions" (p. 21). Digital

¹ Digital media is also but increasingly less often referred to as "new" media, perhaps as the technologies themselves become more commonplace. There is always some form of newer media.

media provides the technological affordances necessary for the movement of this information.

Some scholars refer to digital media more narrowly as computer-mediated communication, or any form of communication between two or more connected computers, because it puts more emphasis on the network (Walther, 1996). Digitally mediated interpersonal interaction is what matters here: these technologies enable frequent communication that instantaneously traverses space and time at minimal cost to the sender and receiver. Essentially, this interactive digital and computer-mediated communication has changed how individuals can engage each other in the contemporary era. It is the digital network that offers the most promise to increase voter turnout. In their study of variables that drive electoral participation, Rosenstone and Hansen (2003) emphasize the power of networks to mobilize voters, crediting turnout to the function of simply being asked to vote.

This dissertation focuses two widely utilized forms of digital media: the social networking site Facebook,² and the most commonly used form of digital communication, email. A brief definition of each is helpful in understanding how they work and are utilized in this research project. Social networking sites are a subset of what is known as social media. Howard and Parks (2012) define social media as:

(a) the information infrastructure and tools used to produce and distribute content that has individual value but reflects shared values; (b) the content that takes the digital form of personal messages, news, ideas, that becomes cultural products; and

² The choice of Facebook over other SNS is deliberate and driven by user statistics, technological affordances, and the ability to match users to a voter file, as will be detailed below. Currently, Twitter is used by less than 20% of online adults, and of those users less than 50% use the service daily, which makes it a suboptimal platform for the study proposed (Duggan & Smith, 2013).

(c) the people, organizations, and industries that produce and consume both the tools and the content. (p. 359)

Thus, social media should be understood as a digital media system in which users generate content, interact, and share information on a mass scale. Social media provide the necessary conditions for social networking sites. In their historiography of social network sites (SNS), boyd and Ellison (2008) define them as:³

web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. (p. 211)

They further emphasize that SNS are focused on networking people together rather than on their shared interests, as a blog or chat room might be. Examples of social networking sites include Facebook (1.28 billion users), Twitter (645 million users), Sina Weibo (300 million users in China), Tumblr (227 million users), and Friendster (90 million users, now predominantly in Southeast Asia). SNS offer an important and unique feature: they make an individual's social network visible through their lists of friends and connections with other users, which is both critical to function of the sites and the methodology of this research.

Facebook is the most widely used SNS among American adults and offers the largest online network through which users can potentially mobilize their friends to vote.

³ boyd and Ellison (2008) choose to use the term “social network sites” rather than “social networking sites” to place further emphasis on the network and not the act of connecting. I will use the more traditional phrase “social networking site” but share their analysis that it is the visibility of and access to users’ networks that sets these sites apart.

In 2013, 71% of online American adults reported using Facebook; 63% of users reported using the site on a daily basis (Duggan & Smith, 2014). Research from Facebook's internal data science team shows that 149 million Americans use Facebook; these users are friends with an average of 214 other Americans (Ugander, Karrer, Backstrom, & Marlow, 2011). Impressively, 99.7% of all American Facebook users are within six degrees of separation from all other American users, which underscores the power of the network to disseminate information or calls to action on a population scale. This dissertation explores the effect of Facebook users directly contacting members of their digitally manifested social network and encouraging them to vote, essentially creating a form of digital canvassing that transcends the bounds of physical space.

Email also enables the contact of targeted individuals using low-cost digital technology, and as the most widely used form of digital communication it makes for an ideal medium through which to conduct large-scale online voter turnout experiments. Over 90 percent of American adults use email, and 61 percent check it on a daily basis (Purcell, 2011). However, email does not fit within the definition of social media, as it does not strictly create a mass-collaborative digital space. Nevertheless, email offers important technological affordances for contacting voters, namely the ability to send massive numbers of voting reminders quickly and at low cost. In this manner email may be able to substitute for direct mail, which is more expensive and can take days to print and deliver. Additionally, the Facebook platform also allows advertisements to be targeted to a list of users' email addresses. Email messages can also be targeted to individuals whose digital addresses are matched to a voter file or belong to a particular organization, enabling the

strategic turnout of individuals within a particular district or who care about a particular issue. In terms of being able to scale up digital voter mobilization to the level of impacting statewide or national elections, email is a critical tool.

The experiments in this dissertation draw on political science research, which has found a variety of mechanisms that can increase voter participation. These methods emphasize the social aspects of voting. One of the most powerful is the use of social pressure mailings, which emphasize the norm of voting and public nature of voting records, and may also include voters' past participation histories and threats to disclose abstentions in the current election to others in the community (Gerber, Green, & Larimer, 2008, 2010; Mann 2010; Matland & Murray, 2014; Panagopoulos 2010, 2011, 2013). These mailings work in part because they strongly emphasize the injunctive social norm of what individuals "should" do – in this case, everyone should do their civic duty and vote. However, by including threats to make individuals' participation public or inducing feelings of pride or shame over past participation, these messages increase turnout even further by shifting one's choice to vote away from an intrinsically motivated action to a need to comply to behaviors that society deems necessary. Additional research has determined that interactive, interpersonal communications with voters in the form of canvassing and phone calls can also boost participation (Gerber, Green, & Nickerson, 2003; Green & Gerber, 2005, 2015; Nickerson, 2006, 2007b). Taken together, this research suggests that voter reminders grounded in interaction and social norms should increase turnout.

Social pressure and direct voter contact are particularly well suited to be adapted to Facebook and email, the two most widely used forms of interactive digital media in America. Facebook makes social networks visible and thus makes social pressure messaging evident not merely to one individual voter, but to her entire network (boyd & Ellison, 2008). Adherence to social norms is stronger when behavior is made more public, so Facebook should be able to increase the social aspect of social pressure messaging. Email is used here as a form of mass communication, rather than in a peer-to-peer context. The medium enables the targeted delivery of social pressure messages on a massive scale at a much lower cost than postcard mailings. This will allow for the inclusion of tens of thousands of subjects, and the testing of not just one mailing but rather multiple rounds of treatment throughout the voting period.

Overall, this research uses electronic communication to increase voter turnout in ways that emphasize the social nature of digital media – the interaction between and among humans, and the phenomena that can arise in the process. Interactive digital media such as Facebook and email are social, through their facilitation of instantaneous interpersonal communication. Similarly, voting is an inherently social act. To work, it must be collective in nature: voting only brings about an individual's desired outcome when a critical mass of other voters make the same decision to vote and select the same ballot choice. The forms of voter contact that have proven most capable of increasing turnout are deeply social: interactive phone calls, in-person canvassing, and messages reminding voters that their participation is public record. This research will examine whether an emphasis on the social norm of voting over interactive digital media can cause an increase voter turnout. The

findings provide concrete ways to address lackluster voting rates in America, and have the potential to make our democracy more representative by inciting a broader range of citizens to participate.

Overview of Dissertation

This dissertation presents the results of four experiments that use Facebook and email communications to increase voter turnout in the 2014 general election. In chapter 2, I will present an overview of literature that pertains to the scope of this inquiry. First, I review the literature that explains how social norms such as voting circulate within social networks, and how the visibility of individuals' behavior is positively associated with norm conformity. Next, I provide an overview of methods that increase voter participation: social pressure messaging and peer-to-peer contact. Subsequently, I review research on Internet use and political participation, and delineate the positive relationship between the two. Finally, I explain how Facebook and email are particularly well suited to adapting proven voter turnout methods. Throughout I propose a series of hypotheses to be addressed by several experiments.

The methods for these four experiments are set forth in Chapter 3. I conducted two get out the vote (GOTV) experiments within Facebook networks that use social pressure messaging in a peer-to-peer setting. Additionally, I conducted two experiments that utilize publicly obtainable email lists to target GOTV email messages and Facebook advertisements that include social pressure messaging.

Ultimately, these experiments produced mixed results. In Chapter 4, I demonstrate the potential ability of social pressure on social media to increase voter turnout, through

two experiments that explore direct contact on the platform and exposure to the social pressuring of others, respectively. In Chapter 5, I present two social pressure email experiments conducted on college campuses, which generate mixed results.

In Chapter 6, I discuss the broader implications of these findings and what they portend for the ability of interactive digital media broadly to increase voter turnout. I also detail the limitations of this research and propose several next steps, including replications to clarify several unexpected findings. Finally, I argue that widespread use of digital media does hold promise for expanding democratic participation in America, but that the power to do so lies with its users and not the technology itself.

Chapter 2: Voting Is A Social Phenomenon

In our American democracy, voting is considered to be a social norm, a desirable and necessary behavior. Much of the research on voter participation emphasizes the social context in which individuals not only choose candidates, but also decide to participate at all (Katz & Lazarsfeld, 1955; Berelson, Lazarsfeld, & McPhee, 1954). Many efforts to increase participation are themselves heavily reliant on social factors, centering on the act of one individual asking another to vote (Knack, 1992; Rosenstone & Hansen, 2003). The sociological factors that influence voting are complex, and include perceptions of turnout in one's community, knowledge of the public nature of voting records, and the impact of being canvassed or phone banked. An exploration of the social aspects of voting is necessary to understanding why people choose to participate, how turnout can be increased, and how mobilization methods might be implemented using interactive digital media.

To date, the most effective methods of increasing voter participation are rooted in an explicitly social context. Social pressure messages – which usually consist of postcards that include the subject's voter history and some form of a threat to publicize her participation or abstention in a current election – have been shown to produce remarkable increases in turnout (Gerber, Green, & Larimer, 2008, 2010; Mann 2010; Matland & Murray, 2014; Panagopoulos 2010, 2011, 2013). Additionally, interpersonal interaction through canvassing or live phone calls can also produce dramatic gains in voter participation (Gerber, Green, & Nickerson, 2003; Green & Gerber, 2005, 2015; Nickerson, 2006, 2007b). These methods work because they make salient the norm of voting and

include an explicit threat or implicit intimation that an individual's failure to comply with admonitions to head to the polls and do one's civic duty could be public knowledge.⁴ The same sociological elements that make social pressure messages and direct voter contact successful in increasing turnout are manifest in the online platforms of Facebook and email as well, therefore these digital media offer the potential to emphasize the social norm of voting in order to increase turnout.

A thorough review of the literature pertaining to these topics provides a strong theoretical foundation for the following studies that use Facebook and email to increase turnout. First, to establish the theoretical basis for social pressure messaging, I review literature pertaining to the social aspects of voting: its status as a norm, the role of social networks in norm formation, and how social capital emerges in social networks and feeds norm compliance. Next, I will provide an overview of the effectiveness of experimental treatments that emphasize these social aspects of voting: direct voter contact and social pressure messaging. Finally, I will explore literature about the Facebook and email platforms, and why both are particularly well suited for "get out the vote" experiments. Throughout this literature review I identify gaps in knowledge and develop medium-specific hypotheses pertaining to the use of Facebook and email to increase voter turnout.

⁴ While traditional canvassing does not include an explicit threat to publish voter participation, I contend that the simple act of contacting a voter at their home either by phone or at the door, knowing their name and the names of others in the house, where they vote, and that they have voted in the past – much of which is invoked in a standard "get out the vote" or GOTV script – implicitly suggests that voting behavior is public knowledge. When voters contacted by phone ask callers, "how did you get my number?" they are often told that the list of registered voters is publicly available.

Social Motivations and Social Networks

When examining the reasons people vote, the rational or economic model only goes so far. In Anthony Downs' (1957) economic theory of voting, the citizen is a rational actor. The decision to cast a vote is equal to his or her perceived benefit from a chosen candidate winning multiplied by the perceived probability that he or she will cast the decisive vote, minus any lost time, money, or resources, plus any personal satisfaction obtained from voting. However, as Harder and Krosnick (2008) state in their overview of the psychological causes of voter turnout, "Voting yields benefits only when supported by collective action" (p. 526). As such, many scholars argue that the Downs model fails to fully explain the explicitly social aspects of voter participation (Gerber & Rogers, 2009; Harder & Krosnick, 2008; Knack, 1992; Mann, 2010; Rosenstone & Hansen, 2003). Knack (1992) argues that a purely economic approach does not justify the decision to participate in large elections, as the odds of casting the decisive ballot are much smaller than the associated costs of voting. This holds in practice – an experiment in which the rational model of voting was presented to a selection of undergraduates saw subjects' turnout reduced by 7% compared to a control group that did not hear the lecture (Blais & Young 1999).

What is missing from the Downs model is the social motivation to vote, and its connection to social capital. As Rosenstone and Hansen (2003) make clear, voter mobilization within social networks is the missing variable that explains electoral participation in America. In their analysis of voter participation, they determine that "half of the decline in voter turnout since the 1960's occurred because electoral mobilization

declined” (p. 217). Essentially, they argue, people vote “because somebody ... asks them to participate” (p. 218-9). Huckfeldt’s work also emphasizes the crucial role that an individual’s social network plays in voter turnout (Huckfeldt, 1979; Huckfeldt & Sprague, 1995; La Due Lake & Huckfeldt, 1998). He argues that a voter’s social environment is the link between her social status and increased political participation. Key to this mechanism is what many scholars define as social capital (Bourdieu, 1986; Coleman, 1988; Lin, 2002; Putnam, 1993, 2000). Social capital is the intangible shared gain that accrues among individuals within a group, which facilitates “coordination and cooperation for mutual benefit” (Putnam, 1993, p. 2). It is “produced by the intentional activities of individuals who are connected to one another by ongoing networks of social relationships” (La Due Lake & Huckfeldt, 1998, p. 570).

Individuals who participate or have an interest in politics possess what La Due Lake and Huckfeldt (1998) refer to as politically relevant social capital. This social phenomenon is a function of an individual's political expertise, frequency of political interactions, and social network size. It is also the form of social capital relevant to the studies presented in this dissertation. Essentially, individuals in social networks that value voting want to be thought of by others in the network as voters, as this contributes to their politically relevant and overall social capital. This relationship, in turn, relies on the conception of voting as a social norm.

Social Norms, Social Emotions, and Voting

To understand how the norm of voting works, it is crucial to understand how norms emerge from and function in society. The work of Robert Cialdini and other scholars have

greatly developed our understanding of these phenomena. Norms are socially constituted: they must be understood by, salient to, and valued by members of a group. They arise from a cycle of repetition and rewarding of given behaviors, and guide individuals' actions through the threat of social – rather than legal⁵ – sanction (Cialdini & Goldstein, 2004; Cialdini & Trost, 1998; Opp, 1982; Posner & Rasmusen, 1999). Thus, social norms must be understood as existing in social networks (Coleman, 1988). Norms can be either injunctive – describing what an individual *should* do in a given situation – or descriptive, detailing what individuals are *actually* doing. (Cialdini & Goldstein, 2004; Gerber & Rogers, 2009). Norms have the power to induce either compliance or conformity with a socially desired behavior. Cialdini and Goldstein (2004) distinguish between these two by defining compliance as acquiescence to a request, and conformity as “the act of changing one’s behavior to match the responses of others” (p. 606). Individuals conform to norms to avoid opprobrium or criticism of their behavior, or to seek praise and gratification for doing as expected. Whereas compliance consists of simply going along with what one is asked to do, conformity is a social act driven by an individual's expected reaction of others within a social network.

The perceived publicness of an individual's behavior exerts tremendous influence on whether she will change her behavior to conform to a social norm, in an effort to manage

⁵ As Matland and Murray (2014) make clear, not all laws function as social norms. They cite the rampant jaywalking on college campuses as one example in which the law, an injunctive norm that says one should not cross against the light is weaker than the descriptive norm of high rates of observed jaywalking. Indeed, the threat of being ticketed for crossing outside of the designated place and time seems particularly ineffective at curtailing the undesirable behavior.

the social emotions of pride and shame. As Cialdini and Trost (1998) state, “conformity is stronger when responses are made in public” (p. 166). Conformity is driven by a desire to obtain social approval by exhibiting a desired behavior (Deutsch & Gerard, 1955). This is extrinsic motivation, in which the subject is driven by an external reward – here, seeking positive opinions of others or avoiding criticism. Rind and Benjamin (1994) determine that concerns about public image matter more than concerns about self-image in fostering adherence to norms. This is because other peoples' opinions can inspire in the subject the two most social emotions: pride and shame.

Pride and shame derive not from an individual's internal assessment of her actions but from the anticipation of how others might react to her behavior. “The thing that moves us to pride or shame is not the mere mechanical reflection of ourselves,” explains Cooley (1929), “but an imputed sentiment, the imagined effect of this reflection upon another’s mind” (p. 184). Shame is broadly understood as an individual’s perception that others think poorly of her for failure to comply with social norms (Bear, Manning, & Izard, 2003; Posner & Rasmusen, 1999; Scheff, 2000). Scheff (2000) further describes shame as “the premiere social emotion” because it threatens social bonds, and is thus an integral part of most social interaction (p. 84). Similarly, Posner and Rasmusen (1999) locate shame in the minds of others who “think badly of the violator,” thus describing it as a “purely external sanction” (p. 371). The emotion of pride is also rooted in others’ conception of the individual. Cooley (1929) defines pride as “social self-approval” that is “distinctly a social sentiment, and gets its standards ultimately from social custom and opinion” (p. 95). Essentially, the drive to comply with powerful social norms – such as voting – can result

in individuals behaving differently than they might otherwise, to either avoid feeling shame or derive pride from their actions.

Therefore, invoking the norm of voting in a way that makes individuals' participatory behavior public has the potential to increase turnout. In contemporary American culture, voting is already a powerful and widely held societal norm, often referred to as doing one's civic duty (Blais, 2000; Knack, 1992; Gerber, Green, & Larimer, 2008). This nation is literally founded on the principle of consent of the governed, which is currently manifested through democratic elections and the implied consent of the governed. Knack (1992) argues that the internal drive to adhere to social norms provides the only tangible incentive to vote, given the investment in time and effort it takes to vote, and the fact that any one individual is unlikely to change the outcome of a single race. He claims that "the key variable accounting for the participation of many citizens" is "a sense of civic duty based on affiliation with society as a whole" (p. 136). It follows that a threat to publicize individuals' voting behavior should lead to higher turnout.

Research indicates that emphasizing injunctive norms can motivate voters to participate. Invoking the need for voters to 'do their civic duty' triggers what Gerber and Rogers (2009) describe as the "psychological benefit from following the injunctive norm of voting" (p. 181). The desire to be seen as compliant with this norm explains why so many voters over-report their own turnout (Belli, Traugott, Young, & McGonagle, 1999). One field experiment that tested the power of the injunctive norm that everyone should vote found that non-voters were 20% more likely to not answer the door for a post-election survey about whether they voted (Della Vigna, List, Malmendier, & Rao, 2014). These

voters did not want to lie, nor did they want to admit to failing to adhere to the injunctive norm.

Voters have also responded favorably to descriptive norms that emphasize high levels of participation. Gerber and Rogers (2009) find that messages emphasizing high voter turnout – providing the descriptive norm that “everybody’s doing it” – increased voters’ stated intention to vote more than a low turnout message in which the voter’s lone ballot could make more of a difference (i.e. the rational model of voting). Conversely, Keane and Nickerson (2015) find that mailers emphasizing low rates of participation among Latino voters actually decreased voting as compared to the control group, because they created the descriptive norm of low turnout. Matland and Murray (2014) demonstrate that sending mailers with either descriptive or injunctive norms increased turnout in high-salience electoral contexts⁶. However, Panagopoulos, Larimer, and Condon (2014) found that descriptive norms emphasizing high turnout did not work in a low-salience electoral context. Perhaps if subjects do not know any members of their networks that are voting, they may not believe the treatments suggesting that turnout levels are high.

Extensive research demonstrates the power of social norms to compel behavioral change. However, publicizing conformity with norms as a mechanism to change behavior only works when the norm itself is powerful and widely supported within a community (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). The invocation of descriptive

⁶ Notably Matland and Murray were able to increase turnout using descriptive and injunctive norms in Wisconsin; the experiment did not work in Texas. They hypothesize that the individualistic culture of Texas may be to blame, and that Midwesterners may be more receptive to social pressure.

norms has proven effective at producing a number of desired behaviors, from increased recycling (Cialdini, 2003) to reduced littering (Cialdini, Kallgren, & Reno, 1990). Notably, combining these norms produces mixed results: providing the descriptive norm that tourists frequently take forest artifacts with the injunctive norm not to steal actually increased theft (Cialdini et al., 2006). However, some combinations of descriptive and injunctive norms may produce a more consistent effect than descriptive norms alone. Schultz et al. (2007) found that when low-energy users were mailed postcards about conservation that showed their households below the mean, their energy use went up. Conversely, the cards resulted in energy savings in households above the mean. When an injunctive norm was added, low users remained below the mean while high users reduced their energy consumption. This follows Matland and Murray's (2014) findings in which mailers that emphasized the injunctive norm of voting and the descriptive norm of low turnout failed to produce gains in participation. Thus, to effectively combine injunctive and descriptive norms, both must consist of socially desirable behaviors.

Scholars are already using threats to publicize conformity with the social norm of voting – as well as actual disclosures of voter histories – to increase voter turnout. A review of research into the use of social pressure messaging to increase voter turnout follows, which demonstrates the power of leveraging citizens' knowledge of public nature of voting records to increase turnout.

Social Pressure Research

Recent experimental political science research demonstrates that messages that emphasize the social norm of voting and the public nature of voter participation are able to

increase turnout considerably. Gerber, Green, and Larimer (2008) were the first to find that sending messages with a “social pressure” component emphasizing the public nature of voting records could produce dramatic gains in turnout. This methodology has since been shown to increase turnout in multiple elections (Gerber, Green, & Larimer, 2008, 2010; Mann 2010; Matland & Murray, 2014; Panagopoulos 2010, 2011, 2013). Social pressure messaging consists of several components that strongly invoke social aspects of voting, and includes some or all of the following: a command to do one’s civic duty and vote, the individual’s own voter history or that of their neighbors, efforts to invoke feelings of pride for past participation or shame over abstentions, and threats to publish voter records in a newspaper or to notify one’s neighbors about who voted in an election. On the whole, these messages emphasize a social norm, make clear the subject’s behavior has and will be monitored (which itself emphasizes the public nature of the norm), and threaten to further publicize adherence to the norm.

Social pressure messaging that includes actual voter histories repeatedly produces greater increases in turnout than messages that only remind citizens to do their civic duty. Gerber, Green, and Larimer (2008) test four messages and find that a mailing with the subjects’ neighbors voting history and a threat to publicize voter participation after an upcoming election had the greatest increase in turnout, at 8.1% over a control group that did not receive a mailing. A group that received a mailing with their own voter history showed a 4.8% increase in turnout compared to the control group, while a civic duty blandishment produced a 1.8% increase, and a notice that voters’ participation was being studied – the so-called “Hawthorne Effect” generated a 2.5% increase. Gerber, Green, and

Larimer (2010) also test mailers that include either a subject's past vote or abstention and a threat to send an update after the current election. Mailers calling out the subject's past abstention with "did not vote" listed under the previous election cycle – designed to induce feelings of shame – were able to raise turnout 6.3% compared to the control group, Mailers highlighting the voter's own past participation with "voted" printed under the prior election date – designed to induce feelings of pride – only raised turnout 4.0%. Mailers commanding voters to do their civic duty that did not include voter history raised turnout 1.8%. On average, non-partisan direct mail raises turnout by less than 1% (Green & Gerber, 2015), thus the increases seen through social pressure messaging are staggering.

These studies have been replicated in a variety of contexts, and consistently demonstrate that a social pressure component including voter histories produces a significant increase in turnout. Social pressure mailings are effective on single female voters (Panagopoulos, 2013; Mann, 2010), and African-American and Hispanic voters (Panagopoulos, 2013). A canvassing experiment consisting of providing voters with a copy of their own past voting history increased turnout 1.6% among subjects in public housing (Davenport., 2010). Subtler forms of social pressure also work, including thanking voters for past participation (Panagopoulos, 2011), which may produce positive feelings in voters akin to pride over external approval of their behavior. Overall, threats to make voters' abstentions public knowledge – the strongest form of shaming across this literature – generate the greatest increases in voter turnout. Gerber, Green, and Larimer's (2008) postcard with neighbors' voting histories and a threat to send an update after the election results in an 8.1% increase in turnout. Similarly, Panagopoulos (2010) finds that threats to

publish abstainers' names in a local newspaper increase turnout by 6.9%, whereas threats to publish voters' names in a local newspaper in two separate experiments increase turnout by only 0.9% and 4.7%. This research demonstrates that when voters become aware of both the public nature of their voting records and the potential of others to find out that they failed to conform to the norm of voting, their participation increases dramatically.

Effects of social pressure treatments are not uniform, however. Past research shows heterogeneous effects from social pressure research based on a variety of moderating variables. Underscoring the psychological mechanisms at work in the treatments, Gerber, Huber, Doherty, Dowling, and Panagopoulos (2012) find that personality traits have a moderating effect on receptiveness to the message for individuals who live in single-voter households. In another experiment, Panagopoulos and Abrajano (2014) suggest that social pressure is only effective on older voters. However, this may be a function of overall voter propensity in that older voters are already more likely to vote than younger voters, and thus more likely to respond to treatments that emphasize their public perception as someone who votes.

Recent experimental research has also sought to quantify the potential backlash to social pressure messaging, particularly to Shame treatments, which follows the literature on psychological reactance. Matland and Murray (2014) demonstrate that "shaming" tactics created negative feelings towards the entity providing the pressure, whether it is a candidate or political party. This limits operationalization for social pressure messages in electoral contexts. Mann (2010) also addresses the potential for backlash to "shaming" treatments, since individuals may ignore messages that invoke negative responses. These

findings are supported by the literature on reactance, which is defined as “the state of being aroused in opposition to a perceived threat to personal choice” (Ringold, 2002, p. 27). Also known as the “boomerang effect,” reactance tends to increase as the severity of the threat increases, and often is manifested most forcefully in the very populations targeted for behavioral interactions (Ringold, 2002). For example, smokers are more resistant to anti-smoking messages than non-smokers, and may react particularly negatively to extremely graphic anti-smoking advertisements that emphasize mortality. Reactance can interfere with the reception of public health messages (Miller, Lane, Deatrack, Young, & Potts, 2007) and consumer goods warnings (Stewart & Martin, 1994), thus it is possible that non-voters will exhibit negative responses to efforts to increase their participation.

Interpersonal Contact And Voter Participation

Experimental research also consistently demonstrates that direct voter contact in the form of canvassing and phone banking are the most effective ways to increase voter turnout. These interpersonal conversations are explicitly social, and invoke what Rosenstone and Hansen (20013) classify as critical to increasing turnout: one person asking another to vote. As Green and Gerber (2005, p. 7) state in an overview of GOTV research, “the effectiveness of voter mobilization efforts depends on the personal touch. ... [M]ore personal approaches, such as door-to-door canvassing and volunteer phonebanks, do more to increase voter turnout” than automated robo-calls, mailers, or literature left on voters’ doors without an attempt to speak to them. In their seminal study examining the effects of canvassing, phone calls, and mail on turnout, Gerber and Green (2000) find a 2.4% increase in turnout among voters assigned to the canvass condition compared to voters who were

not canvassed door-to-door. Voters successfully contacted via canvassing vote at a 14.2% higher rate than all subjects either not assigned to a canvassing condition or assigned to the treatment but not successfully contacted. Telephone calls actually produce a drop turnout, whereas a series of three mailings increase turnout by 2.5 percentage points. In their replication across six municipal elections, Gerber, Green, and Nickerson (2003) find an aggregate increase of 2.1% in turnout among voters assigned to the canvassing treatments, and a 7.1% increase in turnout among voters successfully contacted at the door compared to those in the control group or who could not be reached at home. Canvassing also produces an 18.1 percentage point increase in turnout among those contacted by a partisan GOTV program (Nickerson, Friedrichs, & King, 2006), again providing the largest increase of methods tested.

Additional research on the efficacy of phone GOTV programs has demonstrated that when phone programs emphasize an interpersonal connection with the voter, they can improve turnout, though results remain mixed. Multiple studies show that high-quality, interactive calls delivered by well-trained phone bankers – paid or volunteer – can produce significant turnout gains ranging from 1.6% at the level of random assignment to 5.2% on subjects who were successfully contacted (Nickerson, 2005a; Nickerson, 2006; Nickerson, 2007b; Nickerson, Friedrich & King 2006; Ha & Karlan, 2009). Alternatively, Green and Gerber (2005) find that “mechanically delivered” calls and scripts are not effective, while multiple studies show that all GOTV calls are not effective, regardless of whether partisan messaging (Cardy, 2005; McNulty, 2005; Nickerson, 2005) or non-partisan messaging (McNulty, 2005) was used. Ultimately, the quality of the conversation and frequency of

interaction with the voter during the call is what appears to produce the greatest gains in turnout.

Direct voter contact methods also are effective ways to increase turnout among minority groups and young voters, particularly when canvassers share demographic characteristics with research subjects. Ramirez (2005) finds a substantial, significant increase in turnout amongst low-propensity Latino voters targeted with a live phone call, and Michelson (2005) demonstrates that canvassing can produce a significant increase in participation among Latino voters. Wong (2005) generates an increase among Asian-Americans, while Bennion (2005) demonstrated that canvassing is effective in turning out young voters. Additionally, several studies demonstrate that the highest returns come from matching in-person canvassers to the targeted voter demographic. Michelson (2005) generates a higher increase in turnout when Latino canvassers contact Latino voters as opposed to non-Latino canvassers; Bennion (2005) finds that canvassers under 30 are best capable of mobilizing other young voters.

Social pressure messaging and direct voter contact hold particular potential to increase voter turnout when delivered over Facebook and email, due to specific affordances of each digital medium. Notably, not all forms of offline voter contact are well suited for replication in a digital context: for instance, a so-called “knock and drag” program in which organizers canvass households and drive any voters they find directly to the polls does not translate well to Facebook. Social pressure messages work because they emphasize not only the social norm of voting, but also threaten to make public individuals’ failure to comply, thus jeopardizing their social capital within their network. Facebook and email are

also known for their ability to generate and sustain social capital, through their ability to manifest and maintain social networks in a digital context. Both also offer the potential to make public individuals' voter participation – with Facebook in particular offering the unique ability for users to tag others in status updates that directly praise or shame their participation in an ongoing election. A review of literature pertaining to social networks as they manifest on Facebook and email will delineate how each medium is particularly well designed for an adaptation of social pressure messaging and interpersonal voter contact.

Social Networks On Facebook and Email

Since norms are formed in social networks and compliance with norms is a way to accrue and sustain social capital, it stands to reason that the same is true when these networks are created or sustained in an interactive digital environment. Social interaction using digital media has been shown to support the production and maintenance of social capital in social networks. (Donath 2007; Ellison, Steinfield, & Lampe, 2007; Ellison, Steinfield, & Lampe, 2011; Hampton & Wellman 2003; Haythornthwaite, 2002, 2005). Thus, interactive digital communication among members of social networks has the potential to advance the social norm of voting and even increase turnout. Currently, 92% of American adults use email, making it the most popular interactive online activity (Purcell 2011), while 73% of online adults use Facebook, which Smith (2014) describes as “the dominant social networking platform.” Ultimately, Facebook and email are the best available platforms on which to study the potential of digital communication tools to increase voter turnout, owing to the ability to verify users' identities on both.

Social capital on the Internet hinges on the ability of individuals to be recognized and recognize other users online as members of the same network. Facebook and email both have a high degree of verifiability in terms of demonstrating that the user is indeed who they claim to be – linking their offline identity with their online account⁷. Facebook initially required a university-issued email address to create an account (boyd & Ellison, 2008). All accounts still require verification either through a unique mobile number or unique email address, though multiple email addresses can be associated with a single account. Multiple studies have shown that the service is used more to maintain existing offline relationships between known individuals than it is to create new ones (boyd & Ellison, 2008; Ellison, Steinfield, & Lampe, 2007; Lampe, Ellison, & Steinfield, 2006). These relationships are grounded in individuals’ actual identities rather than anonymous screen names, and Facebook pages often include individuals’ photographs, further underscoring the validity of their Facebook identity⁸. Facebook and email enable users to build and sustain social capital by maintaining relationships of varying degrees of intensity across potentially long distances (Ellison et al., 2007). However, the two ICTs do not do so in the same way.

⁷ Verification of user identities is critical to matching accounts to voter records. This is another reason why Facebook is the preferred medium for this study. Conversely, the medium of Twitter enables (and arguably encourages) the creation of anonymous accounts or accounts that can be shared by multiple individuals.

⁸ While fake Facebook accounts certainly exist for a variety of clandestine-to-malicious purposes, those accounts are unlikely to be a factor in this experiment since they are not likely to be able to be matched to the voter file.

A definition of bonding and bridging social capital is helpful in understanding how social capital functions online. Putnam (2000) defines bonding capital as building ties with similar individuals; bridging capital is connecting with others who are different⁹. Bonding capital is usually associated with “strong ties,” or relationships between family and close friends (Ellison, Steinfield, and Lampe; 2008). Alternatively, bridging capital is associated with formation of “weak ties,” which can be thought of as a less intense relationship. In his seminal essay on weak ties, Granovetter (1973) argues that they are the source of new ideas, opinions, and opportunities that circulate within social networks. Facebook and email can both be used to support strong and weak ties; however, in the context of these studies only Facebook will be used to mobilize votes explicitly within networks.

Several studies have demonstrated the ability of Facebook to develop and maintain social capital (Ellison et al., 2007; Ellison et al., 2011; Steinfield, Ellison, & Lampe, 2008). The platform can be particularly effective for individuals who are low in self-esteem, who exhibit great gains in social capital the more they use Facebook. Ellison et al. (2007) argue that this is because Facebook “serves to lower the barriers to participation” for these individuals (p. 1162) (see also Steinfield et al., 2008). Larger Facebook friend networks are associated with higher social capital, though only to a point (Ellison et al., 2011). Facebook and social networking sites are widely recognized for enabling individuals to

⁹ While Putnam (2000) argues that social capital is on the decline in contemporary America due to declining membership in civic organizations, this is refuted by Paxton (1999), who claims that only trust in individuals has declined. Furthermore, the development of social capital through interactive digital platforms such as Facebook and email presents a compelling counter-argument to Putnam and calls for a broader definition of social capital that measures offline and online networks without privileging one over the other.

maintain weak ties (Castells, 2010; Donath, 2007; Grevet, Terveen, & Gilbert, 2014; Papacharissi, 2010). However, as Grevet, Terveen, and Gilbert (2014) make clear from their study of political disagreement on Facebook, weak ties discuss politics less frequently than strong ties and are more prone to breaking through “unfriending” than strong ties. Facebook also enables the development of latent ties into weak ties (i.e. through formalizing the connections between individuals who already have mutual friends) thus further expanding bridging capital (Ellison et al., 2011; see also Haythornthwaite, 2002, 2005 for more on latent ties in the pre-Facebook era).

Though it is used as a mass medium in this dissertation, email is also capable of maintaining social capital, as it is frequently used by strong ties and is proven effective at maintaining close relationships over long distances (Bargh & McKenna, 2004; Cummings, Lee, & Kraut, 2006; Ellison et al., 2011; Paul & Brier, 2001; Rainie, Horrigan, Wellman, & Boase, 2006). Boase, Horrigan, Wellman, and Rainie (2006) demonstrate that email is particularly useful for individuals with larger networks who seek to maintain regular contact with more people. Email is shown to elicit feelings of trust and cooperation (Frohlich & Oppenheimer, 1998), though this trust is easily broken (see Riegelsberger, Sasse & McCarthy, 2005 for an overview of these studies). This trust may be a result of the archival nature of most contemporary email programs. As Riegelsberger et al. (2005) point out, “email enables users to easily trace and record past statements and behaviors of others” (p. 89). Close ties can use email to hold each other accountable for what they have said in the past. Thus, even though the emails in these experiments are sent from non-existent voter mobilization entities, their recipients already have experience maintaining

social capital through the medium. And as Bargh and McKenna (2004) make clear, email is unique in that it can be used for person-to-person communication as well as a broadcast medium. Ideally the social pressure messaging in the emails combined with the use of the medium to maintain social ties will make the treatments effective.

Taken as a whole, this research suggests that the same social phenomena necessary for social pressure to work offline are replicated online. Social capital circulates in online networks as it does offline, so it stands to reason that La Due Lake & Huckfeldt's (1998) politically relevant social capital will also manifest in digital networks. Individuals who care about being thought of as voters will care about whether their online contacts think of them as such as well. Social pressure messages work because they increase the public nature of individuals' conformity with the social norm of voting, specifically within their social networks. This process can be replicated on Facebook and email, where individuals are already digitally networked with their web of strong and weak ties. Both Facebook and email have specific technological affordances that enable for the mass publicization of individuals' voting records – on Facebook within networks and via email within inboxes. Thus, a social pressure experiment conducted on Facebook and email offers a unique opportunity to leverage the widespread usage and low cost of these media to invoke the threat of social sanction against non-voters.

There is another important reason to be optimistic that Facebook and email can be utilized to produce a significant and potentially substantial increase in voter turnout: past research has found a positive association between Internet use and political participation.

A discussion of these findings follows, as well as a review of literature pertaining to the specific choice of Facebook and email for the experiments in this dissertation.

Political Participation And Internet Use

Extensive research already points to a positive association between Internet use and political participation in the form of voting and other electoral activities. Boulianne (2009) performs a meta-analysis of 38 studies of Internet use and political participation and finds 74 positive, significant effects on Internet use and engagement, comprising a plurality of effects studied. Testing the aggregate research, she finds a positive but non-significant relationship across all studies; as she notes, the non-significance likely comes from aggregating different variables, measures, statistical analyses, and election cycles. Considering studies conducted with data collected after the year 2004, 100 percent of findings pointed towards a positive association between Internet use and political participation, with an effect size outside the standard deviation. To collect enough studies for her analysis, Boulianne uses a broad definition of political participation that includes voting, campaign activities, expression of opinion, and civic engagement. Notably she does not include any studies that only measure online outcomes, and does include news use, which is outside the scope of this dissertation. These findings give reason to believe that at the very least, Internet usage does not have a deleterious effect on participation, but it remains an open question as to whether it can be used experimentally to induce greater participation.

Untangling these studies, it becomes clear that there is a significant, positive relationship between various forms of Internet use and voting, as well as political

participation. Studies find an increase in voting associated with Internet access and observing online election information (Tolbert & McNeal, 2003), and use of online discussion forums (Price, Goldthwaite, Capella, & Romantan, 2002). Additionally, online political talk (Hardy & Scheufele, 2005), obtaining election news online (Tolbert & McNeal, 2003), and online blog use (Gil de Zuniga, Puig-I-Abril, & Rojas, 2009) are all positively associated with an additive measure of political participation that includes voting. More broadly, many Internet uses are positively associated with other forms of offline political participation such as attending a rally or wearing a button (Nisbet & Scheufele, 2004; Weber, Loumakis, & Bergman, 2001). Consuming ideological news online and commenting on like-minded political websites are linked to increased offline engagement (Brundidge et al., 2014), as is Internet use in general when controlled for political interest (Bimber, 2003).

Research also points to a positive relationship between social media use and political participation. Boulianne (2015) conducts a meta-analysis of research from around the globe that finds a positive relationship between social media use and participation. The overwhelming majority were conducted after 2008, and include Facebook, Twitter, and other platforms. Across 36 studies with 170 effects she finds that 82% of the coefficient are positive, though only half were statistically significant. Again, these results suggest that optimism is justified about the relationship between political participation and digital media. In studies that focus on specific sites, Vitak et al. (2011) determine that political activity on Facebook was significantly associated with other forms of political participation offline and on, and that witnessing friends' participation on the platform was a significant

predictor of Facebook participation. Use of social networking sites (Zhang, Johnson, Seltzer, & Bichard, 2013) also has a positive association with civic engagement, suggesting that pro-social motivations can be activated on these platforms.

The composition of digital networks also provides optimism for use of the platform to increase voter turnout. Digital social networks tend to be homophilous, but not entirely homogeneous, in accordance with offline social networks (boyd, 2008; Grevet et al., 2014). Extensive research into network composition and political participation has determined that network homogeneity is positively associated with political participation. In her research on cross-cutting exposure, Mutz (2006) determines that individuals with more like-minded discussion networks are more likely to vote and participate in political activities than individuals in counter-attitudinal networks. Similarly, Eveland and Hively (2009) and Campbell and Kwak (2011) find positive associations between homogeneous discussion networks and political participation. Huckfeldt, Mendez and Osborn (2004) demonstrate that an increase in co-partisans in a discussion network results in higher turnout probability, and finds a positive relationship between homogeneous networks and interest in a political candidate. Overall, the positive association of like-minded discussion networks and political participation is well documented (Knobloch-Westernwick & Meng, 2011; Lazarsfeld & Merton, 1954; Walsh, 2003), and reinforces the notion that exposure to like-minded individuals is a pleasing experience (Huckfeldt, Johnson, & Sprague, 2002).

This dissertation contributes to this literature by exploring if and how Facebook and email can be utilized to increase voter turnout. There is strong evidence of a positive association between digital media use and turnout, and both Facebook and email are well

suited for adaptation of social pressure messaging and direct voter contact. A review of the scant literature on the use of these digital media to impact voter turnout follows, along with a discussion of the unique affordances of Facebook and email and how each is suited for a voter turnout experiment.

Increasing Voter Turnout Using Facebook and Email

Few studies have specifically examined the ability of Facebook to increase voter turnout in America. Facebook's internal data science team made public the results of a randomized field experiment conducted on Election Day 2010. Bond et al. (2012) worked directly with Facebook to determine the impact of “get out the vote” messages. Sixty-one million users were randomly selected to receive one of two reminders to vote (or no treatment) at the top of their newsfeed. Both reminders exhorted individuals to vote, allowed them to click an “I Voted” button to be displayed on their page, and provided a link to their polling locations. One of the treatment messages included images of the user’s friends who had already clicked the “I Voted” button. Those individuals in this “social” condition were 2.08% more likely to click the “I Voted” button and 0.26% more likely to click the polling location link than individuals in the informational message that contained no social content. When subjects were cross-referenced with public voting lists, the social subjects were found to be 0.39% more likely to vote than the informational and control subjects. This effect is small, but suggests that the platform has the potential to increase voter turnout.

However, no research has specifically examined Facebook as a platform for delivering interpersonal GOTV reminders. Interpersonal contact in the form of canvassing

and interactive phone calls has been able to increase voter turnout. Gerber and Green (2013) find that such messages are most effective when delivered by a personal contact within the voter's overall social network. The same causal relationship should persist on Facebook, since individuals' offline social networks manifest themselves online as well. As such, I propose the following hypothesis:

Hypothesis 1: Voters exposed to voting reminder messages from their Facebook friends will turn out at a higher rate than voters assigned to the control group.

What makes this research project unique is the inclusion of social pressure messaging in a way that utilizes the technological affordances of Facebook to emphasize public knowledge of conformity with the social norm of voting. By tagging individuals in GOTV status updates that include Praise or Shame social pressure messaging for voting or abstaining, I will be able to measure whether this digital, interpersonal voter contact can increase turnout. In keeping with past social pressure research by Gerber, Green and Larimer (2010), I propose the following hypothesis:

Hypothesis 2: Voters exposed to Pride or Shame social pressure messages from their Facebook friends will turn out at a higher rate than voters exposed to Civic Duty messages.

Shame messages have routinely produce the greatest gains in turnout (Gerber, Green, & Larimer, 2010). Thus, I propose the following hypothesis:

Hypothesis 3: Voters exposed to Shame social pressure messages from their Facebook friends will turn out at a higher rate than voters exposed to Pride social pressure messages.

As noted in the literature above, young canvassers were more effective at mobilizing members of their age cohort, defined as individuals under 30 (Bennion, 2005).¹⁰ Given the high use of Facebook by young Americans, there is a strategic interest in determining of the medium is particularly effective at mobilizing them to vote. Thus, the following hypothesis is advanced:

Hypothesis 4: Confederates under age 30 will be more effective at mobilizing subjects under age 30 than confederates who are age 30 or older.

What sets Facebook apart as a medium from forms of voter contact such as mailers or phone banking is its unique ability to make visible a user's social network (boyd & Ellison, 2008). As noted previously, when individuals are tagged in voting reminder posts, it gives the impression to the user that the rest of their network can see the post. This

¹⁰ Initially, analysis based on race and ethnicity of the confederates was also planned; however, as IRB forbade collection of demographic data from subjects it was not possible to determine if matching digital canvassers to voters based on race was more effective.

increases the public nature of the treatment for the subject, and should thus increase norm conformity – in this case, voter turnout. However, Facebook also enables individuals to monitor others’ actions – and in anticipating their own surveillance by others, change their behavior. In this manner, Facebook is akin to a digital version of Bentham’s panopticon, in which users change their behavior with the understanding that others might be watching and judging them accordingly.

This presents a unique opportunity for experimental research on voter turnout. If an individual’s direct exposure to social pressure increases turnout, what about an individual’s exposure to others’ experience of social pressure? Facebook’s own GOTV experiment suggests that this is true. Bond et al. (2012) finds a small but statistically significant increase in turnout of the friends of individuals who shared the “I Voted” message, suggesting that exposure to other friends’ voter participation on Facebook does increase offline voter turnout within one’s network. Throughout this dissertation, I will refer to such exposure as social pressure by proxy, a condition in which a subject witnesses the exposure of others to social pressure and changes their behavior to avoid being praised or shamed themselves. My second study will determine if individuals who see their friends be tagged in social pressure status updates – rather than experience being tagged themselves – exhibit a higher turnout rate than those who do not.

Hypothesis 5: Voters exposed to social pressure by proxy on Facebook will turn out to vote at a higher rate than voters in the control group.

Email also provides an opportune way to remind voters to head to the polls. Given its high rate of adoption and low cost of use, it is ideally suited for mass mobilization. Contemporary political campaigns and organizations send emails encouraging voters to head to the polls, and both voters and operatives assume it is successful (Nickerson 2007a, 2007c). However, the majority of experiments designed to increase voter turnout actually find decreased participation among treated subjects (Bennion & Nickerson, 2011; Nickerson 2007a, 2007c). Nickerson (2007c) conducts 13 experiments over several years to see if email can boost turnout, and reports a decrease in voter participation among treated subjects. Other studies of email GOTV efforts also demonstrate a negative but insignificant effect on turnout (Nickerson, 2007c). The one successful study that uses email to mobilize voter turnout finds an increase of only 0.56% and only when the email is sent by the county voter registrar (Malhotra, Michelson, & Valenzuela, 2012). Emails encouraging individuals to register to vote have also largely been unsuccessful: several efforts appear to have actually suppressed registration by 0.3% (Bennion & Nickerson, 2011; Nickerson, 2007c).

The greatest successes in mobilizing political action through email have come in encouraging supporters to donate money to campaigns (Nickerson, 2007a). During the 2012 cycle, the Obama campaign broke all previous records in raising over \$690 million online (Scherer, 2012). Intense media scrutiny has focused on the campaign's practices of rigorously testing multiple versions of fundraising emails to determine which iteration would generate the most funds (Issenberg, 2012). Thus, while email is able to compel

individuals to engage in other desired political activities, so far has not shown substantial effects in increasing voter participation at the polls.

Email messages have been successful at increasing a wide range of desired behavioral outcomes in public health studies. Experiments demonstrate the ability of email messages to encourage the use of an anti-smoking website by Dutch schoolchildren (Cremers, Oenema, Mercken, Candel, & de Vries, 2014), improve healthy behaviors to reduce the risk of cardiovascular disease among hypertensive adults (Cicolini et al., 2014), and help individuals lose weight (Jaime, Bandoni, & Sarno, 2014). These emails were sent by organizational entities seeking to compel particular behavioral choices that comply with injunctive public health norms. These experiments demonstrate that email can be used to generate positive outcomes in a high-stakes, high-salience context (i.e. the individual's own health and well-being) – even when subjects' own desires may try to lead them astray. Thus, email must be considered a powerful tool with the potential to compel positive behavioral changes.

Based on the successes of social pressure postcards, it is feasible that changing the content of the email messages to include an emphasis on public voting records will result in an increase in voter turnout. The methodology in this dissertation differs from previous email GOTV experiments in its use of social pressure messaging. Social pressure delivered via email has been successful in increasing membership in academic associations (Druckman & Green, 2013). The emails in this study will build on research by Gerber, Green, and Larimer (2010) and publicize subjects' past participation or abstention in an attempt to induce feelings of pride or shame. Based on past findings, I pose the following

hypotheses:

Hypothesis 6: Voters exposed to social pressure by email will turn out at a higher rate than voters who receive no email.

Hypothesis 7: Voters who receive Shame social pressure messages by email will turn out at a higher rate than voters who receive Pride messages.

Facebook also offers another powerful way to communicate with individuals outside of peer-to-peer contact: advertisements. In the last quarter of 2013, Facebook generated \$2.3 billion dollars in revenue from advertisements, with 53% of that coming from mobile phone users of the website (Edwards, 2014). Facebook offers a broad array of advertising products, from small, text-based units in the right-hand sidebar to sponsored posts in newsfeeds that include graphics or video and blend almost seamlessly with updates from friends in one's network. There is limited published research on the use of Facebook advertisements in a political or electoral context. Broockman and Green (2014) found that frequent exposure to Facebook ads had little effect on voter persuasion: subjects randomly assigned to receive the ads "were no more likely to recall the candidates' names, did not significantly update their opinions of the candidates, and sometimes did not recall viewing the ads at all" (p. 279). However, these ads were targeted geographically and not by email addresses for specific voters, and were focused on persuasion and not on turnout.

Other relevant research into Facebook ads focuses on their use from either a message-testing or methodological perspective. Advertisements can be targeted to users by demographics and geography in order to reach specific populations. Facebook Ads have been used to recruit survey participants for a variety of public health surveys that were targeted by age, sex, and sexual orientation (Kapp, Peters, & Oliver, 2013; Glick & Golden, 2013). The ads have been successful at promoting awareness of organ donation (Stefanone, Anker, Thomas, & Feeley, 2012) and targeting a variety of public health messages to hard-to-reach populations (Park & Calamaro, 2013). This previous research also demonstrates the willingness of Facebook users to interact with messages that serve a non-commercial purpose. Additionally, research shows that Facebook advertisements are often targeted by users' stated interests in their profiles and posts on their pages. One study of Facebook ads demonstrated that 71.9% of the advertisements shown immediately after a researcher posted status updates about fitness behavior were related to that topic (Villiard & Moreno, 2012). Thus, Facebook users are already conditioned to perceiving ads on the platform as relevant to their age, sex, sexual orientation, or interests. This stands to increase the perceived salience of voting-related communications over Facebook.

Facebook advertisements can be targeted by email address, offering another way to expose voters to social pressure messaging on the platform. Given the success of social pressure messaging in the mail, I propose the following hypothesis:

Hypothesis 8: Voters exposed to social pressure by Facebook ads will turn out at a higher rate than voters in the control group.

The inexpensive nature of Facebook ads and email messages allows for low-cost layering of these communications. Thus, it is possible to expose voters to social pressure messages throughout the voting period. This multimedia exposure increases the total amount of treatment received by the subject. Hence, I pose the following hypotheses:

Hypothesis 9: Voters exposed to social pressure by email and Facebook ads will turn out at a higher rate than voters in the control group.

Hypothesis 10: Voters exposed to social pressure by email and Facebook ads will turn out at a higher rate than voters exposed to only one medium.

Both the peer-to-peer Facebook studies and email-based experiments proposed in this study seek to mobilize a sample of voters within a specific state and electoral context. There is substantial evidence that the success of GOTV efforts is contingent on both the voter's pre-existing likelihood of voting and the salience of the particular election. Arceneaux and Nickerson (2009) perform a statistical meta-analysis using data from 11 GOTV field experiments and find the greatest effects on voters near what they term the "indifference threshold," which is determined by general interest in the election. Essentially, in low-salience elections, mobilization efforts have the greatest effect on high-propensity voters, whereas in high-salience elections, effects are greatest among low-

propensity voters.¹¹ Previous research also demonstrates heterogeneous treatment effects based on voters' pre-existing likelihood of casting a ballot in an election (Arceneaux & Nickerson, 2009; Dale & Strauss, 2009; Gerber & Rogers, 2009; Malhotra, Michelson, Rogers & Valenzuela, 2011; Mann, 2010). Past turnout is considered one of the strongest predictors of future participation. As such, a heterogeneous treatment effect based on past voter history is anticipated across the four experiments in this dissertation.

Hypothesis 11: The effect of voter mobilization treatments will be moderated by subjects' past voter history.

Overall, this dissertation explores whether two widely utilized forms of digital media can be leveraged to increase voter turnout. These media will be used to emphasize the social norm of voting and publicize individuals' participation or lack thereof, in accordance with past social pressure research. Facebook and email are two of the most popular forms of digital communication. These media are also well suited for this research because user accounts on each can be readily matched to public voter files, enabling analysis of treatment effects at the level of the individual. After all, people use Facebook and email to connect with the members of their actual social networks, which in turn

¹¹ A given individual's likelihood of voting changes with the electoral context and is usually considered to be independent of any interventions that may be attempted to change their voting behavior. For instance, someone who votes in every even-year November election may not be a likely voter in a May municipal election. A voter who regularly turns out for Democratic primaries would not be a likely voter in a Republican run-off.

connects to the ability of users to build and sustain social capital on both platforms. It is this social capital that motivates adherence to social norms, particularly when their behaviors are made visible to their networks. The panoptic quality of Facebook profiles enables the heightening of perceived “public-ness” on the platform. Thus, tagging users in status updates that publicize their voting behavior should increase conformity with the norm of voting. While Facebook ads and email messages lack that same interpersonal connection, the low cost of communicating through these media and ability to target individual voters makes them an ideal choice to test the widespread dissemination of targeted social pressure via digital media.

If digital media can increase political participation and offer new, lower-cost ways to contact voters, it will potentially reinvigorate voter participation in America. The ability of Facebook and email to target communications to young and minority populations offers particular promise for a more representative democracy. Furthermore, as the first generation of what Prensky (2001) describes as “digital natives” – those who have known interactive digital media and communications devices since birth and have a high degree of comfort with these technologies – comes of voting age, these findings could be even more relevant and applicable in the future. Conversely, if this research is unsuccessful, it will offer yet more evidence that despite their popularity in America, the two most widely used forms of interactive digital media are unable to positively impact voter participation.

Chapter 3: Research Methods to Increase Voter Turnout Using Facebook And Email

This dissertation reports the results of four field experiments conducted in four counties in Texas during the 2014 general election that determine if and how Facebook and email can be used to increase voter turnout. Two experiments were conducted using new methods developed as part of this study to conduct experiments within Facebook networks. These studies adapt social pressure messaging used in prior studies (Gerber, Green, & Larimer, 2008, 2010; Mann 2010; Matland & Murray, 2014; Panagopoulos 2010, 2011, 2013) for Facebook. The treatments use the platform's networking ability to increase the public-ness of subjects' voting behavior in an attempt to increase compliance with the norm of voting. One experiment also leverages the ability of Facebook users to tag people in status updates that are visible to their other friends, to demonstrate the effect of social pressure on bystanders, or social pressure by proxy. The two subsequent experiments employ large email lists obtained from publicly available sources to remind people to vote using targeted social pressure emails and Facebook advertisements. After the 2014 general election, public voter files were collected from the appropriate jurisdictions to determine the effect of these treatments on voter turnout.

Email messages and Facebook advertisements and status updates are extremely cost-effective ways of reaching voters. As such, these methods offer tremendous potential for civic organizations dedicated to increasing turnout. Accordingly, the experimental methods presented here are designed with broader implementation in mind. The first two experiments were conducted with the help of two political organizations, who facilitated

recruitment of confederates to carry out the treatments. The third and fourth utilize large email lists. While these are convenience samples, they also mirror the potential populations that would be engaged if this research was implemented on a larger scale. Thus the ability to evaluate the effectiveness of these methods on a sample similar to the broader population is a strength of this research.

Study I: Social Pressure on Social Media

This study tests Hypotheses 1 through 4 and 11 to determine if direct social pressure within Facebook networks can increase voter turnout in the 2014 election. This methodology builds on Gerber, Green, and Larimer's (2008; 2010) social pressure experiments that emphasize the public nature of voter histories and attempt to induce feelings of pride or shame for voter participation or abstention, respectively. Treatments also emphasize the social norm of voting. To carry out this experiment, seven confederates were recruited through a political organization to perform the experiment on their Facebook friends. This experiment hinges on the ability of Facebook users to tag their friends in status updates, and create the perception that the update is visible to the networks of both the tagger and person being tagged. Though subjects were placed in private groups to prevent spillover effects and minimize risks, the subjects likely still perceived that the treatment was visible to their entire friend network. As such, the treatments were intended to give the impression that subjects' voting behavior was being made more public.

Experimental Setting

This experiment was conducted in Dallas County during the 2014 general election. This was expected to be a high profile, high-salience election cycle owing to multiple open and contested statewide elections, as well as many open legislative races and contested countywide races. Dallas was chosen for this study because it has a large and ethnically diverse population, which speaks to the generalizability of these methods to the broader population. Each day, Dallas County also makes public a complete list of early voters on their website, which made it possible to remove from treatment any subject that had already voted.

Study Population

This research utilized a convenience sample of subjects recruited by confederates, who who were recruited by a local Democratic organization. The process to enroll each is detailed below.

Confederate Recruitment

Seven confederates were recruited by a local Democratic organization from their volunteer and activist base. Confederates were chosen because they had a Facebook account that they used frequently, and had at least 100 friends. The size of the friend network was critical to recruiting the number of subjects necessary for sufficient statistical power. Each was informed about the procedures and their obligations to the study before agreeing to participate, and each signed a confidentiality agreement in which they agreed not to tell anyone about the research study while it was ongoing. This was to prevent

Hawthorne Effects, which have been shown to impact voter turnout (Gerber, Green & Larimer, 2008).

This convenience sample was appropriate for this research because confederates are politically involved, and will appreciate the value of encouraging others to vote. It would be extremely challenging to recruit confederates for such an experiment outside of a political organization. Second, within their networks, these confederates have high politically relevant social capital, which gives the voting reminders some context in coming from an already-engaged friend. Third, this methodology would most likely be utilized by other political activists seeking to increase participation within their networks. Thus, the convenience sample of confederates closely matches those who would use the methodology in a strategic campaign setting.

Subject Recruitment

Subjects were recruited through their Facebook connection to a confederate. Each confederate downloaded their full friend list; each individual was then matched by name to the Dallas County voter file. Where friend names produced multiple matches, the address and birth dates for each person were returned to the confederate to verify which person was their friend. In the end the confederates were sent a complete list of each person that produced a match to the voter file with that person's address and birthdate. Confederates verified the accuracy of the match. No one was removed due to voting history. However, all candidates for office during any point in the 2014 cycle were removed from the sample to avoid potentially shaming them during an election. Ultimately this process produced 291 subjects for the experiment.

Informed Consent

While confederates consented to participating, informed consent was not obtained from subjects before the experiment. The study posed minimal risk to participants, and relied on public voter records to measure turnout. Given the nature of the experiment, it would not be possible to inform subjects ahead of time without irreparably biasing the experiment. When voters know their behavior is being studied by researchers they exhibit higher levels of turnout (Gerber, Green, & Larimer, 2008).

Experimental Conditions

Each subject was randomly assigned to an experimental condition in which they would receive either one of three voting reminder messages or no reminder. Assignment was conducted via block randomization at the level of the confederate using Microsoft Excel's random number generator. An equal number of subjects was randomized into each condition. The conditions are described in the table below:

Table 3.1: Experimental Conditions, Dallas County (2014)

Experimental Condition	Description of Treatment
1. Control	No contact
2. Civic Duty	Subject tagged in Civic Duty reminder
3. Pride	Subject tagged in Pride reminder
4. Shame	Subject tagged in Shame reminder

After subjects were randomly assigned to a treatment condition, they were randomly assigned to a day of treatment during the Early Voting period. In order to prevent spillover

effects, confederates added each treatment list to a private Facebook group, and restricted visibility of each message to only its respective group. Subjects whose Facebook settings did not allow them to be added to groups will be dropped from the experiment. Step-by-step illustrations of this process are available in the appendix.

Experimental Instrument

Subjects were treated by being tagged in a Facebook status update posted by their respective confederate. The treatment included a link to the list of early voting locations in Dallas County posted on the county website. Full text of all three treatments is below; subjects' names appeared where it says [name]. This created a hyperlink to their profile page in the confederate's status update, and caused the treatment to show up on the subject's own page. Subjects were not informed that these treatments were only visible to them.

Civic Duty:

Voting is your civic duty! Just a reminder for [name], [name], [name], [name], and [name] that Early Voting ends Friday, October 31. Here is a list of Dallas County Early Voting locations: [bit.ly link] Do your civic duty, and VOTE!

Pride:

Voting records are public! Thanks to [name], [name], [name], [name], and [name] for voting in past elections. Early Voting ends Friday, October 31. Here is a list of Dallas County Early Voting locations: [bit.ly link]. Do your civic duty and VOTE!

Shame:

Voting records are public! Records show that [name], [name], [name], [name], and [name] have not yet voted this year. Early Voting ends Friday, October 31. Here is a list of Dallas County Early Voting locations: [bit.ly link] Do your civic duty and VOTE!

Experimental Procedures

Treatment of subjects began after the polls closed at 7:00 p.m. on Thursday, October 23, the fourth day of early voting, and concluded on Wednesday, October 29. Confederates posted three status updates tagging that day's assigned friends: one each for Civic Duty, Pride, and Shame, visible only to the respective treatment group. Each day, Dallas County released daily rosters of all Early Voters on their website, so confederates did not tag anyone who had voted prior to their assigned day of treatment. Subjects were tagged after 7:00 p.m. so that it was possible to separate the day of treatment from the measured outcome of voting.

Throughout the experiment I communicated with the confederates and monitored the posts for any feedback or backlash from subjects; no negative responses were detected. After the election, confederates were able to delete the posts and friend groups.

Data Collection

After the election, a full list of voters was obtained from Dallas County, along with updated registration records.

Measurements

Two measures of past history were calculated to determine which provided the best prediction of participation in 2014. The first variable, Total Vote Count, is based on Gerber and Rogers (2009) and consists of counting the number of primary and general elections the subject voted in out of the last five federal cycles. The second method calculated the percentage of these 10 elections that the voter cast a ballot in based on eligibility

determined by age. Each variable was tested against the control group. The first variable, Total Vote Count, was a better fit for the sample.

Analytic Strategy

To determine if the treatments were successful, a series of statistical tests were performed. They are outlined below.

Robustness Checks: To ensure random assignment to treatment group, a series of tests were performed. Chi-square tests were conducted to determine if there was any relationship between group and sex, voting in the 2010 election, or having any Democratic or Republican history. ANOVAs were used to see if there was any relationship between age, length of registration, or the average number of past elections the subjects voted in.

Estimating Treatment Effect on Treated Subjects: Subjects who voted prior to the start of treatment were removed from the experimental analysis; a chi-square test of independence was used to ensure that there was no association between voting before the start and group assignment.

Effect of Treatment on Turnout: Logistic regression was used to determine if exposure to the treatments had an impact on subjects' odds of voting. This analysis was conducted across the entire voting period.

Moderating Effect of Voter History on Turnout: To evaluate hypothesis 11, a logistic regression was performed that added the Total Vote Count to the model as a control and an interaction term with treatment.

Moderating Effect of Confederate Age on Turnout: Two analyses were planned to determine if confederates under age 30 were more effective at mobilizing members of their age cohort. The first analysis looked at the subset of subjects under 30 assigned to Civic Duty, Pride, or Shame, and added a dummy variable to the model for confederates under 30, and also added an interaction term between confederate and treatment group. The second planned analysis looked at all subjects, and added dummy variables for subjects under 30, confederates under 30, and an interaction term between the two, as well as treatment group variables. Again this analysis was not conducted on Control group subjects.

Moderating Effect of Confederate on Turnout: Given that this design employs confederates to carry out the treatments, a logistic regression was conducted to determine if any individual confederate had an impact on turnout among their friends. Dummy variables were added to the model for each confederate, with the confederate who had the median turnout level among their friends set as the baseline.

Overall, this experiment will show if social pressure messages posted on Facebook that tag specific voters are an effective way to increase turnout, if tagging subjects individually or in groups (thus invoking descriptive norms of voter behavior) has an effect on turnout, and if the age, sex, and race of confederates and subjects has an impact on turnout.

Study II: Social Pressure By Proxy

Study II evaluates Hypotheses 9 and 11 using a pool of confederates and voters in Collin County, Texas. This study explores the impact of seeing other people – total strangers – be socially pressured to vote by a friend. The confederates performed a mock social pressure experiment on each other by tagging each other in Facebook status updates that were only visible to randomized subsets of their Facebook friends. Again there were four treatment conditions following Gerber, Green, and Larimer (2010): control, Civic Duty, Pride, and Shame. Confederates' friends – the subjects in this experiment – were randomly assigned to see one of the treatments during the Early Voting period. Each day, confederates tagged each other in social pressure status updates visible only to the respective treatment group. Note that the subjects were not directly tagged themselves: their treatment was simply exposure to the tagging of others by a member of their Facebook friend network. As such this treatment is uniquely rooted in Facebook's technological affordances. This method also provides an alternative operationalization for campaigns and civic organizations looking to use social pressure to increase voter turnout while minimizing the potential for backlash. After the election, participation was measured using public voting records.

Experimental Setting

This experiment was conducted in Collin County, a suburban county that is part of the Dallas-Fort Worth metropolitan area. The county was selected by the partner organization that agreed to recruit confederates to help carry out the experiment. There are approximately a half-million residents of Collin County, of which over 81% are White. The county has a reputation as a Republican stronghold, and in the 2014 general election no Republican candidate received less than 65% of the vote in Collin County. Collin County's elections division responds rapidly to requests for voter data after elections, which reduces costs and logistical hurdles for the researcher.

Study Population

This experiment utilized a convenience sample of subjects and confederates. As with Study I, the confederates were recruited through a statewide political organization. Recruitment practices are outlined below.

Confederate Recruitment

Eight confederates were recruited through their involvement with a statewide political organization. The confederates were all Organizing Fellows, a title bestowed on volunteers who have significant responsibilities within the organization. While this is a convenience sample, these organizers are similar to the individuals who would be likely to carry out this practice in coordination with a campaign. The confederates were already engaged in voter mobilization efforts, so the treatments were congruent with their other offline and online activities. Organizing fellowships were not restricted to young people, so there was sufficient diversity in terms of age among the confederates. Before agreeing

to participate, confederates were briefed on the methods of the study and their required activities to carry it out, and signed a confidentiality agreement.

Subject Recruitment

Subjects were recruited through their Facebook connection to a confederate participating in the study. Confederates downloaded their Facebook friend lists, and identified residents of Collin County. This list was then matched against the county voter file by name. Anyone who was friends with more than one confederate was removed from the study. Matches were returned to the confederates with addresses, birth dates, and ages from the voter file for identity verification. No one was removed due to voter history or any other reason. This resulted in a total of 671 subjects, who were then block-randomized by confederate into a treatment condition.

Informed Consent

While confederates consented to participate in the study, informed consent was not sought from subjects before the experiment due to the nature of the study. The experiment posed minimal risk to participants, since they were not going to be directly tagged in social pressure status updates and the dependent variable was measured using public records. Conversely, informing the subjects beforehand would have irreparably harmed the experiment.

Experimental Conditions

Each subject was block-randomized into one of four treatment conditions. Randomization was completed using Microsoft Excel's random number generator. A

roughly equal number of subjects was randomized into each condition, as not all confederates had a set of subjects divisible by four. Robustness checks were performed to ensure random assignment. Treatment conditions are listed below:

Table 3.2: Experimental Conditions, Collin County (2014)

Experimental Condition	Description of Treatment
1. Control	No contact
2. Civic Duty	Confederate’s friends see Civic Duty messages
3. Pride	Confederate’s friends see Pride messages
4. Shame	Confederate’s friends see Shame messages

Experimental Instrument

The texts for each treatment condition are below. The [name] in brackets was replaced by the name of another confederate. The order of confederates was randomly assigned, such that each confederate tagged each other confederate on only one night during the study, but tagged them in three separate status updates on their assigned night.

Civic Duty:

Voting is your civic duty! Just a reminder [name], Early Voting ends Friday, October 31. Here is a list of Collin County Early Voting locations: [bit.ly link] Do your civic duty, and VOTE!

Pride:

Voting records are public! Thanks [name] for voting in this election. Early Voting ends Friday, October 31. Here is a list of Collin County Early Voting locations: [bit.ly link]. Do your civic duty and VOTE!

Shame:

Voting records are public! Records show that [name] has not yet voted in this election. Early Voting ends Friday, October 31. Here is a list of Collin County Early Voting locations: [bit.ly link] Do your civic duty and VOTE!

Experimental Procedure

Treatment began on Wednesday, October 22 and concluded on Tuesday, October 28. Each evening after 7:00 p.m. when the polls closed, the eight confederates posted three status updates tagging another confederate – one each using the Civic Duty, Pride, and Shame treatment texts. Each status update was visible only to subjects in its respective condition. Treatment continued for seven nights, because there were eight confederates and each tagged one other confederate per day. Subjects were not removed from treatment after voting. The intention behind the treatments was to give subjects the impression that different people were being reminded to vote by their friend, and that they too could be next. The procedure did not consider whether any of the confederates actually *had* voted – since subjects were not friends with the other confederates, they could not know the truth.

Data Collection

After Election Day, I acquired the full list of all voters from Collin County as well as updated voter registration data. This was used to verify who voted and determine if subjects were still registered in Collin County as of Election Day and thus eligible to be counted in the experiment.

Measurements

Again, two measures of past history were calculated to determine which provided the best prediction of participation in 2014. The first variable, Total Vote Count, is based on Gerber and Rogers (2009) and consists of counting the number of primary and general elections the subject voted in out of the last five federal cycles. The second method calculated the percentage of these 10 elections that the voter cast a ballot in based on

eligibility determined by age. Each variable was tested against the control group. As with the subjects in Study I, the first variable – Total Vote Count – was a better fit for the sample.

Analytic Strategy

Higher turnout among subjects who saw the social pressuring of others would provide strong evidence for the mobilizing effects of social pressure by proxy. A series of statistical tests were utilized to determine if the treatments worked.

Robustness checks: Chi-square tests of independence were used to verify random assignment to group based on sex, voting in 2010, registering to vote in the 2014 cycle, and having any Democratic or Republican primary history. ANOVAs were performed to check for any relationship between average age, length of registration, or Total Vote Count within groups.

Effect of Treatment on Turnout: Logistic regression was used to explore the impact of treatment on the odds of voting. Subjects who had voted prior to the start of treatment were removed; a chi-square test was used to verify no relationship between voting prior to treatment and group assignment.

Moderating Effects of Voter History on Treatment: To evaluate Hypothesis 11, a logistic regression that controlled for voter history and added an interaction term with treatment was performed.

Moderating Effect of Confederate Age on Turnout: Two analyses were planned to determine if confederates under age 30 were more effective at mobilizing members of their age cohort. The first analysis looked at the subset of subjects under 30 assigned to Civic Duty, Pride, or Shame, and added a dummy variable to the model for confederates under 30, and also added an interaction term between confederate and treatment group. The second planned analysis looked at all subjects, and added dummy variables for subjects under 30, confederates under 30, and an interaction term between the two, as well as treatment group variables. Again this analysis was not conducted on Control group subjects.

Moderating Effect of Confederate on Turnout: Given that this design employs confederates to carry out the treatments, a logistic regression was conducted to determine if any individual confederate had an impact on turnout among their friends. Dummy variables were added to the model for each confederate, with the confederate who had the median turnout level among their friends set as the baseline.

Social pressure is known to be a powerful mobilization tactic. This experiment will determine if it can effectively motivate people to vote even when they are not personally reminded to vote with a message that includes their own voter history.

Studies III and IV: Email Out The Vote

Two experiments were conducted to determine if email messages and Facebook advertisements containing social pressure can mobilize voters. These studies are used to evaluate Hypotheses 6 through 11. Email lists were gathered by submitting an open records request to four high-enrollment public universities in Texas for their student, faculty, and staff directory, including email address and birth date. This recruitment strategy was chosen to facilitate several technical aspects of the experiment and to target a more general population than would be possible through the use of a political organization's email list, for example. Large populations at these public universities generated a substantial sample size for the study, thus increasing the statistical power to detect a treatment effect. The choice to include students, faculty, and staff in the sample was a deliberate effort to recruit subjects with a broad disparity in voter history, as well as age group diversity. Additionally, the choice of a publicly available email list was motivated by a desire to explore this treatment method on a wider segment of the population.¹²

The university lists also offered a high degree of verifiability in terms of individual users' identities, which served to improve the match between email address and voter file. Other studies that attempt to use email to increase voter participation have used lists that are already matched to unique individuals whose voter records can be used to verify turnout (Malhotra, Michelson, & Valenzuela, 2012; Nickerson, 2007a, 2007c). The ability to

¹² The pilot study for this experiment, conducted in 2013, used an email list from a statewide political organization; as such, subjects likely had a high degree of political interest, which may have moderated the effect of the treatment.

correctly match email addresses to the voter file is critical to this experimental methodology, as it allows for the measurement of actual voter behavior.

Experimental Setting

This experiment took place during the 2014 general election in Texas in Bexar and Harris County. Both are highly populous urban counties, and were home to multiple contested countywide elections in addition to statewide contests. Four campus populations were selected for the study. In Bexar County, one state university campus with an enrollment of over 30,000 was selected. In Harris County, one public university system with multiple campuses was selected, with a cumulative enrollment of over 61,000 students. One of these three is also a historically Hispanic institution, ensuring some degree of racial and ethnic diversity in the sample. According to promotional materials on each location's website, each university also has a student body that lives in the county in which the campus is located. This was a critical factor in ensuring a reasonably high match rate between each directory list and its respective county voter file.

Subject Recruitment

Subjects were recruited through a series of open records requests for four public universities' student, faculty, and staff directories. These directories include full names, email addresses, and birth dates. Each list was matched to its respective county voter file using SQL, which used the combination of name and birth date to append a Texas state voter unique identification (VUID) number to the email list. Every Texas voter has a unique, 10-digit VUID. These numbers were used to track subjects' voter participation using public voter records.

Informed Consent

Informed consent was not sought from subjects before the experiment, since it would irrevocably bias the results of the study. Furthermore, this experiment posed minimal risk to participants, and relied on public voter records for both subject recruitment and turnout measurement. Subjects were sent an email after the experiment concluded alerting them to the fact that their voting behavior was studied.

Experimental Conditions

Subjects were block-randomized by university and by status (student, faculty, or staff) into one of sixteen experimental conditions, which varied the message, medium, and frequency of contact. These conditions were based in part on the treatments in Gerber, Green, and Larimer's (2010) experiment, which used Civic Duty, Pride, and Shame messages delivered on postcards. Here, the medium of treatment – email and Facebook ads – as well as the frequency of treatment -- one email or two – were also randomly assigned. To ensure sufficient statistical power for pairwise comparisons, four times as many subjects were assigned to the Control group as to each individual email group. Similarly, twice as many subjects were assigned to Facebook ads-only groups as to each email group. A list of treatment groups is below.

Table 3.3: Experimental Conditions, Bexar and Harris Counties (2014)

Experimental Condition	Email Messages	Facebook Ads
1. Control	No	No
2. Civic Duty Email x 1	1 Email	No
3. Civic Duty Email x 2	2 Emails	No
4. Civic Duty Facebook Ads	No	Yes
5. Civic Duty Facebook Ads + Email x 1	1 Email	Yes
6. Civic Duty Facebook Ads + Email x 2	2 Emails	Yes
7. Pride Email x 1	1 Email	No
8. Pride Email x 2	2 Emails	No
9. Pride Facebook Ads	No	Yes
10. Pride Facebook Ads + Email x 1	1 Email	Yes
11. Pride Facebook Ads + Email x 2	2 Emails	Yes
12. Shame Email x 1	1 Email	No
13. Shame Email x 2	2 Emails	No
14. Shame Facebook Ads	No	Yes
15. Shame Facebook Ads + Email x 1	1 Email	Yes
16. Shame Facebook Ads + Email x 2	2 Emails	Yes

Experimental Instrument

The text of each email message and Facebook ads are available in the appendix. The language of the treatments was adapted from past social pressure experiments (Gerber, Green & Larimer, 2008 2010; Panagopoulos, 2011). The phrase “Do your civic duty - vote!” appears in all of the experimental treatments, as it did in the postcards used in both of the Gerber, Green, and Larimer (2008, 2010) studies. This language makes clear what the voter is being asked to do, while also invoking the injunctive norm of voting, i.e.

performing one's civic duty. The Pride and Shame Facebook and email conditions referenced public voting records, also adapted from a past social pressure experiment (Gerber, Green & Larimer, 2010). Finally, the text of the Pride Facebook advertisements included language adapted from Panagopoulos' (2011) findings that thanking voters for past participation increases turnout. These textual elements were edited down for length to fit within the requirements for Facebook advertisements. The images used in the Facebook advertisements were chosen for their common association with voting and doing one's civic duty. The Uncle Sam image is utilized frequently in calls to perform patriotic actions, while the vote icon is commonly used in materials that exhort individuals to participate.

Additionally, each email was customized to automatically insert the subject's first and last name, county of residence, and relevant URL for the county's voting locations. Personalization has been shown to improve response rates for web surveys (Fan & Yan, 2010) and email solicitations (Druckman & Green, 2013). Additionally, personalization has been shown to produce more socially desirable answers to web surveys (Heerwegh, Vanhove, Matthijs, & Loosveldt, 2005). For the purposes of this experiment, the personalized email was also vital in telling the voter that their specific, individual voting record was being monitored.

Experimental Procedures

Treatment began on Friday, October 24 at 11:10 a.m. Details of how each treatment was operationalized follow.

Facebook Ads: All Facebook ads were queued up to begin running in subjects' newsfeeds on the morning of Friday, October 24 and continue in users' newsfeeds until the polls closed at 7:00 p.m. on Tuesday, November 4. The ads were targeted using Facebook's Custom Audiences feature. This function allows users to upload an email list to the platform, which is then matched to any email address associated with a user account. Advertisements can be targeted to any user account that matches an email address on the uploaded list. This prevented spillover effects. While Facebook does not show which email addresses produced matches or to whom it shows ads, it does show the number of emails on the entire list that match to Facebook accounts, and what percentage of those users are exposed to the ads.¹³

The choice of newsfeed ads over the right-hand sidebar was deliberate. Unlike the smaller sidebar ads, newsfeed ads have larger images, appear in the main column of Facebook content, and can appear on desktop, tablet, and mobile devices. This was key to maximizing exposure to the ads, as a significant share of Facebook users are mobile-only and cannot be served sidebar advertisements.

Email Messages: The emails were sent from a fictitious non-profit voter organization, "2014 Election Vote," and were formatted to be short, and thus easy to read in their entirety upon subjects opening the message. The first wave of emails was scheduled to send sent to all subjects in an email condition at 10:00 a.m. on

¹³ Notably, Facebook ads can only be shown to users who log into the platform while the ads are running. Furthermore, since the ads run on a competitive bidding system, the price that the advertiser is willing to pay for the ads must be sufficiently high as to

Thursday, October 23. A low-cost email program was used to send the emails customized with each subject's name, county of residence, and voting location list. The email program enables senders to upload this custom information along with the email list, so that these fields are automatically populated in each email.

The second wave of emails was sent on Monday, November 3 to all individuals assigned to a two-email conditions who had not voted early, again customized to include their name, county of registration, and a link to voting locations. The purpose of this design was to determine if a second email increased turnout in any of the experimental conditions. In practice, campaigns send frequent – sometimes incessant – emails reminding individuals to vote.

Data Collection

This study utilized public voting records to analyze the effect of treatment. After the election, a list of all voters in the 2014 general election, along with the date and time at which they checked in to vote was obtained from each county. Additionally, an updated voter file was utilized to ensure that subjects were still registered in their university's respective county.

Measurements

Two measurements of voter history were utilized in this analysis to test for interactions with email treatments, to ascertain if voter mobilization efforts are moderated by past turnout. The variable Total Vote Count is adapted from Gerber and Rogers (2009) and accounts for the number of past elections a subject has voted in. It counts up the number of general elections and primary elections voted in between 2004 and 2012, and ranges

from 0 to 10. However, given that this is primarily a student population, that measurement may not accurately assess the participation of subjects aged 18 to 22 who have only been eligible to vote in a few of those cycles. The variable Percentage Eligible calculates the share of potential elections in which the voter cast a ballot. Based solely on birthdate, the variable determines how many general and primary elections in which each voter was eligible to cast a ballot. Then, the Total Vote Count number for each subject is divided by their total number of eligible elections to determine the percentage in which they voted. As such, a voter who has only been eligible to participate in six of the last ten elections and cast a ballot in all of them would have a Percentage Eligible value of 100%, and a Total Vote Count of 6.¹⁴ Both variables were used to predict the odds of turnout among subjects in the control group using logistic regression. In both Harris and Bexar County, Total Vote Count produced a better fit; as such, Total Vote Count was used throughout this analysis.

Analytic Strategy

Statistical analysis was used to determine if the emails, Facebook ads, or combination thereof produced an increase in turnout. Data were analyzed as follows:

Robustness Checks: To ensure proper randomization, robustness checks were performed to confirm no relationship between group assignment and various

¹⁴ Notably there is a problem with both measurements, and that is the inability of voter records to track movement across state lines. A subject who voted vigorously in another state and then moved to Texas in 2013 would appear in the Texas records used for this study to be a non-voter. Unfortunately, there is no remedy for this problem, and as such these covariates must be considered in light of the challenges of accurately collecting basic voter history information.

demographic or voting-related variables. A series of chi-square tests of independence were used to test for relationships between group and subjects' sex, having Democratic or Republican primary history, or registering to vote in 2014. Additionally, a series of ANOVAs was performed to check for any relationship between group and average age, length of registration, or Total Vote Count.

Estimating Effects on Treated Subjects: To estimate the effect of treatment on turnout, a series of logistic regressions were performed on subjects who had not voted prior to the start of the experiment. As such, all subjects who voted prior to the start of treatment were removed from this analysis; a chi-square test of independence was used to ensure that there was no association between voting before the start and group assignment. Additionally, subjects who voted by mail, voted provisionally, or had their registration cancelled by the county due to moving or being purged from the voter file were removed. A series of chi-square tests of independence verified that removal for any of these reasons was not significantly associated with group assignment. The remaining subjects were the focus of tests explored the effect of treatment.

Effect of Treatment on Voting: A series of logistic regressions were performed to determine if exposure to treatment resulted in an increase in turnout. These analyses were conducted to estimate the impact of treatment across the entire voting period, during Early Voting, and on Election Day. As such, the dependent variables

were voting at all, voting early, and voting on Election Day. The independent variables were assignment to treatment group, or to the message (Civic Duty, Pride, Shame) or medium (one email, two emails, Facebook ads) of treatment.

Moderating Effect of Voter History on Turnout: To evaluate Hypothesis 11, the Total Vote Count variable was added as a control and interaction term to logistic regression models that used treatment as the independent variable and voting as the dependent variable.

Effect of Subject Line On Opening the Email: To determine if the subject line of the email impacted the odds of it being opened, a logistic regression was performed, in which opening the email was the binary email and treatment group was the independent variable. These tests were performed on the first and second round of emails in the experiment.

Effect of Opening First Email on Second: In order to determine if subjects who opened the first email were more or less likely to open a second email, series of logistic regressions were conducted.

Effect of Opening Email on Turnout: A series of logistic regressions were performed to determine if opening the first email impacted voting overall or during the early voting period, and if this effect varied by email message. Additionally,

logistic regressions were conducted to determine if opening the second email had an impact on voting on Election Day.

Furthermore, because the Harris County experiment took place on three separate campuses, a series of tests were conducted to explore any campus-level effects and interactions. These are explained below.

Effect of Campus on Turnout: Tests were run to determine if turnout levels varied across the three campuses. A logistic regression model was used that estimated turnout based on a dummy variable representing subjects' campus of enrollment.

Analysis of Campus-Level Voter History: To determine if campus populations had different average levels of past turnout, a Levene's test for homogeneity of variance was employed, followed by a Welch's ANOVA.

Moderating Effect of Campus on Voting: A dummy variable for each campus was added as a control to the logistic turnout models, and also added as an interaction term to determine if any campus had a statistically higher or lower level of turnout by group, medium, or message.

Moderating Effect of Campus on Opening Email: In order to determine if open rates varied by campus, a dummy variable for each was added to logistic models as a control and an interaction term.

These tests were sufficient to evaluate the hypotheses proposed for Studies III and IV.

Overall, these four experiments were developed to demonstrate the ability of Facebook as a platform for both interpersonal communication and advertising, and email messages to increase voter turnout. The methods presented here were intentionally designed to be available to any individual or organization who seeks to use digital media to mobilize voters, and as such do not require the direct involvement of the Facebook data science team to carry them out. Furthermore, these techniques – peer-to-peer communication by confederates targeted to randomly assigned friend subgroups, and simultaneous multi-media email and advertising campaigns – could be adapted for other experiments. As such, this dissertation presents not only the results of the four experiments outlined in this chapter, but also two new methods for testing hypotheses using digital media.

The results and analysis of these experiments are provided in the following two chapters. Chapter 4 presents the two peer-to-peer studies, Studies I and II, and Chapter 5 presents the two email-based experiments, Studies III and IV. A discussion of these results, as well as limitations and next steps, are presented in Chapter 6.

Chapter 4: Social Pressure on Social Media

This chapter presents the results of two GOTV experiments conducted on Facebook during the 2014 general election, which demonstrate that exposure to voting reminders that publicize voting behavior on the social networking platform can increase turnout. Both studies were carried out by confederates, who exposed randomly assigned groups of friends to treatments on Facebook.

The first study, conducted in Dallas County, demonstrates the effectiveness of tagging individuals in social pressure status messages on mobilizing voters. In analyzing the results of this study, five hypotheses will be evaluated. The first three hypotheses engage with the medium and messages of treatment. Hypothesis 1 posits that subjects exposed to voting reminders from their Facebook friends will vote at a higher rate than those in the control group. Hypothesis 2 states that subjects exposed to Pride or Shame social pressure messages from their Facebook friends will turn out at a higher rate than voters exposed to Civic Duty messages. Hypothesis 3 proposes that voters exposed to Shame social pressure messages from their Facebook friends will turn out at a higher rate than voters exposed to Pride social pressure messages. Additionally, the age of the confederate will be analyzed to evaluate Hypothesis 4, which states that confederates under age 30 will be more effective at mobilizing subjects under age 30 than confederates who are age 30 or older. Finally, tests for an interaction between subjects' prior voter participation and treatment will be used to evaluate Hypothesis 11, which states that the effect of treatment will be moderated by past voter history.

The second study, which was implemented in Collin County, demonstrates the heterogeneous effects of witnessing the social pressuring of others. This is one of the first experiments to specifically explore the effect of voter mobilization treatments on bystanders. The treatments are made possible because of the unique affordances of the Facebook platform, which makes visible users' behaviors on the site to other members of their networks. This experiment evaluates Hypothesis 5, which states that voters exposed to social pressure by proxy on Facebook will turn out to vote at a higher rate than voters in the control group. Additionally, a test for significant interactions between voter history and treatment will be used to evaluate Hypothesis 11, which expects to find a significant moderating effect of the former variable on the effects of the latter. The results of the two experiments will be reported and discussed separately.

These experiments adapt two established forms of voter mobilization – direct contact and social pressure – for digital media, creating treatments designed to leverage the technological affordances of Facebook. Direct voter contact through door-to-door canvassing and phone calling has become a widely accepted method of increasing voter turnout and is now a commonplace component of contemporary political campaigns. The prevalence of these practices is due in large part to the reams of experimental evidence demonstrating the effectiveness of interpersonal contact in increasing voter turnout (Gerber, Green, & Nickerson, 2003; Green & Gerber, 2005, 2015; Nickerson, 2006, 2007b). Other experiments have explored the use of social pressure messaging to produce gains in turnout in excess of what has been generated by canvassing and phone banking. Social pressure messages include a strong emphasis on the public nature of voting records

and the social norm of voting, and often include the voter's past participation records along with a threat to publicize the names of voters in a current election (Gerber, Green, & Larimer, 2008, 2010; Panagopoulos 2010, 2013). Both "get out the vote" (GOTV) methods – peer-to-peer contact and social pressure messaging – are ideally suited for adaptation to Facebook, which allows users to contact members of their network and utilize social pressure messaging when reminding others to vote. The perceived visibility of these reminders to an individual's entire Facebook network heightens the perception that voting behavior is public, which should in turn increase compliance with the social norm of voting.

In addition to estimating the impact of each treatment on voting, this chapter explores the moderating effect of voter history on the effectiveness of the treatments themselves. Multiple studies have suggested that voter mobilization efforts work differently on individuals based on their past participation records (Arceneaux & Nickerson, 2009; Dale & Strauss, 2009; Gerber & Rogers, 2009; Malhotra et al., 2011). The voter history variable used in this study is similar to that employed by Gerber and Rogers (2009), in which participation in the past ten primary and general elections is used to determine who is an infrequent, occasional, or frequent voter. This analysis will both control for and interact overall past voter history with treatment. A full explanation of this variable is available in the methods section.

Overall, this chapter demonstrates that Facebook is an effective platform for peer-to-peer mobilization, but that the message of the voting reminder matters. Furthermore, the

social networking site can be used to artificially create descriptive norms that in turn can increase voter turnout.

Study I: Direct Social Pressure, Dallas County (2014)

The 2014 election cycle in Texas was relatively high-profile, owing to multiple open, competitive statewide offices and extensive campaign expenditures. Additionally, Dallas County was host to several closely contested countywide and legislative races. Turnout across Texas amounted to 33.70% of registered voters, and reached 34.02% in Dallas County. In the face of this lackluster turnout, however, this experiment was able to produce impressive gains in turnout among subjects who were treated to social pressure voting reminders on Facebook. Overall, the results track with the direction of past social pressure research, though the percentage point increases in turnout are vastly higher than what has been generated through traditional offline methods.

Participants, Dallas County

Subjects were enrolled in the study through their Facebook connection with one of seven confederates who were recruited to carry out the treatments. This amounted to 293 registered voters in Dallas County. The sample was 55.3% female and 44.7% male, roughly corresponding to the gender breakdown of the confederates (four male, three female). The average age of subjects was 46.8 years old ($SD = 17.53$, range = 19 to 94), again reflecting the diversity of confederates, whose ages ranged from 21 to 68 years. Data on race, ethnicity, income, or education were not collected from subjects due to privacy concerns.

Public records provided subjects' voter registration and participation history.

Subjects' mean length of time registered to vote was 15.94 years ($SD = 11.94$), and subjects had voted in an average of 5.09 ($SD = 3.45$) of the last 10 general and primary elections, suggesting that they were a reasonably active pool of citizens. Of the 31 subjects who had not voted in any previous general election, nine subjects (29.0%) had registered to vote in the 2014 election cycle. These descriptive statistics suggest that the recruitment process was successful in generating a subject pool that is diverse in terms of age, length of registration, and voter history. Participant data are presented in Table 4.1.

Table 4.1: Participants, Dallas County (2014)

	All Subjects	Control	Civic Duty	Pride	Shame
Percent Female	55.3%	52.2%	57.5%	54.1%	57.1%
Average Age	46.8	46.4	46.2	47.6	47.0
Average Total Vote Count	5.1	4.8	5.2	5.3	4.9
Average Length Registered (Months)	191.3	189.3	182.4	207.2	186.2
Any Dem. History	54.2%	53.6%	56.2%	54.1%	53.2%
Any Rep. History	15.0%	18.8%	13.7%	12.2%	15.6%
Subjects	293	69	73	74	77

To verify random assignment, robustness checks were performed to determine if any of voter history variables were significantly associated with any group. A chi-square test of independence showed no significant relationship between group assignment and sex of the subject or confederate, voting in the 2010 general election, registering to vote during

the 2014 cycle, or having any Democratic or Republican primary history, respectively. To verify no difference in the mean number of total elections voted in by members of each group, an ANOVA was performed. Results were not significant, suggesting that there is no meaningful difference in the average number of elections voted in by members of each group. Two additional ANOVAs were performed that verified no difference in the average age or length of registration within each group.

Results, Dallas County

After the election, a list of all voters from November 2014 was obtained from the Dallas County elections division. Voters were dummy-coded with a 1 if they voted in the election and zero otherwise. The date on which the subject voted also was recorded, to verify the daily rosters released during Early Voting and ensure that no one was treated after voting. A verification of the early voting daily rosters showed that except for one omitted voter who cast a ballot before treatment started, the rosters were correct in showing who had already voted.

Impact of Direct Social Pressure on Voter Turnout

Logistic regression was used to determine the effect of the treatment on subjects' probability of voting at any time in the election period. To estimate treatment effects, subjects who voted on the first four days of early voting (before tagging started) were excluded, because they were not exposed to the treatment. Including them would artificially inflate the turnout of subjects across the experiment. A chi-square test of independence showed no association between group assignment and voting in this period, $\chi^2(3, N=293)=5.74, p=.13$. This amounted to 74 subjects. A series of logistic regressions

were performed to estimate the effects of treatment on overall turnout, control for voter history, and also test for any moderating effects of past voter history. Results are presented in Table 4.2.

Table 4.2: Logistic Regression, Analyses of Voter Turnout, Dallas County (2014)

	Main Effects	With Vote History Covariate	With Vote History Interaction
Civic Duty	-0.16 (0.27)	-0.15 (0.48)	-0.03 (0.87)
Pride	0.70+ (0.40)	0.96* (0.49)	1.80* (0.75)
Shame	1.09** (0.40)	1.32** (0.47)	1.41+ (0.81)
Total Vote Count		0.42*** (0.06)	0.51*** (0.13)
Civic Duty x Total Vote			-0.03 (0.19)
Pride x Total Vote			-0.26 (0.16)
Shame x Total Vote			0.00 (0.22)
Constant	0.07 (0.27)	-1.62*** (0.41)	-1.98*** (0.60)
Nagelkerke R ²	0.08	0.40	0.42

N = 219; + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

The main effects model shows that the treatments containing social pressure elements – Pride and Shame – were able to substantially increase voter turnout. Subjects in the Shame condition voted at 62.3% overall, amounting to a 21.8 percentage point increase over the control group, which voted at a rate of 40.6%. Additionally, at 50.0% overall turnout, the Pride subjects exhibited a 9.4 percentage point increase over the control group. Notably, the Civic Duty treatment had no significant effect here, suggesting the message of the treatment matters. These results provide partial support for Hypothesis 1,

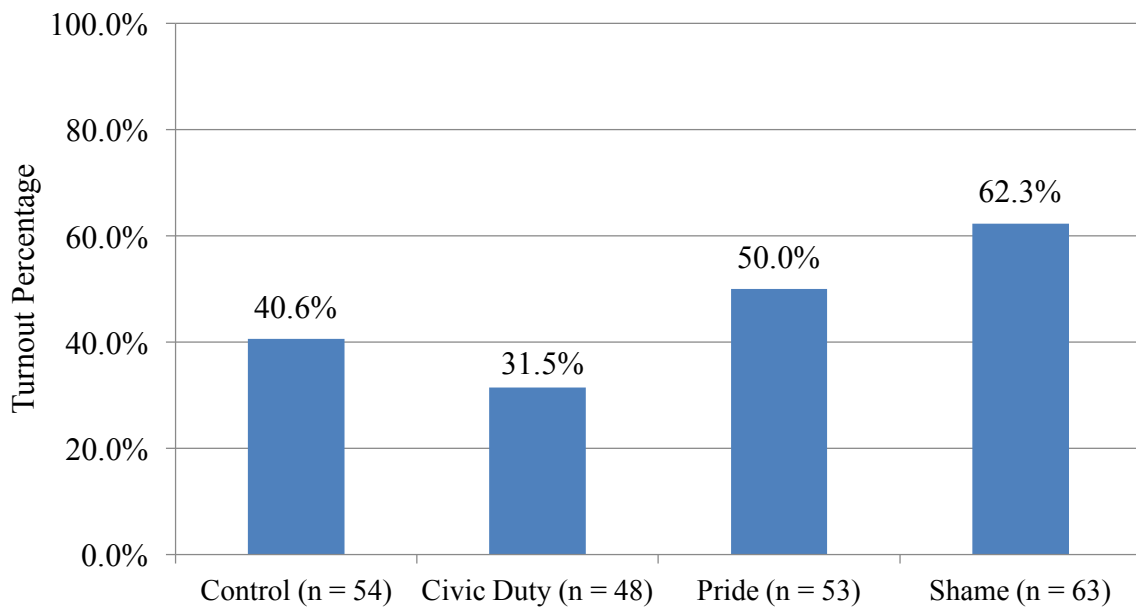
which states that voters exposed to voting reminder messages from their Facebook friends will turn out at a higher rate than voters assigned to the control group. Furthermore, the treatment effects are substantially larger than that which has been generated by canvassing or social pressure mailers, which are in the three to five percent and five to eight percent range, respectively. However, despite the tremendous effects size, some caution is urged since the amount of variance in turnout explained by the treatments – roughly 8% according to Nagelkerke's R^2 – is relatively small.

A series of logistic regressions were performed to evaluate Hypotheses 2 and 3, which predict the relative impact of the Civic Duty, Pride, and Shame treatments. An analysis between the Civic Duty and Pride and Shame treatments show that the latter two produced statistically higher odds of turnout than the Civic Duty messages. This provides support for Hypothesis 2, which states that voters exposed to Pride or Shame social pressure messages from their Facebook friends will turn out at a higher rate than voters exposed to Civic Duty messages. However, a direct comparison between Pride and Shame found no statistically significant difference. As such, the data fail to support Hypothesis 3, which states that voters exposed to Shame social pressure messages from their Facebook friends will turn out at a higher rate than voters exposed to Pride social pressure messages. Tables reporting these results are available in the appendix.

Finally, a series of logistic regressions were conducted to control for subjects' prior voter history, and also test for any moderating effect on treatment. These results are also presented in Table 4.2. When the covariate accounting for voter history was added to the model, both the Shame and Pride conditions produced statistically significant increases in

turnout, whereas Civic Duty messages did not. A test for any interactions between treatment and voter history was not significant, suggesting that Pride and Shame treatments are effective at increasing turnout regardless of a voter's past history. The data fail to provide support for Hypothesis 11, since treatment effect is not moderated by past voter history.

Figure 4.1: Voter Turnout By Treatment Group, Dallas County (2014)



Impact of Confederate Age on Young Voter Turnout

A series of logistic regressions was performed to determine if the age of the confederate had an impact on the effectiveness of the treatments of subjects under age 30. These are preliminary tests given that there were only seven confederates carrying out the study, and of these only three were under age 30. This analysis was motivated by the desire to understand the broader applicability of this treatment and determine if there are specific circumstances in which social pressure from a Facebook friend is more effective. Past

research suggests that when GOTV canvassers “match” their targeted voters in terms of age or race, the treatment is able to raise turnout to a greater degree than when they do not (Bennion, 2005; Michelson, 2005). The race and ethnicity of subjects could not be gathered in this study due to privacy concerns, but the sex of the subject and confederate will be examined. In Bennion’s (2005) study of younger voters, she uses age 30 as the cut-off for youth; this analysis follows that methodology.

An analysis was performed to determine if having a confederate under age 30 was more effective in raising turnout among subjects who are under 30, which produced no significant results. Initially, the analytic plan called for conducting the test only on the subset of voters under age 30, which amounted to 60 subjects. A chi-square test of independence showed no association between group assignment and being under 30, $\chi^2(3, N = 219) = 3.07, p = .38$. Given that the control group was not tagged, they were excluded; this left only 41 subjects for the test. Furthermore, the five confederates over age 30 had only 17 friends who were both under 30 and not in the Control condition. As such, any tests that could be performed on this group would likely have been under-powered and subject to a Type I error, such that it might not be possible to detect an effect that was actually there.

To determine the impact of young confederates on mobilizing young voters, a logistic regression was performed with dummy variables representing subjects under 30 and confederates under 30, which showed no significant interaction. Results are presented in Table 4.3. Additional tests found no interaction between treatment condition and confederates under 30, or subjects under 30. As such, there is no support for Hypothesis 4,

which states that confederates under 30 will be more effective at mobilizing voters under 30. What the results do show is that subjects under 30 were less likely to vote overall in this experiment, even when controlling for treatment. However, a test for any interactions between treatment and age were not significant, suggesting that being under age 30 did not moderate the effect of treatment¹⁵. This suggests that the social pressure is effective on young voters, and that the younger subjects in this study simply started with an overall lower likelihood of voting.

Table 4.3: Logistic Regression: Effect of Subject and Confederate Age on Turnout, Dallas County (2014)

	Age Variables Only	With Interaction	With Treatment
Subject < 30	-1.86*** (0.51)	-1.53*** (0.21)	-1.83*** (0.52)
Confederate < 30	0.91 (0.57)	15.64 (848.37)	0.92 (0.58)
Subject < 30 x Confed < 30		-15.20 (848.37)	
Pride			0.81+ (0.43)
Shame			1.21** (0.44)
Constant			0.26 (0.32)
Nagelkerke R ²	0.13	0.15	0.19

N = 165; + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

¹⁵ This finding was confirmed by a logistic regression that added age to the main effects model and interacted it with treatment. While age itself was a powerful predictor of turnout, it did not moderate the effect of treatments.

Impact of Confederates on Turnout

Finally, a series of tests were performed to determine if the individual confederates carrying out the study had an impact on subject turnout. If this method only works when certain people are using it, then that could limit its broader utility in increasing voter turnout. A categorical dummy variable was created to represent the confederates. Next, an analysis of turnout by confederate was conducted; the confederate with the median turnout was set as the baseline level for this analysis. A logistic regression with just confederates predicting voting found that one confederate had a significant and positive impact on turnout, and that another was marginally significant and positive. However, when treatment condition and Total Vote Count is added to the model, only one of the confederates had a marginally significant and negative impact on subjects' odds of voting compared to the median confederate. Notably, this confederate was barely over 30, and had a large share of friends under 30, suggesting that the age of his friend cohort may be the underlying reason for the marginal negative impact. This suggests that some confederates had friends with more robust voting histories than others, and that after controlling for voting history the effect of the confederate largely becomes non-significant. Regression tables are available in the appendix. Overall, these results suggest that the treatments work regardless of who is applying them.

Overall, these results demonstrate that direct social pressure applied by tagging one's Facebook friends in Pride or Shame status updates is an effective way to increase turnout. The messages work on all voters regardless of past voter history, and are not moderated by the age of the person doing or receiving the treatment. Furthermore, results

are consistent with past social pressure studies, in which shaming messages produced the greatest observed gains in turnout. The results provided partial support for Hypothesis 1, in that treated subjects in Pride and Shame exhibited increased turnout over the Control group. Subjects in Pride and Shame were also significantly more likely to vote than subjects in the Civic Duty condition, providing support for Hypothesis 2. However, there was no significant difference between the Shame and Pride treatments, which is bad news for Hypothesis 3 but good news for anyone interested in using this technique who is worried about backlash from shaming their friends.

Study II: Social Pressure By Proxy, Collin County (2014)

The previous study explores the effect of direct social pressure on Facebook. However, Facebook also enables users to witness the social pressuring of others in their network. The following experiment, conducted in Collin County in the 2014 general election, demonstrates that social pressure treatments can also be effective on bystanders. Results provide partial support for Hypothesis 5, which states that voters exposed to social pressure by proxy on Facebook will turn out to vote at a higher rate than voters in the control group. Additionally, heterogeneous effects based on prior participation lend support to Hypothesis 11, which states that treatments will be moderated by voter history. However, there is no This study presents a uniquely digital way to increase voter turnout, grounded in the affordances of a social networking site. Facebook status updates that tag people and remind them to vote have the potential of influencing individuals beyond those directly tagged.

As detailed in the methods section, the treatments were carried out by confederates who tagged each other in social pressure messages, visible to randomly assigned subsets of their friends. The stimuli used in this study were also slightly different than those used in Dallas County or in past social pressure experiments and have been modified to fit the context of social-pressure-by-proxy. The treatments were posted throughout the Early Voting period and designed to give subjects the impression that they could be next – their friend could tag them and cheer them for turning out, or shame them for their failure to vote on the ongoing election. While the Civic Duty and Shame messages gave the impression that the confederate tagged in the messages had not yet gone to the polls, the Pride messages explicitly praised the confederate for voting. As such the treatments created slightly different descriptive norms of turnout than in the Dallas County study, in which everyone tagged had not voted yet. The Pride treatments created the descriptive norm of high turnout, whereas the Shame (and to a lesser degree, Civic Duty) treatment gave the impression that no one was voting. All three treatments also emphasized the injunctive norm that everyone should vote. The purpose was to determine if subjects in the experiment would conform their behavior in response to the norms in these posts, in response to the perception that their voting behavior, too, might be publicized on Facebook.

Participants, Collin County

As with the previous experiment, subjects were recruited through their Facebook connection with one and only one of the eight confederates who carried out the study. A total of 671 subjects were enrolled in the experiment. The average age of subjects was 34.02 years of age, ranging from 18 to 85 ($SD = 16.32$). Males comprised 36.1% of the

sample and females 63.5% with three subjects' sex unknown, which is likely a function of having five female and three male confederates. Data on race, income, and education were not collected due to privacy concerns, but each subject's voter history was collected from public records. The Collin subjects had a low average participation in prior elections, having voted in an average of 2.08 ($SD = 2.47$) of the last 10 primary and general elections. They had been registered to vote for an average of 95.39 months ($SD = 94.83$). Of subjects who had voted in zero of the past general elections, 48.3% had registered to vote in the 2014 cycle. This would suggest a reasonable interest or intent to vote among the newly registered. Demographic and covariate information is presented in Table 4.4.

Table 4.4: Participants, Collin County (2014)

	All Subjects	Control	Civic Duty	Pride	Shame
Percent Female	63.5%	65.5%	64.3%	65.2%	59.2%
Average Age	34.0	32.6	35.3	34.4	33.7
Average Total Vote Count	2.08	1.93	2.21	2.23	1.97
Average Length Registered (Months)	95.4	84.7	104.5	101.5	90.8
Any Dem. History	13.6%	12.7%	13.7%	18.3%	9.8%
Any Rep. History	14.2%	10.9%	15.5%	16.4%	13.8%
Subjects	671	165	168	164	174

To verify random assignment, robustness checks were performed to ensure no

association between potential moderating variables and voter turnout. Chi-square tests between group and sex of the subject or confederate, any Democratic or Republican primary history, registering in the 2014 cycle, or voting in the 2010 election were all non-significant. A series of ANOVAs was performed that found no significant differences in average age, length of registration, or total vote count for each of the four groups.

Results, Collin County

After the election, the full file of all early, mail, and Election Day voters was downloaded from the Collin County website. Voters were dummy-coded with a 1 if they voted in the election. The date on which the subject voted was also recorded, as well as for voters, the number of days after treatment started that each cast a ballot. A series of logistic regressions were performed to determine if the treatments had a statistically significant impact on subjects' odds of voting, if the effect was moderated by voter history, and if young confederates were more effective at mobilizing younger voters to get to the polls.

Impact of Social Pressure by Proxy on Voter Turnout

In order to estimate actual treatment effects, it was necessary to exclude any subjects that voted before treatment started. A chi-square test of independence found no association between group assignment and voting in the first three days of early voting, $\chi^2(3, N = 671) = 3.32, p = .34$. As such, the 31 subjects who voted before the start of the experiment were removed from the analysis. Next, a series of logistic regressions was performed to estimate the effect of exposure to social pressure by proxy, control for voter history, and explore any moderating effects of past participation. Results are presented in Table 4.5.

Table 4.5: Logistic Regression, Analyses of Voter Turnout, Collin County (2014)

	Main Effects Model	Model With Voting History	Model With Voting History and Interaction
Civic Duty	0.03 (0.27)	-0.15 (0.31)	0.00 (0.58)
Pride	0.36 (0.26)	0.28 (0.30)	1.22* (0.49)
Shame	0.08 (0.26)	-0.01 (0.31)	0.53 (0.52)
Total Vote Count		0.55*** (0.05)	0.76*** (0.13)
Civic x Total Vote			-0.09 (0.17)
Pride x Total Vote			-0.38* (0.15)
Shame x Total Vote			-0.22 (0.16)
Constant	-1.19*** (0.19)	-2.40*** (0.25)	-2.91*** (0.41)
Nagelkerke R-squared	.006	0.35	0.36

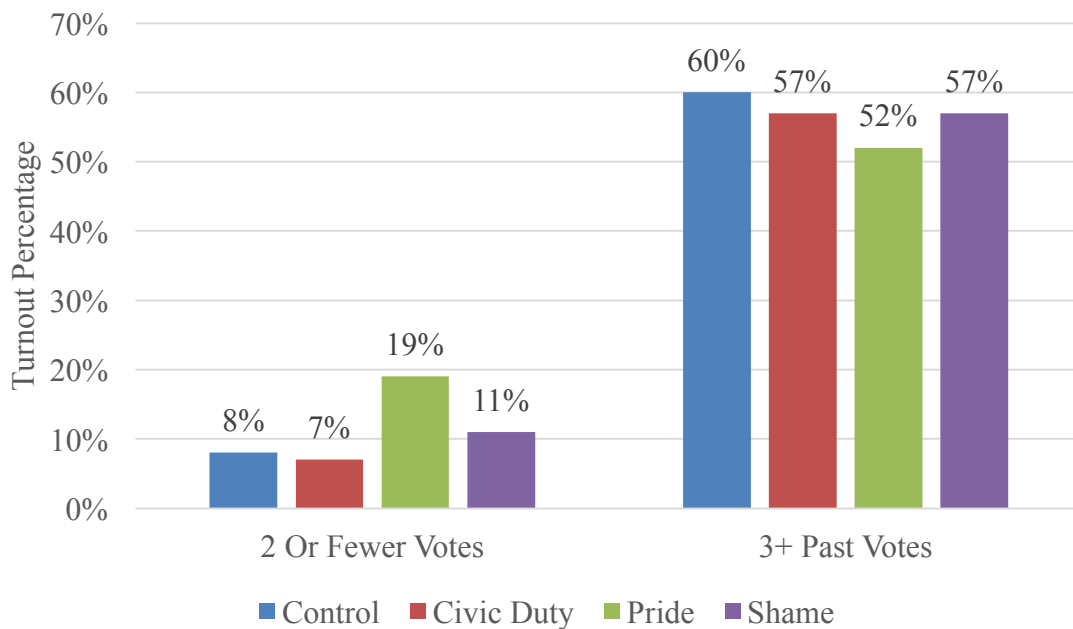
N = 640; + p < .10 * p < .05 ** p < .01 *** p < .001

The main effects model shows that the treatments were not successful in uniformly moving voters to the polls. Similarly, the model controlling for voting history also shows no effect of treatment. However, when an interaction term between voter history and treatment is added to the model, Pride messages produce a statistically significant increase in voting, moderated by past history. Given the coefficients for the main effect of Pride and moderating effect of voter history, any subject in the Pride condition who had voted in three or less of the last 10 elections would have exhibited increased turnout over a voter with the same history who was not exposed to treatment.¹⁶ These results provide partial

¹⁶ This is calculated by multiplying the past vote count (3) by the interaction term coefficient (-.38), which equals -1.14. The coefficient for the main effect of Pride is 1.22.

support for Hypothesis 5, which states that voters exposed to social pressure by proxy will turnout at a higher rate than the control group. Therefore, the results also provide partial support for Hypothesis 11, which anticipates a moderating effect of past vote history. Essentially, the Pride treatment works, but only on less-frequent voters. Results are presented graphically in Figure 4.2, grouping voters by their Total Vote Count covariate, with a mean-split at 2.08.¹⁷

Figure 4.2: Voter Turnout By Treatment Condition, Grouped By Voter History, Collin County (2014)



In this specific sample, anyone who had more than three prior votes would not have exhibited an increase in turnout from being exposed to the Pride treatments.

¹⁷ A chart of turnout by all groups is available in the Appendix.

Impact of Confederate Age On Young Voter Turnout

Next, a series of logistic regressions were performed to determine if confederates under age 30 were more effective at mobilizing subjects under age 30. Again, it was not possible to run these tests on a subset of voters under age 30, since there were only 18 subjects who were under 30 and friends with a confederate age 30 or older. As such, these tests were run on the entire subject pool, minus those in the Control group, since they were not treated. The results show that subjects being under 30 or having a confederate under 30 had a negative influence on the odds of voting, but that there was no significant interaction effect between young voters and young confederates on turnout. Results are presented in Table 4.6. The main effects of the age variable show that subjects under 30 were less likely to vote overall. Additionally, subjects who were friends with a confederate under age 30 were less likely to vote. These results offer no support for Hypothesis 4, which states that confederates under age 30 will be more effective at mobilizing subjects under age 30 than confederates who are age 30 or older. In fact, confederates under 30 are less effective at mobilizing voters overall, regardless of their age. Multicollinearity diagnostics showed no relationship between subjects and confederates being under age 30.

The age of the subject or confederate also has no moderating effect on the effectiveness of treatment. When dummy variables for age are added to the treatment main effects model, both are significant and negative. Tests for a two-way interaction effect between subject age and treatment or confederate age and treatment were not significant, nor was a test for a three-way interaction between confederate age, subject age, and treatment. Therefore, as with Dallas County, the results show that young voters overall are

less likely to participate. Additionally, the non-significance of the interaction between subject age and treatment lends further support to the argument that subjects' voter history is what moderates the effect of social pressure by proxy, rather than an inexperience with voting due to age.

Table 4.6: Logistic Regression, Effect of Confederate Age On Young Voters, Collin County (2014)

	Age Only	Variables With Interaction	With Treatment
Subject < 30	-1.39*** (0.32)	-0.75 (0.71)	-1.37*** (0.32)
Confederate < 30	-0.60* (0.30)	-0.49 (0.32)	-0.62* (0.30)
Subject < 30 x Confed < 30		-0.77 (0.79)	
Pride			0.31 (0.28)
Shame			0.06 (0.28)
Constant	-0.07 (0.15)	-0.10 (0.16)	-0.20 (0.23)
Nagelkerke R ²	0.204	0.206	0.207

N = 486; + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Impact of Confederates on Turnout

Again, a final series of logistic regressions were carried out to determine if any individual confederates had a significant impact on turnout; the statistical analysis suggests that they did not. The confederate whose friends exhibited the median turnout percentage was set as the baseline in the categorical dummy variable used for this analysis. Regression tables are available in the appendix. First, a logistic regression was conducted that predicted voting based on confederate. Three confederates did have a significant and negative impact

on turnout – unsurprisingly, they were the three confederates under age 30. However, when the treatment conditions, Total Vote Count, and interaction between the two variables were added to the model, none of the individual confederates produced a significant impact on turnout. Again, it is likely that controlling for Total Vote Count explains the variance by confederate. Ultimately, adding a dummy variable for the confederates did not change the significance of the treatment moderated by voter history. These results suggest that individuals' past voter history is a strong predictor of whether the treatments will work, and that the confederate him or herself who applies the treatments does not matter to its the overall effectiveness.

Discussion

These two experiments demonstrate that through raising the perceived publicness of individuals' voting behavior on Facebook, social pressure status updates that either tag users directly or tag others can effectively raise turnout. This effect is a direct result of the specific affordances of the social networking site Facebook that enable users to both tag others and see status updates that tag other users. Both treatments – direct tagging and social pressure by proxy – provide the perception that voters' behavior is being monitored by other members of their network. Norm conformity increases as behavior becomes more visible, so the unique affordances of the Facebook platform – namely, broadcasting one's voting behavior to her entire network – actually increase the effectiveness of the treatments. Both studies underscore that the message of voting reminders impacts their effectiveness. Simply tagging friends in reminders to do their civic duty is insufficient – only treatment groups who received social pressure messages referencing their voting records exhibited

measurably higher turnout. And while Pride and Shame both produced significant increases in voting over the Control and Civic Duty groups, the Shame messages were not a statistical improvement over the messages praising voters.

The first study creates a form of digital canvassing in which users do not need to go door to door but rather @ to @, systematically calling out their friends who have failed to vote or praising them for past participation and urging them to do it again. Exposure to being tagged in shaming status updates in Study I generated a 21.7 percentage point increase in turnout, and Pride treatments generated a 9.4 percentage point increase in turnout. The Shame results are far in excess of what has been exhibited by either direct voter contact or social pressure mailings. These treatments were not moderated by past voter history, suggesting they work across the board to mobilize voters. The results track with past social pressure experiments (Gerber, Green & Larimer, 2008, 2010).

The second study suggests that simply seeing others – and in this specific case, total strangers – be praised for voting on social media is sufficient motivation for new and infrequent voters to head to the polls. Notably, in this experiment the subjects were not friends with any of the confederates they saw be tagged in the status updates, so they reacted to their friend praising people they don't know. The effect might be even larger for subjects who see their own friends be tagged in messages praising them for voting. The power of social desirability is strong, so it is possible that subjects are voting because they hope to be publicly praised for it. Conversely, the threat of shaming appears not to have motivated subjects to head to the polls. Evidently the threat of publicizing non-conformity to social norms as in Study II is not as strong of a motivator as the actual shaming itself as

conducted in Study I. However, Pride treatments worked in both studies in terms of tagging voters directly and exposing voters to the potential of being tagged.

The Collin County study also speaks to the power of social media to create descriptive social norms that in turn influence behaviors. In praising people for already voting, the Pride treatments may have given subjects the impression that turnout was high, thus creating the descriptive norm of participation. Gerber and Rogers (2009) find that messages emphasizing high turnout – creating the descriptive norm that “everybody’s doing it” – increased voters’ stated intention to vote more than a low turnout message in which the voter’s lone ballot could make more of a difference (i.e. the rational model of voting). Alternatively, mailers that create descriptive norms about low community-wide turnout in prior elections can depress future participation (Keane & Nickerson, 2015). Matland and Murray (2014) demonstrate that sending mailers with inconsistent descriptive and injunctive norms, which emphasize both the importance of voting and low turnout, do not produce gains. The Shame and Civic Duty treatments encouraged participation while creating the descriptive norm that people were not voting. Alternatively, the Pride treatments provided a norm-consistent message that created an impression of high turnout.

Notably, these results were generated in an election cycle that saw Texas rank among the bottom of states in voter turnout, at 33.1% statewide, despite vigorous campaigning by multiple statewide campaigns, two major political parties, and an amalgam of non-profit organizations and advocacy groups. In the face of this lackluster state of civic affairs, the demonstrated ability of Facebook status updates to produce substantial increases in voter turnout represents a new hope for democracy. The majority of American

adults who use Facebook can be effectively contacted and mobilized to vote by members of their own network. Furthermore, this method offers logistical benefits over door-to-door canvassing, which requires voters to be home and usually is conducted during daylight, or phone calling programs that necessitate correct and connected phone numbers to call. Targeted digital peer-to-peer voter contact can produce substantial, measurable gains in turnout, and as should be incorporated into organizing efforts.

Chapter 5: Email Out The Vote

Email is one of the most widely used forms of communication in contemporary society: over 90% of online adults in America send and receive digital mail on a regular basis. As such, it remains a tantalizing medium to use to increase voter turnout. Email messages are more expedient and cost-efficient than direct mail, and could be particularly useful in reaching younger voters who often change physical addresses frequently (Nickerson, 2006). Political campaigns and civic organizations already believe that email is an effective way to encourage voters to head to the polls (Nickerson 2007a, 2007c). However, the majority of experiments designed to increase voter turnout using electronic mail actually find decreased participation among treated subjects (Bennion & Nickerson, 2011; Nickerson 2007a, 2007c). Nickerson (2007c) conducts 13 experiments over several years to see if email can boost turnout, and reports a decrease in voter participation among treated subjects. Other studies of email GOTV efforts also demonstrate a negative but non-significant effect on turnout (Nickerson, 2007c). The one successful study that uses email to mobilize voter turnout finds an increase of only 0.56% and only when the email is sent by the county voter registrar (Malhotra, Michelson, & Valenzuela, 2012). However, despite these lackluster results, there is still new ground to break in the exploration of email as a voter mobilization medium.

This chapter presents the results of two email experiments that go beyond prior work to test the impact of the message of the email and multiple reminder emails on the odds of a subject voting, as well as the impact of combining emails with Facebook

advertisements that encourage voters to head to the polls. In most GOTV experiments, voting is measured in terms of a binary outcome -- either the subject voted or did not. However, Texas offers a twelve-day early voting period prior to Election Day, providing ample time for voters to head to the polls. This experiment explores whether emails had an impact on subjects' odds of voting early, and if a subsequent email to those who did not vote early was effective at moving voters to the polls on Election Day. The methods used in these studies are detailed in Chapter 3. Essentially, voters were randomly assigned to receive one or two emails and / or Facebook advertisements, with either Civic Duty, Pride, or Shame reminders, following Gerber, Green, & Larimer (2010).

Six hypotheses will be evaluated in this chapter, which speak to the ability of email and Facebook advertisements as instruments of voter mobilization. Two hypotheses explore the impact of social pressure email alone: Hypothesis 6 states that voters exposed to social pressure by email will turn out at a higher rate than voters who receive no email, and Hypothesis 7 states that voters who receive Shame social pressure messages by email will turn out at a higher rate than voters who receive Pride messages. Additionally, the impact of Facebook ads will be evaluated to test Hypothesis 8, which states that voters exposed to social pressure by Facebook ads will turn out at a higher rate than voters in the control group. Finally, two hypotheses explore the multi-media approach used in this experimental design: Hypothesis 9 states that voters exposed to social pressure by email and Facebook ads will turn out at a higher rate than voters in the control group. Hypothesis 10 states that voters exposed to social pressure by email and Facebook ads will turn out at a higher rate than voters exposed to only one medium. Throughout, tests will be conducted

that explore the interaction between treatment and past voter history, in order to evaluate Hypothesis 16, which predicts a moderating effect.

Ultimately these experiments were hampered by technological challenges in implementation, which will be discussed in detail further below. However, the results from Bexar and Harris County do provide some evidence that the message of the email may matter in mobilizing individuals who are predisposed to read emails about voting. Furthermore, there is a consistent finding that social pressure emails are more likely to be opened by recipients than non-social pressure emails. Finally, the analytical challenges presented by the Harris County experiment offer insight as to why email GOTV studies routinely produce null results.

Implementation Challenges

These experiments were designed and intended to test the combined effect of email reminders and Facebook advertisements targeted by email address to the intended subjects. However, due to technical obstacles the majority of subjects in the Facebook conditions were not exposed to these treatments, primarily because many email addresses did not match existing Facebook users. Table 5.1 shows the rate at which subjects' email addresses matched the Facebook user database and were exposed to ads. Among Bexar County subjects, only 41.78% of email addresses matched a Facebook user, and of this subset less than half were exposed to the advertisements. Overall, only 17.47% of subjects assigned to a Facebook condition were actually treated. Those who saw the ads were exposed to them an average of 3.15 to 4.56 times. As such, it became likely that the treatments would show no significant impact, unless the effect was somehow so large that treating less than

a fifth of subjects was enough to generate a change in turnout. In Harris County, the match and treatment rates were even worse: 12.45% of subjects assigned to a Facebook condition matched to the platform, and only 5.43% were exposed to the treatment. Of those treated, subjects were exposed to the ads an average of 2.58 to 3.93 times during the voting period.

Table 5.1: Facebook Matching And Exposure Rates By Treatment Condition

County	Status	Civic Duty	Pride	Shame
Bexar	Uploaded List	2152	2152	2159
	Matched List	900 (41.8%)	800 (37.2%)	1000 (46.3%)
	Exposed	389 (18.1%)	375 (17.4%)	365 (16.9%)
	Avg. Times Exposed	3.15	3.72	4.56
Harris	Uploaded List	4548	4558	4549
	Matched List	500 (11.0%)	600 (13.2%)	600 (13.2%)
	Exposed	220 (4.8%)	280 (6.1%)	241 (5.3%)
	Avg. Times Exposed	2.58	2.95	3.93

There are several possible reasons as to why subjects were not exposed to the Facebook ads, which are likely specific to the universe targeted for the study and the election cycle in which the tests were run. A previous study conducted in 2013 that used an identical method offers evidence that these technological hindrances were indeed what prevented the delivery of Facebook treatments (Haenschen, 2015). In that study the email list was obtained from a political organization rather than open records requests and consisted primarily of adults interested in politics. Conversely, in this study the majority of subjects both counties were college students. It is possible that the student population has decreased its Facebook use. Analysis of Facebook user statistics shows that membership by Americans aged 18-24 dropped 8% between 2011 and 2014 (Fox, 2014).

The advertisements in this study also may not have been sufficiently funded to be displayed. In the previous experiment, there was minimal competition for eyeballs on Facebook at the time as it was conducted during an extremely low-salience statewide constitutional amendment election. The 2014 study took place during a general election with multiple contested, open races on the ballot, and thus more effort by campaigns and organizations to reach young voters using Facebook. Since the Facebook platform prioritizes ads based on bidding amounts – advertisers who will pay more have their ads shown more frequently – it is possible that the dollar amount of the bid placed to run the Facebook ads was not high enough to reach the highly desirable 18-25 demographic. If multiple campaigns and organizations were targeting Facebook users under age 25 with advertisements reminding them to vote, their higher budgets may have displaced the ads for this experiment. Furthermore, advertisements targeting these voters must also compete against general marketing efforts intended to reach desirable young consumers.

However, the most likely reason for the failure of the Facebook treatments to reach their intended subjects is the high rate of university emails in the sample. In Facebook's initial incarnation – as a literal visual student directory – membership was only open to individuals with .edu email addresses, which were required to sign up. Now, however, .edu email addresses are no longer required for membership. If students, faculty and staff did not link their university's .edu address to their Facebook account, it will not produce a match when that same email list is uploaded to Facebook. It does not mean these students are not on Facebook, but rather that this experiment lacks the means to reach them. The pilot study for these experiments conducted in 2013 used an email list from a political

organization that consisted primarily of addresses on consumer email platforms such as Yahoo and Gmail, and produced a higher match rate to the Facebook user database.

Despite the intended design, these two studies became predominantly email-based voter turnout experiments. The results below show that the Facebook ads had no significant impact on voting, offering support for the notion that the ads were not seen to a sufficient degree to effectively treat subjects. As such, statistical analysis of each study focused primarily on whether the social pressure emails were able to mobilize voters and if the message of the email matters. Both studies find a statistically significant increase in email open rates for social pressure messages with the subject line "Voting Records Are Public." In Bexar County, there is evidence that receiving two emails improved turnout, and that Pride emails were more effective than Shame emails among subjects who received two rounds of treatment. The Harris County experiment demonstrates that social pressure emails were more effective at turning out voters who opened them when compared to Civic Duty messages, though the results varied among the three campuses included in the study. These results are discussed in more detail in the sections that follow.

Study III: Email Out The Vote, Bexar County (2014)

Bexar County – home to the City of San Antonio and 959,438 registered voters on Election Day – had several hotly contested countywide and legislative races on the ballot in 2014. Additionally, part of the county was home to the only competitive Congressional race in the state, in District 23. Despite these competitive contests, turnout across the county only reached 31.69%. Among all subjects enrolled in the experiment, turnout reached 33.39%.

Participants, Bexar County

As detailed in the methods section, recruitment for this experiment was conducted using an open records request filed with a public university in Bexar county for the student, faculty, and staff directory including email addresses and birthdates. The initial request produced a list of 36,129 individuals. These subjects were then matched to the voter file - any individual whose first and last name and birthdate produced a unique match to the Bexar County voter file was enrolled in the study.¹⁸ This produced 11,843 subjects. Two subjects used the same email address, so they were dropped from the study since it would not be possible to determine the effect of treatment. After the election concluded, updated voter records for Bexar County were obtained. One subject cast a ballot provisionally and as such it was not reported when she voted or if her vote was counted, so she was dropped from the analysis. Additionally, in the updated Bexar County file, 52 subjects were no longer registered to vote in the county. Before removing these subjects from the analysis, a chi-square test showed no significant association between group assignment and having their registration cancelled by Bexar County, $\chi^2 (15, N = 11,842) = 12.56, p = .63$.

¹⁸ The reason for the low match rate can be due to a low rate of registration among students, individuals who reside and / or vote in another county, or non-citizens who may be part of the university community. Furthermore, any students who may have registered to vote at the very end of the registration period would not have appeared on the rolls since their effective date of registration was after the date on which the full voter list was acquired and used to match individuals.

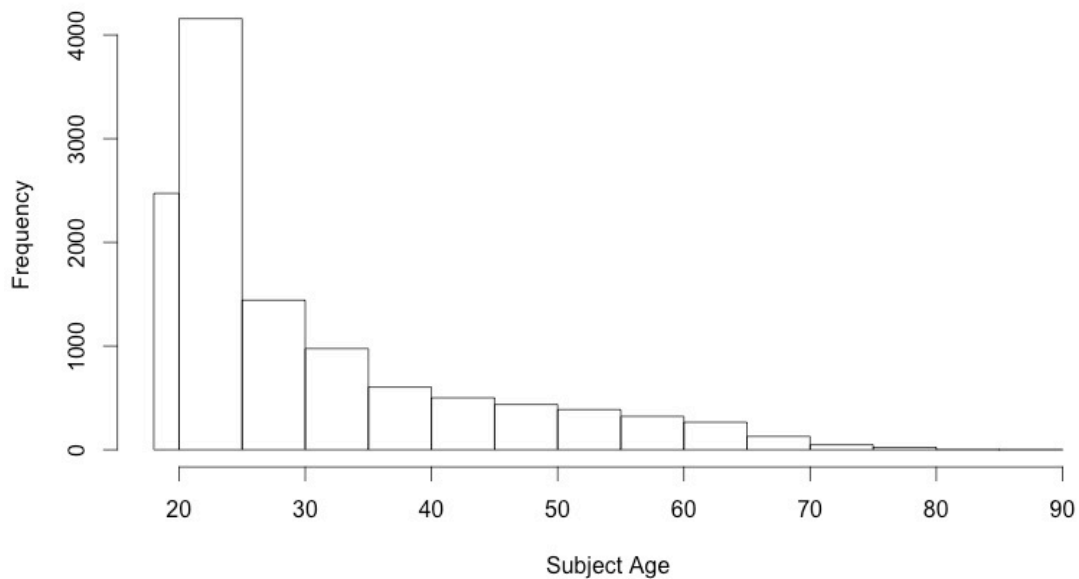
Table 5.2: Participants, Bexar County (2014)

	All Subjects	Students	Faculty / Staff
Percent Female	50.98%	50.78%	51.77%
Average Age	29.69	25.32	47.98
Average Total Vote Count	1.67	1.15	3.88
Average Length Registered (Months)	80.62	57.98	175.55
Registered in 2014	19.18%	22.42%	5.49%
Any Dem. History	13.74%	8.49%	36.12%
Any Rep. History	6.81%	4.65%	16.00%
Subjects	11,769	9,532	2,237

The final number of participants in the study for purpose of analysis was 11,788 registered voters in Bexar County. Demographics of the study population were collected from their voter registration record, and reflect the student-centric nature of the sample; overall participant data and demographics for students versus faculty and staff are reported in Table 5.2. The average age of subjects was 29.69 years of age on Election Day in 2014 ($SD = 12.78$, range 18-87). The sample was 48.92% male and 50.98% female; another eleven subjects' sex was unknown from their voter records. Data on race, ethnicity, income, or education were not collected from subjects due to privacy concerns. However, public records allow for examination of subjects' voter registration and participation history. The mean length of time registered to vote for the subject pool was 80.62 months ($SD = 87.24$), or roughly 6 years. The tremendous variance in this average is again likely due to the choice

of a student sample, many of whom are not old enough to have been registered for a long time. Subjects had voted in an average of 1.67 ($SD = 2.13$) of the ten primary and general elections between 2004 and 2012. However, 19.18% of subjects had registered to vote during the 2014 cycle. Figure 5.1 graphically represents the ages of the subjects, again emphasizing the degree to which they reflect a student sample.

Figure 5.1: Distribution of Subjects By Age, Bexar County (2014)



To verify random assignment, robustness checks were performed to determine if any of the voter history variables were significantly associated with any group.¹⁹ A chi-

¹⁹ Results of robustness tests for Bexar County subjects are reported here. A chi-square test of independence showed no significant relationship between treatment group and sex of the subject, $\chi^2(30, N = 11,788) = 32.04, p = .37$; treatment group and having any Democratic primary history, $\chi^2(15, N = 11,788) = 6.83, p = .96$; treatment group and having any Republican primary history, $\chi^2(15, N = 11,788) = 9.15, p = .87$; or treatment group and registering to vote in the 2014 cycle, $\chi^2(15, N = 11,788) = 17.31, p = .30$. A series of ANOVAs were performed that found no significant relationship between treatment group and average Total Vote Count, $F(15,$

square test of independence showed no significant relationship between treatment group and sex of the subject, having Democratic or Republican primary history, or registering to vote in 2014, respectively. A series of ANOVAs were performed to assess the average Total Vote Count for each group, as well as average age of subjects. Results were not significant, suggesting that there is no meaningful difference in the average number of total elections in which members of each group participated. Finally, since students and faculty / staff were block-randomized into treatment conditions, there is no relationship between university status and treatment group.

Results, Bexar County

Overall, the results presented below suggest that the reminder emails made little impact on turnout, though two emails did produce a small but significant uptick in overall odds of voting. Notably there was a substantial differential in turnout between faculty and staff -- faculty at the Bexar campus voted at a rate of 60.0%, whereas students only voted at a rate of 27.1%. This is unsurprising given the relative youth of students and higher past turnout averages for faculty and staff, and affirms the decision to include all members of the campus community in an effort to recruit subjects with a diversity of voting history. Below, statistical analysis is presented that explores the impact of treatment on voting overall and during the Early Voting period, the impact of receiving a second email on Election Day turnout, and the ramifications of opening the emails on both voting and opening subsequent GOTV messages. Analysis of treatments focuses only on subjects who

11753) = 0.26, $p = .99$; or treatment group and average age of subjects, $F(15, 11753) = 0.39, p = .98$.

had not voted by the start of the experiment so as to avoid artificially inflating turnout percentages with people who could not have possibly been influenced by the emails or Facebook ads.

Estimating Actual Treatment Effects

Before estimating the effect of the voting reminder emails and advertisements, it is necessary to determine which subjects were actually exposed to the treatment. The experiment started when the first wave of emails was sent at 11:00 a.m. on Friday, October 24, 2014 and the Facebook advertisements were activated. As such, any subject who voted before this point was not influenced by the treatment and should not be included in the statistical analysis. A total of 812 subjects cast a ballot before the experiment started. A chi-square test of independence found no significant relationship between group assignment and voting prior to the start of treatment, $\chi^2(15, N = 11,788) = 10.21, p = .81$. As such, they were dropped from analysis. Additionally, an examination of voting records determined that 19 subjects voted by mail. As it is not possible to determine the chronology of requesting a ballot, filling out the ballot, and returning it based on when it was received by Bexar County, these subjects have also been dropped from analysis. There was no significant relationship between assignment to group and voting by mail, $\chi^2(45, N = 10,976) = 41.67, p = .61$. The final subject pool for statistical analysis of treatment consists of 10,957 subjects.

Effects of Treatment Group on Voting

First, a series of logistic regressions were performed to determine if being assigned to one of the treatment groups had an impact on turnout. The first analysis explored the

impact of treatment group on voting overall. The treatment group results were largely insignificant, with only two conditions approaching significance. Figure 5.2 presents turnout levels by group across the entire voting period; regression results are presented in Table 5.3.

Figure 5.2: Turnout Percentages by Treatment Group, Bexar County (2014)

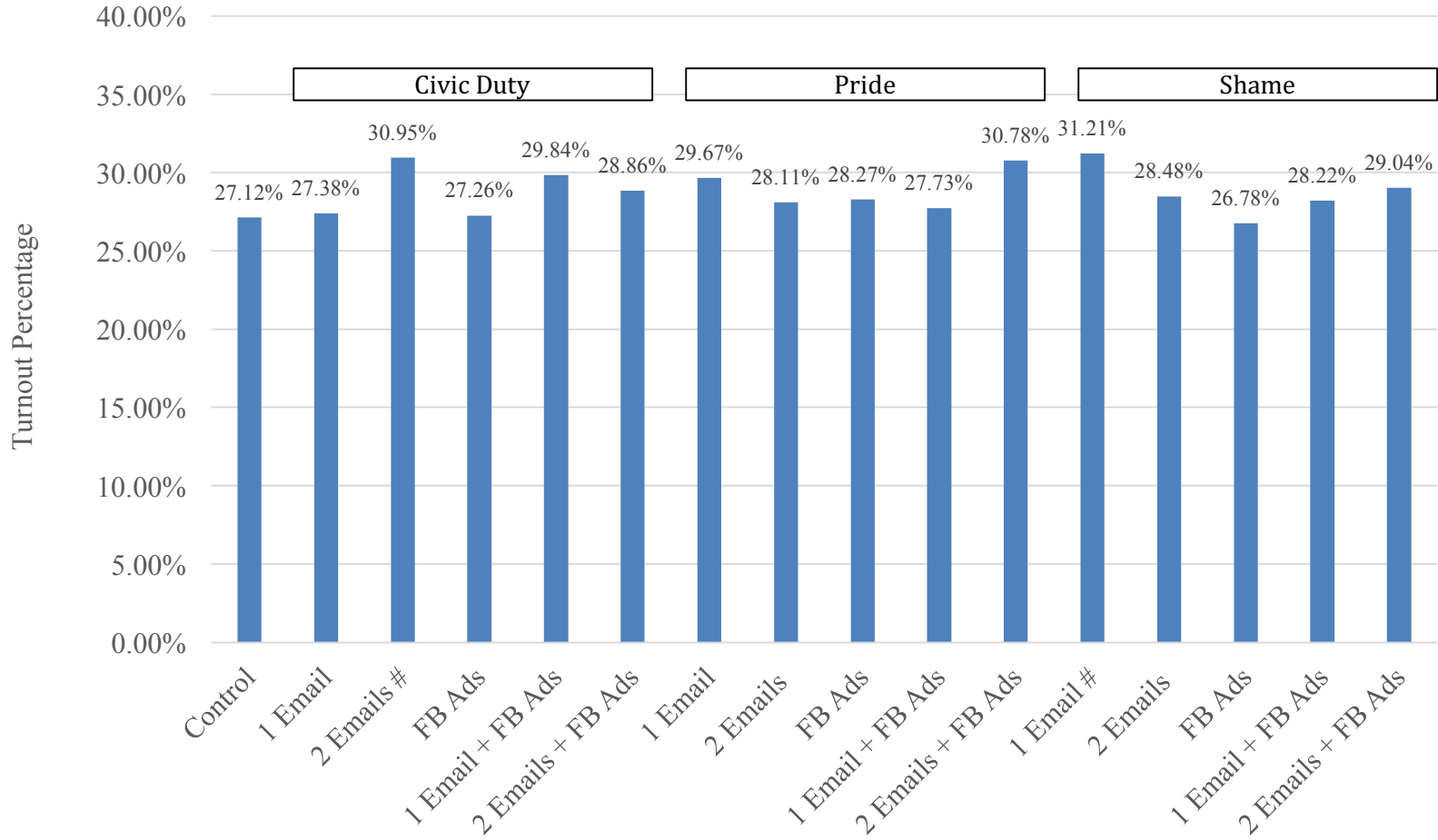


Table 5.3: Logistic Regression, Turnout By Treatment Group, Bexar County (2014)

Treatment Group	Coefficient (SE)
Civic Duty 1 Email	0.01 (0.11)
Civic Duty 2 Emails	0.19+ (0.11)
Civic Duty Facebook Ads	0.01 (0.11)
Civic Duty 1 Email + Facebook	0.13 (0.11)
Civic Duty 2 Emails + Facebook	0.09 (0.11)
Pride 1 Email	0.13 (0.11)
Pride 2 Emails	0.05 (0.11)
Pride Facebook Ads	0.06 (0.09)
Pride 1 Email + Facebook	0.03 (0.11)
Pride 2 Emails + Facebook	0.18 (0.11)
Shame 1 Email	0.20+ (0.11)
Shame 2 Emails	0.07 (0.11)
Shame Facebook Ads	-0.02 (0.09)
Shame 1 Email + Facebook	0.06 (0.11)
Shame 2 Emails + Facebook	0.10 (0.11)
Constant	-0.99*** (0.05)
Nagelkerke R ²	0.001

N = 10,957; + p <.10 * p <.05 ** p < .01 *** p < .001

As the turnout figure and results table show, there is minimal variation between groups. Turnout ranged from 26.78% to 31.21% across conditions. The only two groups with marginally significant increases in turnout over the Control group were the group that received two Civic Duty emails the the group that received one Shame email. Curiously, both groups vastly outpaced the groups that received the identical emails plus Facebook advertisements. If the Facebook ads indeed did not show to the intended subjects, then it is

hard to explain why this discrepancy exists. Overall, the variance explained by assignment to a treatment group – a combination of message, medium, and frequency – as expressed by the Nagelkerke R^2 , is approximately one tenth of one percent. As such, even the marginally significant results above should be taken with a rather hefty piece of salt.

In order to evaluate Hypothesis 11, which expects that treatments will be moderated by voter history, a variable Total Vote Count was added to the logistic regression model detailed above. Regression tables are reported in the appendix. This variable represents subjects' aggregate turnout in the past 10 general and primary elections.²⁰ First, the Total Vote Count variable was added as a covariate to the main effects model; results were consistent with the main effects model in that two Civic Duty emails and one Shame email were marginally significant. Additionally, with this covariate in the model, two Pride emails with Facebook ads produced a marginally significant increase in turnout. Next, a test for a significant interaction between voter history and group assignment was performed. While the Total Vote Count variable was significant, none of the treatment groups or interaction terms were. As such, there is no support for Hypothesis 11 since voter history did not moderate the effect of treatment.

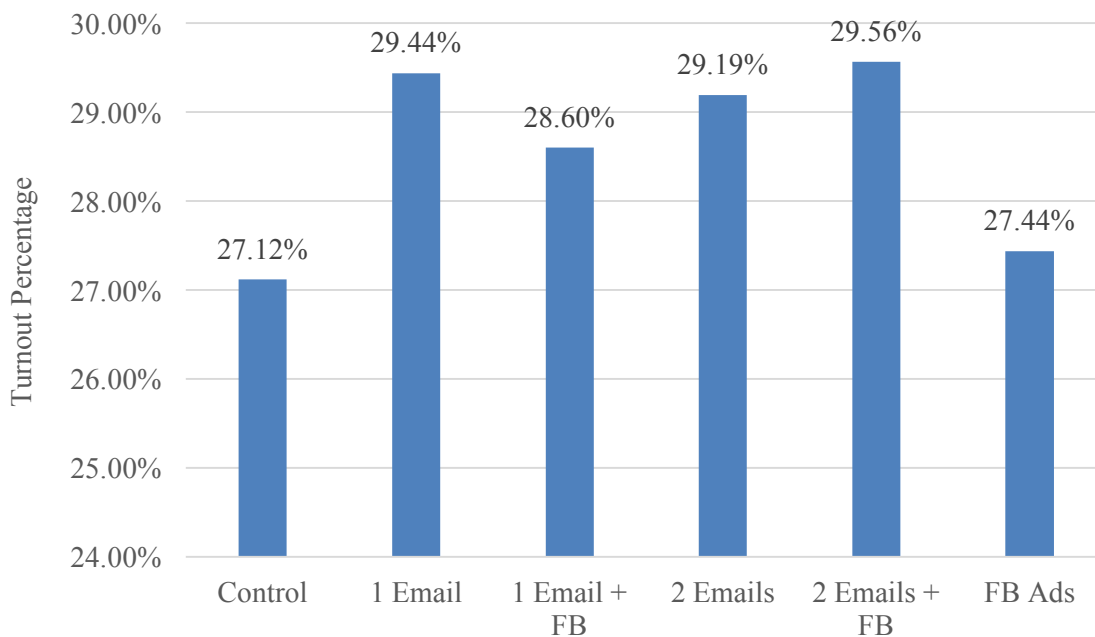
Effects of Message or Medium on Turnout

A subsequent series of logistic regressions explored the impact of treatment message, and treatment medium on turnout. A test of assignment to Civic Duty, Pride, or

²⁰ As detailed in the methods section, the Total Vote Count variable, which expresses how many of the last ten elections the subject has voted in, proved a better fit than the variable that expresses the percentage of elections the voter was eligible to participate in that he or she cast a ballot.

Shame, reported in Table 5.4 was non-significant in terms of increasing turnout over the Control group. However, a test exploring the assigned medium of communication found that being assigned to receive two emails had a positive impact on turnout. Results are reported in Table 5.4, and graphically presented in Figure 5.3. The graph shows that subjects in both two-email conditions (with and without Facebook ads) voted at approximately a 2-2.5% higher rate than the Control group. The average increase among subjects in the one-email conditions was only 1.8%. The Facebook ads-only subjects exhibited a 0.32% increase in turnout, suggesting that the ads barely showed to their intended targets.

Figure 5.3: Turnout By Reminder Medium, Bexar County (2014)



Statistically speaking, assignment to a two-email condition produced a statistically significant boost in turnout in the 2014 general election, equivalent to increasing one's odds

of voting by 1.11. However, again the Nagelkerke R^2 , which approximates the variance in the data explained by the statistical model, is miniscule -- essentially one tenth of one percent. Thus, while the results are significant, they do not demonstrate much of a boost in participation from receiving two reminder emails.

Table 5.4: Turnout by Assignment to Message and Medium, Bexar County (2014)

	By Message	By Medium, Model I	By Medium, Model II
Civic Duty	0.07 (0.06)		
Pride	0.08 (0.06)		
Shame	0.07 (0.06)		
One Email		0.08 (0.05)	0.11 (0.08)
Two Emails		0.10* (0.05)	0.10 (0.08)
Facebook Ads		0.00 (0.04)	0.02 (0.06)
One Email + Facebook Ads			0.07 (0.08)
Two Emails + Facebook Ads			0.12 (0.08)
Constant	-0.99*** (0.05)	-0.98*** (0.04)	-0.99*** (0.05)
Nagelkerke R^2	0.0002	0.001	0.0007

N = 10,957; + p < .10 * p < .05 ** p < .01 *** p < .001

However, these results – largely due to the inability to treat Facebook subjects – fail to support Hypotheses 8, 9, and 10. Hypothesis 8 stated that subjects exposed to Facebook ads would turn out at a higher rate than Control subjects; clearly that is not detectable given the technological challenges faced by implementation. Furthermore, there is no evidence that voters exposed to both email and Facebook voted at a higher rate than

the Control group, offering no support for Hypothesis 9, or than voters exposed to just one medium, this offering no support for Hypothesis 10. These regression results are available in the appendix.

Though the Facebook ads did not display, thus impeding the intended goal of this experiment, it is still possible to analyze the specific impacts of receiving and opening social pressure emails on voter turnout. This analysis follows, and offers some reasons to be optimistic about the potential of email to increase voter turnout.

Effects of Receiving a Reminder Email on Turnout

Analysis was performed to determine the impact of receiving a social pressure email, the effect of opening the email, and if the message of the email had an impact on turnout. Overall, the results suggest that receiving the emails did have a small but positive impact on turnout, though again the message made little difference. First, a logistic regression was performed to determine if assignment to any email condition had an impact on turnout; results were significant and positive. However, a test for the impact of the email message found that only Civic Duty had a marginally significant impact on the odds of voting. These results actually run counter to Hypothesis 6, which states that voters exposed to social pressure by email will turn out at a higher rate than voters who receive no email. The Civic Duty emails are technically not social pressure per se – they do not emphasize the public nature of voting records, only stressing the injunctive social norm that everyone should vote. These messages are usually included in social pressure experiments to contrast the effect of a similar communication without emphasizing the publicness of voting behavior. Notably, the p-value for the Shame email subjects was 0.10, so it too was close

to reaching marginal significance. Again, however, the explained variance here is very small, such that it remains difficult to suggest that these emails had much of an impact on turnout.

Table 5.5: Logistic Regression, Effect of Receiving Email on Turnout (Bexar County, 2014)

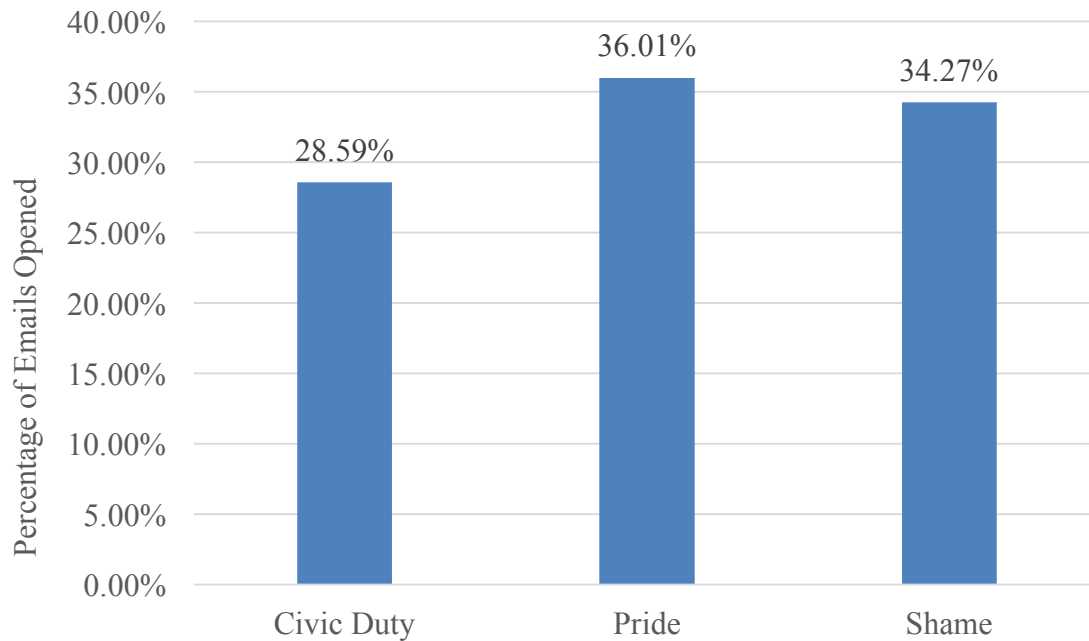
	Model I	Model II
Sent Any Email	0.09* (0.04)	
Civic Duty		0.10+ (0.06)
Pride		0.09 (0.06)
Shame		0.10 (0.06)
Constant	-0.98*** (0.03)	-0.98*** (0.03)
Nagelkerke R ²	0.006	0.0006

N = 10,957; + p < .10 * p < .05 ** p < .01 *** p < .001

Effects of Opening the First Reminder Email On Voting

Next, a series of regressions were performed to determine the impact of opening the email, in order to determine if the different message had divergent effects on turnout. For this analysis, only subjects who were assigned to receive an email were considered, $N = 5966$. An email was counted as opened if the timestamp from the subject's first time opening it was before the timestamp at which they voted (or if they opened it and did not vote at all). Logistic regressions were used to explore the impact of opening the first email on voting, and found that while opening the email was associated with higher turnout, the message of the email did not impact turnout amongst subjects who opened them.

Figure 5.4: Open Rates by Email Message, Bexar County (2014)



Prior to assessing the impact of opening the email, an analysis of subject lines was conducted, which determined that the social pressure subject line produced a higher open rate than that of the Civic Duty emails. As a reminder, the Civic Duty emails had the subject line "Do your civic duty -- VOTE!" whereas the Pride and Shame emails both had the subject line "Voting Records Are Public!" Overall open rates are presented in Figure 5.4. Logistic regression found that subjects were less likely to open the Civic Duty emails than the Pride and Shame emails; there was no significant difference between Pride or Shame email open rates. Therefore, the emails with social pressure messaging in the subject line had higher odds of being opened. The regression results are reported in Table 5.6.

Table 5.6: Logistic Regression, Effect of Subject Line on Opening First Email, Bexar County (2014)

	Civic Duty as Baseline	Pride as Baseline
Civic Duty ("Voting is your civic duty!")		-0.34*** (0.07)
Pride ("Voting records are public!")	0.34*** (0.07)	
Shame ("Voting records are public!")	0.26*** (0.07)	-0.08 (0.07)
Constant	-0.92*** (0.05)	-0.58*** (0.05)
Nagelkerke R ²	0.006	0.006

N = 5,966 + p < .10 * p < .05 ** p < .01 *** p < .001

The quality of being the kind of person who opens an email about voting is not randomly assigned, and is likely associated with an individual's level of political interest. Thus analysis about the impact of opening the email must be taken with a grain of salt. However, if specific messages manage to be more effective in mobilizing voters who open emails, that constitutes a worthwhile finding, and suggests that the challenge is in finding the subject lines and sending times that maximize the number of people who open and read the email. A logistic regression was conducted to determine if opening the email increased turnout. Results were significant and are presented in Table 5.7.

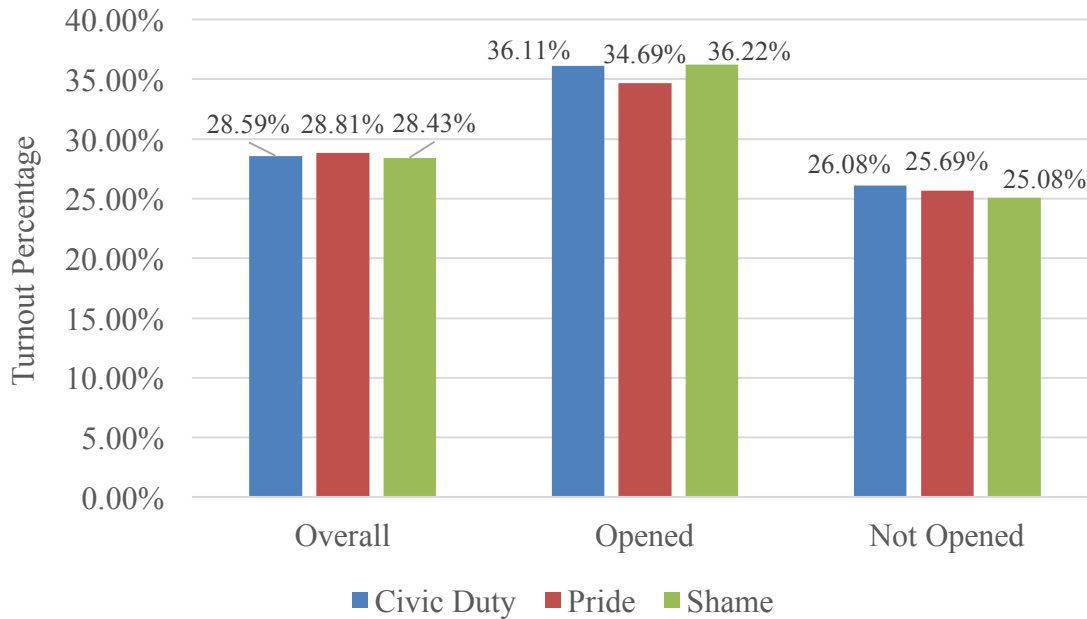
Table 5.7: Logistic Regression, Impact of Opening Email on Turnout, Bexar County (2014)

	Model I: Opening Any Email	Model II: Email Message, Civic Duty as Baseline	Model III: Email Message, Pride as Baseline
Any Email	0.45*** (0.06)		
Civic Duty			0.06 (0.12)
Pride		-0.06 (0.12)	
Shame		0.00 (0.12)	0.07 (0.12)
Constant	-1.04*** (0.04)	-0.57*** (0.09)	-0.63*** (0.08)
Nagelkerke R ²	0.013	0.0003	0.0003
N	5,966	1,959	1,959

+ p < .10 * p < .05 ** p < .01 *** p < .001

Essentially, opening the first email was associated with a 1.57-times increase in subjects' odds of voting, over subjects who received and did not open the first email. A subsequent analysis assessed the impact of reading a Civic Duty, Pride, or Shame email among openers to determine if any were more effective. This logistic regression was conducted only on subjects who actually opened an email, N = 1,959. Results were not significant, suggesting that the contents of the email do not matter on turnout amongst those who read them. Though Shame and Civic Duty openers both voted at a higher rate than Pride openers, the roughly 1.7% difference was not significant. However, it is possible that given the small sample size this test lacked sufficient statistical power to detect an effect. Results are presented in Table 5.7. Finally, a graphic presenting voting rates by openers and non-openers is presented in Figure 5.5.

Figure 5.5: Turnout By Email Recipients, Openers vs. Non-Openers, Bexar County (2014)



Essentially, receiving and opening the first email produced higher turnout than simply receiving the email; however, the message of the email did not matter. Therefore, there is no support for Hypothesis 7, which states that voters who receive Shame social pressure messages by email will turn out at a higher rate than voters who receive Pride messages.

Effects of Opening The Second Reminder Email on Voting

Next, analysis was performed to determine if the second email had an impact on turnout, in terms of both receiving it and opening it. As stated previously, being assigned to a two-email condition did generate a small and significant increase in subjects' overall odds of voting across the entire voting period. This analysis extends on this finding by exploring the impact of opening the second email, as well as its message. A logistic

regression determined that opening the second email resulted in a statistically higher rate of turnout. This analysis was conducted only on subjects who were assigned to receive and then sent a second email, N = 2522, and is presented in Table 5.8.

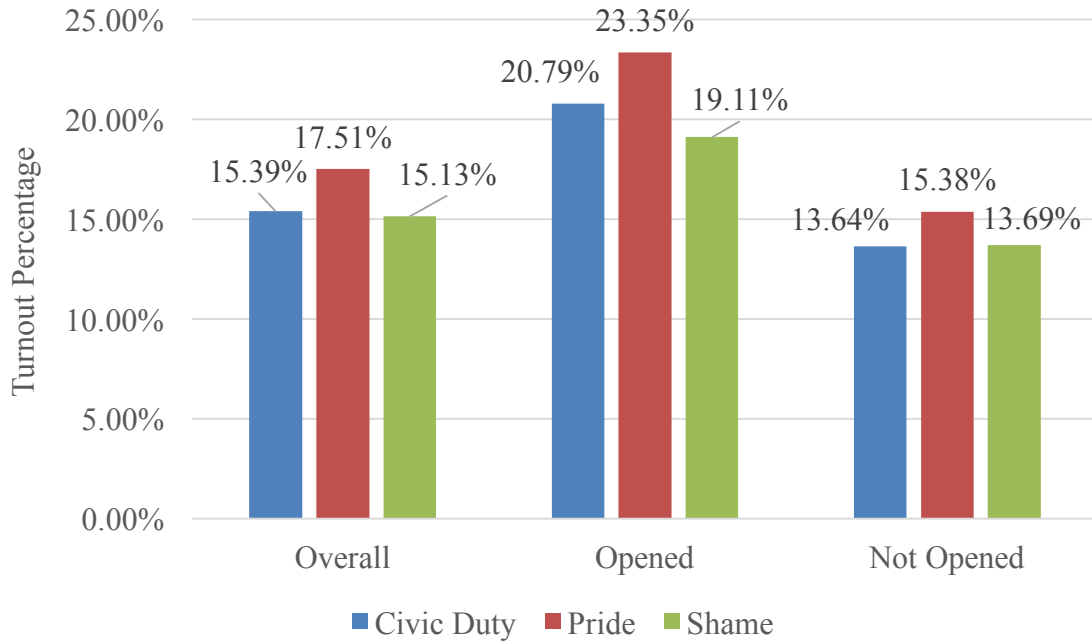
Table 5.8: Logistic Regression, Effect of Opening Second Email on Voting, Bexar County (2014)

	Open Email	Second	Model I: Civic Duty as Baseline	Model II: Pride as Baseline
Open Second Email	0.48*** (0.12)			
Civic Duty				0.09 (0.14)
Pride			0.15 (0.23)	0.15 (0.14)
Shame			-0.11 (0.24)	-0.28 (0.19)
Constant	-1.80*** (0.07)		-1.34*** (0.17)	-2.01*** (0.10)
Nagelkerke R ² :	0.012		0.003	.0015
N	2522		654	654

+ p < .10 * p < .05 ** p < .01 *** p < .001

Finally, a logistic regression was performed to determine if the message of the second email had an impact on turnout. This was conducted only on subjects who opened the second email, N = 654. The test found no significant impact on turnout based on the message of the second email, though this may have been lacking in statistical power due to the small sample. Results are presented in Table 5.8. Turnout among second email recipients is graphically represented in Figure 5.6. Overall, subjects who received the Pride emails voted at higher rates whether they opened the emails or not. However, the 4.24% difference between Pride and Shame was not statistically significant.

Figure 5.6: Turnout By Second Email Recipients, Openers vs. Non-Openers, Bexar County (2014)



Discussion, Bexar County

On the whole, the results of this experiment fail to provide conclusive evidence that social pressure emails alone can increase turnout by a statistically significant amount. While subjects who were assigned to receive two emails did see slightly higher odds of turning out, the explained variance due to these messages was very small, and the contents of the messages appear to have not mattered. The biggest statistical effect found in this experiment is the ability of social pressure subject lines to increase open rates of the reminder emails; however, the Pride and Shame messages themselves did not boost turnout among email openers over the Civic Duty messages.

A second study using this same method – social pressure email messages and Facebook ads – was conducted concurrently on three campuses of a public university in Harris County, Texas. Here, there is evidence again that social pressure messaging increases the open rates of email reminders to vote relative to the Civic Duty subject line, and as well as evidence that social pressure messaging did manage to increase turnout. However, this study ran into further unanticipated technological problems stemming from the use of three separate campus sites to carry out the experiment. The challenges delineated below help shed light on why email experiments repeatedly fail to produce significant results.

Study IV: Email Across Three Campuses, Harris County (2014)

Harris County, home to Houston and 2,044,361 registered voters, is the most populous in Texas and the third most populous in the United States. As the home to multiple public universities, it also presented an ideal location for an email-based voting experiment. Overall turnout in Harris County in 2014 amounted to 33.65%, even though there were multiple open countywide races on the ballot. Within the experiment, turnout reached 30.94%. In order to increase the sample size, three branches of the same public university system -- referred to as Campus A, Campus B, and Campus C -- were targeted for this experiment. The three locations produced heterogeneous results from treatment, and enabled analysis of factors that contribute to null results in email experiments. The analysis below shows that social pressure emails are able to increase voting among subjects who open voting reminders.

Participants, Harris County

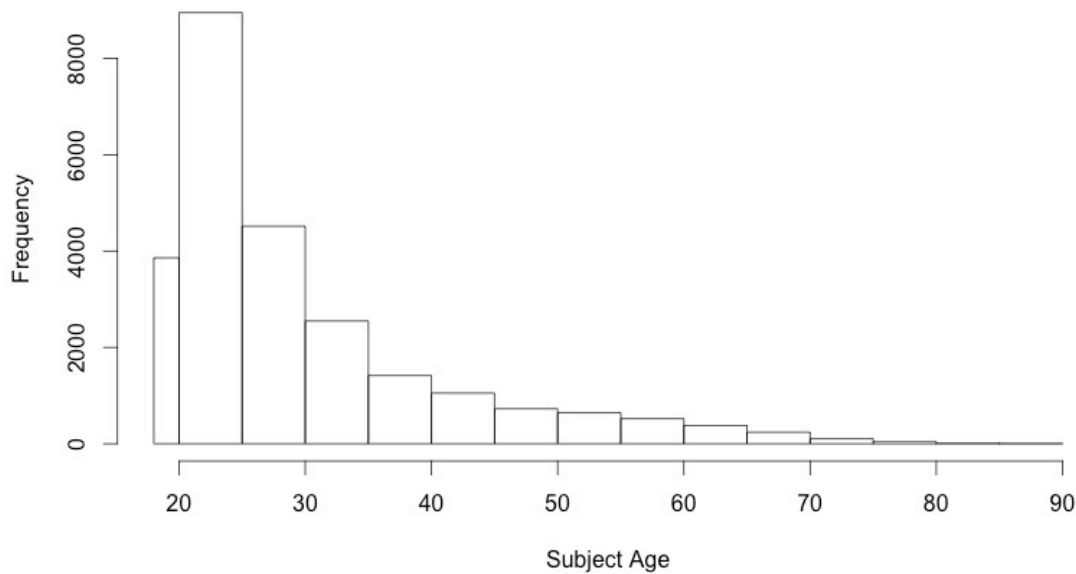
Open records requests were filed with three campuses of a public university in Harris County for the student, faculty, and staff directories including email addresses and birthdates. This request produced 73,858 email addresses. The lists were matched against the voter file for Harris County, and only those individuals who produced a unique match in terms of first and last name and birthdate were enrolled in the experiment. This amounted to 25,016 unique individuals registered to vote in Harris County. Subjects were then block-randomized into a treatment condition by campus and by student / faculty status. After the experiment, a record of all voters was obtained from the Harris County Clerk's office. No subjects were reported to have cast a provisional ballot. However, 228 subjects were no longer registered in Harris County after the Election, meaning they had either moved to another county or had their voter registrations purged. Repeated attempts to acquire updated information on these voters went unanswered. A chi-square test of independence showed no significant association between group assignment and subjects' voter registrations being cancelled by Harris County, $\chi^2 (15, N = 25,011) = 11.77, p = .70$. As such, they were removed from analysis.

Table 5.9: Participants, Harris County (2014)

	All Subjects	Students	Faculty / Staff
Percent Female	55.90%	56.41%	52.61%
Average Age	29.49	26.74	47.31
Average Total Vote Count	1.77	1.44	3.95
Average Months Registered	85.24	70.31	181.90
Registered in 2014	14.64%	16.22%	4.40%
Any Dem. History	15.32%	11.38%	40.87%
Any Rep. History	5.60%	4.57%	12.28%
Subjects	24,783	21,468	3,315

For the purpose of statistical analysis, a total of 24,783 registered voters in Harris County were enrolled in the experiment. Demographics are reported in Table 5.9. The average age of subjects was 29.49 years of age ($SD = 11.50$, range 18 to 90) reflecting the student-centric experimental population. The subject pool was 55.90% female, 43.72% male, with 95 subjects' sex marked unknown in the voter file. Subjects had voted in an average of 1.77 ($SD = 2.08$) of the last 10 elections, likely a result of the relative youth of the sample. The average length of registration for subjects was 85.24 months ($SD = 84.51$), again reflecting the number of subjects who fell into the traditional college age cohort of 18 to 22 years. Additionally, 14.64% of subjects had registered to vote within the 2014 cycle. Figure 5.7 depicts the age distribution for subjects in the Harris County experiment.

Figure 5.7: Distribution of Subjects By Age, Harris County (2014)



A series of robustness checks were performed to ensure proper randomization.²¹ Chi-square tests of independence between group assignment and sex, any Democratic primary history, any Republican history, or registering in the 2014 cycle were not significant. A series of ANOVAs found no statistically significant difference in the average age or Total Vote Count within each treatment group. As subjects were block-randomized

²¹ Robustness checks are reported here. A chi-square test of independence showed no significant relationship between treatment group and sex of the subject, $\chi^2(15, N = 24,688) = 17.01, p = .32$; treatment group and having any Democratic primary history, $\chi^2(15, N = 24,783) = 19.31, p = .20$; treatment group and having any Republican primary history $\chi^2(15, N = 24,783) = 22.53, p = .10$; or treatment group and registering to vote in the 2014 cycle, $\chi^2(15, N = 24,783) = 10.17, p = .81$. A series of ANOVAs were performed that found no significant relationship between either treatment group and average Total Vote Count, $F(15, 24767) = 0.49, p = .95$; or treatment group and average age of subjects, $F(15, 24767) = 0.54, p = .92$.

based on campus and student / employee status, these variables were also not associated with assignment.

Results, Harris County

As in Bexar County, technological problems impeded the full implementation of this study. Less than 6% of subjects assigned to Facebook conditions were exposed to the ads, and one entire campus appears to have blocked delivery of the second wave of emails. Furthermore, on Campus A, the second wave of email messages appears to have been blocked by the university's server, since none were successfully delivered. Finally, analysis will show that each campus location had differential responses to the same email messages, raising the question of campus-level voting culture that could have impacted results. Table 5.10 shows the number of subjects on each campus, the number of subjects that were faculty or staff versus students, and the rate of turnout among the control subjects.

As these descriptive statistics show, the share of subjects enrolled in the study from each campus who were faculty or staff varied widely, primarily because the flagship Campus B has a higher faculty / staff to student ratio than the other two smaller schools. Campus B has over 10,600 faculty and staff members, compared to only 294 at Campus A and 394 at Campus C. Additionally, given Campus A's geographic location it is likely that much of the faculty and staff commute from other counties to work there, and thus would not be registered to vote in Harris County.

Table 5.10: Subjects By Campus and University Status, Harris County (2014)

	Campus A	Campus B	Campus C
Total Subjects	2,231	14,925	6,854
Faculty / Staff	50 (2.2%)	2,966 (19.9%)	19 (0.28%)
Students	2,181	11,959	6,835
Control Turnout	31.9%	30.4%	24.1%
Overall Turnout	31.8%	31.9%	27.3%

Each campus also had marked differences in the demographics of students. Within the university system, Campus B is the flagship campus and home to 12 academic colleges and 40 research centers, as well as a 17 intercollegiate sports teams. Campus B also features several professional schools and is a doctoral degree-granting institution. The campus offers housing, which 19% of the student body utilizes. Demographically, the student body (undergraduate, graduate, and professional students) is 30.7% White, 25.7% Hispanic, 19.4% Asian American, and 10.7% African-American. Campus A is located in a suburb of the county outside of the city of Houston, and is home to four academic schools. Until 2011, the school only offered upper-division undergraduate coursework and graduate-level education. The campus is also designated as a Hispanic-serving institution. As of 2012, 45% of the student body was White, 25% was Hispanic, 11.2% was African-American, and 6.5% was Asian. Campus C is much smaller in size and focus: it is home to only four academic colleges, and offers no varsity sports. Located in the county's downtown area, the school offers no housing facilities, so all students live off-campus. The student body is 47% Hispanic, 25% African-American, 17% White, and 10% Asian American, and has

been designated as a Hispanic-serving institution. These demographic differences may also explain some of the heterogeneous voter turnout on each campus.

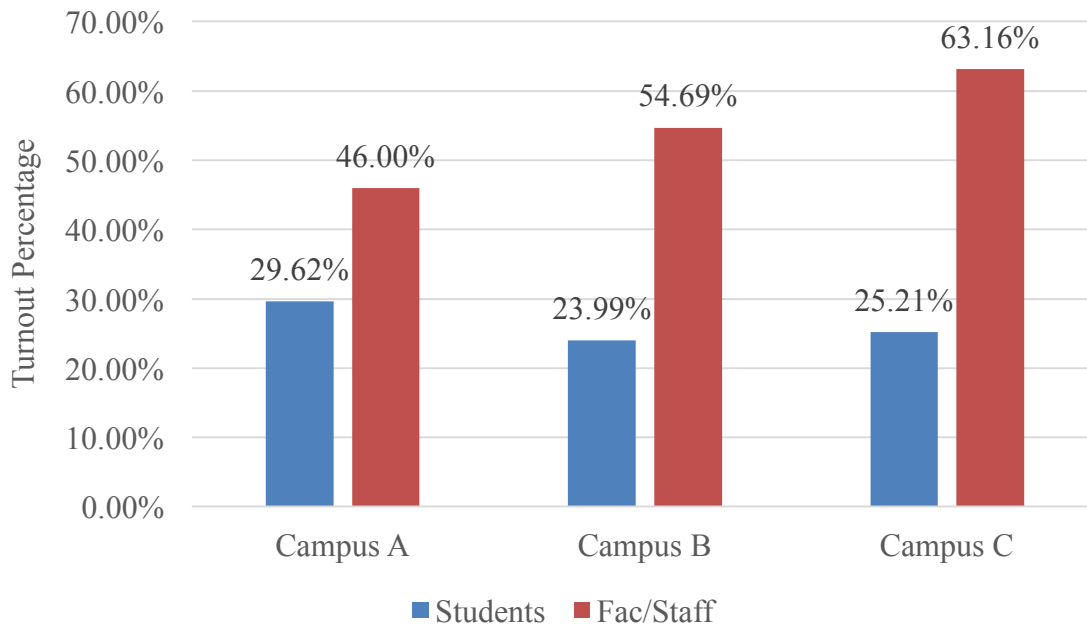
Estimating Actual Treatment Effects

This experiment started at 11:00 a.m. on Friday, October 24, 2014. As such, some subjects had already voted before treatment began and could not have possibly been impacted by the voting reminder messages. Records show that 107 subjects voted by mail; since it is not possible to determine the chronology of requesting and returning a ballot or the time it spent in the postal system, they were dropped from analysis. A chi-square test of independence found no significant relationship between group assignment and voting by mail, $\chi^2 (15, N = 24,783) = 18.48, p = .23$. Additionally, a total of 666 subjects voted before the treatments started; a chi-square test of independence between group assignment and voting before the start was not significant, $\chi^2 (15, N = 24,676) = 11.63, p = .71$. Thus, both subjects who voted by mail and voted before the start of the experiment will be removed from analysis to estimate treatment effects.

Effects of Campus Community on Voting

Before beginning statistical analysis, it is worth noting the overall turnout rate by subjects at each campus, by students and faculty / staff. Unsurprisingly again, faculty and staff voted at a much higher rate than students, just as they did in Bexar County. Furthermore, there was heterogeneous turnout on each of the three Harris County campuses. Turnout percentages are presented in Figure 5.8.

Figure 5.8: Turnout By Campus and University Status, Harris County (2014)



Quite obviously, students voted at a lower rate than faculty and staff. A series of logistic regressions were performed to explore the significance between faculty/staff and student turnout differentials across campuses. Regression results are reported in Table 5.11. Overall, both Campus A and B voted at a statistically higher rate than Campus C, the downtown commuter campus. A pairwise comparison between Campus A and B was not significant. Furthermore, there is a significant interaction between student voting rates and campus: students on Campus B voted at lower rates than students on Campus A; both students at A and B voted at marginally higher rates than those at Campus C.

Table 5.11: Logistic Regression, Turnout by Campus and Status, Harris County (2014)

	By Campus, A Baseline	By Campus, B Baseline	By Campus and Status, B Baseline	By Campus x Status, A Baseline	By Campus x Status, B Baseline
Campus A		-0.00 (0.05)	0.27*** (0.05)		-0.35 (0.29)
Campus B	0.00 (0.05)			0.35 (0.29)	
Campus C	-0.23*** (0.05)	-0.24*** (0.03)	0.06+ (0.03)	0.70 (0.56)	0.35 (0.48)
Student			-1.33*** (0.04)	-0.71* (0.29)	-1.34*** (0.04)
Campus A x Student					0.64* (0.29)
Campus B x Student				-0.64* (0.29)	
Campus C x Student				-0.92+ (0.56)	-0.29 (0.48)
Constant	-0.85*** (0.05)	-0.84*** (0.02)	0.18*** (0.04)	-0.16 (0.28)	0.19*** (0.04)
Nagelkerke R ²	0.003	0.003	0.061	0.062	0.062

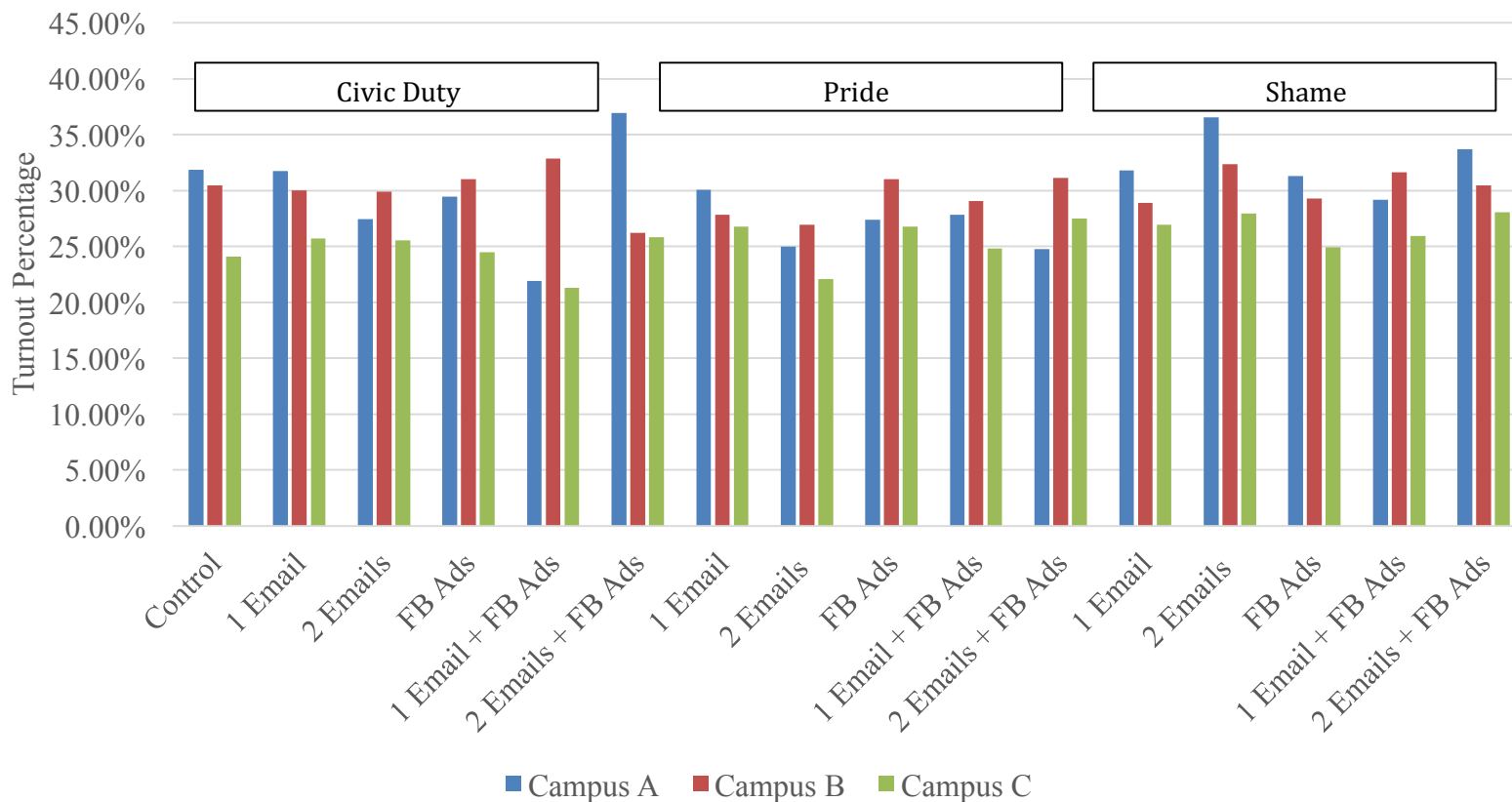
N = 24,010; + p < .10, * p < .05, ** p < .01, *** p < .001

Furthermore, each campus subject pool had statistically significant variation in average Total Vote Counts. Levene's test for homogeneity of variance was significant ($F = 9.81, p < .001$), thus it is not possible to use ANOVA to compare campus averages. Since the assumptions needed for a traditional ANOVA are not met, a Welch's ANOVA was performed to evaluate the difference in mean Total Vote Count for each campus. The test was significant, $p < .001$, thus the averages for each campus are different, as well as the variance. As such, a dummy variable for each campus was added to the models presented throughout this analysis.

Effects of Treatment Group on Voting, by Campus

In order to determine if the treatments worked to increase turnout, a series of logistic regressions were performed, which utilized treatment group as the independent variable and included the dummy variable for campus first as a covariate and then an interaction term. Due to the size of the table, regression results are presented in the appendix. A graph of turnout by group by campus is presented in Figure 5.9; turnout percentages are in the appendix. Turnout percentages show that in every condition, Campus C had lower turnout than the other two locations. The interaction analysis shows that the statistically significant differences in were generated by two Civic Duty emails with Facebook ads on Campus A when compared with Campus B, and by one Civic Duty email with Facebook ads on Campus B when compared with Campus A. However, no email-ad combination on its own was significantly different from another campus or the Control group. The Nagelkerke R^2 is approximately 0.5% throughout, suggesting that less than one percent of the variance in turnout across conditions by campus can be explained by the emails. Some of the pairwise comparisons may be significant, but overall the emails and Facebook ads cannot be credited with improving turnout.

Figure 5.9: Turnout by Treatment Group By Campus, Harris County (2014)ⁱ



ⁱ The following campus-level pairwise comparisons were statistically significant: Civic Duty – one email with Facebook ads was statistically higher for Campus B than A; Civic Duty – two emails with Facebook ads was statistically higher for Campus A than B; Pride – two emails with Facebook ads was marginally higher for Campus A than C.

Effects of Message or Medium on Turnout, By Campus

Next, a test was conducted to determine if the message or medium of treatment had an impact on voter turnout. A logistic regression was conducted, first with the campus dummy variable as a control and then as an interaction term. Results are presented below in Table 5.12. Overall the message had little impact, however the Pride messages managed to marginally increase turnout on Campus C when compared to Campus A.

Table 5.12: Logistic Regression, Turnout Based on Message by Campus, Harris County (2014)

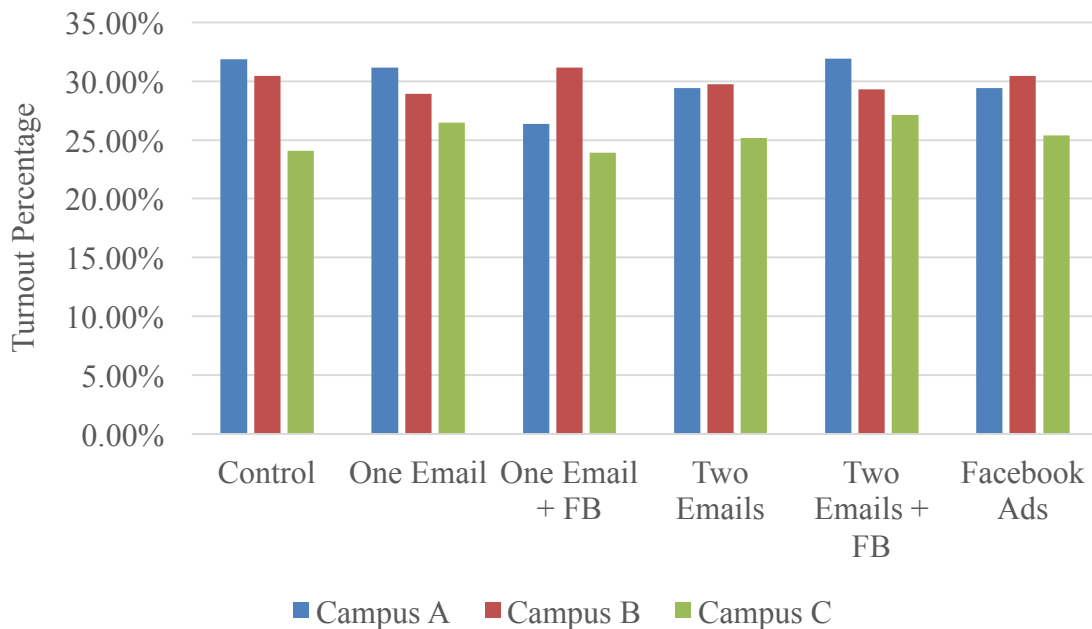
	By Message	By Message x Campus (A)	By Message x Campus (B)
Civic Duty	-0.01 (0.04)	-0.11 (0.14)	-0.01 (0.05)
Pride	-0.03 (0.04)	-0.23 (0.14)	-0.05 (0.05)
Shame	0.03 (0.04)	0.01 (0.14)	-0.01 (0.05)
Campus A	-0.01 (0.05)		0.06 (0.12)
Campus B		-0.06 (0.12)	
Campus C	-0.24*** (0.03)	-0.39** (0.13)	-0.32*** (0.08)
Civic Duty x A			-0.10 (0.15)
Pride x A			-0.18 (0.15)
Shame x A			0.02 (0.15)
Civic Duty x B		0.10 (0.15)	
Pride x B		0.18 (0.15)	
Shame x B		-0.02 (0.15)	
Civic Duty x C		0.14 (0.16)	0.04 (0.10)
Pride x C		0.32+ (0.17)	0.14 (0.10)
Shame x C		0.11 (0.16)	0.13 (0.10)
Constant	-0.84*** (0.04)	-0.76*** (0.11)	-0.83*** (0.04)
Nagelkerke R ²	0.003	0.004	0.004

N = 24,010; + p <.10 * p <.05 ** p <.01 *** p <.001

Next a series of logistic regressions was conducted to ascertain the impact of treatment medium on turnout. Overall, no medium was associated with a significant

increase in turnout, either among all subjects or on a single campus. Furthermore, there were no significant pairwise comparisons between campuses. The regression results are presented in the appendix. Turnout by medium and campus is graphically represented in Figure 5.10. These results fail to offer support for Hypothesis 8, which states that subjects exposed to Facebook ads will vote at a higher rate, Hypothesis 9, which states that subjects exposed to both media will turnout at higher rates than the Control group, or Hypothesis 10, which states that subjects exposed to both media will vote at higher rates than those exposed to only one.

Figure 5.10: Turnout By Medium By Campus, Harris County (2014)



Overall, the results based on assignment to treatment group, medium, or message raise questions as to whether the randomization that occurred prior to the start of the experiment was successful. Given that only 5.43% of subjects assigned to Facebook ad

treatments were actually exposed to them, it is likely that the ads had no impact on voting -- a hypothesis confirmed statistically. As such, there is no reason that subjects who were assigned to received one email and Facebook ads should vote at a differential rate than those who were assigned to only one email no Facebook ads, and yet according to the analysis at group-level, they did.

Furthermore, each campus appears to have a different baseline rate of voting -- reflected in the turnout by the control groups on each campus -- and a different share of faculty or staff members in the test population. Campus-specific tests are challenging in terms of statistical power given the relatively smaller samples from Campus A and Campus C. As such, it is recommended that significant results based on random assignment be viewed with ample skepticism. Given the number of tests run, small sample sizes within treatment groups on Campuses A and C, and overall low Nagelkerke R^2 values throughout, it is likely that the significant findings are Type II errors, and that the pairwise comparisons between Campus A and C lacked sufficient power to detect actual effects.

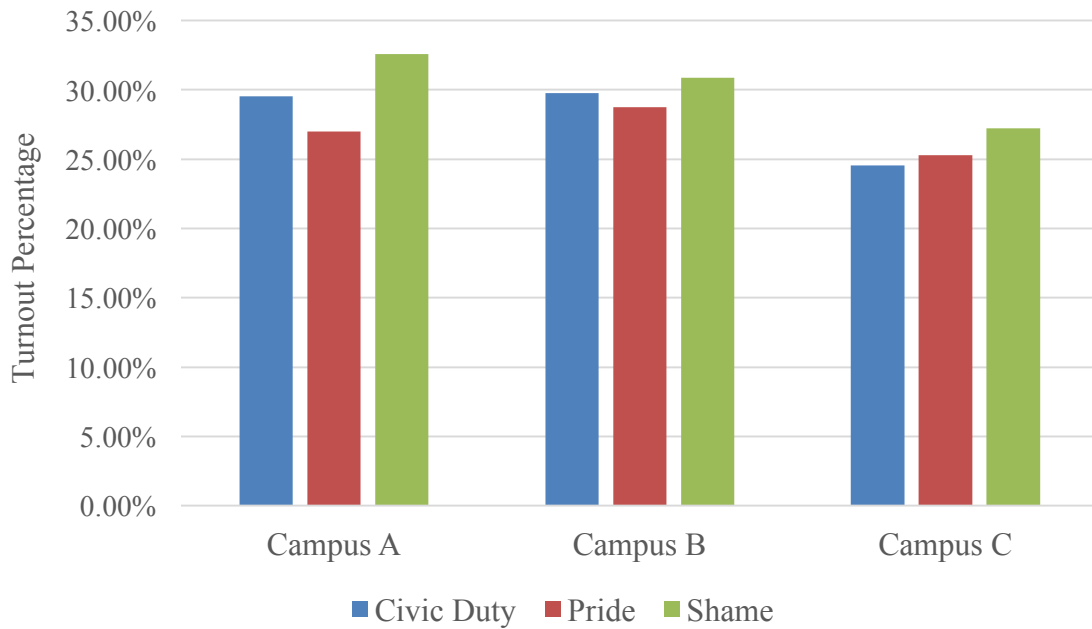
Notably, the overall experiment had a substantial sample size – over 24,000 people were analyzed in these results. The failure of the main effects models that control for campus-level variance suggest that assignment to these treatments simply didn't work. The Facebook ads did not treat their intended subjects, and as further analysis shows, Campus A did not receive the second wave of emails. What remains to be determined is if the email messages had an impact on those who opened them.

Effects of Receiving a Reminder Email on Turnout, by Campus

Despite the implementation challenges that plagued this study, it is still worthwhile to explore the impact of each wave of GOTV emails to determine what can be learned about the use of this medium for voter turnout. First, a series of logistic regressions were conducted to determine if being sent any email had an impact on turnout; tests that controlled for and interacted with the dummy variable for campus were non-significant and are reported in the appendix. A subsequent series of logistic regressions that explored the impact of the message of the email with campus as a dummy variable and interaction term also produced entirely null results, which are presented in the appendix. Receiving an email did not impact turnout overall or on any of the three campuses compared to the control group, nor did the message of the email impact turnout. As such there is no support for Hypothesis 6, which states that voters exposed to social pressure by email will turn out at a higher rate than voters who receive no email.

However, among those subjects who did receive an email, the message did impact turnout. A logistic regression was performed on the subset of subjects who received email (N = 13,093) to explore the impact of the message on turnout. Overall, Shame messages produced higher turnout than Pride messages, and marginally higher turnout than Civic Duty. There was no significant difference between Pride and Civic Duty. Turnout by campus by email message is graphed in Figure 5.11. This relationship was true across all campuses; an interaction with the dummy variable for campus was not significant. As such,

Figure 5.11: Turnout By Email Message by Campus, Harris County (2014)



the results provide support for Hypothesis 7, which states that voters who receive Shame social pressure messages by email will turn out at a higher rate than voters who receive Pride messages. However, the explained variance here is still less than 1%, so results should be interpreted with caution. Regression results are presented in Table 5.13.

Table 5.13: Logistic Regression, Email Message on Turnout, Harris County (2014)

	By Message, Pride Baseline	By Message, Shame Baseline
Civic Duty	0.03 (0.05)	-0.09+ (0.05)
Pride		-0.12* (0.05)
Shame	0.12* (0.05)	
Campus A	-0.00 (0.07)	-0.00 (0.07)
Campus C	-0.21*** (0.04)	-0.21*** (0.04)
Constant	-0.91*** (0.04)	-0.79*** (0.04)
Nagelkerke R ²	0.003	0.003

N = 13,093 ; + p < .10 * p < .05 ** p < .01 *** p < .001

Notably, this analysis explores only the effects of receiving the email, and since the Pride and Shame email messages had the same subject line – "Voting Records are Public!" – it merits exploration as to whether actually reading the email produced disparate turnout effects. This analysis follows.

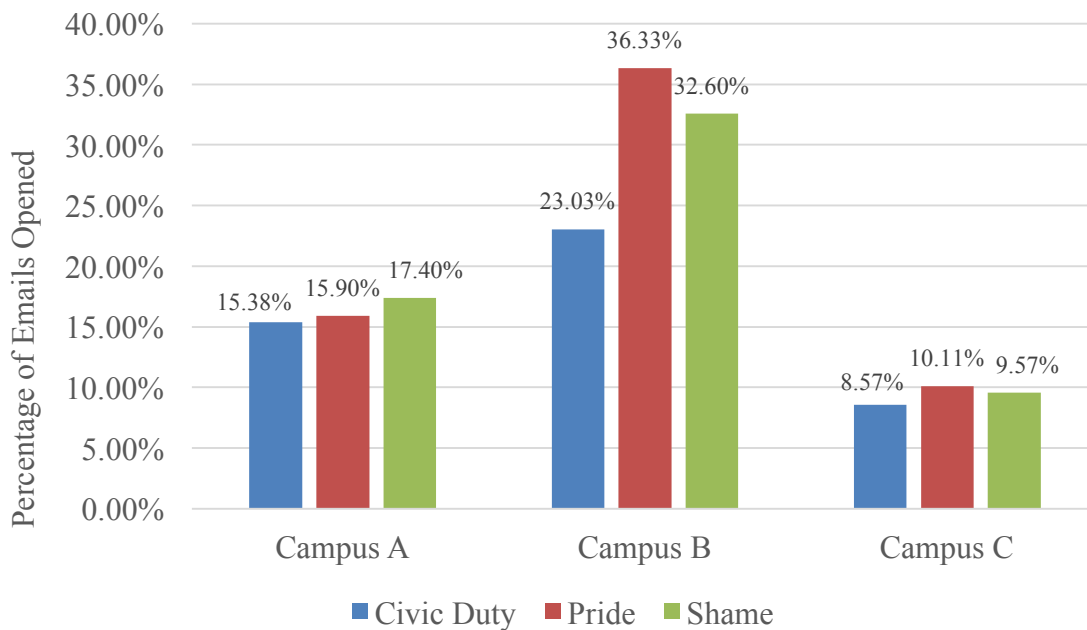
Effects of Opening the First Reminder Email on Voting

Before determining the impact of reading the email, a series of analyses were conducted to determine if the reminder emails had differing open rates by message or campus. Though all members of the same university system, the three campuses in this study did not use the same email platform. Campus B – the largest of the three in terms of campus and experimental population – uses Outlook for its email client, whereas Campuses A and C use a webmail-based client and encourage students to forward their email to a personal address (registered with Yahoo or Gmail, for example). Outlook provides a preview pane for emails, such that people can read the first few sentences of the message before clicking to open it. Furthermore, scrolling over an email in Outlook can falsely register as opening the email if graphics are displayed. As such it is possible that there will be campus-specific results for opening and clicking the email that stem from the use of the email client.

A series of logistic regressions were run to determine if the message of the email or campus of recipient had an impact on the open rate of the email. For these tests, only subjects who were assigned to receive the first email were considered, $N = 13,093$. This excluded anyone in the Control group, and anyone in a Facebook ads-only condition. As expected, each campus had statistically significant and distinct open rates, with Campus B

opening their emails at a higher rate than Campuses A and C, and Campus A also besting Campus C. The Nagelkerke R^2 for this model is 0.086, suggesting that approximately 8% of the variation in opening the reminder email is based on the campus alone. Furthermore, a test of open rates by subject line by campus was also significant. Figure 5.12 depicts the disparate open rates. Regression results are reported in the appendix.

Figure 5.12: Email Open Rates by Message by Campus, Harris County (2014)



The email platform may explain some of this variation. Campus B – the location that uses Outlook – registered much higher open rates than Campuses A or C. This may be due to subjects scrolling over the email in their Outlook inbox, which can register as an open if the images previewed in the email are loaded. Furthermore, subjects at Campus B also opened their Pride and Shame emails at a statistically higher rate than their Civic Duty emails; however, a pairwise comparison between Pride and Shame on Campus B was not

significant. There was no significant difference in open rates by message on Campus A (likely an under-powered test) or Campus C. Overall, as in Bexar County, results show that social pressure subject lines produce higher open rates than more general reminders, and that the Outlook platform appears to amplify this result.

Effects of Opening the First Reminder Email On Voting

The message of the email did appear to have an impact on voting rates, among those who registered opening their email. A series of tests were performed to determine if the contents of the message had an impact on subjects' odds of voting. These tests were conducted on the 3,040 subjects who opened the email they received, with a dummy variable for campus added as a control and then interaction term. Results are graphically represented in Figure 5.13 and a regression table is below in Table 5.14.

Figure 5.13: Voting Rates By First Email Openers By Campus, Harris County (2014)

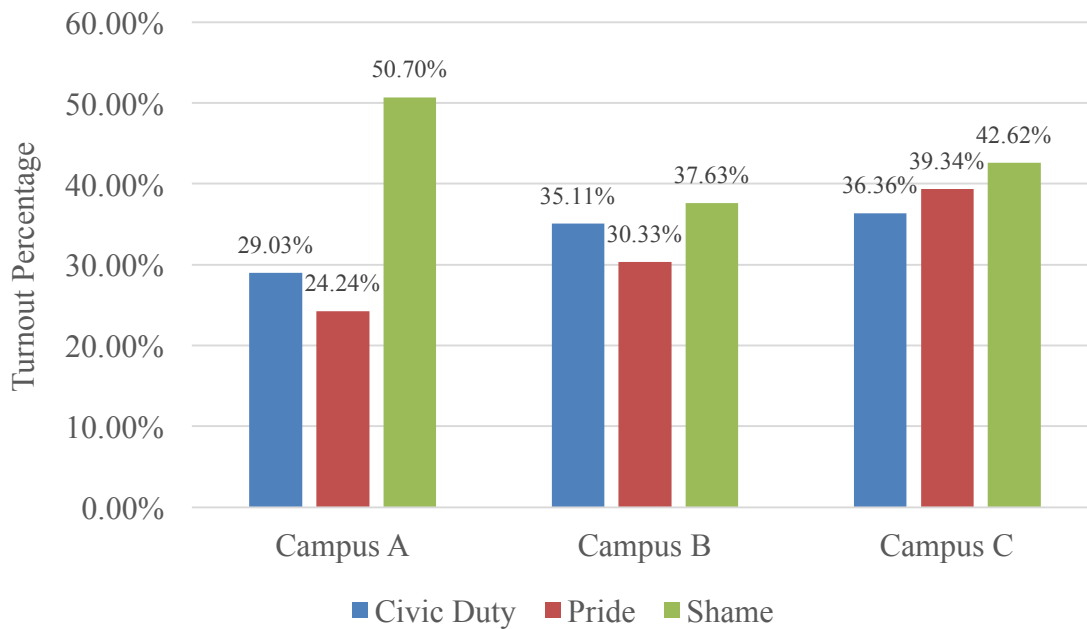


Table 5.14: Logistic Regression, Voting Among Email Openers By Campus, Harris County (2014)

	Model I: Civic Duty & Campus A Baseline	Model II: Civic Duty & Campus C Baseline	Model III: Shame & Campus C Baseline
Civic Duty			-0.92* (0.37)
Pride	-0.25 (0.40)	0.13 (0.27)	-1.17** (0.37)
Shame	0.92* (0.37)	0.26 (0.27)	
Campus A		-0.33 (0.34)	
Campus B	0.28 (0.29)	-0.05 (0.22)	-0.55* (0.25)
Campus C	0.33 (0.34)		-0.33 (0.30)
Civic Duty x Campus A			
Civic Duty x Campus B			0.82* (0.38)
Civic Duty x Campus C			0.66 (0.46)
Pride x Campus A		-0.37 (0.48)	
Pride x Campus B	0.03 (0.42)	-0.34 (0.29)	0.85* (0.39)
Pride x Campus C	0.37 (0.48)		1.03* (0.45)
Shame x Campus A		0.66 (0.46)	
Shame x Campus B	-0.82* (0.38)	-0.17 (0.29)	
Shame x Campus C	-0.66 (0.46)		
Constant	-0.89** (0.28)	-0.56** (0.20)	0.03 (0.24)
Nagelkerke R ²	0.0125	0.0125	0.0125

N = 3040, + p < .10 * p < .05 ** p < .01 *** p < .001

It is plain to see that the effects of each email are different on each campus. Whereas the Pride message had the highest open rate on Campus B, it generated the lowest voting rate among openers. It is thus possible that the combination of Outlook plus the social pressure subject line ("Voting Records Are Public") and the visible first sentence ("Thank you for being a registered voter!") combined to produce the highest open rates, but that the contents were not as effective at mobilizing voters. Notably on both Campus A and C, subjects who read the Shame emails voted at the highest rates, tracking with past social pressure research in which attempting to induce the emotion of shame is the most effective mechanism of driving voters to the polls (Gerber, Green & Larimer, 2010). This provides further support for Hypothesis 7, which states that Shame will produce higher turnout than the other messages.

Effects of Opening The Second Reminder Email on Turnout

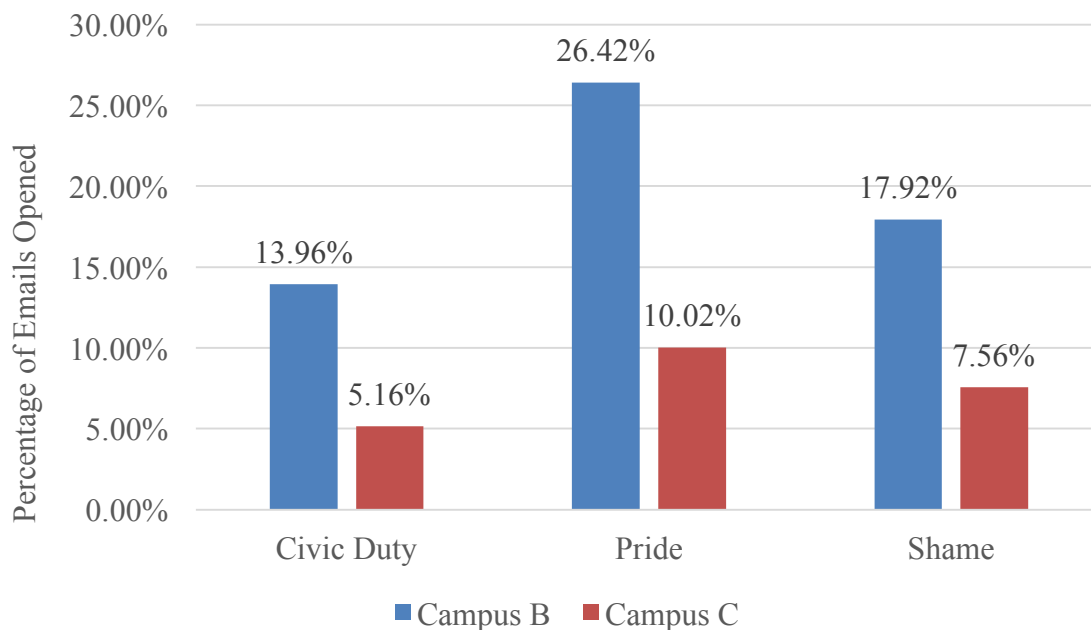
Finally, a series of tests were performed to determine if a second email had an impact on raising turnout on Election Day. Data suggest that the second wave of emails were blocked to Campus A, since not a single subject opened the email. Only 603 subjects were initially assigned to receive a second email on Campus A, and after Early Voting only 547 were left to be treated (the remaining 56 already voted). While it is possible that the emails were delivered and all went unopened, it is more likely that the campus email client blocked the sender due to spam reports or complaints after the first wave of reminders. As such, analysis of the impact of the second email will not consider Campus A.

A series of logistic regressions were conducted on subjects who were both assigned to receive a second email, $N = 5,833$. The results determined that again subjects were more

likely to open Pride or Shame messages than Civic Duty. In keeping with campus-specific findings for the first email, subjects on Campus B were again more likely to open the second wave of emails. There was a significant increase in open rates among the Pride and Shame emails over Civic Duty, and Pride also bested Shame. This is a curious finding, since the Pride and Shame emails had the same subject line, and since only one campus uses Outlook, thus providing a glimpse inside the message from the preview pane in the inbox. It is possible that the positive feelings engendered by the first Pride email made subjects more likely to open the second one.

There was no significant interaction based on campus for the second emails. Open rates are depicted in Figure 5.14 below. However, a subsequent round of analysis found

Figure 5.14: Open Rates Of Second Email By Campus, Harris County (2014)



that opening the follow-up email had no impact on voting rates. Tests for significance of

opening the second message of the email were not significant when including a control or interaction with a campus dummy variable, suggesting that in Harris County the second message to vote had no greater impact.

Discussion, Harris County

Ultimately it is hard to call this experiment a success in terms of increasing voter turnout due to the technological problems in implementation and the largely non-significant results. Assignment to receive one or two emails appears not to have had a positive impact on turnout, regardless of the message. However, of subjects who did receive the emails, the social pressure subject line increased the open rates significantly, and among subjects who opened the emails the social pressure Shame emails appear to have generated the highest level of turnout. This suggests that the message can effectively mobilize additional citizens who are already predisposed to open an email about voting, and that the challenge lies in maximizing open rates. The effectiveness of the Shame treatments also tracks with past social pressure research findings (Gerber, Green & Larimer, 2010).

The most important contribution of these results is a deeper understanding about why email GOTV experiments may produce null results: namely, the heterogeneous effects of email clients and study populations. Campus B utilizes Outlook for its email client, which may be reflected in the substantially higher open rates – twice that of Campuses A and C. While the higher open rate may be due to other differences between campuses such as demographics or underlying campus culture, it is worth considering that the email client also played a role. Outlook's user interface changes how subjects interact with the email,

by previewing the first sentences before the message is opened and by registering an email as opened when the recipient merely scrolls over it in his or her inbox. Most email experiments do not disaggregate results based on email client, likely due to an inability to know on what device an email is received -- laptop, mobile phone, forwarded from one client to another. Outlook impacts the results the experiment by generating heterogeneous open rates, which in turn impact turnout rates within openers, due to a disproportionately larger pool of Campus B subjects who opened the Pride email but did not vote. Ironically, this difference would not have been measurable without the inclusion of three sites in Harris County, one of which happened to use a different email client.

Each campus site in Harris County had different results in terms of how the email messages impacted turnout, likely due to underlying differences in each location's study population. As demonstrated previously, subjects at each location also had a significantly different mean and standard deviation of Total Vote Count. There may be an element of campus culture that impacts voter turnout that is not reflected here -- for instance, if one university is closer to Early Voting locations or has signs or banners promoting political participation. Campus B is the flagship university, offers residential housing, and enrolls many graduate and professional students. The location also had more faculty members included in the experiment. Campuses A and C are much smaller, and serve commuter populations. As such, the differences in turnout on Campus B may result from a campus population that has stronger social ties, which may have made the social pressure messages more powerful. It is also possible that the underlying demographics on each campus are a factor in explaining disparate turnout rates. Campuses A and C are designated Hispanic-

serving institutions. In Texas, voter turnout among Hispanic citizens has lagged behind that of White citizens, reaching only 39% in the 2012 Presidential election (Latino Decisions, 2014). Social pressure works by emphasizing the injunctive norm of voting; if voting is indeed not the norm within communities then reminding subjects that their voting records are public may not have a mobilizing effect. Despite the challenges in analysis presented by the three campus locations in the study, the ability to estimate results by sub-populations in the same county help shed light on why email GOTV experiments have not worked particularly well to date. Future email experiments that use large email lists that range across geographies and jurisdictions may want to find a way to control for local election effects in their statistical models.

Sadly, this study may have been doomed by implementation problems, which did not occur during a previous effort to use the combination of email messages and Facebook ads to increase turnout. In the pilot test of this design, only the combination of Facebook ads and emails produced a significant gain in turnout. That study was deployed using an email list from a political organization, and thus was not subject to the challenges of matching university email addresses to the Facebook user database or having emails blocked en masse, as the second wave appears to have been on Campus A. Furthermore, this experiment utilizes 16 treatment conditions, which result in small subject pools for each, particularly on Campuses A and C, which have much smaller enrollments and matched lists of voters. Furthermore, there is some evidence that the randomization may have failed, since subjects that ostensibly received the same treatment, absent Facebook ads -- one email or two -- voted at statistically different rates. That said, there is some

evidence of the value of social pressure messaging to both increase open rates and voting rates among email openers, though results vary by campus.

Discussion

Although these studies failed to produce conclusive results demonstrating the ability of social pressure emails to increase voter turnout, there are some findings that suggest the value of further email experimentation. In both Bexar County and Harris County, social pressure subject lines produced statistically higher open rates than the Civic Duty subject line. At the very least, social pressure is able to put voting information about polling locations and times in front of more voters than more generic blandishments urging voters to "do their civic duty." These two experiments also produced some heterogeneous, albeit small, significant effects. Receiving two emails in Bexar County did increase subjects' overall odds of voting, regardless of the message. This suggests that subsequent waves of reminders may prove effective. In Harris County, the Shame social pressure emails increased turnout among those who opened them as compared to recipients of Pride and Civic Duty messages. Overall, however, these experiments failed to replicate the findings from the 2013 pilot study that produced statistically significant gains in turnout using a combination of Facebook and email messages.

In addition to the technological problems with the Facebook ads and emails delineated above, several factors related to the electoral context may have limited the experiments' effectiveness. In the 2014 general election, Texas had the lowest turnout of any state with a gubernatorial or Senate contest on the ballot, with only 33.1% of eligible voters turning out statewide. This lackluster participation is not for lack of effort to

mobilize voters -- campaigns and civic organizations spent millions of dollars trying to boost turnout. It is possible that anonymous emails reminding voters to head to the polls are as ineffective as direct mail, which now produces average gains in turnout of less than 1%. Furthermore, statewide media had largely written off the viability of the Democratic nominee for governor owing to polling showing her trailing her Republican opponent by 20%. News coverage throughout early voting also focused on the low turnout. Since emphasizing low turnout has been shown to reduce intent to vote and actual turnout (Gerber & Rogers, 2009; Keane & Nickerson, 2015), perhaps these media reports created a descriptive norm that in turn further decreased participation.

The overall lackluster turnout and limited success of the experiment may also be due to students having difficulty complying with the state's newly enacted voter identification law, requiring voters to present one of a limited number of government-issued photo ID's. Student ID's are not an accepted form of identification, so students who used them in the past to vote or did not have another accepted form of ID would have been unable to vote in this cycle. One recent study suggests that the law was a deterrent to participation in Texas in a congressional district that included portions of Bexar County (Hobby, Jones, Granato, & Cross, 2015). A separate analysis found that over 608,000 Texas voters lacked proper ID (Clark, 2014). This figure was based on analysis by two leading political scientists, Stephen Ansolabehere of Harvard University, and Michael C. Herron of Dartmouth University. Though free election identification certificates were available from county offices, as of mid-October 2014 the state had only issued 295 such ID's (Olsen, 2014). Students were anticipated to have a particularly difficult time

complying with the voter ID law, so it is possible that the treatments were effective in convincing the subjects to go to the polls, where they were blocked from casting a ballot due to voter ID laws. As such, these individuals would not show up on the list of voters, and would not be registered as having voted for the purposes of this study. One can argue that even if the treatment may have gotten additional individuals to the polls, if they were unable to cast a ballot that does not help change the actual voter turnout. Voting, after all, is a binary variable. Researchers may want to avoid conducting future experiments in states with laws that actively put up barriers to participation with laws that actively put up barriers to participation that may have unintended effects on treatment outcomes.

Furthermore, the student-centric study population had extremely limited past participation, having voted in on average less than two of the last 10 general and primary elections. Ample research suggests that voter propensity moderates the effect of mobilization treatments, and that in low-salience elections it is difficult to mobilize infrequent voters (Arceneaux & Nickerson, 2009; Dale & Strauss, 2009; Gerber & Rogers, 2009; Malhotra, Michelson, Rogers & Valenzuela, 2011). Notably there were no significant interactions in these experiments between past voter history and treatments; however, it is possible that the 2014 general election in Texas wound up becoming a sufficiently low-salience affair such that the majority of subjects were too unlikely to vote in it to be able to be mobilized. Given that only one third of the potential subjects for this experiment could be matched to public records using their full name and birth date, voting simply may not be relevant to these campus populations. Social pressure messaging relies

on individuals caring about what others might think of their voting record, so if subjects don't care about being thought of as a voter, the treatments might not work.

Finally, it is possible that large-scale social pressure experiments from unfamiliar sources such as the emails used in this study do not work in Texas. In the 2010 election, Matland and Murray (2014) fielded a social pressure experiment that utilized descriptive and injunctive norms to boost turnout in Texas and Wisconsin, the latter of which has some of the highest turnout in the country. In Texas they sent mailers from "Lubbock Get Out The Vote" to test the effects of messaging, norms, and frequency on turnout. Their study finds no effect of social pressure in Texas, and argues that the self-reliant culture of the state may be at odds with the voting norms in the treatment. Overall, Matland and Murray (2014) conclude that the two states produced quite different results:

In Wisconsin, results are largely, but not entirely, consistent with the proposed theoretical relationships. Timing matters. A norm-consistent message is more effective than an inconsistent or neutral message. In Texas, however, the time at which mobilization postcards are sent is irrelevant, as is their content. What matters is receiving a GOTV mailer, not what that mailer says (p. 314).

It is possible that the norm of voting is simply not salient to a state with the lowest turnout in the nation and a history of non-competitive statewide elections.

On the whole, while the findings are not what was expected or desired, they do suggest the value of continuing to experiment with email as a way to increase voter turnout. After all, emails are extremely inexpensive, and able to reach broad swaths of the voting population. It is possible that some combination of message and frequency will produce the desired boost in participation that is sought by campaigns and civic organizations alike.

It is likely that email experimentation will continue. The results here suggest that future experimentation should consider the choice of the targeted email list carefully, try different messages, and explore the impact of sending multiple reminders. Furthermore, unseen factors such as a voter's choice of email client and underlying voting culture may be the reason why these experiments often produce null results.

Chapter 6: Implications Of This Research in A Digitally Networked Society

The widespread usage of the Internet in the United States offers tantalizing potential to increase voter turnout using digital communications. However, as the varied results of the studies in this dissertation show, simply sending reminders to vote through online channels is not enough to reinvigorate political participation. This final chapter offers discussion of these results, outlines the theoretical, methodological, and practical contributions of the research, delineates limitations and next steps, and ultimately engages with the driving question behind this research: can digital media be used to increase voter turnout? The answer, in Chapter 4, is an emphatic yes. The studies in Chapter 4 demonstrate that Facebook's platform can be leveraged by users to generate substantial increases in turnout within their own friend networks by emphasizing the social norm of voting and increasing awareness of individuals' conformity with that norm. Furthermore, raising the visibility of voting behaviors within networks is powerful enough to have an effect on digital bystanders who see it – or at least those who are new or infrequent voters. However, as the studies in Chapter 5 show, similar messages that emphasized the public nature of voting records were unable to substantially increase turnout within campus communities when delivered via email from an unknown voting organization. These mixed results offer deeper insights in terms of how to proceed in future efforts to mobilize turnout using digital media, and contribute to our broader theoretical understanding of how communication technology and social phenomena can influence pro-social behavior.

This dissertation addresses several gaps in knowledge about the role of digital media in influencing voting behavior. While there is ample evidence that digital media usage is positively associated with participation in a variety of political activities, there are few studies that have attempted to make causal claims about this relationship. Chapter 4, which presents the results of two peer-to-peer Facebook experiments, successfully demonstrates that this widely utilized platform can be used as a conduit to measurably increase turnout. Prior to this project there was minimal published research that looked at Facebook specifically as an experimental medium for GOTV studies (Bond et al., 2012; Teresi & Michelson, 2015). The results show that the social networking platform can be a powerful tool for increasing turnout. Although Chapter 5 largely fails to use email messages to generate sizeable increases in turnout, the two experiments reported therein expand on past work by testing a variety of messages and the impact of sending multiple rounds of treatments. There are some minimal significant results suggesting that two emails are more effective than one or none, that social pressure subject lines increase open rates, and that the social pressure messaging within the email can be more effective on people who open the messages. However, the explained variance in each of these tests is relatively small and does not yet support the idea that email can be used to effectively mobilize voters by a sizeable percentage. Furthermore, the disparate findings in Harris County that appear to be based on email client provide insights as to why these experiments are not working.

Overall, peer-to-peer messages sent by actual Facebook users to their friends proved far more effective than unsolicited emails and Facebook advertisements sent from a fictitious non-profit organization. The difference in the effectiveness of the treatments

using Facebook status updates over the unsolicited emails and advertisements can be explained not simply by the platform, but by the role of the online network. These experiments show that digital media can increase turnout, but that the power to do so lies with networked connections among the people using it. Digital technology alone will not increase voter turnout; instead, it is the reproduction and amplification of human social norms within networks through digital media that can drive increased turnout. By leveraging their online networks, citizens can motivate participation and increase the perceived publicity of compliance with the social norm of voting, both of which have been shown here to increase turnout. Emails from an unknown organization that proffer no concrete threat of social sanction are simply not as effective as reminders from a friend that incorporate the individual's actual voting history. Taken as a whole, this research suggests that it is digital networks, not merely digital communication itself, that can increase turnout – and potentially do so in excess of what has been demonstrated using analog methods.

Theoretical Contributions

The studies reported in this dissertation make several contributions to theoretical work in the studies of communication, digital media, and social norms. By showing the power of networks to mobilizing voters, Chapter 4 adds to our understanding of how interpersonal influence shapes political behavior. Furthermore, these studies provide concrete examples of the theorized changes to citizenship and activism created by widespread digital media. Conversely, Chapter 5 contributes to our theoretical understanding of social pressure, and when and how it works. Finally, both studies offer

insight as to the power of social norms to drive behavior change, and how the norm itself must be salient and conformity to it made visible in a meaningful way.

Chapter 4 makes an important theoretical contribution to our own understanding of democracy by demonstrating that voting behavior circulates in networks. Katz and Lazarsfeld (1955) famously demonstrated the power of interpersonal influence on political opinion formation. Opinion leaders had a greater impact on the political decision making of members of their networks than the mass media. These studies extend the theory of interpersonal influence on voting by showing that social pressure from within one's network is more influential in increasing turnout than mere awareness of an election as is generated by the media and campaign activities. The studies in Chapter 4 demonstrate that there is a flow of political action -- not just information and opinions -- within personal networks. By experimentally emphasizing the injunctive and descriptive norms of turnout and increasing awareness of voting behavior, these studies were able to produce sizable and measurable gains in participation from members of confederates' networks. The results speak to Rosenstone and Hansen's (2003) statement that people vote because someone asks them to, and affirm their theorized power of networks to mobilize voters. Technology has enabled individuals to make their networks manifest and visible through digital media, thus facilitating this interpersonal outreach. These studies make clear that these digital networks can be successfully leveraged to increase voter turnout.

The studies in Chapter 4 also provide valuable experimental evidence to back up theoretical work about the power of online networks and potential of digital media to create new forms of political participation. In his work on digital networks, Manuel Castells

(2012) says that social media "maximizes chances of participation" (p. 220). This treatment quite literally maximizes voters' probabilities of participation by leveraging technological affordances of the Facebook platform. It also demonstrates Castells' conception of how new forms of social organization made possible by information technology can become a source of power. The methods used in Chapter 4 enable citizens to independently increase turnout by reminding members of their Facebook networks to vote using social pressure elements. A collection of individuals motivated by a particular issue can choose to work together and use this strategy to affect the outcome of a low-turnout or local election. Posting social pressure messages in Facebook tagging others does not require overt or hierarchical organization by a group.

In developing a method for individuals to take voter mobilization into their own fingers, Chapter 4 also provides support for what Bennett (2007, 2008) describes as "actualizing citizenship," which emphasizes the role of peer networks in organizing collective action. Prior to Facebook, citizens were somewhat limited in how they could effectively mass-mobilize their networks for political action. It is impractical to canvass all of one's friends, especially if they live out of town. Using one's holiday card list to target social pressure postcards may be cost-prohibitive and run afoul of limits on personal political spending. Facebook provides an immediate and inexpensive way to remind all of one's friends to turn out in a way that also provides public awareness of compliance with the norm of voting. In this sense the treatments reflect what Bimber, Flanigan, and Stohl (2005) describe as "changing manifestations of collective action" (p. 384). The treatments work because Facebook enables users to make behaviors of others visible to their entire

networks -- here, by tagging friends in status updates that publicize their voter participation. It is not enough to have a digital network; the actions of members also must have the potential to be seen by others in the network. Thus this specific form of actualizing citizenship not only utilizes but also depends on the technological affordances of Facebook to increase voter turnout. In this manner it reflects boyd and Ellison's (2008) definition of social media, in which users can "view and traverse" their networks, and behavior of users is visible.

However, the experiments in Chapter 5 produced mixed results about the efficacy of social pressure messaging itself when delivered via email, which speaks to our theoretical understanding of how these messages work. In Bexar County, the messages had no significant effect, though social pressure emails were more likely to be opened due to the subject line. In Harris County, among email openers the Shame messages both produced significant boosts in turnout over Pride and Civic Duty, though the total variance explained was approximately 1%. Given the seemingly minimal impact of the messages, it would not be inappropriate to suggest that social pressure messaging did not work here, which prompts exploration of why a seemingly effective mobilization tactic failed. Notably, the messages used in these experiments departed from past social pressure studies in two meaningful ways: they did not include the "voter report card," or the list of past elections and whether the voter cast a ballot, and they did not offer a credible threat to publicize the names of voters after the ongoing election. The messages simply reported that voting records are public, but not to whom, how, or when this information might be revealed. As such, it is likely that the message of the emails failed to make subjects think

their behavior would be known to others, which is key to driving conformity with the social norm of voting. In this sense, the social pressure emails functioned much like direct mail, which recently has been shown to produce less than a 1% increase in turnout (Green & Gerber, 2015).

The results of all four studies also contribute to our theoretical understanding of how social norms shape behaviors. The Collin County study in Chapter 4 demonstrates that social media also has the ability to create descriptive social norms that are powerful enough to influence behaviors. New and infrequent voters can be mobilized to participate simply by being exposed an artificial impression of high turnout created by friends' Facebook posts. Social media has been at times criticized for engendering a form of anxiety known as FOMO, or "fear of missing out": a concern that all of one's friends are having fun without them that arises when individuals see images of said conviviality on social media. The results of the Collin County study provide a positive take on the same phenomenon of the power of descriptive norms created through social media, and suggest that these postings can be utilized to increase participation in pro-social activities, potentially without the negative emotional consequences. Furthermore, the drive for social approval is strong, and one cannot rule out the notion that subjects in the Pride condition voted in the hopes of being publicly praised for participation.

The studies also suggest that norms impact people differently depending on how the publicization of their conformity to the norm is structured. In the Dallas County study, the most effective treatments – the Shame messages calling out friends for failing to vote in the ongoing election – created a *de facto* descriptive norm of low turnout while

emphasizing the injunctive norm that everyone should vote. Conversely, the less-effective Pride treatments that created a descriptive norm of high past turnout were not as effective. These results track with prior studies in which social pressure is directed at an individual and includes their voting history (Gerber, Green & Larimer, 2010). However, the Dallas County findings run counter to past studies that argue that mixing messages of descriptive and injunctive norms (essentially stating "turnout is low but you should go vote") do not raise turnout (Gerber & Rogers, 2009; Keane & Nickerson, 2015; Matland & Murray, 2014). The Collin County treatments – which do not tag subjects directly – follow this research. These results suggest that direct social pressure is more powerful in terms of changing behaviors by publicizing the individual's conformity with the norm of voting, rather than simply creating a descriptive norm that doesn't impact how others might view the subject.

The Chapter 5 results suggest that if a norm is not salient to a community, then emphasizing conformity with should not produce much of an impact. Essentially, baseline turnout in Harris and Bexar County was very low, both on the countywide and university campus level. The primarily student population also had a minimal amount of past voter history, likely due in large part to age. Finally, two of the campuses had a high Hispanic student population, and in Texas Hispanic communities tend to exhibit turnout that is 20 percentage points lower than their White counterparts. As such, it is possible that the injunctive social norm of voting is not relevant to these subjects, and that the perceived descriptive social norm is "no one votes." If voting is not a salient norm, then the social pressure treatments – which stress the injunctive norm and try to inspire feelings of pride

or shame over past participation – simply may not work. This tracks with the theory of when and how descriptive social norms can be used to influence behaviors. Only social norms that are salient to the individual and their community can effectively be leveraged to change outcomes (Cialdini, Kallgren, & Reno, 1991). Quite simply, the theory behind using social norms suggests that for them to work they have to be relevant to the target population, and in the two email studies here there is strong evidence that the norm of voting is not meaningful.

Methodological Contributions

These studies also make several contributions to research methods, which are relevant to scholars seeking to test hypotheses about digital media or the impact of social networks. The methods used in Chapters 4 and 5 demonstrate how to conduct experiments using the Facebook platform that are randomized at the level of the individual, without the explicit involvement of Facebook's own data science team. The peer-to-peer mobilization study uses confederates to conduct experiments within networks; this method has the potential to be broadly applied throughout the social sciences. Through the use of Facebook friend groups, it is possible to expose subjects to and test the impact of a range of messages and images designed to mobilize or persuade. In the email address-oriented studies, custom audiences were used to make sure that subjects received only the advertisements for the condition to which they were assigned. This offers greater flexibility in treating subjects with Facebook ads than targeting by age, sex, and/or geography.

The implementation challenges reported in Chapter 5 also shed some valuable insight as to why email experiments are not working. There is evidence that subjects' choice

of email client can influence results. Results on Campus B were statistically different from those on Campus A and C, and may stem from the campus-wide use of Outlook for their email system, which offers an extended preview of the email message. Outlook users can see more of the email in their inbox than simply the subject line – they can see the first few sentences if they scroll over the message without clicking to open it. This preview feature may explain the divergent open rates among subjects in the Pride condition, and the lower rate of voting among Pride email openers. Subjects' choice of email client and how it renders messages in the inbox are not variables that can be controlled for or even known in an experiment. If indeed reading the message of the email does matter in terms of mobilizing turnout -- as is the case in the Harris County study -- then email clients that produce disparate open rates may also influence turnout. This may limit the ability of email GOTV experiments to produce measurable increases in turnout, since more general lists that are not restricted to a university setting will vary wildly in the choice of email client and device used.

While the emails themselves did not make a tremendous impact on turnout, the combination of ads and messages used in the study have proven effective previously (Haenschen, 2015). This suggests that the email address itself may be the solution to increasing turnout, because it can be used to target multiple forms of reminder messages. Email reminders coupled with Facebook ads have also proven more effective at raising funds online than sending either medium alone, so the method here may need to center on the email address rather than the email message.

Practical Contributions

The results of these studies also have implications for civic organizations and campaign practitioners looking to increase turnout using online communication tools. Chapter 4 provides a reason to be optimistic about the use of digital media to increase turnout, based on the boost in participation generated by tagging Facebook friends in voting reminders that include social pressure elements. In the Dallas County study, subjects who were treated with Shame status updates exhibited a 21% increase in turnout over the control group; those who received the Pride treatments produced a 10% boost in turnout. Both of these increases in turnout are higher than what has been produced by canvassing or social pressure mailings in the past. As such, these studies present a new form of voter contact – digital canvassing, in which volunteers systematically knock on their friends' digital doors, reminding them to vote and publicizing their participation history.

This method is cost-effective and accessible to any organization or individual who has access to a public voter file. All that is needed to carry out this study are a group of willing confederates and the ability to match friend lists to a list of registered voters. The treatments themselves are free; the only cost entailed would involve staff members who perform the matching process and send confederates a list of which friends to tag who haven't voted yet. As such it is much less costly than television ads or direct mail, which have not been shown to produce tremendous gains in turnout, or even a highly skilled paid canvassing or phone banking program, which can work but are very costly. As such this method has tremendous potential to be used by coalitions engaged in what Bimber (2003) describes as a more event-based form of political organizing, in which disparate groups

and individuals unite in a short-term effort to win a battle of shared interest, and do not invest in long-term coalition building after the fact.

This form of voter contact is also particularly relevant to any organization or campaign that is focused on an urban or young, apartment-dwelling population. Whereas past social pressure experiments threatened or actually disclosed participation histories to subjects' neighbors (Gerber, Green & Larimer, 2008, 2010), the Facebook method may be more suitable in an increasingly urbanized America and among a subject population that may be more likely to live in an anonymous apartment complex than a leafy suburban street. The effectiveness of the studies is likely due to the unique affordances of the Facebook platform – being tagged in social pressure messages makes one's failure to vote visible to potentially everyone they know. In contemporary America, the online network may supersede the neighbors as the group whose opinion matters.

While the email experiments did not perform as intended, the results still have implications for organizations that continue to use the medium to remind supporters or members to vote. The null results are not surprising in the broader context of email studies; most experiments actually find decreased participation among treated populations (Bennion & Nickerson, 2011; Nickerson 2007a, 2007c). One study that did produce a significant result, boosting turnout by 0.56% sent the reminder emails from the county voter registrar (Malhotra, Michelson, & Valenzuela, 2012). The studies in Chapter 5, however, attempted to improve on these findings in two ways: by including social pressure messaging in the text of the email, and coupling the emails with Facebook advertisements. Due to unforeseen technological problems the Facebook ads did not display, suggesting a

serious impediment to the widespread adoption of this method. As such, organizations need to determine how well their email list matches to Facebook before deciding to proceed with this tactic. The success of social pressure messaging in a peer-to-peer context using Facebook and its failure when used in a massive, unsolicited email blast suggest that these treatments must directly leverage subjects' social networks in order to drive up turnout. Social pressure works by emphasizing the social norm of voting and publicizing compliance with that norm to other members of an individual's network. If individuals do not perceive that those they care about will be made aware of their voting behavior, the treatments are unlikely to work.

Limitations of the Research

The four experiments reported in this dissertation each faced limitations in terms of methods and implementation that should be addressed in future expansions on this work. In Chapter 4, both studies' sample populations were a result of the confederates who agreed to participate in carrying out the project. This is inescapable since the experiment tests hypotheses within networks and thus must utilize existing spheres of social connections. Furthermore, the Dallas County study had a small sample size – 293 subjects at the point of randomization. The direct social pressure study merits replication with a much larger sample, which by necessity will require more confederates. As such it is an ideal method for a membership-based civic organization to pursue. However, many organizations fear the negative backlash that can arise from social pressure, particularly the Shame treatments (Mann, 2010). Anecdotally, the confederates who participated in these studies reported no angry responses from their friends, which suggests that this concern may be less dire within

individual friend networks than when coming from a political organization or campaign. The Collin County study testing the effects of social pressure by proxy also merits replication with a larger sample; given the significant interaction between voting history and turnout, a subject pool with more diverse voter history should be recruited and subjects should be block-randomized by past participation level. Block-randomizing at the voter history level would result in each each group having an even distribution of the covariate that appears to moderate the effect of treatment; this would allow for a more conclusive statistical analysis. Such a study would provide more insight as to which voters might be mobilized by witnessing the social pressuring of others.

While the direct peer-to-peer mobilization methods were effective in increasing turnout, the cumbersome process of matching individual Facebook friends to the voter file and tagging them individually also limits the ability of this treatment to scale. Automating the matching process to the voter file – either through a Facebook-approved application program interface or by Facebook itself, which could then provide or sell access to these data – and enabling daily updates of who has or has not yet voted would vastly increase the accessibility of this method. Additionally, improving access to voter lists would make it easier for individuals to determine if their friends have voted. Currently in Texas all counties make the lists available, but some charge money. A centralized, searchable database would make it easier to determine if an individual's friends have voted. One such example is BadVoter.org, which provides a database of registered Oklahomans and allows anyone to search by name to see an individual's voter history. Social pressure is predicated on the ability to publicize voting behavior, past and present. Currently that ability is limited

to those with the knowledge and funds to obtain public voter lists. However, concurrent with the need to prevent state-level retribution, backlash against misapplied social pressure – in which candidates or interest groups make up or misuse voter history – threatens to create state-level bans on the preventing the use of public voting records in political communication.

Given that this method is predicated on confederates who are willing to apply the treatments to members of their own networks, one way to extend this research is to recruit a broader range of people to participate in tagging their friends. The confederates who participated in the two studies in Chapter 4 were high in what La Due Lake and Huckfeldt (1998) term "politically relevant social capital" (p. 567). It is possible that the treatments worked because these individuals were known within their networks to be politically active, such that the voting reminders were consistent with the range of their offline and online activities. One way to test the importance of the confederate on the treatment effect is to replicate this study utilizing both visible activists and people who have minimal political engagement. This would determine if the reminder is more salient when it comes from someone who frequently talks about politics, or when it comes from someone who has heretofore shown little interest in voting. Such a study would also speak to the broader applicability of this method, because if social pressure on social media only works when it comes from someone high in politically relevant social capital, then there are limits as to who can effectively apply the treatment.

As noted above, the studies in Chapter 5 were hampered by a series of technological problems stemming from the failure of the Facebook ads to properly treat subjects and the

blocking of an entire wave of emails. These speak to the limitations of this method and raise questions about the broader applicability of unsolicited email as a voter mobilization method. The primarily ".edu" email lists generated a poor match to the Facebook user database; as such, anyone seeking to replicate the previously successful combination of emails and ads should start by uploading their email list to Facebook to see how many subjects can be treated. Lists that predominantly consist of mass-market email clients (Yahoo, Gmail, etc.) are likely to produce a higher match rate; those lists can also be more difficult to come by without direct participation of a membership organization. Furthermore, one wave of emails -- the second round of emails sent to Campus C in the Harris County study -- were seemingly blocked by the recipient domain.²² The inability of experimentalists to ensure delivery of email treatments remains a key methodological challenge in this kind of work. Even mass-market email clients may mark the messages as spam before they reach the intended inbox, particularly if they come from an unknown organization. Even if the social pressure messaging in the emails does motivate subjects to head to the polls, if the voting reminder emails cannot actually be delivered, then they cannot impact turnout.

Despite the largely non-significant findings in the Bexar County and Harris County studies this experiment does merit replication, ideally with changes to the email treatments

²² A fifth experiment planned for this dissertation faced an even larger technological obstacle: the entire first wave of treatment emails was blocked by the recipient university, a large public university in North Texas. These experiments were conducted without explicit approval from the targeted campuses. Future researchers may want to gain permission such that the IT department can try to avoid blocking all of the treatments.

themselves. The messages in Chapter 5 may have failed to generate the "pressure" component of social pressure due to the absence of a sufficiently powerful threat to disclose participation after the election. An email that promises to disclose names of non-voters in an advertisement in the school newspaper or on a public website might spur greater turnout. Furthermore, it may not be the medium itself that is to blame, but rather the sender of or audience for of the emails. In Chapter 5, the emails came from a fictitious organization and targeted a primarily student population. In other past studies that produced null results the emails came from campus leaders or non-profit organizations and targeted university students (Nickerson 2006, 2007). Since the only study to date that produced a positive and significant effect sent emails from the official county voter registrar and targeted a general list of registered voters (Malhotra, Michelson, & Valenzuela, 2012), it may be necessary to either vary sender names or avoid targeting university students to increase turnout using email. The treatments also failed to include the voter report card that lists past participations and abstentions. As such, the treatments likely failed to generate the social pressure needed to motivate turnout as a way to avoid public sanction for failing to conform to the norm of voting. This provides a possible glimpse inside the "black box" of social pressure experiments – the messages don't work if the knowledge that voting records are public is not accompanied by a meaningful threat to disclose participation. Future social pressure experiments may want to randomly assign these message components to determine if the treatments need each element to be effective.

Ultimately, the power of email as a voter mobilization tactic may lie in its ability to be utilized within networks, rather than sent on a massive scale via automation. The

peer-to-peer studies were effective because they increased the perceived visibility of voting behavior and norm compliance within networks. A similar method can be employed via email, in which confederates email their friends directly with social pressure messages. The messages might be more effective when all subjects are CC'ed, rather than BCC'ed, to increase the perception that others are aware of one's voting behavior. While the treatments might not be as public as those on Facebook, the messages would still make clear that at least the subject's friend, the sender, would know if they voted or not.

These social pressure experiments also hinge on subjects caring if others know they voted or not: if this norm is not salient to a person or community, then the treatments likely won't work. The biggest limitation on these studies is the lackluster participation in the 2014 general election in Texas overall. Approximately one third of registered voters in the state cast a ballot, ranking Texas last in participation among states with a statewide contest on the ballot. If voting is not the norm – and arguably in Texas it is not, outside of Presidential election cycles – then treatments that attempt to leverage the power of this norm should fall flat. In Chapter 4, the treatments work by leaning on Facebook's ability to increase awareness of an individual's compliance with social norms. However, Dallas County subjects who received the Shame treatments only voted at a rate of 62.3% -- that means over a third of subjects weren't moved by the specter of public shaming. Even the power of being pilloried in front of one's entire network for failing to vote is not enough to motivate a majority of subjects to vote.²³

²³ See also Gerber, Huber, Doherty, Dowling, & Panagopoulos (2012) for an analysis of how Big Five personality types moderate the effectiveness of social pressure treatments.

Promoting the norm of voting, both injunctive and descriptive, within underperforming networks may be the ultimate challenge in fostering turnout. This is where the results of the Collin County study provide reason to be optimistic – artificially creating the descriptive norm of voting was able to increase participation among a subset of new and infrequent voters. Future studies that utilize digital media to motivate voters may want to manipulate perceptions of high turnout, which has been shown to increase both intent to vote and actual participation (Gerber & Rogers, 2009; Nickerson & Keane, 2015). This can be done on a massive scale via advertisements and mailers, and within networks by encouraging people to post selfies with "I Voted" stickers or other demonstrations of voting on social media. Separately, digital media may be ideal for transmitting messages that can increase support within underperforming demographics and neighborhoods for the injunctive norm that everyone should vote. The results in the social pressure by proxy study suggest that artificially creating the descriptive norm of high turnout can mobilize voting; this could be replicated within specific communities and populations such that heretofore underperforming communities can see themselves as voters, represented as such by people they know. While this study did not seek to measure belief in the injunctive norm of voting, it is nevertheless likely that if individuals don't buy into the importance of voting, they are unlikely to be praised or shamed into doing it. Any messages that are proven to increase support for the social norm of voting within communities would be ideal to test and disseminate online, via advertisements on Facebook and other websites targeted by demographic criteria.

Conclusion

The central aim of this dissertation was to determine if the widespread use of the Internet and digital media holds any promise for expanding democratic participation in America. Based on the results of the four experiments reported here, the participatory power of digital media appears to be in creating networks and enabling quick, easy, and inexpensive communication between members. Not all digital communication is equal: tens of thousands of unsolicited emails failed to produce much in the way of increased participation, whereas less than a dozen Facebook status updates posted by seven confederates in Dallas County generated over a 20-percentage point increase in turnout. The Facebook studies show that peer-to-peer mobilization online works, and due to the visibility of digital behavior it can be even more effective than offline canvassing or analog social pressure postcards. However, the email studies suggest that unsolicited mass-communications have as little impact online as they do offline.

As Internet usage is unlikely to decrease any time soon, the potential of digital media to increase political participation will remain tantalizing -- all the more so as offline methods of voter mobilization produce increasingly diminishing returns (Green & Gerber, 2015). What these studies show is that simply mimicking analog methods of mobilization may not be enough -- social pressure delivered via email did not raise turnout. However, strategies that leverage the specific affordances of digital media, namely the visibility of user behavior within the social networks, have the potential to increase voting in excess of what has been demonstrated offline. As such, future efforts to leverage the Internet as a way to increase political participation must also focus on developing tools that enable

people to encourage each other to vote, whether by tagging friends on Facebook or sending personalized emails.

Ironically, this dissertation -- one which sought to demonstrate the value of digital media in increasing political participation -- has determined that the power to increase voter turnout remains with the people, and more specifically within their networks. It is the power of digital media to connect individuals online and enable both the maintenance of networks, strong and weak ties alike, and cheap, easy, and instantaneous communication within them that gives it the potential to leverage the social norms that reproduce themselves in the digital space. Voting remains a social phenomenon, with participation inextricably tied to injunctive and descriptive norms about what people should and actually do that circulate within networks. Digital media can be utilized by people to both create and emphasize the descriptive norm of high turnout, while also publicizing compliance with the injunctive norm that everybody should vote. Rather than provide another reason to be pessimistic about the future of our democratic society, digital media -- through its formation of networks and reproduction of social norms online -- gives us cause to be optimistic, as long as citizens have the means and motivation to use the Internet to encourage others to vote.

Appendix A: Emails and Facebook Ads Used in Study III and IV

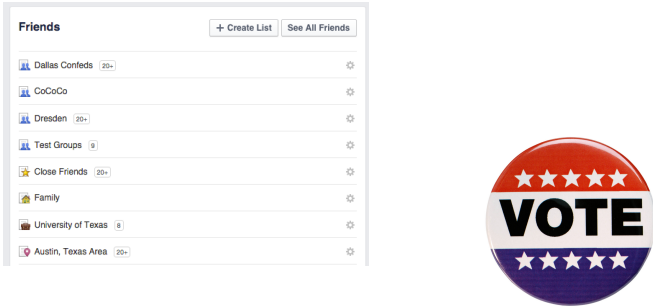
For the two peer-to-peer experiments, confederates were trained to group their Facebook friends using Facebook's Friend List function. These groups were used to prevent spillover effects by ensuring that subjects could only see the messages for the treatment to which they were assigned. Below are graphics from the training document sent to each confederate.

Figure A.1: Locate the Friend List function

Open Facebook. On the lower left, mouse over where it says "Friends" and click on the word "More." You should end up at this link:

<https://www.facebook.com/bookmarks/lists>

It looks something like this:

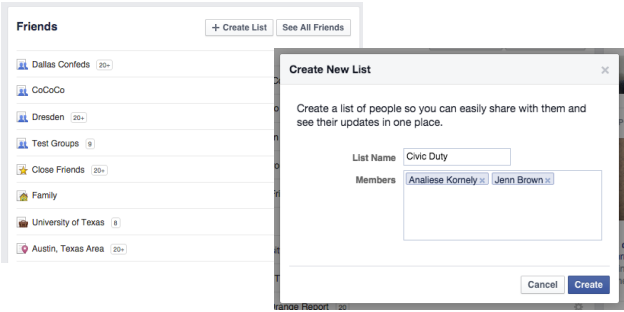


The screenshot shows the Facebook 'Friends' page with a list of friend lists. The lists include: Dallas Confeds (20+), CoCoCo, Dresden (20+), Test Groups (9), Close Friends (20+), Family, University of Texas (8), and Austin, Texas Area (20+). To the right of the list is a circular button with a red top half, a blue bottom half, and white stars, with the word 'VOTE' in the center.

Figure B.2: Create a new list

Next, we're going to create our FOUR secret groups.


Click "Create a List" and name it "Civic Duty." Add the names of the friends Katherine assigned to the Civic Duty group. Type their name until it appears in blue. Add them all. Count to make sure everyone's in. If you can't add a specific person based on their Facebook settings that's Ok, just please tell Katherine.



The screenshot shows the 'Create New List' dialog box overlaid on the Facebook 'Friends' page. The dialog box has a title bar 'Create New List' and a close button. The main text says: 'Create a list of people so you can easily share with them and see their updates in one place.' There are two input fields: 'List Name' with the value 'Civic Duty' and 'Members' with the values 'Analiese Kornely' and 'Jenn Brown'. At the bottom are 'Cancel' and 'Create' buttons.

Figure A.3: Post example, Dallas County (tagging subject)

Here's an example of a "Civic Duty" treatment:



Tag the assigned friends for the message for that day.

Set the group that matches the message




Figure A.4: Post Example, Collin County (tagging confederate)

Here's an example of a "Civic Duty" treatment:



Tag the confederate

Set the group that matches the message



APPENDIX B: Email and Facebook ads used in Study III and IV

Email Messages

Below are examples of the email messages sent to subjects in Bexar and Harris County. Each email was customized to automatically include the subject's first and last name, county of residence, and URL of his or her county's voting locations.

Civic Duty Email:

SUBJ: Do your civic duty – VOTE!

Hello [First Name] [Last Name],

This is a reminder: voting is your civic duty.

Early Voting in the 2014 General Election will continue until Friday, October 31.

Your vote is important in this election. Click here to find your [County] County polling location:

[URL of voting locations]

Do your civic duty – VOTE!



Pride Email:

SUBJ: Voting Records Are Public!

Hello [First Name] [Last Name],

Thank you for voting in past elections! We are glad that you are a regular voter who cares about our state.

Early Voting in the 2014 General Election will continue until Friday, October 31.

Your vote is important in this election. Click here to find your [County] County polling location:

[URL of voting locations]

Do your civic duty – VOTE!



Shame Email:

SUBJ: Voting Records Are Public!

Hello [First Name] [Last Name],

Public records indicate that you have not yet voted in this election.

Early Voting in the 2014 General Election will continue until Friday, October 31.

Your vote is important in this election. Click here to find your [County] County polling location:

[URL of voting locations]

Do your civic duty – VOTE!



Facebook Ads

Below are the Election Day versions of the ads. The Early Voting versions read "Early Voting ends October 31." Each ad linked to the list of voting locations in the subject's county.

Civic Duty

Do Your Civic Duty: Vote!



Election Day is Tuesday. Do Your Civic Duty: Vote! Click for poll locations.

Do Your Civic Duty: Vote!



Election Day is Tuesday. Do Your Civic Duty: Vote! Click for poll locations.

Pride

Voting Records Are Public



Thank you for voting in past elections! Election Day is Tuesday. Click for poll locations.

Voting Records Are Public



Thank you for voting in past elections! Election Day is Tuesday. Click for poll locations.

Shame

Voting Records Are Public



Records indicate you haven't voted yet. Election Day is Tuesday. Click for locations.

Voting Records Are Public



Records indicate you haven't voted yet. Election Day is Tuesday. Click for locations.

Appendix C: Additional Regression Analyses and Descriptive Statistics For Chapter 4

Table C.1: Logistic Regression, Turnout by Group, Dallas County (2014)

Treatment Group	Model I: Shame as Baseline
Control	-1.09** (0.40)
Civic Duty	-1.25** (0.41)
Pride	-0.39 (0.42)
Constant	1.16*** (0.30)
Nagelkerke R ²	0.078

N = 219, ; + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table C.2: Logistic Regression, Effect of Confederates on Treatment, Dallas County (2014)

Treatment Group	Model I: Confederates	Model II: Confederates and Treatment	Model III: Confederates, Treatment, and Vote History
Civic Duty		-0.13 (0.44)	-0.20 (0.50)
Pride		0.87* (0.44)	1.04* (0.49)
Shame		1.23** (0.44)	1.37** (0.48)
Total Vote Count			0.43*** (0.08)
Confederate C	-0.50 (0.58)	-0.62 (0.60)	-1.16+ (0.70)
Confederate D	-0.31 (0.56)	-0.36 (0.59)	-0.90 (0.68)
Confederate G	0.93 (0.59)	0.97 (0.61)	0.05 (0.70)
Confederate L	2.01** (0.77)	2.02* (0.79)	-0.36 (0.96)
Confederate M	-0.38 (0.62)	-0.41 (0.64)	0.10 (0.71)
Confederate R	1.32+ (0.79)	1.36+ (0.82)	-0.11 (0.92)
Constant	0.22 (0.47)	-0.25 (0.54)	-1.25* (0.63)
Nagelkerke R ²	0.187	0.260	0.439

N = 219, ; + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table C.3: Turnout By Confederate by Group, Dallas County (2014)

	Control	Civic Duty	Pride	Shame
Confederate C	50.00%	0.00%	50.00%	54.55%
Confederate D	22.22%	25.00%	72.73%	66.67%
Confederate G	72.73%	81.82%	50.00%	92.86%
Confederate L	87.50%	80.00%	87.50%	100.00%
Confederate M	16.67%	42.86%	66.67%	57.14%
Confederate R	75.00%	75.00%	100.00%	80.00%
Confederate W	33.33%	33.33%	80.00%	75.00%

Table C.4: Logistic Regression, Effect of Confederates on Treatment, Collin County (2014)

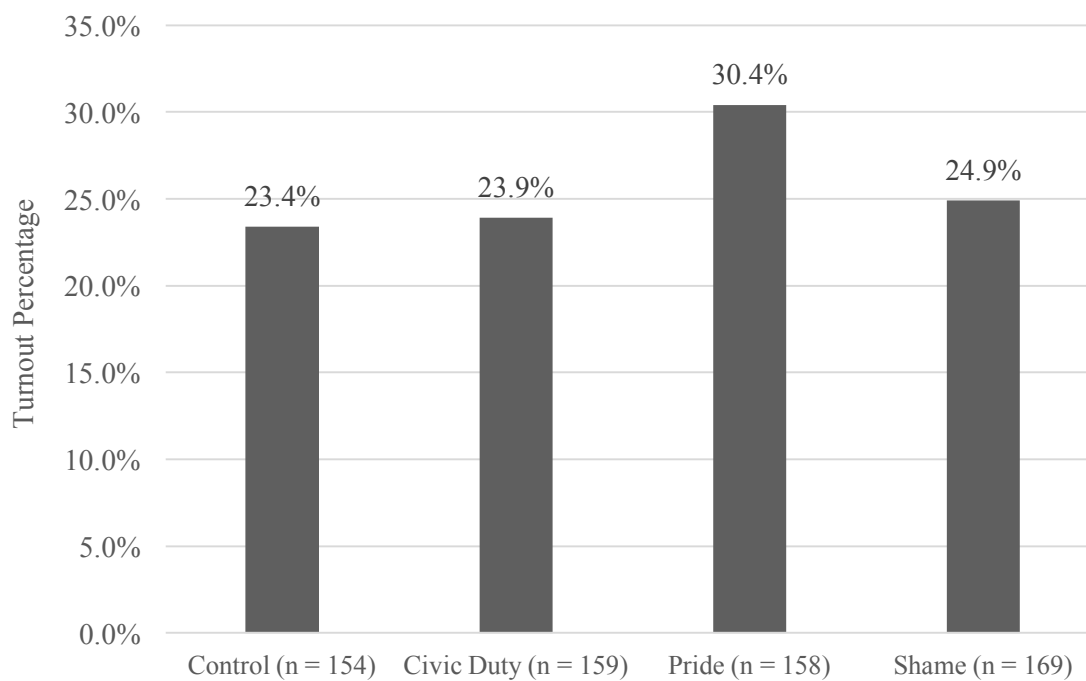
Treatment Group	Model I: Confederates	Model II: Confederates and Treatment	Model III: Confederates, Treatment, and Vote History Interaction
Civic Duty		0.10 (0.28)	-0.00 (0.59)
Pride		0.40 (0.28)	1.17* (0.50)
Shame		0.02 (0.29)	0.51 (0.52)
Total Vote Count			0.67*** (0.13)
Confederate A	0.33 (0.33)	0.31 (0.33)	0.45 (0.39)
Confederate B	-1.67* (0.68)	-1.67* (0.68)	-0.49 (0.78)
Confederate E	-0.33 (0.58)	-0.35 (0.58)	0.31 (0.69)
Confederate K	0.12 (0.62)	0.09 (0.63)	0.35 (0.70)
Confederate M	0.28 (0.55)	0.27 (0.55)	0.61 (0.61)
Confederate Y	-1.35** (0.43)	-1.38** (0.44)	0.21 (0.52)
Confederate Z	-1.62*** (0.33)	-1.64*** (0.33)	-0.27 (0.41)
Constant	-0.28 (0.28)	-0.40 (0.33)	-2.79*** (0.56)
Nagelkerke R ²	0.193	0.199	0.378

N = 640, ; + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table C.5: Turnout By Confederate by Group, Collin County (2014)

	Control	Civic Duty	Pride	Shame
Confederate A	45.16%	53.33%	51.52%	54.55%
Confederate B	0.00%	12.50%	40.00%	0.00%
Confederate E	75.00%	20.00%	40.00%	0.00%
Confederate G	61.54%	46.15%	36.36%	28.57%
Confederate K	33.33%	66.67%	75.00%	0.00%
Confederate M	66.67%	0.00%	50.00%	100.00%
Confederate Y	20.00%	0.00%	23.53%	19.05%
Confederate Z	6.25%	15.00%	17.72%	13.10%

Figure C.1: Overall Turnout by Treatment Group, Collin County (2014)



APPENDIX D: Additional Logistic Regression Analyses for Chapter 5

Table D.1: Logistic Regression, Turnout by Group and Vote History, Bexar County (2014)

	Group + Total Vote Count	Group x Total Vote Count
Civic Duty 1 Email	0.02 (0.13)	-0.03 (0.17)
Civic Duty 2 Emails	0.22+ (0.12)	0.24 (0.16)
Civic Duty Facebook Ads	0.01 (0.10)	-0.07 (0.13)
Civic Duty 1 Email + FB	0.11 (0.12)	0.04 (0.17)
Civic Duty 2 Emails + FB	0.06 (0.12)	-0.15 (0.18)
Pride 1 Email	0.15 (0.12)	0.14 (0.16)
Pride 2 Emails	0.07 (0.12)	0.15 (0.16)
Pride Facebook Ads	0.08 (0.10)	0.11 (0.13)
Pride 1 Email + Facebook	0.07 (0.12)	0.01 (0.17)
Pride 2 Emails + Facebook	0.22+ (0.12)	0.21 (0.16)
Shame 1 Email	0.20+ (0.12)	0.18 (0.16)
Shame 2 Emails	0.11 (0.12)	0.14 (0.16)
Shame Facebook Ads	-0.03 (0.10)	-0.00 (0.13)
Shame 1 Email + Facebook	0.04 (0.12)	0.06 (0.17)
Shame 2 Emails + Facebook	0.12 (0.12)	0.11 (0.16)
Total Vote Count	0.49 (0.01)	0.48*** (0.02)
TVC x Civic Duty 1 Email		0.03 (0.06)
TVC x Civic Duty 2 Emails		-0.01 (0.06)
TVC x Civic Duty Facebook Ads		0.04 (0.05)
TVC x Civic Duty 1 Email + FB		0.03 (0.06)
TVC x Civic Duty 2 Emails + FB		0.11 (0.07)
TVC x Pride 1 Email		0.00 (0.06)
TVC x Pride 2 Emails		-0.04 (0.06)
TVC x Pride Facebook Ads		-0.02 (0.05)
TVC x Pride 1 Email + Facebook		0.03 (0.06)
TVC x Pride 2 Emails + Facebook		0.00 (0.06)
TVC x Shame 1 Email		0.01 (0.06)
TVC x Shame 2 Emails		-0.02 (0.06)
TVC x Shame Facebook Ads		-0.01 (0.05)
TVC x Shame 1 Email + Facebook	-1.85 (0.06)	-0.01 (0.06)
TVC x Shame 2 Emails + FB	0.233	0.00 (0.06)
Constant	-1.85 (0.06)	-1.83*** (0.07)
Nagelkerke R ²	0.233	0.223

N = 10,957; + p < .10, * p < .05, ** p < .01, *** p < .001

Table D.2: Logistic Regression, Turnout by Number of Treatment Media, Bexar County (2014)

Treatment Medium	Coefficient (SE)
One	-0.03 (0.05)
None	-0.10 (0.06)
Constant	-0.89*** (0.04)
Nagelkerke R ²	0.0003

N = 10,957, ; + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table D.3: Logistic Regression, Turnout By Group and Campus, Harris County (2014)

	Group + Campus	Group x Campus (B)	Group x Campus (A)
Civic Duty 1 Email	0.01 (0.07)	-0.02 (0.09)	-0.00 (0.25)
Civic Duty 2 Emails	-0.02 (0.08)	-0.02 (0.09)	-0.21 (0.24)
Civic Duty Facebook Ads	0.01 (0.06)	0.02 (0.07)	-0.11 (0.18)
Civic Duty 1 Email + FB	0.01 (0.06)	0.11 (0.09)	-0.51* (0.26)
Civic Duty 2 Emails + FB	-0.08 (0.08)	-0.20* (0.09)	0.22 (0.22)
Pride 1 Email	-0.05 (0.08)	-0.12 (0.09)	-0.08 (0.23)
Pride 2 Emails	-0.17* (0.08)	-0.17 (0.09)	-0.33 (0.25)
Pride Facebook Ads	0.04 (0.06)	0.02 (0.07)	-0.21 (0.19)
Pride 1 Email + Facebook	-0.05 (0.08)	-0.06 (0.09)	-0.19 (0.25)
Pride 2 Emails + Facebook	0.04 (0.07)	0.03 (0.09)	-0.35 (0.25)
Shame 1 Email	-0.00 (0.07)	-0.07 (0.09)	-0.00 (0.23)
Shame 2 Emails	0.13+ (0.07)	0.08 (0.09)	0.20 (0.24)
Shame Facebook Ads	-0.03 (0.06)	-0.05 (0.07)	-0.02 (0.18)
Shame 1 Email + Facebook	0.05 (0.07)	0.05 (0.09)	-0.12 (0.23)
Shame 2 Emails + Facebook	0.06 (0.07)		
Campus A	-0.00 (0.05)	0.06 (0.11)	-0.06 (0.11)
Campus B			-0.38** (0.12)
Campus C	-0.24*** (0.03)	-0.32*** (0.07)	
Campus A x			
Civic Duty 1 Email		0.01 (0.27)	
Civic Duty 2 Emails		-0.18 (0.26)	
Civic Duty Facebook Ads		-0.13 (0.19)	
Civic Duty 1 Email + FB		-0.62* (0.27)	
Civic Duty 2 Emails + FB		0.43+ (0.24)	
Pride 1 Email		0.04 (0.25)	
Pride 2 Emails		-0.16 (0.26)	
Pride Facebook Ads		-0.23 (0.20)	
Pride 1 Email + Facebook		-0.12 (0.26)	
Pride 2 Emails + FB		-0.38 (0.27)	
Shame 1 Email		0.07 (0.25)	
Shame 2 Emails		0.12 (0.25)	
Shame Facebook Ads		0.02 (0.19)	
Shame 1 Email + FB		-0.18 (0.25)	
Shame 2 Emails + FB		0.08 (0.26)	
Campus B x			
Civic Duty 1 Email			-0.01 (0.27)
Civic Duty 2 Emails			0.18 (0.26)
Civic Duty Facebook Ads			0.13 (0.19)
Civic Duty 1 Email + FB			0.62* (0.27)
Civic Duty 2 Emails + FB			-0.43+ (0.24)
Pride 1 Email			-0.04 (0.25)
Pride 2 Emails			0.16 (0.26)
Pride Facebook Ads			0.23 (0.20)
Pride 1 Email + Facebook			0.12 (0.26)

Pride 2 Emails + FB		0.38 (0.27)
Shame 1 Email		-0.07 (0.25)
Shame 2 Emails		-0.12 (0.25)
Shame Facebook Ads		-0.02 (0.19)
Shame 1 Email + FB		0.18 (0.25)
Shame 2 Emails + FB		-0.08 (0.26)
Campus C x		
Civic Duty 1 Email	0.10 (0.17)	0.09 (0.29)
Civic Duty 2 Emails	0.10 (0.17)	0.29 (0.28)
Civic Duty Facebook Ads	-0.00 (0.13)	0.13 (0.21)
Civic Duty 1 Email + FB	-0.27 (0.17)	0.35 (0.30)
Civic Duty 2 Emails + FB	0.30+ (0.17)	-0.13 (0.26)
Pride 1 Email	0.26 (0.17)	0.22 (0.27)
Pride 2 Emails	0.05 (0.18)	0.22 (0.29)
Pride Facebook Ads	0.11 (0.13)	0.35 (0.22)
Pride 1 Email + Facebook	0.10 (0.17)	0.23 (0.29)
Pride 2 Emails + FB	0.14 (0.17)	0.53+ (0.29)
Shame 1 Email	0.22 (0.16)	0.15 (0.27)
Shame 2 Emails	0.11 (0.17)	-0.00 (0.28)
Shame Facebook Ads	0.10 (0.13)	0.07 (0.21)
Shame 1 Email + FB	0.04 (0.17)	0.22 (0.27)
Shame 2 Emails + FB	0.20 (0.16)	0.12 (0.28)
Constant	-0.84*** (0.04)	-0.82*** (0.04)
Nagelkerke R ²	0.004	0.006
<hr/>		
N = 24,010; + p < .10, * p < .05, ** p < .01, *** p < .001		

Table D.4: Logistic Regression, Turnout by Medium and Campus, Harris County (2014)

	By Medium	By Medium x Campus (A)	By Medium x Campus (B)
One Email	-0.01 (0.03)	-0.09 (0.11)	-0.02 (0.04)
Two Emails	-0.01 (0.03)	0.01 (0.11)	-0.04 (0.04)
Facebook Ads	0.01 (0.03)	-0.08 (0.09)	0.03 (0.04)
Campus A	-0.00 (0.05)		0.06 (0.10)
Campus B		-0.06 (0.10)	
Campus C		-0.34** (0.10)	-0.28*** (0.06)
One Email x A	-0.24*** (0.03)		-0.07 (0.12)
Two Emails x A			0.05 (0.12)
FB Ads x A			-0.11 (0.10)
One Email x B		0.07 (0.12)	
Two Emails x B		-0.05 (0.12)	
FB Ads x B		0.11 (0.10)	
One Email x C		0.11 (0.13)	0.04 (0.08)
Two Emails x C		0.06 (0.13)	0.11 (0.08)
FB Ads x C		0.10 (0.11)	-0.00 (0.07)
Constant	-0.84*** (0.03)	-0.78*** (0.09)	-0.84*** (0.03)
Nagelkerke R ²	0.003	0.004	0.004

N = 24,010; + p < .10 * p < .05 ** p < .01 *** p < .001

Table D.6: Logistic Regression, Effect of Receiving Email on Turnout, Harris County (2014)

	Model I: Any Email	Model II: Any Email x Campus	Model III: Email Message x Campus
Any Email	-0.01 (0.03)	-0.03 (0.05)	
Civic Duty Email			-0.03 (0.05)
Pride Email			-0.08 (0.05)
Shame Email			0.02 (0.05)
Campus A	-0.00 (0.05)	-0.01 (0.07)	-0.01 (0.07)
Campus C	-0.24 (0.03)	-0.28*** (0.05)	-0.28*** (0.05)
Any Email x Campus A		0.00 (0.10)	
Any Email x Campus C		0.08 (0.07)	
Campus A x Civic Duty			-0.01 (0.14)
Campus A x Pride			-0.08 (0.14)
Campus A x Shame			0.08 (0.14)
Campus B x Civic Duty			0.02 (0.09)
Campus B x Pride			0.10 (0.09)
Campus B x Shame			0.10 (0.09)
Constant	-0.84*** (0.02)	-0.83*** (0.03)	-0.83*** (0.03)
Nagelkerke R ²	0.003	0.003	0.004

N = 24,010 ; , + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table D.7: Logistic Regression, Effect of Message on Opening Email, Harris County (2014)

	Model I: Campus A Baseline	Model II: Campus B Baseline	Model III: Campus x Message
Pride Email			0.65*** (0.06)
Shame Email			0.48*** (0.06)
Campus A		-0.83*** (0.08)	-0.50*** (0.15)
Campus B	0.83*** (0.08)		
Campus C	-0.62*** (0.10)	-1.45*** (0.06)	-1.16*** (0.11)
Campus A x Pride			-0.61** (0.20)
Campus A x Shame			-0.33+ (0.20)
Campus C x Pride			-0.46** (0.15)
Campus C x Shame			-0.36* (0.15)
Constant	-1.64*** (0.08)	-0.81*** (0.02)	-1.21*** (0.05)
Nagelkerke R ²	0.086	0.086	0.099

N = 13,093; + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

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