Evaluating Civic Technology Design
for Citizen Empowerment

by

Erhardt Graeff

B.S., Rochester Institute of Technology (2006)
B.S., Rochester Institute of Technology (2007)
M.Phil., University of Cambridge (2008)
S.M., Massachusetts Institute of Technology (2014)

Submitted to the Program in Media Arts and Sciences
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in Media Arts and Sciences

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2018

© Massachusetts Institute of Technology 2018. All rights reserved.

Author . . . .
Program in Media Arts and Sciences
May 4, 2018

Certified by . . . .
Ethan Zuckerman
Associate Professor of the Practice
Program in Media Arts and Sciences
Thesis Supervisor

Accepted by . . . .
Tod Machover
Academic Head
Program in Media Arts and Sciences

Evaluating Civic Technology Design

for Citizen Empowerment

by

Erhardt Graeff

Submitted to the Program in Media Arts and Sciences on May 4, 2018,
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in Media Arts and Sciences

Abstract

Civic technology should empower us as citizens. Despite its breadth as a field, civic technology often takes its lead from Silicon Valley companies that espouse design goals potentially hazardous to participatory democracy. In this dissertation, I explore: How might we design civic technologies for citizen empowerment and evaluate their impact on this goal?

With their growing role as mediators of democracy, it is insufficient for civic technology designers to evaluate their designs in terms of ease of use and increased engagement with their platform. Research from political and developmental psychology shows the importance to lifelong civic engagement of learning experiences that cultivate a citizen's perception they can make change (political efficacy) and their belief in having responsibilities to the public good (civic identity). To achieve these positive feedback loops, we need a richer framework for civic technology design.

This dissertation proposes two solutions: 1) empowerment-based design principles for civic technology and 2) a prototype toolkit for evaluating the impact of civic technology on political efficacy. Because empowerment is contextual, the proposals here focus on tools and platforms built to support "monitorial citizenship," an increasingly popular form of civic engagement aimed at holding institutions accountable. To see these solutions in action, I report on a case study of SeeClickFix, a civic technology company that builds tools enabling citizens to report infrastructure problems to local governments. Two surveys of political efficacy and a randomized experiment with active users of SeeClickFix, followed by interviews with SeeClickFix staff, indicate the validity and utility of evaluating political efficacy as a measure of empowerment as well as the limitations of testing for incremental improvements.

Thesis Supervisor: Ethan Zuckerman
Title: Associate Professor of the Practice
Program in Media Arts and Sciences

This doctoral thesis has been examined by the following committee:

Ethan Zuckerman..
Chair, Thesis Committee
Associate Professor of the Practice
Massachusetts Institute of Technology

Peter Levine..
Member, Thesis Committee
Lincoln Filene Professor of Citizenship and Public Affairs
Tufts University

Evan Lieberman..
Member, Thesis Committee
Total Professor of Political Science and Contemporary Africa
Massachusetts Institute of Technology

Winter Mason..
Member, Thesis Committee
Data Scientist
Facebook

Acknowledgments

This dissertation is dedicated to my son Nikolai. He can earn as many or as few academic degrees as he wishes; I simply hope he is blessed with a lifetime of curiosity, inquiring both deeply and widely.

Thank you to my wife, Kate. You make all things in my life possible; I would be lost without you. This is as much your PhD as it is mine.

Thank you to my Mom, Dad, and sister Lydia. You have supported me through an absurd amount of education.

Thank you to my advisor Ethan. You have pushed me to be more creative, impactful, and thoughtful since before I was your student. You are a dear friend and colleague. I am going to miss teaching, writing, speaking, and organizing alongside you, but I know that this dissertation also marks a beginning with opportunities to collaborate even more.

Thank you to my committee: Peter, Evan, and Winter. Peter, apart from Ethan, you have been the most influential mentor in my life over the past few years; I have so much more to learn from you and look forward to our next chance to work together. Evan, I couldn't be more thankful for your willingness to join this unorthodox dissertation and lend your expertise; I have grown a lot as a scholar thanks to your feedback. Winter, your important work at Facebook directly inspired this dissertation—it literally would not exist without you; I'm proud to call you a friend and colleague.

Thank you to J. Nathan Matias and Andrew Ho. Nathan, your friendship, collegiality, and dedication to service continue to inspire me and illuminate my path toward doing impactful work. I miss you terribly, and yet you always find time to help me out no matter where you are or how busy. This dissertation does not exist without your eye for statistics and experimentation and your unending support. Andrew, your tutelage in my general exams and in coursework through all things data analysis and psychometrics, including teaching Nathan and I how to be thoughtful and rigorous social scientists, laid the foundations for this study.

Thank you to my MIT Center for Civic Media family, who have given me the great

Contents

List of Figures

List of Tables

Chapter 1

The Need for Empowerment-based Design and Evaluation

In a June 2017 post, Mark Zuckerberg introduced a change in Facebook's mission from "make the world more open and connected to "give people the power to build community and bring the world closer together." Facebook may not be able to give people power, but the goal of empowering people and building community is language familiar to civic engagement and participatory democracy, similar to the core idea of relational organizing—building interpersonal relationships that can be mobilized for collective action. In a February 2017 post, Zuckerberg first articulated this new thinking: "In times like these, the most important thing we at Facebook can do is develop the social infrastructure to give people the power to build a global community that works for all of us." Companies like Facebook often claim to serve the public good through their products; however, this particular language and the depth of explanation in Zuckerberg's posts imply a recognition of ethical responsibility and at least an intention to design for true citizen empowerment.

I believe it is fair to insist that if the creators of a technology platform seek to make claims about empowering users, they must set explicit design goals for citizen empowerment and evaluate their platform against those goals. Facebook continues to face steep challenges to providing equal access to its platform. To aim for communities that can be effective and serving the public good is an even loftier goal. How Facebook

will know whether it is actually making progress on its mission remains to be seen. However, technology companies have a reputation for religiously articulating goals and measuring them empirically. In fact, one of the architects of the data science team at Facebook claims that they invented the term "data scientist" to describe this important role (Hammerbacher 2009).

Democracy that values citizen-centered governance requires citizen empowerment (sometimes called "civic agency"), and empowered citizens need certain skills, knowledge, attitudes, and habits that lead to effective civic engagement (Boyte 2009; Levinson 2012; Gibson and Levine 2003). Empowering experiences and learning opportunities can promote a virtuous cycle of reinforcing citizen empowerment and strengthening democracy. Spaces like town hall meetings, protest marches, the voting booth, and the civic education classroom traditionally represent where these experiences and opportunities take place. The emergence of networked digital media have created new, pervasive civic spaces—the networked public sphere. Whereas public spaces offline have seen a decline (Zick 2009), their online replacements, largely private spaces like Facebook, have grown to astounding size and influence with limited accountability to governments and the public.

Social media platforms like Facebook, government communication tools like We the People, and smaller civic technology platforms like SeeClickFix—the focus of the case study in this dissertation—are increasingly the spaces through which citizens seek empowerment in the form of direct response from their government on key issues. As important actors in U.S. democracy (as well as other polities), the creators of these spaces have a responsibility to design for citizen empowerment and ensure they are advancing empowering processes and outcomes for citizens by evaluating whether their platforms are actually serving this mission. These creators of digital technology used for civic engagement should be understood as stewards of democracy with an ethical obligation to serve the public good. My aim in this dissertation is to offer ways that they can fulfill this obligation through better design and research.

1.1 Defining the Problem

Although Facebook was not built from the start as a tool for citizen empowerment, it espouses a civic mission and increasingly designs features explicitly for civic engagement, solidifying its palace in the civic technology ecosystem and its responsibility for citizen empowerment. The problem of serving citizens and democracy through digital technology extends to tools and platforms with origins in public service as well. The White House petition platform We the People is an example of how even when a civic technology platform is designed and owned by a government institution with clear responsibility to serve the public it can miss the mark on empowering citizens.

1.1.1 The Story of We the People

On September 22, 2011, the President Obama's White House team launched an online petition tool called "We the People," which allowed anyone to submit a petition after registering with an email address. If the submitter was able to get 150 people to sign the petition, it became searchable on the site, and if it collected 5,000 signatures within 30 days, the White House guaranteed a formal response from someone in the federal government (assuming it met the site's criteria as being within their jurisdiction and not impinging on the independence of law enforcement or the judiciary). The initial website included a quote from President Obama, "When I ran for this office, I pledged to make government more open and accountable to its citizens. That's what the new We the People feature on WhiteHouse.gov is all about—giving Americans a direct line to the White House on the issues and concerns that matter most to them."

Early critics worried that We the People would amount to little more than a short-lived public relations stunt and argued that there was no need for another way to petition the government, especially when there was no promise to explore true policy change, just to respond to certain petitions (Judd 2011a). Tom Steinberg, who founded mySociety which helped build the similar Downing Street E-petitions system for Tony Blair's UK government, hoped the White House would learn from

their experience by building a robust registration system and lining up staff who could write "good, constructive, engaged replies to the petitioners" (2011).

A month after the launch, the White House published its first response from education advisor Roberto Rodriguez announcing a new education policy initiative he claimed was influenced by a petition on We the People. Macon Phillips, the White House official in charge of We the People, blogged about how it was fulfilling the reason for its launch, "to bring the voices of Americans around the country into our government" (2011a). However, new criticisms painted a different picture: the registration system was unreliable and the entire site suffered numerous outages, meaning those trying to create or sign petitions were turned away at key times, perhaps disenfranchising those users unlikely to try again (Snider 2011). In addition, commenters like TechPresident's Nick Judd argued that petitioners were at a disadvantage if they were less skilled at organizing online and using social media efficaciously:

> "On the social front, the platform doesn't connect petitioners to each other — if they want to find each other by cause or petition, they'd have to hunt around for one another on social networks, or have the foresight to link in their petition to a website or hashtag where they could go to find each other. One stated goal here is to start civil conversations about policy, which makes this a bit of a missed opportunity." (2011b)

An analysis of Downing Street E-petitions found that the most successful petitions came from individuals who appeared to be adept at courting media coverage and attracting the support of traditional advocacy organizations or prominent personalities (Wright 2015).

We the People's early popularity also prompted a sudden site policy change to increase the required signature count to 25,000, making it harder to receive a response. In a blog post touting the growth of the platform in terms of registration and participation statistics, such as average signatures and new users per minute, the White House said the increased threshold would allow them to be "able to offer timely and meaningful response to petitions in the long term" (Phillips 2011a). The

signature threshold would be increased again in January 2013 to 100,000. Another blog post with statistics on the explosive growth in participation accompanied that policy change and defended the decision on the grounds of ensuring the White House could "continue to give the most popular ideas the time they deserve" (Phillips 2013).

In the meantime, the White House tried to assure petitioners that they were having a real impact on policy and they were addressing the technical issues (Phillips 2011b). In a response to the snarky petition "Actually take these petitions seriously instead of just using them as an excuse to pretend you are listening," Phillips listed a few high profile responses and provided a video that interviewed senior White House staff about how top petitions were discussed at weekly meetings and generally valued (Phillips 2012a; The Obama White House 2012). When they reached three million signatures, Phillips published a blog post with an infographic arguing We the People was effective at engaging citizens and impacting policy (2012b). They highlighted total user growth and total signatures. They also started offering outcome and efficacy measures: how many petitions had achieved the threshold, how many had been responded to (100 of 112), and the number of agencies who have authored a response. Survey measures of petitioners reported that they generally felt that the responses they received were helpful (78%), that they often learned something new (50%), and that they were likely to create or sign another petition (89%). In the post announcing the new 100,000 signature threshold, they updated these statistics (Phillips 2013). Gone was the ratio of responses to qualifying petitions (perhaps to avoid publicly measuring inefficacy). Survey measures of petitioners saw slight declines, though they still generally felt the responses they received were helpful (66%), learned something new (50%), and they were likely to create or sign another petition (86%). Despite technical challenges and confusion among petitioners about whether their submissions would make an impact, the White House was clearly interested in communicating that their intention in We the People's design was empowerment.

Another way to measure whether the platform was achieving its goals is to look at who was not participating. An analysis by Nextgov of the policy content of the earliest petitions to pass the 150 signature threshold indicated greater use among

liberals than conservatives, and topics like marijuana legalization and animal cruelty were unusually common (Marks 2011b). America Speaks's David Stern believed We the People would be unlikely to produce major policy change but could have an effect "by bringing up an issue for which the administration didn't realize there was a strong constituency" (Marks 2011a). The early petition trends pose questions about who felt welcome to use the site and who believed that they would have a receptive audience in the federal government. Certainly, the marijuana legalization community saw an opportunity here, but conservatives addressing questions like fiscal responsibility did not see themselves empowered by the site—few economic concerns were voiced at all early on (Marks 2011b).

In late 2012 and early 2013, We the People received a new wave of criticism following the popularity of several facetious or strange petitions about deporting a talk show host, states wishing to secede from the union, and most notoriously "Secure resources and funding, and begin construction of a Death Star by 2016" (Flock 2012, Cushing 2012, Garber 2013, Hartmann 2013). Although many applauded the White House's humorous response to the Death Star petition (Shawcross 2013), it provided a perfect example for many critics of how the White House seemed to be responding selectively to popular petitions of "dubious import," or where the administration could rely on "canned administration talking points," some of these did not even hit the signature threshold (Cushing 2012). In contrast the most popular petition in the site's history, "Legally recognize Westboro Baptist Church as a hate group" (367,180) languished without a response until well after the new 100,000 signature threshold came into effect.

We the People's struggles were due in part to the constraints of it being hosted by the federal government. As Dave Karpf wrote in 2014, explaining why the site "became a virtual ghost-town," two design principles put in practice by the independent e-petition sites on Change.org and MoveOn.org were not available to the White House creators: 1) "static homepages don't draw traffic" and 2) "vibrant online publics have to be curated and supported." No longer able to rely on the novelty of the "promise of a more open, responsive government," slow and selective replies coupled with a

100,000 signature threshold that is unrealistic for "genuinely new, substantive citizen proposals" meant petitioners did not see a reason to return (Karpf 2014). Change.org and MoveOn.org could address these problems by devoting staff and resources toward actively promoting petitions on social media where they were most likely to enjoy new clicks and signatures and to developing curation engines that matched people with petitions on issues they care about. The White House cannot be seen as partisan toward particular petitions or ideas in such a way. Their only options for fostering the empowerment of citizens were to convert petitions of import into policy change and to make the process as transparent as possible. Both the critics and the steep decline in participation on the site suggest the White House had not sufficiently delivered on those design goals.

On July 28, 2015, the new lead for We The People Jason Goldman authored a blog post in response to the litany of criticisms over the years, attempting to steer the perception of it back toward empowerment. The White House published a backlog of 20 responses to petitions that had met their threshold and promised to respond within 60 days to new qualifying petitions. They introduced a new integration program starting with Change.org where signatures collected on that site (with its superior advertising and curation features as Karpf discussed) would count for the signature threshold on We the People. Lastly, they said they had "assembled a team of people responsible for taking your questions and requests and bringing them to the right people—whether within the White House or in an agency within the Administration—who may be in a position to say something about your request." Goldman's post concluded with an example of a petition from January 2013 that had prompted the creation of a multi-agency task force to study the policy and eventually produced a new law signed in August 2014.

A new infographic of statistics from We the People was released with the blog post with updated average statistics from a user survey in 2014, revealing another reduction in percentages of citizens feeling that they were likely to have learned something new (45%), it was helpful to hear the administration's response (64%), and they would use the site again compared to the infographic in 2013 (79%) ("We

the People, By the Numbers" 2015). Perhaps, if the White House had been freer to explore a dynamic and interactive approach to the design and been tracking measures of empowerment more closely, continuously rather than as a long-term average—privileging such indicators over the misleading graph of total signatures over time (featured most prominently in both infographics)—positive design changes would have been implemented sooner and the averaged survey responses would tell a story of increasing rather than decreasing value to petitioners.

1.1.2   The Logic of Civic Technology

One source of disconnect between civic technology design and citizen empowerment is the internal logic of most civic technology—efficiency—and its main source of inspiration: Silicon Valley technology company culture. Analyzing the existing logics and proposing an alternative logic of democracy that can better serve citizens offers a foundation for empowerment-based design.

In their framework for a civic technology field guide, Micah Sifry, Matt Stempeck, and Erin Simpson broadly define civic technology as "the use of technology for the public good" (2016). They defend the utility of this vague framing by noting: "1) it is culturally and historically subjective, 2) we use public to distinguish from personal and private, and 3) 'public good' deals with shared public challenges." Underneath this expansive umbrella, they find common technical functions and social processes that define civic technology as a field of various digital tools and also as a subculture. This definition allows civic technology to encompass "constituent to government communication tools" such as the We the People platform, "issue reporting tools" such as SeeClickFix, a small for-profit civic technology company, as well as "group communication tools" such as Facebook Groups, a feature of the mammoth social media platform (Sifry, Stempeck, and Simpson 2016). Focusing on functions sidesteps the incongruence of including in the field both explicitly defined civic technology companies and platforms (SeeClickFix, mySociety, We the People) as well as technology companies that lack an initial, explicit civic mission or intention (Twitter, Google, Facebook) but whose tools and platforms provide civic functions within the

networked public sphere, finding that they share a necessary orientation toward the public good in practice.

The social processes and, by extension, the design processes of civic technology are a convergence of the public good-orientation of civic engagement and public service and the ethos of the digital technology industry dominated by the culture of Silicon Valley's technology industry. These are sometimes in tension, demanding different logics of technology design. In particular, the specific logic of efficiency used to optimize algorithms and lower costs of participation can be an undemocratic logic when it primarily serves the platform itself or stakeholders other than citizens. Furthermore, for-profit civic technology companies and the larger social media platforms like Facebook and Twitter, where an enormous amount of civic activity takes place, are most susceptible to making trade-offs in their design logic in ways that can damage democracy.

Silicon Valley is obsessed with metrics of participation. How many users registered? How many actions did they take? In a conventional technology platform, design is optimized to increase user engagement in order to increase interactions with advertising. This creates incentives for designers to build features that give those who can pay to promote content prominent positions on the platform and to build algorithms that presents users with content and invitations to participation that are more likely to get them to click rather than what may actually serve their interests best. Problems such as the proliferation of political disinformation campaigns and shallow infotainment, as well as echo chambers of conversation formed by Facebook's news feed, could be attributed to this logic.

The assumption that more clicks signals what users really want to accomplish leads to other problematic assumptions. For those who design civic technology, the implicit theory of change is that user engagement will scale due to lowered barriers to participation and network effects, and aggregate engagement online might convert into impact. Creating space for individual actions is not equivalent to creating space for collective action. Early users of Twitter had to create this capacity themselves by adopting the convention of using "RT" and the username of a user ahead of content

copied from them in order to share or to amplify the original message, as well as by adding the "#" symbol ahead of discussion topics to make it easy to search for them. The company later built explicit features for "retweets" and "hashtags" to support these functions.

Technology used for political campaigns often follows logics similar to Silicon Valley technology platforms, where sufficient participation translates into winning an election. This is the logic behind We the People, which was devised by veterans of campaign technology such as the company Blue State Digital, which was responsible for my.barackobama.com. There is a necessary short-sightedness in such "instrumental" design visions: the technology just needs to support a high intensity level of engagement until the end of the campaign. Usually, the actions are highly scripted by political directors driven to ensure the maximum level of support on election day, and they closely monitor aggregate numbers of actions and avowed supporters, just like We the People was reporting in the headlines of their infographics. Surveys about people's perception of the campaign is helpful for monitoring morale and telling stories of the value of what they are doing, but it is almost never meant to help steer the campaign.

To be fair, participation is itself an important predictor of future engagement. However, the goal of civic participation is not simply a singular win or more of the same participation; it is about a larger impact on society and on an individual citizen's life. It is about personal growth and the health of democracy. Measuring impact on an individual citizen's life is rare outside of academia. But if we set a goal for empowering citizens, then our understanding of impact must broaden and lengthen. We must talk about lifelong civic participation, and this requires us to examine predictors like positive shifts in attitudes indicative of a maturing civic identity and in a citizen's sense of efficacy.

As depicted in Figure 1-1, an Empowerment-based Design approach to civic technology seeks to build knowledge, skills, identity, and efficacy in its users over the long-term. We can measure these using survey tools that reveal individuals' changes in attitudes and efficacy over time. This offers a dimension of qualitative meaning to

	Silicon Valley	Instrumental Civic Tech	Empowerment-based Design
GOAL	Earn Revenue	Win Campaigns or Solve Problems	Empower Citizens
METHODS	Sustain Regular (Sticky) Engagement with Platform	Inspire Intense, Short-term Participation	Build Knowledge, Skills, Identity, and Efficacy over Long-term
METRIC	Participation	Participation	Attitudes and Efficacy
LOGIC	Efficiency		Democracy

Figure 1-1: The Internal Logics of Civic Technology

any acts of participation by users and helps put them in the context of growth as a citizens. This is a logic of democracy in contrast to the participation-based logic of efficiency that dominates most technology design. Making things easy to participate in is important but insufficient for empowerment and may actually impede the growth of citizens over their lifetime when designers optimize for engagement with platforms themselves rather than with democracy more broadly.

In their argument for more playful civic technology design via "meaningful inefficiencies," Eric Gordon and Stephen Walter also find that most civic systems follow a logic of technological efficiency (2016). The citizen becomes an abstracted archetype of the "good user," who navigates the system as intended—their behavior shaped as intended by the "user-friendly" system. Gordon and Walter assert, "designers and proponents of civic technology too often articulate participation and openness within the framework of efficiency and control" (2016, p. 251). Their alternative vision proposes designing systems for emergent civic action, rather than desired behaviors. Meaningful inefficiencies is borrowed from game design, where playful experiences are engaging because they are challenging; this creates opportunities for creative problem-solving and, as the authors argue, civic learning. Political scientist David Karpf finds the same value of "beneficial inefficiencies" lost within political advocacy when organizations trade old membership communication systems like phone trees or

meetups (that required person-to-person relationships and conversation, which also strengthened organizations and trained new leaders) for email listservs, petitions, or analytic listening tools (Karpf 2012; Karpf 2016). Gordon and Walter (2016) as well as Karpf (2016) concede that meaningful/beneficial inefficiencies should be balanced or blended with efficiencies that ensure that systems work well and support users in their goals and tasks.

Designing and measuring for empowerment rather than participation may also address fundamental problems of justice and inequality. A focus on activity privileges those who have greater access to technology and more sophisticated literacy in how to employ it or exploit it to their benefit. Designing for empowerment brings people and their voices directly into the design process and evaluates success according to improved outcomes for those people based on their actual needs, not those manufactured by the platform. Civic technology design can and should learn from the field of civic education. If we want to enhance citizen empowerment, we need to think about how we are designing for civic learning and addressing real civic empowerment gaps (Levinson 2012) and participation gaps (Jenkins et al. 2006). And because we are designing digital tools, this means designing metrics that work on civic learning, not just on simple participation.

1.1.3   The Civic Empowerment Gap

Problems with civic technology design unfold against the backdrop of profound inequalities in empowerment among U.S. citizens. In her 2012 book *No Citizen Left Behind*, Meira Levinson describes and seeks to address what she calls the "civic empowerment gap" in the United States. It starts in schools, where students have unequal access to quality civic education and opportunities for transformative civic experiences. These inequalities overlap with inequalities of class and ethnicity so that young people from marginalized backgrounds have fewer opportunities to prepare to be citizens able to exercise voice and influence their communities for the better. This is creates a deeply unequal democracy.

Levinson adopts the Civic Mission of Schools' definition of what kind of citizenship

good civic education should aim for:

"Civic education should help young people acquire and learn to use the skills, knowledge, and attitudes that will prepare them to be competent and responsible citizens throughout their lives. Competent and responsible citizens:

1. Are informed and thoughtful; have a grasp and an appreciation of history and the fundamental processes of American democracy; have an understanding and awareness of public and community issues; and have the ability to obtain information, think critically, and enter into dialogue among others with different perspectives.

2. Participate in their communities through membership in or contributions to organizations working to address an array of cultural, social, political, and religious interests and beliefs.

3. Act politically by having the skills, knowledge, and commitment needed to accomplish public purposes, such as group problem solving, public speaking, petitioning and protesting, and voting.

4. Have moral and civic virtues such as concern for the rights and welfare of others, social responsibility, tolerance and respect, and belief in the capacity to make a difference." (Gibson and Levine, 2003, p. 4)

Levinson concedes that this list is somewhat old-fashioned yet is inclusive enough to reflect the distinction between skills, knowledge, attitudes, and habits that represent the different characteristics we know to be correlated with civic participation and empowerment.

To introduce her prescriptions for addressing the civic empowerment gap, Levinson states, "The most concrete and pervasive context in which most young people interact is in fact school. Schools are themselves civil societies, for good and ill. They exert a profound effect on students' and adults' civic experiences, identities

and opportunities—even when they have no intention of doing so" (2012, p. 56). Civic technologies are at least as pervasive and play a similarly profound role as civic spaces for all ages of citizens. In the same way, we expect schools to prepare our young people to be effective citizens, I believe the creators of our digital civic spaces have a responsibility to design for civic learning and empowerment.

This is not just a question of feature design but also of policy. Social media sites claim to operate as neutral platforms and do so in order to elude accountability and regulation (Gillespie 2010). However, the reality is that the logics of their design and their participation in international flows of information means they transform those flows and influence the logics of the industries and stakeholders they touch—Facebook and the news industry being perhaps the most prominent example (Caplan and boyd 2018). With the civic functions of these platforms continuing to grow, these companies cannot avoid their responsibility as stewards of democracy and its online instantiation: the networked public sphere. This includes not just civic and political information in the form of news but also tailored advertising by campaigns, election guides and voting reminders, petition and constituent services tools, and spaces that attract political organizing. Researchers, designers, and citizens need to understand how the design of these platforms transform other institutions in our democracy (Caplan and boyd 2018).

1.2 A Framework for Democracy, Citizen Empowerment, and the Role of Civic Technology

"Free spaces" offer a way to connect the responsibility for civic learning and empowerment shared by schools and by civic technology (Evans and Boyte 1986). As background to their theory of free spaces, Sara Evans and Harry Boyte tell the story of U.S. democracy that was envisioned as a republic led by elites from the start, where community was taken for granted and individual rights and freedoms, part of the Enlightenment tradition, were instead emphasized (1986). The rustic vision of

small U.S. towns organizing themselves in self-governance was real but divorced from the state—an arrangement that changed with the industrial revolution and the Progressive Era, which ushered in a more centralized society and sought to bring it under the control of scientific processes. By the mid-twentieth century, the responsibilities of citizenship and town hall-style meetings were seen as an anachronism, whereas the freedom to be a disengaged citizen was celebrated as a triumph of the modern democracy (Evans and Boyte 1986). Instead, the newspaper and evening news were thought to have have sufficiently replaced participatory forms of democracy as the public sphere.

Although some deem the ancient idea of democracy as rule by the people as quaint, the mediated, modern form of democracy produces a highly unequal society and undermines our own fundamental narratives of America as a land of opportunity. Popular narratives suggest that anyone could become president, and that community and citizens are our most valuable resources. However, these are are not cultivated with the same enthusiasm that the U.S. devotes to the creation of new informational and technological systems for governance and the protection of individual liberties that most often benefit the elite.

Studying the rise of popular social movements like the Civil Rights Movement and the Knights of Labor, Evans and Boyte propose we reimagine U.S. democracy and the crucial role played by spaces—often voluntary associations like churches and neighborhood groups—that offer a practical civic education for the average citizen:

> "Particular sorts of public places in the community, what we call free spaces, are the environments in which people are able to learn a new self-respect, a deeper and more assertive group identity, public skills, and values of cooperation and civic virtue. Put simply, free spaces are settings between private lives and large scale institutions where ordinary citizens can act with dignity, independence and vision." (1986, p. 17)

They continue, "Democratic action depends upon these free spaces, where people experience a schooling in citizenship and learn a vision of the common good in the

course of struggling for change" (Evans and Boyte 1986, p. 18). Although there is significant variation in free spaces between different contexts, some common features define them:

> "They are defined by their roots in community, the dense rich networks of daily life; by their autonomy; and by their public or quasi-public character as participatory environments which nurture values associated with citizenship and a vision of the common good." (Evans and Boyte 1986, p. 20)

Research on citizen organizations finds that organizations whose internal processes are more democratic and inclusive (less hierarchical) strengthen their members' civic skills (Verba, Schlozman, and Brady 1995), and are more effective, regardless of whether they have more resources (Andrews et al., 2010) or are employing new media tools (Gaby 2017). Ultimately, free spaces, which we could perhaps call "empowering" spaces, play a core role in democratic society, responsible for cultivating the citizens a democracy needs.

The best known critique of forms of democracy that proceed without significant citizen engagement is Barber's *Strong Democracy* (1984), which calls for a participatory democracy rich with self-government by citizens with one goal being "the creation of a political community capable of transforming dependent private individuals into free citizens and partial and private interests into public goods," supported by "institutions designed to facilitate ongoing civic participation in agenda-setting, deliberation, legislation, and policy implementation (in the form of "common work")" (1984, p. 151). Crucially, Barber argues, "Community grows out of participation and at the same time makes participation possible; civic activity educates individuals how to think publicly as citizens even as citizenship informs civic activity with the required sense of publicness and justice" (1984, p.152). When strong democracy works properly, it "creates the very citizens it depends upon because it depends upon them" (Barber 1984, p. 153). For Barber, citizenship is the intersection of community and conscious participation.

These ideal fusions of community and participation are Evans and Boyte's free spaces. The canonical examples, appearing to have emerged from communities themselves and seen as in decline through the lens of Robert Putnam's *Bowling Alone* (2000), were unfortunately often homogeneous and exclusive of marginalized groups (Jain 2003; Allen 2004). Instead, emphasizing forms of citizenship that connect strangers around commonality and respecting differences and leveraging existing institutions to support these practices offer a path toward building shared civic identities, trust, and respect despite differences (Allen 2004). Recent theories focused on civic and political participation online propose that civic and political organizations there take on a different character: looser, more network-based associations (Bennett and Segerberg 2013). Findings from a large panel survey of U.S. youth highlight an important relationship between non-political and friendship-driven activity on major social media platforms and political engagement (Kahne and Bowyer 2018).

In his recent writing, Harry Boyte has argued that schools can and should be be intentionally designed as free spaces, in part, by "renewing the public, empowering dimensions of teaching." (2016). This implies that other spaces for citizen engagement and growth such as civic technology can also be intentionally designed to provide "room for self-organizing efforts and development of public skills and broader political agency," if only designers are held to account for the public roles they play (Boyte 2016).

As core contexts for contemporary participatory democracy, civic technologies ought to be designed with the goal of becoming free/empowering spaces. And these online free spaces can be designed to work at different scales: "transmovement" or global, "indigenous" to specific communities, or "prefigurative" to emerging community identities and calls to action (Polletta 1999). This places civic technology platforms and their creators within a framework of democracy where the work that they do serves a public function and has a direct impact on the health of the democracies in which they play a role (see Figure 1-2). When creators of civic technology implicitly and explicitly encourage civic and political participation through their platforms, this helps realize Barber's vision of strong democracy. The natural extension
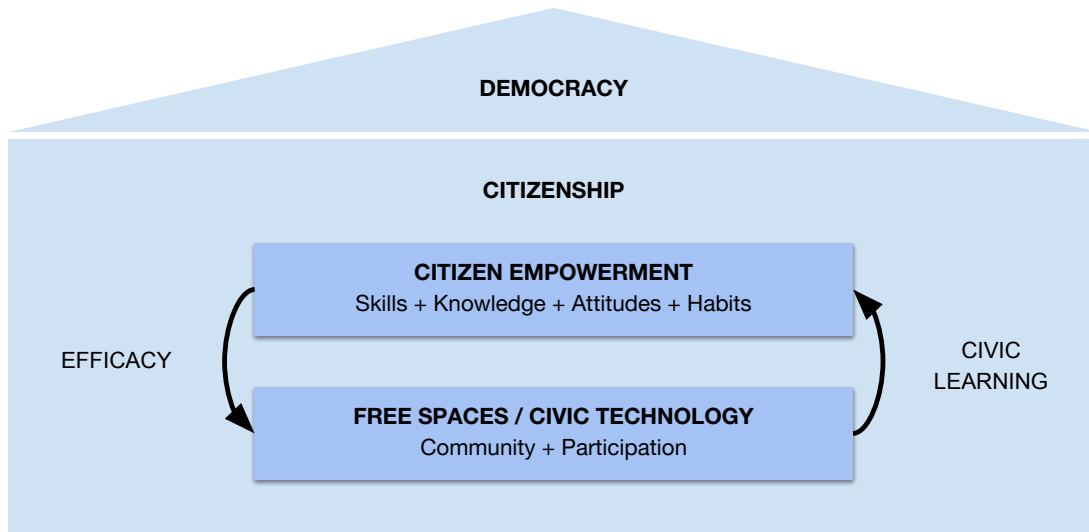
Figure 1-2: Framework for Civic Technology in Participatory Democracy

of this is that the creators of civic technology have a public responsibility to design their platforms in ways that support strong democracy, and by doing so realize their own destiny as participatory citizens.

This assertion of responsibility is reinforced by arguments asserting there is no option to "exit" social media as a means of disapproving of their existing designs because equivalent systems for platforms like Facebook do not exist or because only elites have the off-Facebook social capital to spend on what Portwood-Stacer calls "conspicuous non-consumption" (2013); these platforms are effectively utilities and "utilities get regulated" (boyd 2010). Even anti-institutionalist movements like Occupy Wall Street rely on the new media infrastructure of Facebook and Twitter rather than constructing wholly alternative spaces (Kaun 2015). This view of social media platforms as de facto public spaces where we might expect freedom of speech and assembly and other democratic rights and opportunities, extends the definition of civic technology and the responsibility of designers beyond instrumental function and into a framework that demands their designers serve participatory democracy. In other words, We the People represents a rather extreme case as a formal petitioning system operated by the federal government with very specific public obligations, whereas the field of civic technology comprises many actors that have ethical, if not formal

responsibilities.

1.3   Research Questions

The central research question of this dissertation asks: How might we design civic technologies for citizen empowerment and evaluate their impact on this goal? I focus on a subset of civic technologies used for monitorial citizenship (a form of civic engagement I define and discuss in Chapter 3 by which data collection and storytelling are used to hold institutions accountable) to propose a set of empowerment-based design principles and a prototype toolkit for evaluating platforms in terms of citizen empowerment. I illustrate the application of this evaluation approach through a novel panel survey and experiment with users of SeeClickFix, asking: How does participation on SeeClickFix and knowledge of the efficacy of fellow users change a SeeClickFix user's perceived political efficacy?

1.4   Scope of this Dissertation

When this dissertation talks about democracy, it is referring to U.S. democracy. While non-U.S. examples of citizenship and civic technology are referenced, and some ideas discussed here may be applicable in other countries, there has been no attempt to generalize the arguments beyond U.S. democracy and U.S. citizens. Furthermore, I do not address the specific complications involved in managing transnational platforms and civic ecosystems like Facebook that have to work in and design mindfully to handle multiple regimes and cultures. Instead, I work from a normative goal of supporting participatory democracy starting in the U.S.

This dissertation concerns the design of civic technology and the role it plays in democracy and civic engagement. Features and problems of democracy such as the nature of public institutions and of social and political inequality are acknowledged as critically important and likely in need of reform and resolution. However, actually proposing reforms for these things are beyond the scope of this dissertation, as well as beyond what I would expect any individual civic technology platform to be able to address.

I make every effort to reflect on the broadest definition of civic engagement relevant to technology design, and my intentions are to outline a framework for empowerment-based design that can eventually address all forms of civic technology. However, citizen experience and growth are context-dependent and so the definition of design principles and tools for design evaluation are also context-dependent. Thus, this dissertation focuses on only the subset of civic engagement, defined as "monitorial citizenship" in Chapter 3, within U.S. democracy, as specified above.

For the core case study, I work with SeeClickFix, a civic technology company which provides an easy way for residents to request infrastructure problems in their local communities be fixed using smartphone app and desktop interfaces. The canonical request is a resident reporting a pothole on a street. This form of civic activity is an example of monitorial citizenship, and I argue that monitorial citizens like SeeClickFix users seek out tools that provide explicit opportunities to increase their ability to influence the behavior of an institution like their local government, which makes such a platform ideal for evaluating a civic technology in terms of empowerment.

1.5   A Preview of Chapters 2–7

Chapter 2 fills in the details of the framework by which civic technology serves citizenship, civic learning, empowerment, and democracy by exploring recent scholarly dialogues attempting to redefine these concepts in the current age of the internet and civic technology.

Chapter 3 defines monitorial citizenship, places it in the context of other polit-

ical theories addressing citizens' roles in supporting and critiquing institutions, and discusses the ways SeeClickFix supports monitorial citizens.

Chapter 4 introduces six empowerment-based design principles for monitorial citizenship based on a normative analysis surveying existing tools, practices, and research:

1. Be Inclusive at Every Stage

2. Give Users Agency

3. Provide Opportunities for Reflection and Discourse

4. Foster and Respect Communities

5. Tell Stories with Data

6. Anticipate Breakdown and Evaluate Rigorously.

I also evaluate the design of SeeClickFix against these six principles.

Chapter 5 outlines methods for an empowerment-based research approach for civic technology that evaluates tools for monitorial citizenship for local governance like SeeClickFix using survey measures, platform data, and a randomized experiment. I operationalize user empowerment by looking at a user's perceived internal political efficacy, perceived external political efficacy, and belief in the efficacy of the platform they are using.

Chapter 6 reports on a case-study evaluating the relationship between the design of SeeClickFix's platform, user behavior, and the three forms of political efficacy introduced in Chapter 5, using the methods also introduced in Chapter 5. I find the survey-based political efficacy measures are reasonable lagging indicators of perceived user empowerment, mapping well to expected user behaviors and government responsiveness. In particular, platform political efficacy and external political efficacy are associated with closing issues and response times. The randomized experiment, looking at whether email notifications illustrating the success of fellow residents of a city in getting their issues resolved, produced no observable impact on political

efficacy measures, but revealed opportunities for future research and the possibility that political efficacy may produce future participation.

Chapter 7 reflects on the implications and limitations of the proposed empowerment-based design principles and research toolkit and suggests next steps for academia, governments, and the technology industry.

Chapter 2

Citizenship, Civic Learning, and Empowerment in the Current Age of Civic Technology

To lay the foundation for the normative and empirical efforts around designing and evaluating civic technology proposed in this dissertation and to flesh out the framework of democracy introduced in Chapter 1, this chapter conceptualizes citizenship, civic learning, and empowerment, locating the importance of developing certain civic and digital skills, having authentic civic and political experiences, and making voice and influence in a democracy synonymous. These represent the objectives of empowerment-based design. Analyzing contemporary debates in the fields of civic engagement and civic education through these concepts also helps to contextualize monitorial citizenship—the subfield I define in Chapter 3 that serves to scope this dissertation.

2.1 Education and Equality

In her writing about U.S. democracy, citizenship, and the purpose of education, Danielle Allen emphasizes the concept of equality. In *Our Declaration*, Allen argues that the definition of equality written into the founding document is much broader

and more radical than history would suggest. Complementing and strengthening her argument is Allen's introduction of the concept of "democratic writing"—a skill that allowed the founding fathers to produce a document that represents a shared vision constructed across many iterations, discussions, and edits (2014). For Allen, these two elements, 1) a radical vision for equality at the core of U.S. democracy and 2) a deliberative approach to writing necessary for producing policies that represent a country and propel it forward, must be renewed and reclaimed through contemporary liberal education as a key step toward achieving equality in America. This is the answer to the question she poses in the title of her essay "What is Education For?" (2016b).

Allen's essay opens by describing a recent legal case in New York that decided students have a right to civic education according to the state constitution, a right included in many state constitutions. Citing Michael Rebell's responsive essay to Allen's short book *Education and Equality* (2016), Allen notes that twenty-four state courts "have explicitly held that preparation for "capable citizenship is a primary purpose of public education, and no state court has disputed this proposition." Defining how America should conceive of "capable citizenship" in an age of vocational paradigms for education is core to Allen's argument.

The national focus on economic inequality has elevated a vocational paradigm for education as the dominant policy solution, pushing STEM coursework in particular. Allen sees solving economic inequality as a matter of making better political choices, which requires "empowering all to participate capably in the life of a polity." In other words, political equality precedes economic equality.

Political equality demands a civic conception of education focused on what Allen calls "participatory readiness" (2014b). Participatory readiness is about having the skills associated with civic agency. Using Hannah Arendt's language, this means we are "co-creators" of our society—it is a state of empowerment and an experience of efficacy. For Allen (2016a), civic agency involves three tasks—"disinterested deliberation, prophetic frame shifting, and fair fighting"—that are best illustrated by the civic roles that embody them. The "civic leader" is capable of deliberating about

political issues and acting reasonably in the model of ancient Athens. The "activist" is capable of rhetorical work that can shift society's values. And the "professional politician" is capable of passionate pursuit of a cause.

Allen concedes that we lack the statesmen-like public officials and ideal ordinary citizens, who embody all of the capabilities of civic agency. The goal for a civic conception of education built around participatory readiness is to educate for civic agency, to nourish civic leaders, activists, and politicians, and to permit reintegration of these roles.

Historically, this form of education was provided by the liberal arts. The liberal (or free person's) arts ensured that democratic citizens were capable of participating in "the central intellectual labor" of U.S. democracy. Allen finds this role defined in the second paragraph of the Declaration of Independence (I add emphasis on the key clause):

> We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. — That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed, — That whenever any Form of Government becomes destructive of these ends, it *is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness.*

For Allen, the central intellectual labor is judging "what combination of principle and organizational form is most likely to secure collective safety and happiness; in other words, it is the labor of co-creating the democratic state again if necessary (2016b).

Allen concedes that the demands of contemporary society likely require a reimagining of the liberal arts for education. But whatever form they take should still "cultivate capacities for social diagnosis, ethical reasoning, cause-and-effect analysis, and persuasive argumentation." At the end of "What is Education For?" Allen attempts

41

to connect her theory to empirical evidence, citing data from the U.S. Department of Education suggesting STEM majors vote and write to public officials less often than humanities majors, which may be indicative of political inequalities that arise when individuals have less training in sophisticated verbal skills and socio-political analysis.

2.2 Theorizing Civic Learning and Political Socialization

In her proposal, Allen appears to aim for an educational solution that addresses political and economic inequality which will be palatable to policymakers and scholars across the political spectrum. By making the Declaration of Independence the cornerstone of her argument over what education is for, she appeals to patriotism and nostalgia for the founding fathers. There is still much wisdom there connecting education to democracy and the ideals of America, and Allen is expert at extracting it. However, because her argument focuses on the curriculum of formal education, spending little time on the extracurricular opportunities and spaces that civic technology creates or overlaps with, additional exploration of contemporary theories of civic learning and political socialization is necessary to develop a fuller picture of how citizens grow in and out of school.

Educator Deborah Meier's response to "What is Education For?" agrees that the practice of democracy starts in schools (2016). However, students and faculty need the ability to exercise choice in what is usually compulsory curricula in public schools. In the same way, we co-create our democracy, students and faculty should co-create the institution of their school—in the same way John Dewey recommended—otherwise it is anti-democratic. Furthermore, for Meier, test scores and personalized learning are undemocratic pedagogies that continue to grow in importance within public and charter schools. These trends reduce the collaborative, human-to-human elements at the core of education. Meier contends that it's not enough to say we need the

humanities; it's important how we teach them—a sentiment echoed in Lelac Almagor's response (2016). Peter Levine extends this argument by noting, "pencil-and paper tests measure only skills and knowledge [...] we should also seek to impart attitudes, values, habits, and behaviors." (2007, 153).

Evidence from developmental psychology research helps reorient civic education in terms of identity development—a disposition for citizenship—solidifying the importance of practicing civics in order to learn it (McIntosh and Youniss 2010; Youniss and Yates 1997). McIntosh and Youniss (2010) argue that because identity is socially negotiated there are limits to what we can gain through cognitive development (individual coursework) alone.

For their landmark study on service learning looking at civic education outcomes among Catholic high school students who worked in a soup kitchen, Jim Youniss and Miranda Yates (1997) develop a robust theoretical framework for the long-term impact of service based on Erik Erikson's (1968) concepts of identity, ideology, and industry (agency):

> "When youth are given opportunities to use their skills to redress social problems, they can experience themselves as having agency and as being responsible for society's well-being. When they participate as a cohort and when participation is encouraged by respected adults, youth begin to reflect on the political and moral ideologies used to understand society. It is this process of reflection, which takes place publicly with peers and adults, as well as privately, that allows youth to construct identities that are integrated with ideological stances and political-moral outlooks.

> "Gaining a sense of agency and feeling responsible for addressing society's problems are distinguishing elements that mark mature social identity. When identity is then integrated with a clear political or moral ideological stance, individuals are able to transcend the moment and draw meaning from society's history, which, in turn, makes it possible to face the future with hope and confidence." (Youniss and Yates 1997, 36)

Lev Vygotsky's theory that "our ideas and beliefs are internalizations of social, collaborative practice" (Flanagan 2013), also motivate this developmental psychology research. Using scholarly conceptions of civic engagement as an outcome of political socialization (McIntosh and Youniss 2010), or that which "influences public matters" and "the commons" (Levine 2007, 7), demands that we emphasize the social construction and evolution of a civic identity negotiated in public fora.

This is not to say that how something is taught is necessarily more important than what is taught. These and other scholars do care about the content of civic education (Levine 2007; Youniss and Yates 1997; Selman and Kwok 2010). Collating findings from several studies, Levine suggest four principles of good civic education: learning "about great, perennial ideals and concepts such as those in the Declaration of Independence", being "at least partly experiential," "trying to make civics courses especially enjoyable instead of especially dull," and helping students learn about disagreements and practice "taking sides without demonizing opponents." (2007, 125–126). This last principle connects back to Allen's idealized civic roles and to Erikson's ideas of developing a personal ideology and identity—a young person starts with some view of the world or a particular issue and has that challenged and renegotiated through discourse. Erikson saw this as occurring when youth leave the safe microcosm of school for the authentic experience of industry (1968).

Youniss and Yates note that that taking action and seeking its outcomes shapes people's perception of society, and these perceptions in turn motivate people to do things they might not otherwise (1997). This is the basis of social responsibility:

> "If individuals did not believe their actions counted, they would not feel responsible to register new voters, boycott, strike, march, argue politics, or join movements. Adults do these things because they believe democratic society depends on people acting democratically. It is important that the behaviors that make up adult agency are not extraordinary and have incipient forms in the repertoire of youth." (Youniss and Yates 1997, p. 28)

Alongside service learning, discussing current events and engaging in student government are ways this occurs within schools (Youniss 2011). The goal should be creating an authentic context in which conflict and reflection can lead to learning. This is the core of "situated learning" theory, whereby one can take on or adapt the habits and identities of a "community of practice" through meaningful participation (Lave and Wenger 1991; McIntosh and Youniss 2010). Because development is social and contextual, the who, what, where, why, and how all matter. Educators can guide students by creating spaces where collaboration and conflict can be scaffolded toward productive learning experiences (McIntosh and Youniss 2010).

Returning to Youniss and Yates theoretical framework, these experiences that grow our social identities and give us an authentic taste of agency ought to be key to the goals of participatory readiness and civic agency that Allen is pursuing. In their critiques of Allen's "What is Education For?" Rob Reich (2016) and Lucas Stanczyk (2016) both suggest that Allen might be asking too much of schools. As Reich notes, we also lack the clear evidence that the humanities support civic action in the way she hopes. However, we do know that civic knowledge, service learning, identifying with a community, or getting a taste of civic engagement through family or friends are correlated with civic engagement outcomes (Galston 2001; Maher and Earl 2017). There are also an expanding set of civic practices that youth are engaging in outside of school and online that may demand a broader set of knowledge and skills than the humanities on their own can offer.

2.3   The Need for Digital Literacy

In 2006, Henry Jenkins and others at MIT painted a prescient picture of the near future dominated by the "participatory culture" that was emerging online. They anticipated a world in which the abilities to create, share, and consume media effectively and critically online would be key to one's ability to express themselves and be civically engaged. We would need "new media literacies" to prepare young people for this future, and these would need to be distributed equitably in terms of access to

the internet, good tools, and capable mentors, lest we expand a "participation gap" between those prepared for full engagement and those who are not.

In the meantime, sociologist Eszter Hargittai and collaborators have shown in repeated studies, "web-use skills" are neither inherent nor equally distributed among the so-called "digital native" youth. Digital skills, patterns of internet use, and autonomous access to online social networks, help explain online political information practices, civic engagement, petition signing, and political engagement activities" (Hargittai and Shaw, 2013). This literacy and participation problem falls along lines of race and class, possibly exacerbating the existing civic empowerment gaps that Levinson has documented (2012).

Rob Reich notes in his critique (2006) that STEM may be necessary for youth to engage adequately with emerging issues like artificial intelligence and biotechnology. But what all of the critiques miss is the likelihood that these debates will take place at least in part online and that those debates will require making, sharing and interpreting media.

Surveys by Pew in 2016 suggest that 79% of U.S. adults who are online use Facebook and 24% use Twitter—whose population is skewed toward the political and technologically savvy (Greenwood, Perrin, and Duggan 2016). A majority of Americans (62%) get news from social media (Gottfried and Shearer 2016). And during the 2016 U.S. Presidential election, "20% of social media users say they've modified their stance on a social or political issue because of material they saw on social media, and 17% say social media has helped to change their views about a specific political candidate" (Anderson 2016). The latest Pew numbers from 2015 on 13–17 year olds online indicate that 71% are on Facebook and 33% are on Twitter, but 92% are going online daily with 24% reporting they do so "almost constantly"—powered by nearly 75% having access to a smartphone (Lenhart 2015).

There is little doubt that most youth are being exposed to politics online. And if they choose to actively engage, it will likely be in social networks like Facebook, Instagram, Snapchat, Twitter, and YouTube where they will navigate an overwhelming mix of facts, bias, and outright propaganda coming from journalists, bloggers,

as well as their friends and family. They must find a way to critically consume and respond within these new public spheres, confronting difficult ethical and creative decisions. Current civics education lack sufficient focus on "media education" or "communication competence," although scholars have noted the tight relationship between traditional forms of interpersonal communication skills and media/digital literacy necessary for contemporary civic competence (Stoddard 2014; McLeod et al. 2010).

It is hard to replicate these authentic experiences in classroom simulations and to keep up with rapid social and technological changes in the digital landscape (Levine 2015); however, it is incumbent on educators to help scaffold young people by ensuring that they develop strategies for handling collaboration and conflict online and offline. Verbal empowerment is not just a rhetorical skill for in-person lectures and public writing, but is also something that must be learned in online contexts in which social distance changes the dynamics of intimacy and the strange coincidence of permanence and evanescence of what we write and share.

Surveys suggest that those who get the most out of online political discourse are those who identify as highly interested and engaged in politics broadly—they are investing in what they see as "valuable tools for political action and discussion" (Duggan and Smith 2016, p. 5). To be successfully engaged, students must be exposed to diverse political perspectives and the political psychology that motivates people to post their opinions in certain ways. New research indicates that students who report having had an opportunity for media literacy training were more influenced by the accuracy of information and less so by personal political bias (Kahne and Bowyer 2017). Youth also must cultivate their own motivations, which means cultivating their civic identities by relating their own knowledge and personal experiences to issues at hand. These basic elements of a practical digital civics education needed for participatory readiness could work well with the recommendations from The New Media Consortium advocating "literacy across disciplines" as one paradigm for teaching the breadth of necessary digital skills within different contexts and subject matter (Anderson, Adams Becker, Cummins 2016).

2.4 New Media, New Civics?

In 2013, Ethan Zuckerman gave a Bellwether lecture at Oxford University later published as the article "New Media, New Civics?" about civic engagement and the citizens we need in the age of new media, attracting several formal responses by scholars of online civic and political engagement (2014). Zuckerman argues that the latest crisis in civics is how the dysfunction in politics and growing mistrust in institutions are leaving citizens feeling ineffectual. However, he finds hope in the rise of what he calls "participatory civics," offering new ways for citizens to take action.

Participatory civics are "forms of civic engagement that use digital media as a core component and embrace a post-'informed citizen' model of civic participation" (Zuckerman 2014, p. 156). Zuckerman argues that practitioners of participatory civics are defined in part by their interest or need "to see their impact on the issues they're trying to influence" (2014, p. 156). He attributes this to young citizens growing up on participatory media and enjoying the democratized access to voice and influence in those digital spaces. In the same way online participation, more generally, is driven by an individual's passion, so to is participatory civics "driven by specific passions, not by broader adherence to political movements or philosophies" (Zuckerman 2014, p. 157). In the language of Erikson and Youniss and Yates, these are individual moral or political stances that motivate participation in digital versions of authentic political space that through experience and reflection help construct civic identities.

To understand how participatory civics might represent a changing field of civic practice, Zuckerman constructs a cartesian plane with axes of thin versus thick intensity of participation and voice versus instrumental theories of change to map examples of participatory civics. By including thin levels of participation using just one's voice to set an agenda, Zuckerman recognizes the legitimate power and function of what critics have derided as "slacktivism" or "clicktivism" (Morozov 2009, White 2010). For instance, the use of online petitions and hashtag campaigns have enjoyed success on their targets through mass participation, a characteristic of thin participation that's often minimized, even when successful.

To give structure to these new theories of change, Zuckerman adapts Lessig's (1999) four modes of regulation—law, code, norms, and markets—and makes spheres for change. In an age where the institutions meant to change laws are slow, broken, or distrusted, the other three spheres become more relevant. And new media make norms-based change a more attractive target. The voices of thousands online can drive media agenda and reframe issues using consistent refrains like "black lives matter." Zuckerman hopes that participatory civics can be "effective civics" by recognizing the value of multiple spheres of change and applying passions and skills to seek changes in code, norms, and markets via thin, thick, instrumental, and voice-based activism. Moreover, he makes it clear that he believes the traditional form of civics education, emphasizing the basics of how government functions, may be out of touch with this new civics, emphasizing some methods of participation over others and privileging law as a primary lever of change.

In her response to Ethan's article, Jennifer Earl suggests that the social movement literature has little evidence for the effectiveness of more traditional, offline street activism, and in fact the "thin" participation may be both more effective and more strategic at hitting the levers of change Ethan enumerates (2014). She also emphasizes that we shouldn't construct ladders of engagement that mandate as citizens grow in their engagement they should move from thin forms of engagement to thicker, offline forms—many activists would not participate at all except for thin, online participation and scholars should be more "agnostic" in promoting more activism of any kind rather than prescribing one form or another (2014, p. 173).

Zeynep Tufekci's response complements Earl's, arguing that new social movements that spilled into Tahrir Square or Occupy Wall Street in 2011 or Gezi Park in 2013 grew out of disillusionment with traditional institutions and politics and were far from thin expressions on social media. She writes, "[Participants] see their own agency as crucial—there is no sense of delegation, or acceptance of 'tell me what to do.' The engagement is thick, in fact, almost overly thick. Every one of them aspires to be an empowered individual, and many cherish this empowerment. Institutionalization, which requires delegation and hence handing over individual empowerment to others,

is thus viewed with great suspicion exactly because self-empowerment is cherished" (2014, p. 204). While certain online forms of participation may indeed be thin, Tufekci notes that the seemingly simple changing of one's Facebook profile image in support of the Human Rights Campaign's Red Equals Sign may have been thicker for some participants than others if they had done so with a hostile personal audience that might attack them for their stance on gay rights: "symbolic acts can be consequential" (2014, p. 204). Participants in contemporary movements also bring close friends with them or develop strong bonds with fellow activists through the types of life-changing experiences well-known to solidify civic identities.

Finally, Tufekci suggests that rather than thinking about digital tools or tactics mapped onto movement goals using Zuckerman's axes, we think of them as more deeply intertwined using Amartya Sen's concept of capabilities. "[A]ffordances of digital media allow movements to develop certain capabilities—engagement, protests, occupation, counterpublics (Fraser, 1990), synchronization, visibility, publicity, logistics, coordination, attention, etc.—without needing as much the traditional political tools that the protesters are disillusioned with and are, in fact, trying not to develop, engage, or use," writes Tufekci (2014, pp. 205–206).

In his response to Zuckerman, Chris Wells believes the revolution in "late modern citizenship" may be social rather than technological (2014). A shift from community organizations that structure life to networks of individuals that transcend geography or traditional social hierarchies means that the civic identities of late modern citizens like those Zuckerman describes are constituted instead by the choices they make to identify with certain issues or groups—these defines the forms and goals of emerging movements. Wells urges us to not overlook the enduring importance of organization, though they may not necessarily be in terms of legacy institutions or hierarchy, new forms of organization will still be necessary to bind together individuals in order to build voice and influence within contentious politics (2014).

Henry Farrell shares Wells' concern in his response to Zuckerman's article, using John Dewey's theories to examine the creation of new publics via social media, their relationship to the state, and how they can solve certain problems and create others

(2014). He worries about the growth of "privatized activism" (in lieu of participatory activism) because it may degrade public voice by circumventing the state and existing democratic processes and by empowering only those with the resources to participate in these new forms.

2.5   From Voice to Empowerment

Reviewing contemporary participatory democracy discourse, Francesca Polletta finds that efforts to increase citizen participation may be in lieu of giving people real power and may serve other instrumental goals like mitigating litigation around public projects (2016). She argues there is a need for more theoretical precision distinguishing "democratic-y" participation from "participatory democracy;" otherwise, "Democracy may come to be associated more with openness than with equality, more with participation than with power. Having a voice may be defined more as expression than as influence" (Polletta 2016, p. 243).

In their seminal report, Cohen and Kahne define participatory politics as "interactive, peer-based acts through which individuals and groups seek to exert both voice and influence on issues of public concern" (2012, p. vi). In the section on risks of participatory politics, they note:

> "there is a risk that proponents of participatory politics, including youth themselves, will fail to focus on the distinction between voice and influence. We should be clear: we do not want to undervalue the significance of voice, especially for youth who are in the process of developing their political identities. At the same time, we recognize that the promise of a democratic society is predicated on the belief that political actors have more than voice. They must also have influence." (p. 37–38)

In particular, the authors worry about youth turning away from institutional politics and more instrumental means of making change in favor of voice-centric actions. Fortunately, the data suggests that youth engaged in participatory politics are more likely to be engaged in traditional political activities.

Kahne, Middaugh, and Allen (2015) are optimistic about youth achieving voice and influence through new media, especially since they are often at the margins of institutional politics and power. They break down the relevant participatory politics skills "from agenda settings to opinion formation and action" using new media for investigation, dialogue and feedback, circulation, production, and mobilization (2015, p. 41). There is a clear overlap between Allen's hand here and her writing in *Education and Equality* about "participatory readiness." The target is civic agency or empowerment. However, the connection between voice via digital technology and empowerment is left as an open research question or left to recycled theories that advocate participation in institutional politics such as voting.

Recent research reinforces the case for the importance of Evans and Boyte's free spaces, communities and local institutions that foster "deliberation (talking and listening in reasonably diverse groups about public issues), collaborative work, and the strengthening of civic relationships," to use Peter Levine's definition of civic engagement (Levine 2013, p. 15; Sampson 2011; Atwell, Bridgeland, and Levine 2017). A lack or corruption of free spaces and local institutions contributes to what Levine calls a "vicious cycle of citizens' disempowerment;" alternatively, we need strategies for "a virtuous cycle of reengagement and reform" that go beyond messaging campaigns that may reframe issues but fail to build and mobilize movements and go beyond shallow applications of social networking technology that fail to build relationships around shared public concerns (2013, p. 189). This is why the framework of democracy in Figure 1-2 emphasizes the interrelatedness of these elements within its definition of citizenship.

As key spaces of civic engagement and civic learning (as I argue in Chapter 1), social media and civic technology platforms should consider how they are fostering citizen empowerment by increasing levels of "civic and political knowledge, skill, efficacy, sense of membership, and participation" (Levinson 2012, p. 46). Empowerment theory tells us that empowerment "includes both processes and outcomes" and is "context and population specific" (Zimmerman 2000, p. 45). Moreover, empowering processes and outcomes vary between community, organizational, and individual lev-

els of analysis, although they are mutually interdependent in cases of campaigns in which citizens come together to pursue change. Psychological empowerment is one way of describing the theory at the individual level. Zimmerman argues, "The specific actions one takes to achieve goals are not as important as simply being involved and attempting to exert control" (2000, p. 46). More specifically, "an empowered person might be expected to exhibit a sense of personal control, a critical awareness of one's environment, and the behaviors necessary to exert control" (p. 47).

Another way of putting this is to say that empowerment is about reflection and action working in tandem. Danielle Allen, Jennifer Earl, and Lissa Soep devised "10 Questions for Changemakers" as a framework for guiding young citizens toward civic agency via participatory politics (n.d.). The questions start by challenging you to define why you want to take action, and then walk you through developing a theory of change to determine how you will act and what it will mean. Research from their colleagues at Harvard speaks to the importance of cultivating a "civic identity," finding that many highly engaged youth self-identify as "activists" and believe in the importance of "speaking up," and these traits appear related to ongoing civic expression online (James and Lee 2018).

Chapter 3

Defining Monitorial Citizenship

One mode of participatory politics increasingly supported by digital technologies that has shown promise in empowering citizens is an updated version of "monitorial citizenship" that serves democracy by buttressing institutions and improving communities through proactive collective action. My definition of monitorial citizenship is a form of civic engagement in which people collect information about their surroundings or track issues of local or personal interest in order to improve their communities and pursue justice. Common activities of the monitorial citizen include collecting information, sharing stories and insights, coordinating with networks of other civic actors, and pursuing accountability for institutions and elite individuals and their perceived responsibilities.

The term originates in Michael Schudson's 1998 book *The Good Citizen*. However, Schudson's formulation proposes monitorial citizenship as a successor to the "informed citizenship" paradigm to better account for our current age of information overload, arguing the obligation of citizens to know enough to participate intelligently in governmental affairs be understood as a monitorial obligation (p. 310). This original concept positioned monitorial citizens as "defensive rather than proactive" (p. 311). The idea of citizens paying attention to public affairs and serving a monitorial role certainly predates Schudson and, of course, the internet. What is different now is that technologies like the internet and smartphones enable the average person to be more effective at monitoring topics of interest and powerful actors in society through

the construction of distributed networks and ongoing campaigns that can leverage sophisticated narrative strategies with data to hold them to account. Some contemporary scholars believe monitorial citizenship may be one answer to revitalizing civics in an age of mistrust (Zuckerman 2014).

3.1 History of the term "Monitorial Citizen"

Monitorial Citizenship has its foundation in the American Progressive Era ideal of the informed citizen. In *The Good Citizen*, Michael Schudson argues that since the United States' founding, the practice of democracy and what it means to be a good citizen have evolved (1998). Until the late 19th and early 20th Centuries, U.S. citizens had a minimal role to play in politics and instead were expected to support the wisdom of their rich local elites and then later the wisdom of the political parties, who provided jobs and other handouts to supporters.

Civil society outside of electoral and legislative politics did exist as documented by de Tocqueville in *Democracy in America*. However, it was not until the Progressive Era starting in the 1890s that a broader philosophical and societal shift emerged toward rationalizing governance by expanding the role of professionals and marginalizing populist movements, which included independent and professionalized journalism, electoral reforms like state ballot initiatives and the Australian (or secret) ballot, and educating citizens to think for themselves through critical inquiry and experiential education. After the Progressive Era, the "informed citizen" would have new responsibilities, not only electing the best officials in their assessment but also being involved in policy decisions through polling. By 1940, George Gallup believed the new science of polling might even replace political parties (Schudson 1998). Governments could now be held accountable for executing the will of the people between elections, and journalists could be their champions by citing poll numbers and reporting back to readers what decisions had been made.

The ideal of informed citizenship was that citizens would be part of governance by being in conversation with each other and their leaders. But this theory had

critics early on. Walter Lippmann, writing in the early 1920s, argues that the increasing complexity of society meant that an elite class of experts should lead and advise government, leaving the bewildered herd of the public to be interested spectators and regular voters (1922). Lippmann, espousing the Progressive Era ideals of objective, scientific expertise rather than manipulation by political parties, believes the average citizen lacks sufficient knowledge to be omnicompetent about all policy issues (Schudson 2008). Schudson agrees with Lippmann on this point—the ideal of informed citizenship may demand too much of the average person. Schudson finds alternative opportunities for citizenship in the history of the Civil Rights Movement, which realized an expanded repertoire of civic actions in the form of *rights-conscious citizenship*—empowering people through tactical legal cases that when decided by superior courts could change state and federal policy. Also, Schudson's concept of monitorial citizenship suggested such "citizens can be monitorial rather than informed" (1998, p. 310). As would be later evident, this form of government accountability and changemaking anticipates "the private sphere" politics of the internet because these are not collective politics unfolding in the public sphere, but rather individual politics adjudicated in private spaces (Papacharissi 2009; Papacharissi 2010).

Writing in the late 1990s amidst the proliferation of cable news channels, the rise of the internet, and the professionalization of politics (Skocpol 2003), Schudson argues American society must redistribute the responsibilities of being informed and able to take action. This is the monitorial citizenship paradigm. Monitorial citizens scan (rather than read) the informational environment in a way so that they may be alerted on a very wide variety of issues for a very wide variety of ends and may be mobilized around those issues in a large variety of ways; they tend to be defensive rather than proactive, engaging in environmental surveillance more than information-gathering (1998, pp. 310–311). Monitorial citizens integrate their civic duties into their daily lives. For instance, they watch over the kids on their block, keep abreast of important consumer recalls, and note how weather affects the cost of groceries or their ability to check in on family members' safety. Schudson argues that monitorial citizenship can be practiced all year-round and year-after-year, rather than the season-

long citizenship practices of political volunteerism and voting that emerge every four years around the U.S. Presidential Election.

In 2000, Schudson defends the monitorial citizen against claims that he was "offering a California, 'laid back' model of what civic participation should be" (p. 16). He countered that monitorial responsibilities can be more demanding than being simply informed. When "danger to their personal good and danger to the public good" arises, "they should have the resources—in trusted relationships, in political parties and elected officials, in relationships to interest groups and other trustees of their concerns, in knowledge of an access to the courts as well as the electoral system, and in relevant information sources to jump into the political fray and make a lot of noise" (2000, p. 16). This is closer to my contemporary formulation of monitorial citizenship that responds to the Lippmann's critique of the impossibility of omnicompetent citizens by saying that monitorial citizens can act where they are capable of being effective. And this opportunity for empowerment is extended through better means of monitoring and easier coordination with other citizens thanks to digital technology.

3.2 Contemporary Definitions and Examples of Monitorial Citizenship

Political scientists Hooghe and Dejaeghere (2007), who searched for empirical examples of Schudson's proposed model in Scandinavia, define four key qualities of Schudson's monitorial citizen: 1) they are interested in politics, and thus pay attention to relevant events; 2) they have a sense of political efficacy, that their actions will matter; 3) they are not passive, taking some form of political action regularly; and 4) they do not need to connect their actions to conventional political organizations or institutions. While the authors believe that monitorial citizenship is relatively rare, their broad definition makes room for individual citizens to choose their own depth of inquiry as well as the formality and regularity of their civic and political engagement.

Media scholars focused on news production and consumption (Zaller, 2003; Prior,

2007) are interested in the ramifications of monitorial citizens engaging in shallower forms of information-gathering than the informed citizenship paradigm: how might this change the relationship between news producers and news consumers? Prior (2007) argues that news junkies might represent the typical monitorial citizens because they take advantage of enhancements in media choice offered by cable television and the internet to consume more news, albeit at a shallower level of analysis.

Media scholars focused on the internet such as Zizi Papacharissi (2009; 2010) and Ethan Zuckerman (2013; 2014) argue that monitorial citizenship is a natural extension of citizen journalism and technology-enabled "crowdsourcing" (Howe 2008; Shirky 2008). Papacharissi notes that "newer information technologies," used by monitorial citizens, can "enable navigation and management of a complex sphere of information and public affairs" (2009). Blogs and YouTube offer non-mainstream media opportunities that cross the private and public and enable feedback and reciprocity. And yet, this is ultimately a set of solitary actions and does not serve to render a person better informed than any older model (Papacharissi 2010).

In his essays, Zuckerman discusses Schudson's *The Good Citizen* in relation to Lawrence Lessig's book *Code: And Other Laws of Cyberspace* (1999). Following Schudson and Lippmann's cues that the need for omnicompetent citizens undermines democracy, Zuckerman focuses instead on the knowledge and skills an individual may have that increase their chance of being effective at manipulating one or more levers of power (Zuckerman also calls them spheres of change) based on Lessig's four modes of regulation: law, code, norms, and markets. Monitorial citizenship becomes a sophisticated approach to working with others digitally and journalistically to collect information and create narratives that can shape people's normative frameworks around an issue and thereby enhance public pressure for accountability.

In each of these definitions, monitorial citizenship is about a more regular practice of civic activity that goes beyond voting or paying attention to politics during election seasons. People need not be "vigilantes," but they should maintain a constant level of vigilance around issues and communities of interest, an idea supported by Pierre Rosanvallon's view of democracy and "counter-democracy" that requiring

the role of citizen accountability to "buttress" democratic institutions (2008). The following six examples of contemporary monitorial citizenship help illustrate these various expressions.

1) *NeverSeconds* (neverseconds.blogspot.co.uk) was a blog containing photographs of and comments on school lunch meals started by a Scottish primary school student Martha Payne with her father in 2012. The blog led to Payne facing disciplinary action at her school, but protests from readers online spawned an international conversation on the quality of school lunches.

2) *Safecast* (safecast.org) is a radiation monitoring and open data project born out of the Fukushima disaster in 2011. An international network of technologists and activists designed and deployed an affordable Geiger counter to empower citizens to collect radiation data across Japan, which the government was failing to update and disseminate during the crisis.

3) *WeCopwatch* (wecopwatch.org) is a national effort to watch the police and educate people on the use of "copwatch" as a tool for defense and justice. WeCopwatch began training activists and distributing cameras after Michael Brown's death in Ferguson, Missouri in 2014. Though it has been identified with the Black Lives Matter movement, the efforts of WeCopwatch build on the work of long standing Copwatch networks like the one founded in Berkeley in 1990.

4) *Monithon* (monithon.it) is "a civil society initiative run by volunteers and engaging citizens in evaluating the results of EU-funded projects. Using government open data from OpenCoesione.gov.it, citizens organize themselves into groups to verify how the money is spent" (Gascó-Hernández et al. 2017). A majority of the reports were created by high school students participating in a program to develop civic awareness and engagement by interacting with the data portal (Ciacola and Reggi 2015).

5) *LittleSis* (littlesis.org) is a research database started in 2008 to help identify corruption and cronyism. Initially founded by activists, public interest lawyers, and academics, the data has been crowdsourced by volunteers who use open and public data, such as government filings and news articles, to map the relationships between

lobbyists, politicians, business leaders, funders, and the institutions they represent.

6) */r/FindBostonBombers* (reddit.com/r/findbostonbombers/) was an effort by reddit users to crowdsource information that might help find the perpetrators of the Boston Marathon bombing in 2013. Participants listened to police scanners, conducted reverse image searches, and trawled through social media sites trying to identify the bombers. Despite good intentions, the effort was widely criticized as irresponsible vigilantism when reddit users misidentified Sunil Tripathi as a prime suspect. The Brown University student had been missing for a month at the time and was later found to have committed suicide. Tripathi's family suffered a flood calls from journalists, for which former reddit general manager Erik Martin later apologized.

The successes and challenges in each of these examples illustrate how citizenship represents the intersection of communities, different forms of participation, and diverse goals, contexts, and tools. They also beg questions about empowerment being complicated by degrees of institutionalization and the inclusion and participation of different stakeholders, which will be explored in Chapter 4.

3.3 Locating Monitorial Citizenship within Contemporary Debates of Democratic Theory and Practice

As noted in the introduction, monitorial citizenship has long been a form of civic and political action and these practices appear under other names or fall under other past and present theories of democracy.

3.3.1 Postmodern Citizenship

In their summary of monitorial citizenship, Hooghe and Dejaeghere find Schudson's proposal to be an extension of postmodern concepts of citizenship from scholars like Pippa Norris, Russell Dalton, and Ronald Inglehart who track international trends in

distrusting and criticizing political systems and reduced participation in conventional forms of politics (2007). Using Schudson's description, they construct an ideal type for the monitorial citizen as "someone who is politically interested, enjoys efficacy and participates in a non-traditional manner" (p. 261). Looking at evidence of political interest, internal political efficacy, political participation, and institutionalized political activity in the European Social Survey, they find that the anti-institutional thrust of American theories of postmodern citizenship doesn't hold in a Scandinavian context, where political party and labor union membership are still highly correlated with the other indicators of monitorial citizenship.

3.3.2 Counter-Democracy

Writing in response to widespread mistrust in representational democracy, historian and political theorist Pierre Rosanvallon argues for the political strategies of what he calls "counter-democracy" (2008). Rosanvallon starts by diagnosing the limits of electoral politics to express democratic voice and to serve as a check on power, which Achen and Bartels (2016) trace in great empirical detail in their own recently published "realist theory of democracy," to use Rosanvallon's way of describing his work (2008, p. 317). The core of counter-democracy is supporting democratic institutions through three forms of "democratic distrust": "oversight" (surveillance), "prevention," and "judgment."

While prevention and judgment encapsulate existing ways in which experts advise government and judges and juries can be a check on legislation and executive policy, oversight is where average citizens need to play a more prominent role. Oversight powers can be divided into "vigilance," "denunciation," and "evaluation" which map well onto the practices of monitorial citizenship. Rosanvallon is urgent and specific about the need for counter-democratic practices, yet he is vague and often pessimistic about their efficacy. Whereas monitorial citizenship is often celebrated for its lack of central institutions, Rosanvallon sees this as a long-term weakness of counter-democracy; it is most effective at buttressing democratic institutions through negative actions instead of positive, productive ones. Perhaps reflecting specifically on French

politics and the more ideological role of the European press in contrast to the U.S.'s tradition of an objective *fourth estate*, Rosanvallon finds a need for more robust civil society institutions that can convert protest into governance. Monithon (an example above) is in this mold.

3.3.3 Eyes on the Street

In her seminal study of cities, Jane Jacobs argues that well-used streets are also safe streets thanks in part to "eyes on the street," representing the natural orientation of buildings and residents toward this public space (1961, p. 35). She frames the casual vigilance of residents and business owners as a natural ownership of the space and stresses its importance: "even more fundamental than the action and necessary to the action, is the watching itself" (p. 38). While this is clearly a form of monitorial citizenship, Jacobs's focus is on combating mid-twentieth century trends in city planning that seemed to ignore the value of community that streets could build over time. Her citizens monitor each other, rather than the state to show that the value lost when the state meddles in neighborhoods in ways that might disrupt their vibrant culture and civic capacities.

Jacobs's form of monitorial citizenship works at the intersection of trust and mistrust to watch strangers but also reinforce shared social norms. However, in part because of the top-down city planning that Jacobs fought against, the streets of contemporary cities on average contain a far more transient population of residents and businesses, and lack the trust and social capital that stability can provide. Monitorial citizenship still works through social sanctions, but it no longer demands that we share a common street; instead we are joined by common issues that often require broader appeals for awareness. For instance, a volunteer-based anti-harassment initiative helped coordinate the escalation and review of harassment reports on Twitter to improve the experience for users (Matias et al. 2015).

3.3.4   Strong Democracy and the Participatory Citizen

In *Strong Democracy*, Barber articulates his seminal theory of the same name, calling for a more participatory democracy (1984). Barber builds on the work of John Dewey and other Progressive Era thinkers to find a solution to the contentiousness of politics post-Civil Rights Movement by uniting people through shared "civic attitudes and participatory institutions" (p. 117). In contrast, a thin democracy is an electorate voting for representatives, letting the elected government run its course, and minimizing conflict. The "participatory citizen" takes advantage of a broader notion of the public sphere to build "collective, community-based efforts" (Westheimer and Kahne 2004).

This "way of living" as Barber calls it certainly advocates for the type of self-governance inherent to monitorial citizenship. The key difference is the formalism that Barber suggests in the creation of participatory institutions and idealism of binding people through shared virtues. Monitorial citizenship comes from a sense of inequality and a need for power redistribution where discursive democracy seems impossible. And while monitorial citizens are participatory to the degree that they combine efforts with others, it is often a far more individual than collective effort. In contrast to Rosanvallon's theory of democracy that centralizes the role of monitorial citizenship, the monitorial citizen is folded into the responsibilities of the participatory citizen in Barber's idealized form of governance, with the need for independent and antagonistic vigilance ideally diminishing as a greater share of citizens can claim shared ownership in their democracy.

3.3.5   Everyday Politics and Public Work

Responding to the domination of politics by professionals and elite institutions, Harry Boyte argues for the reinvigoration of community-rooted activities and broad-based citizen organizations (2005). This "everyday politics" is built on the belief that citizens should be "co-creators of democracy, not simply as customers or clients, voters, protesters, or volunteers" (p. 5). Boyte argues that we reframe civic engagement in

terms of "public work" to "highlight the creative, educative, and productive dimensions of politics" (p. 5).

Like Barber, Boyte draws from Progressive Era ideals of informed citizenship but focuses on how most conceptions of democracy exclude everyday, community-based forms of civic and political engagement by artificially separating the politics of the public sphere from private activities. As an organizer during the Civil Rights Movement, Boyte saw firsthand the expansion of political tactics to the private sphere. Tim Highfield's *Social Media and Everyday Politics* helps translate this reality to the age of social media, where the private and public collide and new forms of civic and political activity play out through the performance of identity construction and engagement in online communities (2016). Boyte's concept of everyday politics, with its emphasis on building and creating democracy, might best absorb the role of monitorial citizens as stewards of citizen organizations and communities, where the functions of watching and speaking out can perform public work by being part of conscientious service to the public good.

3.3.6 Connective Action

In studying new social movement models like the Arab Spring, Occupy, and the Spanish indignados, W. Lance Bennett and Alexandra Segerberg find that structural fragmentation and individualization in contemporary society was being translated into a kind of "connective action" rather than what would usually be described as "collective action" (2012). Connective action is more loosely organized and built around "personal action frames" rather than "collective action frames" Because communication over the landscapes of social media is personalized rather than group-based, successful personal action frames allow the participant to make the issue part of their identity rather than forcing them to conform to a group identity.

Bennett and Segerberg describe two flavors of connective action: crowd-enabled networks and organizationally-enabled networks. Crowd-enabled networks are loosely connected, bound by emergent personal action frames like a particularly resonant social media hashtag. Organizationally-enabled networks have a central organization

or set of organizations that help coordinate messaging and activities across a formally and informally connected community. This type of social movement lends itself well to the casual politics of monitorial citizenship, which may be coordinated in terms of a style of reporting or a central repository of collected information, but not built as a top-down project. Critics of technology-enabled crowdsourced civics like Peter Levine argue this is an inadequate strategy because the history of social movements points to the hard work of community organizing and coalition building as necessary to build effective movements (2013).

3.3.7 The Actualizing Citizen

Before theorizing the logic of connective action, Bennett suggested that the type of civic actor emerging in this age of networked technology might be best described as the "(self-)actualizing citizen" (2008). Actualizing citizens are "rooted in self actualization through social expression" and channel their personal interests through loosely tied networks with little distinction between production and consumption or between personal and political contexts (Bennett, Wells, and Freelon 2009). This concept of citizenship aligns well with the theory and practice of the monitorial citizen, which can be understood as a subcategory of actualizing citizen. Using the concepts of identity construction from Youniss and Yates (1999), monitorial citizens actualize through the experience of pursuing personal interest in topics of interest or communities, improving them or pursuing justice by watching and speaking up. Attempts to construct successful monitorial citizenship projects may need to find ways to appeal to actualizing citizens using personal action frames and to achieve opportunities for reflection and sense of efficacy that support identity construction and empowerment.

3.3.8 Participatory Politics

As I discuss in Chapter 2, participatory politics are "interactive, peer-based acts through which individuals and groups seek to exert both voice and influence on issues of public concern" (Cohen and Kahne 2012). Similar to Bennett's conclusions about

actualizing citizens, Cohen and Kahne note that interest-driven participation is a strong predictor of engagement in participatory politics, moreover "these acts are not guided by deference to elites or formal institutions" (2012). When practiced as personal and independent actions, monitorial citizenship qualifies as a form of participatory politics, especially given its enhancement using the same technologies and social media that allow for a new kind of interactive, voice-based politics.

3.3.9 Sousveillance

Computer scientist Steve Mann and others (2002; 2016) coined the term sousveillance to refer to the use of wearable cameras and computing devices to observe those in authority, creating an inverse panopticon. This is a response to a state of unequal power in a society under massive surveillance: sousveillance asks us to use the same technologies to watch the watchers. This is monitorial citizenship as information collection but also as deliberate public performance to sharpen our awareness of how pervasive surveillance is in modern society and to disrupt current power hierarchies in public spaces. Sousveillance enriches the idea of monitorial citizenship by making it a visible practice of everyday politics and illustrating how technologies for monitoring embody values of justice and power distribution (Mann 2016).

3.3.10 Monitory Democracy

Political theorist John Keane argues that "monitory democracy" is replacing the dying model of traditional representational democracy (2009; 2013). He imagines the rise of "extra-parliamentary, power-scrutinising mechanisms," akin to civil society institutions Rosanvallon wants. Working both nationally and transnationally, these new institutions will supplant the privileged positions conventional elections and political organizations occupy. Keane describes the rise of an age of monitory democracy since 1945, overlapping with Schudson's rise of the rights-conscious citizen. It comprises ideas like empowerment, deliberative democracy, and participatory governance, and mechanisms like participatory budgeting, think tanks, and watchdog organizations.

In a 2015 book recounting the social history of the politics and culture of transparency, Schudson himself surveys the relevant political theory and finds Keane's depiction of monitory democracy to best describe these currents.

Keane uses monitory democracy as a frame through which we might reflect on the ways our society is now oriented around scrutinizing power and policy-making and doing so on a transnational level. Moreover, Keane argues that this is not about a return of power to the people or grassroots democracy. This in fact a new form of representational democracy, whereby monitorial apparatus jostle for the right to say they work on behalf of the people. As most other theorists do, Keane sees technology as enabling monitory democracy through its media saturation, collapse of the public and private, and ability to connect us directly to one another in ways that appear utopic. For Keane, it's not so much that monitorial citizenship is a new, more democratic orientation, but that the age of monitory democracy gives individuals just as many reasons for disillusionment and retreat from public life—a challenge monitorial citizens must use as motivation for more grassroots civic engagement in Zuckerman's vision.

3.3.11   Participatory Governance

In his work, Archon Fung argues for an "empowered participatory governance" that builds off the Progressive ideal of an informed citizen capable of being deeply involved in policymaking (Fung and Wright 2001; Fung 2002). Participatory governance is both a top-down and a bottom-up utilization of new forms of deliberative democratic practices coordinated by the state but with power devolved to local communities with authentic deliberation among community stakeholders. Neighborhood councils and participatory budgeting are key examples. Monitoring is an important responsibility of these deliberative groups to ensure that decisions made through participatory governance are implemented properly; but it is difficult to sustain the level of involvement required over time (Fung and Wright 2001). Although less institutional than participatory governance, there is a natural fit with monitorial citizenship as a broader effort within communities to ensure representation and accountability.

3.3.12 Social Monitoring

Working with Holly Russon Gilman and Jennifer Shkabatur, Fung includes "social monitoring" as one of six models for digital technology transforming democratic politics (2013). Relying on crowdsourcing, social monitoring involves public or civic organizations deploying digital tools that "enlist the eyes and ears of citizens" to help spot and bring attention to public problems (p. 42). Their examples of this practice focus on deployments of the Ushahidi (ushahidi.com) crowdsourcing application, lamenting that the most visible uses fail to transfer power to individual citizens. Instead, social monitoring essentially employs users as sensors that serve the professionalized political class of journalists, NGOs, or companies, who are positioned in the middle to leverage user-generated content with or against the government. Madianou et al. (2016) found the same result studying the use of SMS for accountability during disaster response—feedback does not translate into changes in aid provision for disaster-affected communities but is used primarily as evidence of success by relaying "thank you" messages to donors. These examples illustrate how the activities of technology-enabled monitorial citizenship can be instrumentalized by existing institutions to feel like a new democratic lifestyle without actual devolution of power back to citizens. Social monitoring when poorly served by institutional mechanisms of power such as the press or lacking independent citizen organizing to amplify narratives of accountability can fail to fulfill the promise of monitorial citizenship, defined in this dissertation in service of participatory democracy and empowerment-based design.

3.3.13 Accountability Technologies

Inspired in part by Schudson's monitorial citizen, Dietmar Offenhuber and Katja Schechtner coined "accountability technologies" to describe a collection of recent technology projects, including citizen science projects, open data and transparency initiatives, whistleblower platforms, social visualization tools, and advocacy tools (2013). Although they admit that accountability or transparency is an ambiguous and often contentious goal, they argue accountability technologies "rely on a cooperative

relationship between the individual and the government, since these technologies interface with mechanisms that need to be, at least in principle, already built into the system" (Offenhuber and Schechtner 2013, p. 8). Offenhuber and Schechtner's book thoughtfully curates examples of technology-enabled monitorial citizenship that span the data-heavy and practical to the artistic and performative.

3.4   Why use "Citizenship"

Some scholars use citizenship and civic engagement interchangeably. Although studies of civic engagement that emphasize voting implicitly exclude those who lack legal status as citizens and thus the right to vote. Contemporary studies of online civic engagement instead are more interested in a definition of citizenship inclusive of participation outside of formal politics and specifically of non-citizens or those defined as members of a public sphere that transcends national borders. The concept of "global citizenship" represents an early attempt to account for the responsibility humans have to each other and to the Earth in an age where globalization means nation-states and boundaries are less meaningful (Falk 1993). However, those who are not legal citizens of a state can still feel disenfranchised when asked to view their contributions as citizenship.

From the perspective of this dissertation, important examples of monitorial citizenship are practiced by immigrants fighting for justice or activists travelling abroad to document injustices in countries whose citizens have limited rights to do so. In the citizenship literature, such struggles are sometimes described in terms of a right to collective self-determination (Kabeer 2005), which is recognized as a human right by the Union Nations. In such cases, a human right can be interpreted as universal, beyond particular legal jurisdictions. Definitions of citizenship also wrestle with the duties of citizens (Kabeer 2005). Many who do not enjoy legal rights as American citizens observe citizenship duties by obeying laws (albeit not always the letter of immigration law), paying taxes, and contributing to their communities and the common good. Monitorial citizenship is intended to be an "inclusive" concept, as Naila

Kabeer writes about the cases studies in her edited volume on inclusive citizenship:

> "Their sense of citizenship lies in the terms on which they participate in this collective life and the forms of agency they are able to exercise. And where they are only able to participate on highly unequal terms, or are denied access altogether, citizenship relates to their attempts to challenge these exclusionary processes and bring about change. As a number of contributions to the book make clear, while the capacity to exercise agency at the individual level may be an important precondition, it is the collective struggles of excluded groups which have historically driven processes of social transformation." (2005, p. 22)

3.5 SeeClickFix as Monitorial Citizenship

SeeClickFix provides an easy way for residents to request repairs to infrastructure in their local communities. They can take a photo of a pothole, add a description, and submit it to the service with geolocation coordinates attached. SeeClickFix currently works with over 300 local governments and has over 1 million users (2016). They represent an ideal case study for examining empowerment in the context of civic technology design because 1) they focus on straightforward issues of governance within the space of monitorial citizenship, 2) they have a clear goal of citizen empowerment, and 3) they have taken a public stance that civic technology platforms have a responsibility to study the outcomes of their systems (Berkowitz 2016).

SeeClickFix represents an eyes on the street model of monitorial citizenship, in which responsibilities for governance are shared between the local government and citizens. The tool makes it easy for users to request issues be fixed and it makes it easy for governments to handle those requests when they connect their work order systems to SeeClickFix's API. When it was first created, they didn't have any government partners. The idea was to shift the balance of power toward average citizens and log complaints publicly so that there was a record of the request that anyone could see online and challenge the local authority when such requests went ignored.

However, the power and efficacy of monitoring is also a function of the responsiveness of government; which means SeeClickFix must also design for its government partners, so they can better respond to citizens' requests.

As SeeClickFix shifted to designing more with their government partners (paying clients) in mind, they added simple feedback loops like automatically acknowledging an issues from an official account (where previously these had to be posted manually) and then automatic issue resolution based on updates to the connected work order systems. These increased the efficiency of the platform; however, in some communities, it may have made it harder for building trust between citizens and officials with the absence of personal interaction. These are some of the challenges and trade-offs in designing a tool for empowering monitorial citizens: When is it appropriate to increase efficacy through automation? What does reflection look like when your civic action is demanding graffiti be removed? What kind of community can we create among isolated reports?

Chapter 4

Empowerment-based Design Principles for Civic Technology and Monitorial Citizenship

In this chapter, I propose six principles for empowerment-based design (previewed in Table 4.1), derived from a synthesis of Feminist HCI and the idea of free spaces, which I believe should be applied to the creation and revision of tools for monitorial citizenship. The principles are supported by case studies of existing tools synthesized with theories of empowerment and learning to create a normative guide for designers to increase their likelihood of empowering users through their platforms. Some of the principles will be applicable to all civic technologies and others are specific to monitorial citizenship tools. The final principle demands rigorous evaluation, which enshrines the need to test claims of empowerment and anticipates the research framework proposed in Chapter 5. At the end of this chapter, I evaluate the design of SeeClickFix against these principles based on interviews with design staff and my own analysis.

Eric Liu writes that citizen empowerment "is about identity and action in the collective: how *we* make change happen *together*" (2017, p. 11). Liu argues that an American democracy that works for everyone requires "that we learn to circulate power and literacy in power far more widely" (2017, p. 12). Circulation follows from

Empowerment-based Design Principles for Civic Technology and Monitorial Citizenship
1. Be Inclusive at Every Stage
2. Give Users Agency
3. Provide Opportunities for Reflection and Discourse
4. Foster and Respect Communities
5. Tell Stories with Data
6. Anticipate Breakdown and Evaluate Rigorously

Figure 4-1: Empowerment-based Design Principles for Civic Technology and Monitorial Citizenship

how Liu frames power as a tool and as a gift (given by others in various forms like attention or money to the powerful) that talented wielders can use to make change. Importantly, Liu notes that power is not finite, "those getting a raw deal can create a new deal by looking beyond the confines of their helpless situation and *making more power*" (2017, p. 40) and people can develop their talent (literacy) through experience practicing power. This can unfold through the negotiation of the legitimacy of an institution of power: for Liu this is about whether it is inclusive of and responsible to its stakeholders (2017).

Civic technology is an example of what Liu calls a "conduit of power"—structures of civic action like organizations, networks, laws, or narratives. These can be designed to empower citizens such as a town hall meeting scheduled at times and located in places convenient to the most marginalized stakeholders versus a meeting held at times and in locations inconvenient to everyone but a few elite attendees. Civic technology for monitorial citizenship is also specifically about supporting practices of investigating and challenging the legitimacy of institutions and powerful elites. If

civic technologies are free spaces, as proposed in Chapter 1, their designs should create opportunities for diverse encounters, cycles of reflection and action, the development of citizens' interests and capacities, and the exercise of citizen agency (Boyte 2017).

Free spaces are different than most civic education classrooms and civic learning as examined in Chapters 1 and 2, because they focus on authentic opportunities for practicing citizenship in collaboration with others. This is a good thing, since there is scant evidence that traditional civics curricula can have the effect on citizen empowerment we are seeking (Hart and Youniss 2018). Informal spaces, including at home, are where political identity and interest are forged, often before adolescence; practice, actions, and the experience of major civic events like the reunification of Germany are likely more important (Hart and Youniss 2018). Today, civic technology and social media are key conduits through which action is taken and moments are experienced.

Unfortunately, civic technology often follows a design paradigm from Silicon Valley that is consumer-oriented rather than citizen-oriented, emphasizing participation in existing systems rather than creating or reforming infrastructures to be more inclusive, responsible, and participatory (Olivier and Wright 2015). Their emphasis on efficiency reinforces systems and moves the user experience away from a "citizen-centeredness," defined by productive inefficiencies (Boyte 2017). An alternative is Harry Boyte's vision in *Everyday Politics* (2014), as Olivier and Wright discuss in their proposal for "Digital Civics": it is "relational rather than transactional" and "political thinking and action can be co-produced and co-owned through dialogue across differences in experience, values, and knowledge" (2015, p. 62). Challenges to a more participatory and empowering approach to civic technology design include: "shifting our focus from city as service to city as collective or commons," ensuring "communities have the right to not participate," and developing "nuanced process interventions, interaction techniques, and system affordances so that engagement as political expedient is not confused with engagement as deeply participatory process" (DiSalvo and Le Dantec 2017). These challenges may require much deeper partnerships between designers and communities and training new designers to value deep partnership (Lampe 2016).

Arguably, the most influential paradigm for designing civic technology is Tim O'Reilly's "Government as a Platform" articulation of principles for technologists interested in making government more transparent and participatory (2010). O'Reilly offers his own principles derived from the perspective of designing general-purpose computer platforms, which allow access to common functions and data for new applications, and from the culture of open source software development. This technology-centric approach emphasizes open standards, iterating on simple systems, participation in terms of many developers helping build services, learning from "hackers," data mining, and easy experimentation. Absent in his approach is a critical reckoning with how citizens who are users rather than software developers can best be empowered by these tools. It fails to account for power and inequality among different stakeholders of the civic technologies to be built. Transparency and open standards is not empowerment. To be fair to O'Reilly, his audience was technologists in government who he rightly argues should be adopting the best software design principles from Silicon Valley and the open source community to build robust platforms.

To complement well-built software architecture, participatory democracy requires additional empowerment-based design principles to help designers think about the impact they will have on their most important stakeholders: citizens. Rather than starting with Government as a Platform, a better point of departure for civic technology designers is Feminist HCI—a framework in human-computer interaction gaining influence among a new generation of designers invested in just and equitable outcomes for marginalized stakeholders.

4.1   Point of Departure: Feminist HCI

Shaowen Bardzell proposed "Feminist HCI" in 2010 writing, "I am concerned with the design and evaluation of interactive systems that are imbued with sensitivity to the central commitments of feminism—agency, fulfillment, identity and the self, equity, empowerment, diversity, and social justice" (p. 1301). These commitments become principles that can form the core of an empowerment-based approach that

76

instantiates several qualities of free spaces and participatory democracy.

Bardzell (2010) surveys fields related to HCI in which feminist critique has had instructive influence. Feminist science and technology studies have probed problems of underrepresentation and accessibility, critiquing the "universal design" movement as reducing people to averages that represent no one well and thus serve no one well—the movement fails to produce equality because it focuses on equity in usability, not on equity in outcomes of use. Addressing these problems in feminist product design, subjectivity is reintroduced to shape design by questioning whether, why, and how someone uses a technology. Feminist architecture and urban planning pays attention to the forces that shape contexts and spaces in which users exist and how those contexts shape design, use cases, and outcomes.

Bardzell argues that Feminist HCI aligns with other movements in HCI pressing the field beyond efficiency concerns to focus on culture and society (2010, p. 1304; Bell and Dourish 2006; Blevis 2007). She proposes six principles ("qualities") of feminist interaction: "pluralism, participation, advocacy, ecology, embodiment, and self-disclosure" (Bardzell 2010, p. 1305). Bardzell argues separately that the feminist methodological values of human diversity and the shift of "social science knowledge production away from managing people to nurturing them" are urgent "given the role of information systems in managing people today" (Bardzell and Bardzell 2011, p. 681). Civic technology's role in democracy demands a similar approach: nurture citizens to learn, to grow, and to be empowered. Feminist HCI principles push HCI to embrace a critical approach to user empowerment, which creates a foundation from which we can push civic technology toward free spaces for citizen empowerment.

4.2 Principle 1: Be Inclusive at Every Stage

In an August 2017 viral video, posted to Twitter by Chukwuemeka Afigbo, a no-touch soap dispenser fails to see his hand underneath the sensor because of his dark skin; he commented, "If you have ever had a problem grasping the importance of diversity in tech and its impact on society, watch this video" (Hale 2017). In order to create

opportunities for diverse encounters, inclusion and pluralism must be a goal of not only the technology but also of the technology's design process.

Ceasar McDowell has a framework for designing projects through democratic means that argues the public should be part of a dialogue at every design stage, starting with framing the problem and continuing through ideation, prioritization, selecting, implementing, and finally monitoring (2016). MIT Professor Sasha Costanza-Chock has worked for many years to teach students "co-design" that engages community members as full collaborators in technology design projects.[1] Challenges in doing this work include slow and contentious processes compared to a top-down approach; it can also shift the responsibility for solving problems to those most affected by them. However, the benefits include more appropriate solutions to real-world problems as well as a sense of ownership in the final projects by the communities engaged in the process, meaning that implementations may be easier and more effective.

McDowell's framework tries to break down the barriers and costs by ensuring that designers keep asking themselves whether they have voice and participation of stakeholders at each stage. Though many examples of monitorial citizenship look spontaneous, it is possible to design for this form of participation. In fact, because many of these practices arise out of existing forms of participation using smartphones and social media hashtags (Highfield 2016), it is important to understand the ways those practices might be different across contexts or received by different targets. The local knowledge of the people who are facing a problem that demands monitorial citizenship and the application of civic technology should be leveraged in the design of practices and any digital tools. Ideally, stakeholders should be centrally involved in the design process.

The ethos of the co-design process is captured in Laurenellen McCann's exhortation, "build with, nor for" (2014). By making user research and design a collaborative project with target users, we can increase our chances of building something that is accessible in terms of both available technologies and ease of use. Furthermore, users have a say in the overall effort's theory of change as well as a sense of ownership in the

---

[1]http://codesign.mit.edu

project, which increases its likelihood of success. This can also socialize citizens for further action, especially youth, as Roger Hart has emphasized in his calls to engage young people in the planning and execution of projects like environmental monitoring (1997).

Two projects from the MIT Center for Civic Media—Grassroots Mapping and Promise Tracker—incorporated elements of co-design in their lifecycles. While both projects started as attempts to solve interesting technical challenges with (well-founded) theoretical use cases, they developed into tools that fit the needs of certain users through collaboration and iteration. Public Lab co-founder Jeff Warren developed the simple balloon- and kite-based aerial mapping kits of Grassroots Mapping, as well as software that stitched photos from the inexpensive digital cameras suspended from them (2010). This was refined in partnership with activists for diverse use cases: mapping ancestral land rights in Lima, Peru and documenting polluted fisheries with fishermen after the Deep Horizon Oil Spill. Both of these cases had a robust theory of change where novel, high quality imagery would make for better advocacy in the related legal proceedings, which drove the design of the grassroots mapping projects.

Promise Tracker was initially developed to allow citizens to document progress on infrastructure promises made by elected officials during their campaigns. After a series of workshops, the Center for Civic Media's Emilie Reiser built a general purpose survey tool with image and location data capture was built in partnership with local community groups in Brazil who found that they had their own monitorial agenda for what were the most important issues to track, irrespective of promises made by their elected officials.

Since June 2016, middle and high school students involved in the Student Movement Pacto for Education in Pará have been collecting data on the provision and quality of school lunches. Nutritious lunches for all enrolled students is explicitly protected in the Brazilian constitution, and with the help of the Public Prosecutor's office, the student activists and citizen groups can threaten legal action if they have sufficient evidence. In partnership with the MIT Center for Civic Media, Humani-

tas360, and the University of São Paulo's Collaboratory for Development and Participation, students have been using the Promise Tracker app and dashboard to record whether lunch is provided or not and to take photos of what was served (Martano, Reiser, and Craveiro 2017). During the data collection campaign, students noticed the quality of lunches improved and in one case the Public Prosecutor was able to pressure a school to reinstate lunches. Similar to the Grassroots Mapping example, the school lunch campaign and Promise Tracker tool represent a synthesis of design affordance and user need.

As McDowell argues (2016), we want monitoring to be inclusive and pluralistic. Diverse participation supports the thesis of monitorial citizenship that any citizen, even high school students, can help buttress democracy by rooting out corrupt actors and institutions. Being inclusive in such free spaces demands that barriers to participation be addressed by asking for or encouraging participation in ways that ensures people realize that their participation is possible and will be valuable. It also demands that there be ideological freedom and "freedom from the surveillance of authorities" (Polletta 1999, p. 6). Freedom from censorship online has been an ongoing battle between companies, states, and other actors, wherein political speech and freedom of assembly online have been attacked by various means that disrupt users' access technically, silence their voice through deletion or fear of arrest or violence, and even pollute online discussions with disinformation (Deibert et al. 2011). These undemocratic forces represent a moving target that continues to disrupt designs thought to be inclusive.

Designing for free exchange online requires a clear set of a ethics and values at the organization layer, robust processes that are meant to serve user-citizens first and foremost, and sufficient resources scaled to the size of the platform in order to support online communities and root out bad actors. This is consistent with most principles of good design, even O'Reilly's, and should be an inevitable part of how we want these spaces to operate. Designs should be built in partnership with users and leverage their monitorial capacities—although relying on users only to report bad actors and problems is insufficient when they are the targets of disinformation and

other forms of manipulation.

4.3   Principle 2: Give Users Agency

Another way to think about inclusive design for empowerment is how user agency is integral to the user experience and its outcomes. Ideally, civic technologies should fulfill the original promise of the internet, articulated by Jonathan Zittrain (2008) and others, to enable generativity: i.e., they should empower users to solve problems beyond those the tool builder intended to solve. A common way to design for agency and generativity is by offering choices and open-endedness: users can choose their own problems to solve and/or choose the way to solve their problems that is most appropriate to their needs and context. Technologies can integrate choices as well as open up new opportunities for self-determination.

In her work on the use of information technologies for development, Dorothea Kleine (2013) constructs a choice framework that defines empowerment in terms of how much choice is offered to people in the application of technology. Applying Amartya Sen's (1999) capabilities approach to development as freedom, Kleine articulates a vision whereby technologies are part of the structure of society that work with individual and group agency (represented by knowledge, skills, and other resources) to produce capabilities that are in effect opportunities that people with different structural and agentic situations have to make decisions that achieve developmental outcomes, such as increased income, knowledge, communication, etc. that can improve their future agency and transform structures in their favor. Kleine argues that technologies should be designed to enhance people's freedom to choose better outcomes.

Choice is one way to answer the challenge of Virginia Eubanks, who critiques the use of technology in citizen-government relations as too often disempowering because it frequently reinforces the divisions between the information rich and the information poor through design (2012). Her research on women on welfare noted the ways technologies used to administer welfare were used on people, rather than *for*

people or the ideal of *with* people, stripping them of their agency through mechanisms of discipline and control like data surveillance and forms on screens optimized to make social work more efficient than helpful.

Eubanks calls for an inversion of this paradigm through a new movement in digital literacy and design: "popular technology." Popular technology (Eubanks 2011) is based on the ideas of popular education whereby learning about decision-making processes comes from "actually making decisions" (p. 105). Eubanks quotes Highlander School founder Myles Horton, "The problem is not the danger of irresponsibility or inefficiency, but the problem of convincing students, minorities, and other disenchanted people that their involvement will have meaning and their ideas will be respected" (Horton 1972, p. 31; quoted in Eubanks 2011, p. 105).

Specifically, Eubanks offers popular technology as an educational effort in response to technology equity programs aimed at boosting the technological proficiency of the marginalized. She believes "technological citizenship" should be the goal of such programs because social justice in the information age is only achieved through skills, knowledge, and identity in the pursuit of self-determination, i.e. empowerment by co-creating one's technological world (Eubanks 2012), which aligns it closely with the co-design and "build with, not for" movements in civic technology.

In her recent book on how algorithms may exacerbate inequalities for the poor, Eubanks proposes two guiding questions for technologists designing systems that serve the public: "Does the tool increase the self-determination and the agency of the poor? Would the tool be tolerated if it was targeted at non-poor people?" (2017, p. 212). She follows these questions with a draft "Oath of Non-harm for an Age of Big Data" that implores system designers to see humans at the center of the technologies they build rather than data, since the interests of people, especially the poor, are lost when bureaucratic priorities and the perceived needs of the technologies themselves are given primacy.

Promise Tracker attempts to provide users agency by allowing them to choose what they want to monitor, rather than following the government's lead; then, they can create their own surveys and do their own data collection with the tool. There is a

qualitative difference between a superficial choice—which predetermined issue would you like to track—and a meaningful choice that empowers people to choose their own issue to track and have a say over the outcomes of their participation on a platform. Social media and meme-based campaigns, such as the Human Rights Campaign's "Red Equal Sign" campaign (n.d.; Matias et al. 2013), also support this principle by allowing for open-ended individual expression through remixing a shared set of media and ideas (Jenkins et al. 2013). Making actions personal and expressive is important for the ways monitorial citizenship extends from local and personal interest—a logic of social media-based social movements Bennett and Segerberg describe as "connective action" (2013).

Another approach to agency is through play, which is also an important mode for learning. As discussed in Chapter 1, "meaningful inefficiency" is a useful principle from game design that civic technology can use to structure experiences in ways that allow users to find their own path through a problem and thereby make choices and learn from them—getting better as a player/citizen (Gordon and Walter 2016). In his book *Making Democracy Fun*, Josh Lerner surveys how games can serve democracy and finds five things that such games should try to avoid (2014, p. 196): violence between players, unfair outcomes, lack of fun, trivialization, and manipulation. Such aspects of the experience take away from the value of designs for "ludic engagement"— "activities motivated by curiosity, exploration, and reflection rather than externally-defined tasks" (Gaver et al. 2004, p. 885). Games are fun because players' behaviors determine the outcome, and when they lose that agency the game gets boring or feels pointless. Civic technology should be designed to mitigate this disempowering outcome.

4.4 Principle 3: Provide Opportunities for Reflection and Discourse

Inclusion and agency are necessary precursors for reflection, central to civic learning , and discourse, central to many theories of democratic inclusion and practice. Although reflection and action are core to civic learning (Allen, Earl, and Soep n.d.), civic technology often fails to take advantage of opportunities to support users in expanding their understanding through feedback and discourse. Working with those who most need social services, design company InWithForward now develops ethnographic profiles of interviewees and uses them not only as user personas in their presentations but also shares back their analyses to the interviewees (Napier 2018). They find that sharing this collected data back is a powerful opportunity for reflection and discourse, and they suggest social services should do more to return the data they collect back to the people they are working with. This could be a feature of both the design process and the service design, offering an opportunity for "popular technology," justice, and action (Eubanks 2012; Eubanks 2017).

In human-computer interaction, Sengers et al. (2005) have proposed "Reflective Design" as a movement that promotes reflection as a core goal of design for both designers and users. The concept builds on the seminal work of Donald Schön, who coined "reflection-in-action and reflection-on-action" as core skills of "reflective practitioners"—professionals who combine technical expertise with artful improvisation when facing unfamiliar problems and situations (1984). Schön was a philosopher, an architecture and design professor, and a pioneer of organizational learning, whose study of extraordinary practitioners led to the insight that excellence was a function of professionals' artistry more than simply superior technical competence. As we conceive of citizenship as more than voting and the knowledge of how a bill becomes a law, we might understand it as an art that can benefit from reflective practice.

Schön advocated "coaching" as the means of teaching professionals the holistic skills that would make them successful (1987). Reflective Design aligns well with our goals of empowerment by encouraging designs that "support users in reflecting

84

on their own lives," engagement between designers and users building on traditions of participatory design, and specifically building infrastructure that provides users agency, dynamic feedback on their participation, and making user input and evaluation fundamental to the design process.

Take Deera, a kind of SeeClickFix for Kuwait, for example. The service emerged from the struggle of its founder, Haytham Al-Hawaj, to request a giant pothole he fell into while cycling be fixed by the relevant ministry in charge of infrastructure. There was no easy way to submit a request as a citizen, so he found the manager in charge of receiving and assign work orders and offered to fill out the requisite forms. When problems were fixed he publicly thanked the manager on Instagram—Kuwait's most popular social network. Using Instagram's features that allowed the submitter and the fixer to be tagged on Instagram and to be broadcast publicly, he created a feedback loop that connected citizens to their government and created a dialogue and opportunity for trust-building and efficacy where none previously existed. And because it made the ministry officials look good, he was later able to automate the submission process and strengthen its effect.

4.4.1 Feedback Loops

In March 2018, Hewlett Foundation program officer David Sasaki complained on Twitter, "Why don't civic tech apps give me feedback on how my contributions have been used by others like [Google Maps]?" alongside a screenshot of a notification telling him how many people had viewed photos he had shared on the service. The best citizen input systems communicate to users what happens to their contributions. In the "We The People" example in Chapter 1, we find an example of the absence of a feedback loop in its design that was only closed later via blog posts in response to complaints that the petitions and signatures did not appear to be meaningful. And although we see opportunities for growth in designs that incorporate certain "meaningful inefficiencies" (Gordon and Walter 2016), providing "status indicators" and breaking down progress into levels or stages are important for providing users a sense of progress during playful civic experiences aimed at specific goals (Lerner 2014,

p. 194).

Psychological empowerment is driven by feedback that indicates to people their efforts are meaningful and can reinforce their personal identity. Closing the feedback loop requires both "willingness and capacity" on the part of institutions being targeted for change—which cannot be guaranteed even in cases where the government is the sponsor as in We The People and many other civic technology projects around the world (Peixoto and Fox 2016, p. 35). Good feedback loops help citizens experience a measure of success either individually on a campaign or as a sense of shared effort with others, which can help build internal political efficacy. Even if a citizen doesn't receive a response from the government—likely if their project is oppositional—there should be some way of visualizing their contribution as part of a larger effort. This is at the heart of SeeClickFix's messages when their partners have acknowledged and resolved reported issues. The point-of-interest notification feature also accomplishes this by indicating activity by fellow members in areas that are likely meaningful. When a user submits an issue, the location of the issue is registered as a point-of-interest and the user receives subsequent emails alerting her to activity on the platform that is located nearby.

4.4.2   Deliberation

Scholars often illustrate their theories of participatory democracy as feedback loops. Levine's (2013) virtuous cycle in Chapter 2 and John Gastil's (2016) vision for a "democracy machine" that incorporates a long-term feedback loop whereby citizens are called to participate in policymaking by learning and deliberating, generating, and then evaluating policies and procedures in ways that produce more demand for citizen participation. This discourse between policymakers and citizens parallels the discourse between designers and citizens that empowerment-based design calls for. However, the idea of discourse and deliberation amongst systems is also a key opportunity for reflection and learning as scholars like Gastil indicate.

"Deliberative talk" (Polletta 2002) is a key feature of participatory democracy: discourse among diverse members of a public help to develop skills of argumentation,

find common interests with other citizens, and build a civic identity overtime. This is a key feature of free spaces and is at the heart of what Danielle Allen hopes (2016) a liberal education can offer to democracy and has even come to be the center of a movement in higher education called "deliberative pedagogy" (Shaffer et al. 2017). Research among college students has even shown that informal conversations about politics among roommates is correlated with political participation (Klofstad 2010).

Deliberation helps make decision-making more transparent and more inclusive and thus more legitimate, which strengthens its claim to power both internal to movements and organizations and externally to other stakeholders and the wider public. Deliberation should never be confused with simply listening, especially new tools that attempt to interpret different elements of participation as analytics signalling interest or decisions (Karpf 2016). Rather, it is a two-way conversation, which needs to be supported by providing balanced voice and representation through inclusivity (see Principle 1) and creating opportunities for reflection-in-action among users. Conversation is the core of relational organizing which is important for building civic identity and building capacity for future engagement not just mobilizing in the moment (Karpf 2016).

Deliberation is often presented as the ideal component of participatory democracy, being core to previously discussed theories from Danielle Allen, Benjamin Barber, Harry Boyte, and Peter Levine. It is inherently (and meaningfully) inefficient, which puts it in tension with the efficiency goals of most technology. But without supporting some open discourse among citizens or between citizens and government, free spaces and civic technology cannot achieve their promise.

4.5 Principle 4: Foster and Respect Communities

In his seminal *Social Movements, 1768–2004*, Charles Tilly proposed that the power of a movement derives from its worthiness, unity, numbers, and commitment (2004). A movement's demands have a chance to command the necessary attention for change when they can display a large, resilient group of people coming together for a worthy

cause. Drawing on Tilly and other social movements scholars, Peter Levine has offered an updated version of "WUNC" that he abbreviates as "SPUD"—scale, pluralism, unity, and depth (2016; 2017). In addition to numbers and unity, he argues pluralism is important to ensure representation and better strategy arising from diverse viewpoints and depth grows the organization by investing in its participants by a kind of reflective practice: gaining skills and knowledge, agency and purpose, and developing common values and identity through participation (Levine 2016). Numbers and pluralism together increase the chance that someone is going to take seriously the concerns raised by a group, which allows for movements to gain greater attention. Depth of leadership and numbers unlock a community's ability to grow and adapt over time and lay the foundation to seek power via multiple levers. Levine believes social movements, organizations, networks, and media platforms can benefit from focusing on SPUD (2016), and that fostering these types of organizations may address the problem of "civic deserts"—communities where young people lack opportunities for civic engagement and learning (Levine 2017; Kawashima-Ginsberg and Sullivan 2017).

The depth that Levine writes about, empowers individuals when formal and informal experiences lead to members gaining skills, information, agency, purpose, and allies (2016). Beyond the more formal organizational forms, social movements scholarship has long pointed to the importance of family, friends, and school to the mobilization of young people into civic action, and even in the digital age these still hold true (Maher and Earl 2018).

Civic engagement and learning is social, and designs should encourage collaboration among users. Eric Klopfer (2011, p. 151) articulates five "collaborative learning components" in the augmented reality learning games he studies and designs: positive interdependence, promotive interaction, individual accountability, interpersonal and small-group skills, and group processing. These components offer different modes for reflection and action as a community: linking the activity and success of users together, sharing back progress to and fostering discussion among a whole group, and generally building up the skills of users to thrive in group-based activity—building

on the value of deliberation described in Principle 3.

Hollaback! offers an online platform for documenting street harassment (Dimond et al. 2013). Their explicit efforts to build a community of street harassment survivors lends credibility to the outward advocacy and also legitimacy to their internal efforts to support this community. Public Lab does this work by working in local communities, respecting those local needs and contexts, and supporting the people there to build and to deploy tools in ways that serve their goals (Public Lab 2018). The work that Promise Tracker is doing with its community partners in Brazil follows a similar model of respecting local communities and their needs, building features and deployment plans around their interest and supporting efforts to build networks of monitors for the ensuing campaigns.

Several of the successful examples of monitorial citizenship introduced in Chapter 3 build communities and/or respect existing communities in order to do their work. WeCopwatch, Monithon, and LittleSis all worked with or through existing local organizations or institutions. Monithon anchored much of their work with students in local schools. WeCopwatch identifies community leaders and existing copwatch groups to help organize workshops. LittleSis launched the effort "Map the Power" in 2017, connecting with local citizen groups in cities across the United States to teach power mapping tools and support groups in contributing to LittleSis projects relevant to their local communities and interests (Gott 2017; Lokhandwala and Gott 2018).

Community as a goal may seem to be an obvious or old-fashioned conclusion following from Principles 1–3; however, it is important to highlight the qualitative difference between a set of aggregated individual efforts and a cohesive community project. Community is a source of trust through shared identity and experience that enables the resilience and power that Tilly and Levine describe. This is at the heart of critiques of recent theories like "the logic of connective action" that wrongly suggest collective identity is less important in the age of digital activism (Gerbaudo and Treré 2015).

4.6 Principle 5: Tell Stories with Data

Stories offer compelling starting points for reflective and deliberative modes of democratic practice. And data offer stories an ability to root anecdotes in real world experiences and make clear connections at different scales and across contexts. In monitorial citizenship, stories can transform discrete data points into a trend and a narrative that have the power to reframe issues and invite others to see themselves in the data.

Ezio Manzini argues that everybody ought to be involved in design if the goal is social innovation, and designers can foster this by making the present more "visible and tangible," which allows people to comprehend the complexity of our present world (2015, p. 121). Approaches to this goal include "mapping and amplifying" data in ways that are open and inclusive, "creating stories" that convey both knowledge and values, and "scenario building" to cultivate a shared vision for the future (Manzini 2015, p. 121–129).

4.6.1 Leverage facts and data

New technologies are particularly good at capturing, collating, and disseminating data. In certain cases, data or facts can be very effective for the purposes of monitoring and accountability. Efforts to open public data and insist on transparency from corporations around their impacts help empower people to use this data to ensure that it is serving the public (Baack 2015; Transparency International 2014). For instance, the success of Grassroots Mapping in helping claim land rights in Lima, Peru and in recovering damages after the Deep Horizon Oil Spill is due in part to the admissibility of aerial photography as evidence in legal proceedings.

In New York, the Uncivil Servants project targeted the known problem of police parking illegally around the city flouting the rules they were meant to enforce. They crowdsourced reports of illegally parked police cars and used the data to create a compelling website and map of reports. Local media coverage amplified their story, which shamed the police into towing their colleague's cars and revoking the bogus

parking permits they had been using to claim a right to park where they are not allowed (Naparstek 2016).

Guttenplag was an anonymous effort to investigate plagiarism in then German chancellor candidate Karl-Theodor zu Guttenberg's doctoral thesis (PlagDoc 2013). The effort uncovered the fact of the matter and tanked Guttenberg's political career. However, in the age of Donald Trump and "alternative facts," simple objective epistemologies may be impotent. Trump turns whatever facts he happens to encounter into a narrative that serves his interests. When data are easily selected or substituted for political convenience, personal experiences become even more critical for conveying truth.

4.6.2   Personal experiences are data too

Hollaback!'s collection of street harassment stories fills a gap in public data because official ledgers from political reports fail to track this problem (Dimond et al. 2013). Collecting personal stories and illustrating a pattern is a necessary and effective way to draw attention to the issue. Additionally, because Hollaback!'s theory of change is not just about raising awareness but about mutual support for victims—collecting shared stories helps serve the community-building purpose as well

We might term this "emotive counterspeech." Stefania Milan in her analysis of social movement technologies includes "emotions" as one of the core factors that influence actions and the design of interventions (2016). In his theory of organizing, Marshall Ganz makes the case for emotions as a core component of public narrative—storytelling as a means to "translate our values into the motivation to act," summarizing Martha Nussbaum's argument that "because we experience values through our emotions, making moral choices in the absence of emotional information is futile" (Ganz 2011, p. 280 and p. 275; Nussbaum 2001). Counterspeech is the first amendment legal principle that argues against censorship and instead for more speech in an attempt to counter bad speech (Hudson 2012). Like Rosanvallon's concept of "counter-democracy" (2008), critiques made salient through the emotional resonance of personal experience can help buttress democratic institutions by reframing insti-

91

tutional activity in ways that make it accountable for the lived experience of citizens. To use Hirschman's framework (1970), this is particularly important in situations where "exiting" a system is not possible, left with only the political option to exercise one's "voice."

4.6.3 Thinking narratively

Whether relying on the perceived objectivity of facts or the subjective resonance of personal experiences, having impact with data requires telling a story. Rather than simply voice as expressing preferences to an institution, storytelling using a framework like Ganz's (2011) public narrative offers a path toward efficacy through movement building—stitching together the ingredients of SPUD by sharing values and experiences, calling yourself and others to leadership, and expressing the urgency of action. In *Beautiful Trouble*, Canning and Reinsborough frame this tactic as "think narratively" (2012). When a project is conceived, activists and technologists should not only engage the community but immediately consider their communication strategy.

Often monitorial campaigns rely on the repertoires of recruitment, media attention, and ultimately changing hearts and minds. The "hearts and minds" theory of change, what Zuckerman describes as shaping norms (2014), is that the collective experience of activist media can manipulate social norms by using narratives to reframe issues, and those underlying attitude shifts make possible future actions and social change motivated by a new, shared sense of justice. Whether it happened organically or intentionally, the work of Black Lives Matter and the complementary project WeCopwatch have been successful through telling a story in their efforts to document police violence. Black Lives Matter is a movement built on a central narrative that connects individual tragedies into a cohesive pattern. The tragic deaths of black men captured on camera illustrate the story, and its moral that "black lives matter" is reinforced by seeing the contrast of police action.

4.7 Principle 6: Anticipate Breakdown and Evaluate Rigorously

A 2018 *Co.Design* article updating Dieter Ram's classic principles of good design argues that good design is now "transparent," "considers broad consequences," and "slow" (rather than moving fast and breaking things) (Labarre 2018). Moreover, the narrative of innovation is often dominated by the idea of producing something new rather than the maintenance or repair of something that already exists or the details of adapting it to differing uses and contexts; "this is a false and partial representation of how worlds of technology actually work, when they work" (Jackson 2014, p. 227). The evaluation and iteration of design is equally important.

If we conceive of civic technologies as part of the infrastructure of democracy, we should evaluate them in the way we might test and repair infrastructure. Technologies that become infrastructure often become invisible, only returning to visibility when they break (Bowker and Star 1999). Dangers to democracy are sometimes slow to surface. Regular and novel evaluations are necessary to address whether tools are empowering citizens in ways that serve participatory democracy. Repairing (evolving) these technologies so that they continue to serve to their purpose continues long after the design phase—an initial phase of innovation that is often over-emphasized relative to the critical and perhaps more ethically essential maintenance phase (Jackson 2014). Considering design in ways that account for "breakdown" may represent its own ethical design principle (Houston et al. 2016).

Good evaluation starts by determining the right goals and measures. As both platforms and online campaigns increasingly rely on analytics to make decisions about design and strategy, designers must choose metrics wisely and not forget the importance of their own strategic thinking (Karpf 2016). The often used idiom in the world of evaluation, "what is measured is what matters," shines a light on the importance of appropriate measures because often organizations will steer themselves to optimize for improving performance on those measures—a paradox known as Goodhart's Law, best summarized by Strathern as "when a measure becomes a target, it ceases to be

a good measure" (Strathern 1997). In Silicon Valley technology culture, the measurement of engagement with the platform, and in social media the measurement of advertising revenue, creates incentives for focusing on the "stickiness" of the platform rather than the quality of the experience or off-platform outcomes. And for mission-driven organizations, it's been shown that the need to adopt "data-driven decision making" can be a disempowering experience when evaluation is driven by what data or metrics are most readily available or seem appropriate at a given time, and/or imposed by outside stakeholders (Bopp, Harmon, and Voida 2017)

As I have argued throughout this dissertation, the right goal for civic technology is empowering citizens, which means we must measure empowerment rigorously and regularly to determine whether our tools are performing that function. In the next two chapters, I propose a framework for an empowerment-based research approach for civic technology and report on findings testing some of those evaluation tools with SeeClickFix.

4.7.1 mySociety and Facebook Research Programs

The principle of evaluation, as well as the empirical work in this dissertation, is directly inspired by the values and goals expressed in the research programs of mySociety and Facebook's Civic Engagement team. In their research strategy, mySociety proclaims "mySociety's vision is for citizens around the world to feel empowered to interact efficiently, effectively and meaningfully with their governments and decision-makers using low cost and user-friendly civic technology," and a mission "to invent and popularise digital tools that enable citizens to exert power over institutions and decision-makers" (2015, p. 2-3). To evaluate their progress, they explicitly fundraised to invest in academic research to explore the impact of their and others' civic technology products. They investigate not only user experience design for ease of use, but also the personal and contextual factors of use, such as user demography and socio-political conditions where users' live. Importantly, they explicitly commit to examining the attitudinal impact on citizens of using digital tools. mySociety's research strategy is a fusion of normative values about their responsibilities in doing

this research and a commitment to rigorous empirical work.

Although Facebook as a whole is known as an opaque organization with complex interests, it is also mission-driven and its Civic Engagement team, responsible for features that touch on civic and political experiences of users, has been laudably values-driven in its design work and open regarding its efforts to evaluate impact rigorously.[2] At the 2016 and 2017 convenings of mySociety's The Impacts of Civic Technology Conference (TICTeC), Facebook Civic Engagement staff presented their own research and stressed the values that drive their team's work:

- Be Selfless: serve people's interest first, not Facebook's interests

- Be Protective: Keep people safe (including from personal risk)

- Be Fair: Provide the same opportunities to everyone

- Be Representative: Strive towards broadly inclusive products

- Be Constructive: Build empathy and defuse acrimonious polarization

- Be Conscious: Know our impact (both positive and negative)
  (Chakrabarti and Mason 2016)

Unfortunately, it is impossible to evaluate how well Facebook lives up to these principles because it is unlikely that the company would ever voluntarily reveal all the cases in which they fall short of them. The fallout from Russian disinformation campaigns over social media during the 2016 election and the Cambridge Analytica scandal involving microtargeting Americans with political advertising data extracted from the platform emphasize the importance of doing research and the potential adverse impacts on democracy and the disempowerment of users. Facebook has been willing to share null results, however, telling the audience at TICTeC 2017 that they failed to detect a meaningful impact on user political knowledge of which candidates were running in which races despite building features during recent elections with that goal in mind (Chakrabarti and Moehler 2017).

---

[2]Disclosure: I was employed as a PhD intern on Facebook's Civic Engagement team in 2016, conducting user experience research.

4.7.2 Representation in Research

Returning to Principle 1 on inclusion at every stage—McDowell (2016) would say this must also happen at the "monitoring" stage. Monitorial Citizenship already advocates everyone playing the role of auditor in society, but when considering how that feeds back into the design process, representation is incredibly important. Discussing the principles of the Design Justice Network (2017) and citing work by Joy Buolamwini (2017) on auditing bias within facial recognition technology, Sasha Costanza-Chock wrote on Twitter in January 2018 that designers must switch to an intersectional framework that understands how technology designs impact different groups differently in overlapping and complex ways: "one of the implications is that we must restructure testing at all stages, from early prototypes through quality control in production lines, around what [Joy Buolamwini] has described as intersectional benchmarks."

Finally, in the spirit of this principle of evaluation, it is important to emphasize the need to test each of the above normatively derived principles to understand better their contribution to empowering users and supporting the work of monitorial citizenship.

4.8 On Institutionalization

It is difficult for monitorial citizenship projects to succeed if their accountability mechanisms lie outside of systems and institutions of power. Institutionalization of monitoring, ensuring dedicated resources on the advocacy side for collecting and sharing data and findings as well as established means for responding on the side of the targets held to account. This can improve the efficacy and efficiency of monitorial work, but is not always an option for monitorial citizenship projects because of the tension that arises from the need for strict independence or noisy antagonism in certain cases.

Richard Pope (2016), a chief advocate for "government as a platform" in the UK, returned to his ideas about well-designed products and decided that "easy to use" was

an insufficient goal. He now endorses the goals of making services "understandable, accountable, and trusted" (2016), and he is making the case that these should apply to not only government platforms but all technology services. Combining ease of use with action through and feedback from a trusted institution has an empowering quality. An excellent monitorial citizenship example comes from Romania: the Ministry of Environment released an app that allowed anyone to check license plates on logging trucks against a government database to see whether they were registered to legal logging operation; after 30,000 reports in the first ten days, there was a 50 percent increase in permitting activity as the loggers felt they were being watched (Conniff 2018).

However, Zuckerman (2015) sees monitorial citizenship as a form of civic engagement that insurrectionists can embrace to remake their institutions. Supporting this claim is evidence that shows formal democratic systems are not necessary for accountability practices to have impact. Informal grassroots accountability in places like China has been proven effective when mobilized through groups that share backgrounds and values with officials in government, empowering public pressure with social pressure (Tsai 2007), as well as through mass non-compliance with *de jure* rules (Tsai 2015).

However, there is also much to be learned from non-grassroots civic technology projects. In her book reflecting on participatory budgeting and civic innovation in America, Holly Russon Gilman outlines three design principles for successful participatory governance projects: substantive participation, deliberation, and opportunities for institutionalization (2016). SeeClickFix might be classed as one of these top-down civic technology projects—born out of frustration as a citizen but solved through creating a more institutionalized technology directly tied to local governments.

Because people need to have a sense that their participation matters, SeeClickFix is about giving users agency. In Russon Gilman's work on participatory budgeting, such government-led efforts entrust a significant amount of money to citizens (2016). The participatory budgeting process is also "thick" or meaningfully difficult, so that people really invest in the project and in each others' participation in it, which can

produce the social benefits that Russon Gilman calls "civic rewards" (2016).

We can also think about civic rewards in terms of the perceived agency of users—evaluating empowerment in terms of measures like political efficacy as I will detail in the next chapter. Technologies can increase the likelihood of government responsiveness and enhance citizen's sense that they are being listened to by institutions willing to do something. The best citizen input systems communicate to users what happens to their contributions. Positive feedback loops help citizens experience a measure of success either individually on a campaign or as a sense of shared effort with others, which can help build their sense of agency. Even if a citizen fails to receive a response from the government—likely if the project is oppositional—there should be some way of visualizing one's contribution as part of a larger effort.

Finally, institutionalization is what ensures civic innovations can persist past their pilots or without the individual champions that organize them. They need to be placed at the core of existing political processes and decision-making, not kept ad hoc, which maximizes the influence of citizens on targeted institutions in order to achieve their transformation. Rosanvallon's history of "counter-democracy" describes how forms of resistance and dissent were slowly institutionalized in Western democracy to buttress the larger democratic system, e.g. the formal role given to trade unions (2008). Albert Hirschman described how change can be effected in organizations by exercising various forms of exit and voice, when loyalty to the core institution is valued (1970).

In the realm of civic technology, the most effective voice-based citizen reporting tools seem to be those that increase the capacity of policymakers (who actually care) to see and respond to needs (Peixoto and Fox 2016). This is SeeClickFix's model of selling a backend system to local governments that can easily ingest the crowdsourced reports from their user-facing apps and website. This poses a challenge to insurrectionist monitorial citizens, who may see themselves as more adversarial to existing institutions. But this could also be a tactic employed in a larger anti-institutionalist strategy of revolutions from inside, such as in the case of Sourcemap, which traces the supply chain of components of common consumer goods as a service to both

consumers and companies to enable ethical decision-making based on understanding the environmental, economic, and social impact of their sourcing strategies (Bonanni 2013).

4.9 Evaluating SeeClickFix according to Empowerment-based Design Principles

According to SeeClickFix staff, citizens are involved in design through conventional means like email and support channels, as well as user interviews and test sessions with prototypes. Trends in citizen feedback are used to prioritize certain fixes or features in the product roadmap. In contrast, SeeClickFix's paying clients (often municipal governments), who are also users, enjoy dedicated communication staff for customer success and annual in-person workshops that SeeClickFix calls "User Summits." Although not designed directly with users, this at least represents an ongoing effort to research and iterate on the design.

4.9.1 Inclusivity and Agency

Asked about tensions between designing for citizen users versus the client users, staff admit that trade-offs exist but they are also unwilling to compromise features that are fundamental to user empowerment, such as the public (transparent) nature of fix requests and the ability of users to control their submitted issues by re-opening and commenting on them if they are unsatisfied with the city's job. These are ways SeeClickFix gives users agency. Staff see citizens as fundamentally owning their requests for service, which involves their ability to upload a photo, use a free-form text box, apply their preferred service categories, and comment on each other's reports. Users can also close their own issues and de-duplicate requests among their neighbors between the time they are submitted and a city worker acknowledges it.
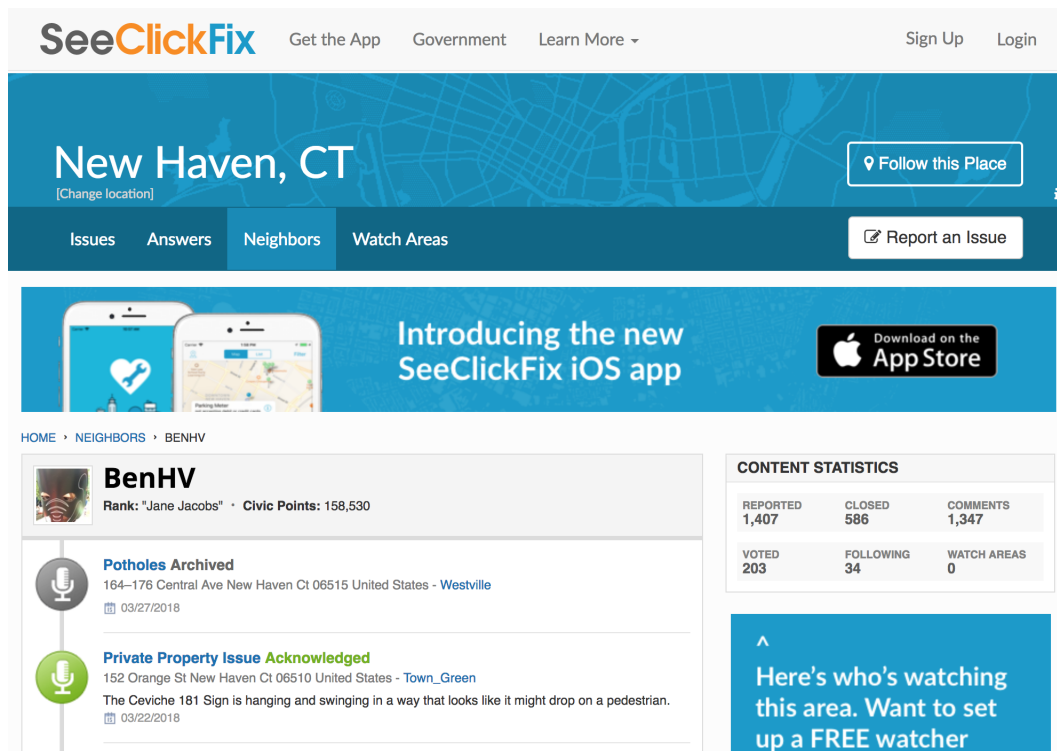
Figure 4-2: SeeClickFix CEO Ben Berkowitz's Profile Page

4.9.2 Reflection and Discourse

As for opportunities to reflect on actions on SeeClickFix, staff say they could do a better job designing for this. Instead, they continue to focus on improving the efficacy and efficiency of the central, instrumental function of gettings things fixed. The key feature currently supporting reflection is "point-of-interest notifications," which email users about other activity on the platform happening near the geographic coordinates of their past actions. This provides users a chance to learn more about the activity of their neighbors and the problems affecting areas of the city they may care about. Users get email updates on any new activity on their reported issues, including city acknowledgment and closure. SeeClickFix also tracks analytics for users on a profile page (see Figure 4-2) that enumerates their reports, comments, votes, watched issues, and it allows them to browse their submitted issues. All users, including client accounts, get "Civic Points" that represent the sum of all activity on the platform and are mapped to cleverly named user ranks like "Street Smart" and

"Jane Jacobs." You can browse the top users in your local city in the "Neighbors" tab on the SeeClickFix website.

4.9.3 Communities

Users have limited opportunities to connect with each other for conversation or community-building through the site. SeeClickFix's CEO stresses that the platform has always been framed as a community- or neighborhood-centric tool rather than an individual one. Company slogans over the years include: "power to the community," "love thy community," and the current "strong communities, more efficient government." This emphasis on aggregate impact may explain the lack of opportunities for individual citizen reflection.

The comment section on issues has seen emergent cases of collective action by citizens in SeeClickFix's home city of New Haven where many residents have accounts—strengthening the sense of community on the site. Examples include an effort to help an abandoned dog in SeeClickFix's home city of New Haven and a call to action to address food deserts in the city (Sifry 2014). Local groups will also create their own shared accounts or coordinate efforts to monitor particular "watch areas" in their city.

4.9.4 Storytelling with Data

In these ways, users can attempt to tell their own stories although through the constraints of the platform. SeeClickFix on occasion shares out stories of success from the platform, especially in conversation with its clients, but otherwise does not curate or amplify active requests in the way Change.org does with its petitions. Apparently, they used to email out newsletters to users about recent activity in their cities, but this stopped when some cities complained about the lack of control over what was sent to their local users—a case that highlights the tension in designing for SeeClickFix's two kinds of users.

4.9.5 Evaluation

It is important to note that the tension is not a simple case of empowering governments over citizens. Making it easier for cities to adopt the platform and resolve issues, directly impacts the efficacy of citizens to get their voice heard and problems fixed. The staff believe that the number of issues closed per year represents user empowerment, and they use it as a core quantitative measure of their success (alongside revenue that represents their financial health and cachet with clients). By adopting an empowerment-based research framework, SeeClickFix can explore the relationship between this measure and users' reported sense of empowerment, as we'll explore in the next two chapters.

Chapter 5

Toward an Empowerment-based Research Toolkit (Methods)

Meira Levinson and the Civic Mission of Schools offer several dimensions of empowerment that might serve as measures to evaluate impacts on citizen empowerment: civic and political knowledge, skill, efficacy, sense of membership, and participation. Currently, technology companies emphasize participation. And as I have argued throughout this dissertation, participation provides an incomplete and biased picture of empowerment.

While an ideal measure would allow comparisons across different platforms and campaigns or movements, empowerment theory tells us that each of these dimensions are context-based. The generalizability of a measure is in part a function of its validity. In political science literature, the most common, validated approach to studying citizens' sense of empowerment is political efficacy, which is where I propose we start building this research toolkit. Below, I introduce how we might implement the evaluation of political efficacy among civic technology users through a methodology for a case study of SeeClickFix.

The SeeClickFix case study in this dissertation offers an opportunity to validate the use of political efficacy among civic technology users and in reference to citizens' relationships to their local governments, which is where SeeClickFix serves as a mediator. I introduce the concept of "platform political efficacy" to measure the

perceived impact of civic technology by users. Generalizability will be discussed in the final chapter of this dissertation, where I lay out a research agenda that starts with deeper analysis of SeeClickFix and moves to reproduce the case study here with other civic technology platforms.

Case Study Research Question: How does the use of a civic technology platform like SeeClickFix change a user's perceived political efficacy?

5.1 Why Study Political Efficacy?

Political efficacy is a well established construct in political psychology and political socialization research and known to be correlated with active participation in civic and political engagement (Almond and Verba 1963). It is closely associated with the American National Election Study (ANES) started in 1952, when it was measured using five statements that asked voters to say whether they agreed or disagreed with them (Campbell, Gurin, and Warren 1954). The authors of that first study defined the sense of political efficacy as: "the feeling that individual political action does have, or can have, an impact upon the political process, i.e., that it is worth while to perform one's civic duties. It is the feeling that political and social change is possible, and that individual citizen can play a part in bringing about this change" (Campbell, Gurin, and Warren 1954, p. 187).

For evaluating civic technology, I propose measuring three types of political efficacy: internal, external, and platform political efficacy. In the 1970s, political scientists started disambiguating between internal and external political efficacy, finding that political efficacy was not a unidimensional construct—measures of political interest and political knowledge (internal) were related but different from measures of political trust and conventional political participation (Balch 1974; Niemi, Craig, and Mattei 1991). As I am framing empowerment in terms of civic learning, I derive my definitions for political efficacy from the civic education scholars Kahne and Westheimer's definitions of internal and external political efficacy: "Internal political

104

efficacy refers to a person's sense of his or her own ability to participate effectively in the political process. People with high degrees of internal political efficacy believe they are capable when it comes to civic affairs. Measures of external political efficacy, on the other hand, reflect perceptions of governmental and institutional responsiveness to citizens' needs and demands" (2006, p. 292).

In this dissertation, *Internal Political Efficacy* is a user's perception of their own ability to address problems in their local community. *External Political Efficacy* is a user's perception of their local government's receptiveness to their attempts to address problems in their local community. I introduce a measure of perceived efficacy of the civic technology platform that is mediating their actions, similar to the use of "online political efficacy" in some recent studies (Ognyanova and Ball-Rokeach 2015; Martin, Martins, and Naqvi 2018). Thus, *Platform Political Efficacy* is a user's perception of a civic technology platform's ability to help address problems in their local community. Adapting platform political efficacy for this study, *SeeClickFix Political Efficacy* is a user's perception of the SeeClickFix platform's ability to help address problems in their local community.

Political efficacy has been used in countless studies of civic and political behavior, attitudes, and education because of its ease of implementation as a subjective assessment of one's own ability to effect change. For instance, the landmark 1999 IEA Civic Education Study created a measure of internal political efficacy as confidence in participation at school (Torney-Purta, Lehmann, Oswald, and Schulz, 2001). The study found that "countries that are high on school confidence also score high on scales relating to concepts of citizenship as involving both conventional and social movement activity and on the scale indicating willingness to participate in political activities as adults" (p. 135).

Most studies look at the ways political efficacy can explain political participation like voting and they often treat it as a stable construct. Studies looking at what explains variation in political efficacy largely indicate the influence of demographic characteristics. Education, income, social status, and age have all been shown to explain efficacy (Verba and Nie 1972; Verba, Schlozman, and Brady 1995; Anderson

2010; Beaumont 2011). The 1999 IEA study revealed significant variation in mean internal political efficacy between countries and genders (Torney-Purta, Lehmann, Oswald, and Schulz, 2001).

I propose focusing on whether a certain way of participating through the use of networked technology influences political efficacy. In earlier studies, internet use has been shown to modestly explain internal and external political efficacy, but it explains much less variation than demographic variables (Kenski and Stroud 2006). We also know that participation, especially when effective at addressing a political goal, is associated with increased political efficacy (Valentino, Gregorowicz, and Groenendyk 2009). This kind of "effective participation" is a kind of positive feedback loop that civic technologists often try to incorporate into their designs.

The case for evaluating design in terms of political efficacy is best represented by a recent conversation within the civic technology community about how we might usefully reimagine Downs' (1957) rational-actor model of political participation. His model was formalized and extended by Riker and Ordeshook (1968) as $R = PB - C + D$, where rational participation (R) follows when the probability (P) of receiving an intended benefit (B), supplemented by a sense of duty (D), is not outweighed by the cost of participation (C). In 2014, civic technologist Anthea Watson-Strong, then working at Google, reformulated Riker and Ordeshook's "calculus of voting" to emphasize that the goal of good technology should be to ensure that the cut to the cost of participation is always lower than one's perceived probability of benefit (PB) plus their sense of duty, which she stressed is a social phenomenon: $PB + D > C$. SeeClickFix and its core feature of making it very easy to submit requests for service to local municipalities is an example of this.

As Zuckerman notes, "the danger of cost-based approaches to increasing civic participation is that they can increase participation in broken systems" (2016, p. 57). The goal is to increase both participation and effectiveness. Zuckerman offers another update to the formula, reframing the probability of benefit as perceived efficacy and building on Watson-Strong's ideas to consider how duty functions in the age of online collective action: $C < BP + \Sigma I$, I will act if the cost is lower than the sum of my

perceived efficacy (BP) and [the sum of] what my influencers signal they are doing" (2016, p. 69).[1]

Ideally, designs for civic participation should be judged by their impact on perceived internal, external, and platform efficacy as well as how they might facilitate collective action in service of impact. We could make the cost of participation zero, and it would not matter if power is not actually shifted. SeeClickFix has already made an impact on this by building the tools for municipalities to easily process requests for service as digitized work orders with sophisticated tracking and analysis tools. Completed tasks are automatically updated to indicate to the users who submitted them that their issues were resolved. Rather than trying to incrementally increase participation by lowering cost further, it's worth seeing if we can increase efficacy through design features. The company hypothesizes that fixed issues is the key metric because it represents the efficacy of both citizens and the government. Measuring political efficacy and looking at measures like reported and closed issues could re-emphasize SeeClickFix's design work toward efficacy rather than simply participation—meaning that they can evaluate their work based on what really matters.

The goal would be to make this a longitudinal metric for evaluating the system as a whole over time in addition to specific experiments around new features. This presents the need to consider changes in the different forms of political efficacy as key metrics—the outcome measures I advocate we use to evaluate empowerment in this dissertation.

5.2   Why Study SeeClickFix?

Partnering with SeeClickFix and studying their users' perceived political efficacy is more than a matter of convenience (the author has worked with this company before). SeeClickFix is a successful civic technology company, providing an easy way for residents to request 311 services in their local communities using a smartphone

---

[1]Zuckerman transposes PB to BP in his formula and also refers to political efficacy in the general sense, which would include some degree of both internal and external political efficacy.

app. The canonical example is someone reporting a pothole on a street—they can take a photo and add a note and submit it to the service with GPS coordinates attached. They currently work with over 300 local governments and have over 1 million users (SeeClickFix 2016).

One of SeeClickFix's newest features is point-of-interest notifications, which send an alert via email to a user when another user submits a new issue in the same area where they have been active. The company's founder has explicitly noted that these were created to serve the public interest and has also argued the civic technology platforms have a responsibility to study the outcomes of algorithms (Berkowitz 2016). Prior research on Boston's 311 service shows that user activity fits a pattern of territorialization, where they act as custodians of a particular area like their home neighborhood—meaning geographic proximity is an important factor in their civic engagement (O'Brien 2016). Although I cannot run a randomized experiment with an already deployed feature, I can still examine this phenomenon. I can look at novel email reminders of the aggregate efficacy of residents in their city and test whether such an intervention regarding collective and effective activity in a user's local community might have an effect on their sense of empowerment. In other words, I am asking: Does my sense of political efficacy increase when I see that others (who are plausibly like me) are taking action on SeeClickFix and my local government has been responsive?

Using SeeClickFix also helps validate our study by controlling for a user's intention when acting online. SeeClickFix, unlike Facebook or Twitter, is an explicitly civic platform. We can reasonably assume that political efficacy matters when it comes to participation on the platform since that is why people use it.

5.3   Case Study Design and Analysis Plan

The key details of this research design and analysis plan were registered ahead of data collection on February 25, 2018 at the Center for Open Science website: https://osf.io/aq9wx/.

Internal Political Efficacy	A user's perception of their own ability to address problems in their local community.
External Political Efficacy	A user's perception of their local government's receptiveness to their attempts to address problems in their local community.
SeeClickFix Political Efficacy	A user's perception of the SeeClickFix platform's ability to help address problems in their local community.

Figure 5-1: Definitions of Three Forms of Perceived Political Efficacy for Users of SeeClickFix.

5.3.1 Goals

I am exploring the relationship between the demographics, context, and activity of active SeeClickFix users and three forms of political efficacy (see summary in Figure 5-1), testing the effect on political efficacy of an email providing information about the success of users in their city in getting their issues fixed.

Importantly, this project was a partnership with SeeClickFix, whose CEO dedicated company resources to the project and approved the focus on empowerment and political efficacy. I worked directly with the Director of Product (two people in this role as the position transitioned during the course of research design) and the Director of Engineering to send emails to users and collect user data.

5.3.2 Experiment Design Process and Constraints

We wanted to create an experiment that would test the impact of a major feature of SeeClickFix on political efficacy so that it could be useful in evaluating the existing SeeClickFix design and provide a baseline for future experiments. We looked at measuring the change in political efficacy following the receipt of a point-of-interest notification email, which we theorized would best shape internal political efficacy. However, this had to be ruled out because the feature had already been deployed universally in the system and the user acquisition rates for SeeClickFix were not high enough to ensure a large enough sample of full compliers after randomizing half of all new users into a control group.

We also looked at testing the effect of closing the SeeClickFix's core feedback loop of having an issue fixed and how that impacted perceived efficacy, which we believed would maximize potential changes in political efficacy. However, this could not be experimentally induced since it depended on the type of issue reported, the quality of the report, the responsiveness of the municipal government, and other factors. Additionally, SeeClickFix did not have existing software or data infrastructure for handling experiments on the production version of the platform. One of our constraints was to make this as easy to run without serious engineering time both at SeeClickFix and as an example for future evaluations on other civic technology platforms.

In the end, we created a new, simple intervention that could be delivered via email that based on an idea for a possible future feature in their design roadmap similar to point-of-interest notifications that provided users a regular summary of platform activity relevant to them. We knew that the treatment effect of this email would likely be small on top of the existing features of having one's own issue closed and possibly receiving point-of-interest notifications, but possibly measurable with a large enough sample size. Even in the event of null results, we would still have a starting point for thinking about future research designs measuring incremental improvements in efficacy through experimentation.

5.3.3   Data Collection and Experimentation Steps

All SeeClickFix users who have been active in the past year in one of SeeClickFix's partner communities were invited via email to take a short survey that includes questions about their perceived political efficacy and some basic demographic information (see the complete initial survey in the Appendix A). Active meant that they had reported an issue or added a comment to an issue in the previous 365 days (February 20, 2017 – February 20, 2018).

We excluded:

- The 200 users invited to our pilot survey in December 2017,

- Any user who had requested to be unsubscribed from SeeClickFix's email lists, and

- Any user affiliated with a partner organization (e.g. city government accounts and SeeClickFix staff accounts).

SeeClickFix users whose activity suggested they were in the top five most active SeeClickFix partner communities were block randomized by community to receive either the treatment arm or the control arm (50% each) before being invited to take the initial survey. The top five most active communities are: Houston, TX, Detroit, MI, Memphis, TN, St. Petersburg, FL, Oakland, CA.

The experiment is a within subjects design to reduce the error that naturally arises from variance between subjects. Randomization was conducted by generating a Random.org sequence for the number of users in that community. These sequences were assigned to the list of users from each city provided by the database query, and then that list was sorted by this new random id and cut in half. The top half was the control arm and the bottom half was the treatment arm.

Respondents in the treatment group were sent a "thank you for taking the survey" email containing a message about the number of issues closed in their community last year as well as a screenshot of an actual example of a user in that community having their issue closed by the local government in February 2018 with an explicit "thank you" message from a user in the comment section as depicted in Figure 5-2. Respondents in the control group, as well as all respondents not in one of the top five communities, received a placebo message containing just the message at the beginning of the treatment email: "Thank you for taking our survey to help us improve our service! If you have any questions regarding the survey, please contact Erhardt Graeff at erhardt@media.mit.edu." See the control email and the treatment emails sent to participants in each of the five cities in Appendix C.

Figure 5-2: Treatment Email Content for Participants Connected to the St. Petersburg Partner Account

To measure change over time and treatment effect, approximately one month after the initial survey was sent, a second survey invitation was sent to all respondents to the initial survey. This survey contained the same questions about political efficacy but not the demographic questions. The experiment was an intent-to-treat design since we randomized groups ahead of time and could not verify whether or not the thank you emails were read as intended.

Platform data for the respondents' accounts that covers their activity on SeeClick-Fix prior to the initial survey was exported for analysis. Platform data for all respondents of the initial survey that covers their activity during the time between the first survey and the second was also exported for analysis. See Appendix B for a list of all platform activity variables collected from SeeClickFix.

5.3.4 Survey Construction

My goal for the user survey was to create a survey that would include multiple questions for each type of political efficacy as well as basic demographic questions, all of which could be answered in approximately two minutes. I considered any unnecessary or redundant questions as reducing the number of respondents and the potential power of the final analysis to detect an effect. This was important because the intervention in the proposed experiment would likely have a very modest effective on top of the existing impact of being an active SeeClickFix user and even being invited to take a survey by SeeClickFix ahead of the intervention.

All of the original political efficacy questions I adapted for this survey were aimed at asking citizens to reflect on national politics. Because citizens work on local affairs through SeeClickFix, I exchanged "local area" or "local government" for the jurisdiction and "local affairs" or "local issues" when "politics" was mentioned without a jurisdiction. I was also interested in specifying issues and affairs rather than politics because I wanted to offer a larger problem space than simply politics for reflection, because for some people "politics" implies institutional politics focused on campaigns and voting.

Sources of Survey Questions

My starting point for survey questions was the American National Election Survey.[2] Its political efficacy questions are generally formulated as statements participants are meant to explain how much they agree or disagree with them. I specifically tested the validated ANES items from Niemi, Craig, and Mattei 1991 (Morrell 2003)[3] as seen in Table 5.2. I also tested the often asked ANES question: "Sometimes politics and government seem so complicated that a person like me can't understand what's going on," which has been used in other studies to represent internal political efficacy.

Because of my specific interest in civic learning, I created versions of the validated internal political efficacy questions from the IEA CivicEd Study's "EFFIC" scale (Husfeldt, Barber, and Torney-Purta 2005). One question from the scale made it to the final survey: "When political issues or problems are discussed, I usually have something to say" became "When local issues are being discussed, I usually have something to say."

The external political efficacy questions I tested included versions of two standard ANES questions as seen in Table 5.2. I also tested versions of two questions that Zúñiga et al. 2017 refers to as indicative of "government political efficacy," a special case of external political efficacy that focuses on trust in institutions generally, rather than specific to the respondent's demands. My hope was that these questions would prove useful to SeeClickFix when reporting findings to their local government partners. However, the questions were cut after the second round of cognitive interviews.

One of my SeeClickFix Political Efficacy questions is adapted from an ANES question that focuses on the perceived efficacy of elections: "How much does having elections make the government pay attention to what the people think" became "SeeClickFix and its partner platforms help make my local government pay attention to what the people want." I also adapted Facebook's adaptation of a political efficacy

---

[2]The full list of American National Election Studies questions asked over the years can be seen on the ANES website: http://www.electionstudies.org/CoreUtility/all.htm.

[3]In addition to validation of the basic wording, adapting questions from the ANES surveys offers the opportunity to compare the distributions of responses to the federal questions in recent election years to my localized versions of them. These could provide a baseline against which to judge the reported efficacy of SeeClickFix users.

question from the 2006 AsiaBarometer questionnaire (Chakrabarti and Mason 2016; AsiaBarometer Project 2006): "Political activities on Facebook, including political discussion, can affect government policy or actions" became "Actions by community members on SeeClickFix and its partner platforms can affect my local government's actions."

Lastly, I used questions from a 2008 proposal to the American National Election Survey that address the more recently theorized concept of "collective political efficacy" to the internal and external political efficacy questions already in the survey (Manning et al. 2008). Two collective political efficacy questions and an external political efficacy question, which matched one of the collective political efficacy questions, made it through the cognitive interviews and into the final survey. These can be seen in Table 5.1 with shading on the cells denoting questions included in the final version of the survey. However, the collective political efficacy questions represent experimental additions and their validation and analysis are beyond the scope of this dissertation.

Table 5.1: SeeClickFix User Survey Items as adapted from Original Sources

Type of Political Efficacy	Source of Survey Item	Original Wording	SeeClickFix User Survey Version
Internal	ANES (Niemi, Craig, and Mattei 1991; also Cohen and Kahne 2011)	I consider myself well-qualified to participate in politics.	I consider myself well-qualified to participate in local affairs.
Internal	ANES (Niemi, Craig, and Mattei 1991; version in Husfeldt et al. 2005)	I feel that I have a pretty good understanding of the important political issues facing our country.	I feel that I have a pretty good understanding of the important issues facing my local area.

Table 5.1 continued from previous page

Internal	ANES (Niemi, Craig, and Mattei 1991)	I feel that I could do as good a job in public office as most other people.	I could do as good a job in local public office as most other people.
Internal	ANES (Niemi, Craig, and Mattei 1991; version in Husfeldt et al. 2005)	I think that I am better informed about politics and government than most people.	I think that I am better informed about local issues and local government than most people.
Internal	ANES	Sometimes politics and government seem so complicated that a person like me can't understand what's going on.	Sometimes local problems and local government seem so complicated that a person like me can't understand what's going on.
Internal	CivicEd Study (Husfeldt et al. 2005)	When political issues or problems are discussed, I usually have something to say.	When local issues are being discussed, I usually have something to say.
Internal	CivicEd Study (Husfeldt et al. 2005)	I am interested in politics.	I am interested in issues affecting my local area.
External	ANES	People like me don't have any say about what the government does.	People like me DON'T have any say about what my local government does.
External	ANES (also Cohen and Kahne 2011)	Public officials don't care much what people like me think.	My local government DOESN'T care much what people like me think.
External	ANES	How much attention does government pay to what people think when it decides what to do?	My local government pays attention to what people think when it decides what to do.

Table 5.1 continued from previous page

External	Manning et al. 2008	How much doesRagree or disagree that if enough people banded together and demandedchange, politicians would take the steps to enact change?	When people like me speak up about important issues, my local government takes the steps to enact change.
External/ Government	Zúñiga et al. 2017	My government works on everyone's behalf.	My local government works on everyone's behalf.
External/ Government	Zúñiga et al. 2017	My government provides citizens with efficient services.	My local government provides citizens with efficient services.
Internal Collective	Manning et al. 2008	As people in this country, we can all band together in order to achieve political goals.	People in my local area are able to band together in order to address important issues.
Internal Collective	Manning et al. 2008	We are definitely able to accomplish something positive since we are a competent group of people.	Community members in my local area are a competent group of people able to address important issues together.
Internal Collective	Manning et al. 2008	As a people, we can cooperatively develop and carry out programs to benefit us all, even when difficulties arise.	As a local community, we can cooperatively develop and carry out programs to benefit us all, even when difficulties arise.
Internal Collective	Manning et al. 2008	We, as people, are able to struggle together in order to achieve political goals.	We, as local community members, are able to struggle together in order to address important problems.

Table 5.1 continued from previous page

Internal Collective	Manning et al. 2008	Since we are all competent in engaging in collective action, we can forward our political demands successfully.	Since we are all competent in engaging in collective action, we can push forward our demands of local government successfully.
Internal Collective	Manning et al. 2008	We can work together to promote important political goals, even if we face difficulties.	We, as local community members, can work together to address important problems, even if we face difficulties.
External Collective	Manning et al. 2008	Dramatic change could occur in this country if people banded together and demanded change.	Dramatic change could occur in my local community if people banded together and demanded change.
External Collective	Manning et al. 2008	If enough people banded together and demanded change, politicians would take the steps to enact change.	If people banded together and demanded change, my local government would take the steps to enact change.
External Collective	Manning et al. 2008	Organized groups of citizens can have much impact on the political policies of this country.	Organized groups of citizens can have much impact on the welfare of my local community.
External Collective	Manning et al. 2008	Politicians would respond to our needs if we banded together and began a movement to demand policies to address those needs.	Local officials would respond to our needs if we banded together and began a movement to demand actions to address those needs.

Table 5.1 continued from previous page

External Collective	Manning et al. 2008	Politicians would respond to the needs of citizens if enough people demanded change.	Local officials would respond to the needs of citizens if enough people demanded change.
External Collective	Manning et al. 2008	Politicians would listen to people if we pressured them to.	My local government would listen to people if we pressured them to.
SeeClickFix	ANES	How much does having elections make the government pay attention to what the people think?	SeeClickFix and its partner platforms help make my local government pay attention to what the people want.
SeeClickFix	Facebook (Chakrabarti and Mason 2016)	Political activities on Facebook, including political discussion, can affect government policy or actions.	Actions by community members on SeeClickFix and its partner platforms can affect my local government's actions.

Cognitive Interviews

To determine whether the wording of my adapted questions and the new collective political efficacy questions would evoke the kind of reflection on political efficacy that I intended them to, I conducted two rounds of cognitive interviews with colleagues at MIT. Cognitive interviews help to determine whether questions can "validly and reliably capture respondents' experiences" (Desimone and Le Floch 2004, p. 6). I used "think-aloud interviews," asking participants to walk me through how they were determining answers to the survey questions in front of them, probing to discover which words in the questions might be confounding them and to explain personal experiences they might be drawing on to choose their answers (American Statistical Association 1997; Desimone and Le Floch 2004).

Methodology

During the first round of cognitive interviews, I recruited a convenience sample of twelve cognitive interviewees from among my colleagues at MIT, incentivized by a $5 gift card or charity donation. The talk-aloud interviews were conducted in a private office. Participants were asked to read each statement off a provided copy of the protocol, tell me their level of agreement with it, and why they chose that response. Occasionally, I would probe to understand why they might choose different gradations of agreement or to explain what they meant when they used concepts or examples that were unclear to me. I recorded the interviews and took notes on a fresh copy of the survey for each interview, noting words that were confusing or commonly misinterpreted in some statements, inconsistencies in the wording across questions that caused confusion, and requests for more options in the continuum of agreement (including the lack of a neutral "neither agree nor disagree" option). As the interviews progressed, I began eliminating questions that were clearly redundant or confusing based on early interviewee responses. The interviews each lasted approximately fifteen minutes.

After analyzing the first round of twelve cognitive interviews and returning to the political efficacy literature, I revised the survey questions and conducted a second round of five cognitive interviews with affiliates of the MIT Center for Civic Media. A new draft following the second round was then shared with the experts on my dissertation committee who suggested additional revisions to ensure parity between concepts.

Results

In my analysis of the first round cognitive interviews, I found that a six or seven point Likert scale was necessary because the four point force-choiced Likert scale was insufficient for several interviewees. I eliminated questions about seeking local office because it was entangled with desire for serving in public office rather than an estimation of one's competence to do the work. "Local public officials" was read by some participants as elected politicians and others as career bureaucrats, which made interpreting the results difficult. I standardized the language to "local government."

120

The internal collective efficacy questions were the hardest for participants to understand and respond to. Several participants had difficulty imagining the competence of their fellow local community members and what it would be mean to struggle with them or develop programs with them. These questions also make much less sense in the context of the work SeeClickFix does and the ways that users can collaborate on the platform, so they were eliminated. I kept two for experimental purposes.

I tested the government political efficacy questions during the second round of cognitive interviews and found that interviewees focused on aspects and beliefs about local government that were clearly distinct from external political efficacy (as Ziga et al. 2017 argued). There was also confusion over whether to describe local government services as "efficient" or "effective." I dropped both questions from the final survey because investigating these validation issues around a possible additional construct was beyond the scope of the study.

The cognitive interviews also helped validate how the questions might discriminate among genders and ethnicities. The women and participants of color were more circumspect in the way they described their internal and external political efficacy. In particular, the participants of color noted how they could read the questions as applying to different facets of their identities: educated citizens or people of color—where the former were more efficacious and the latter were less efficacious, in particular external political efficacy. Lastly, the sample of cognitive interviewees was unusual in that they were all part of a university, which is itself a local community, and so they had trouble deciding whether to think of the questions in terms of MIT affiliates that their fellow local community members and, if they were temporary transplants from another locality, whether to respond based on the place they were from or the place (MIT / Cambridge, MA) that they currently resided in. This suggested that the survey needed additional framing in the introductory text in order to help define a "local area" for respondents.

Final decisions about the survey questions were made in consultation with my dissertation committee. I decided to drop the question of interest in issues affecting local areas as specific to a separate construct of political interest that overlaps with

but is distinct from internal political efficacy. To restore the internal political efficacy questions to four, I added the question "When local issues are being discussed, I usually have something to say," which had been validated in the CivicEd study. With this question, I wanted to measure a participant's sense that they exercise their internal political efficacy. I also added an external political efficacy question that had a parallel construction to the remaining external collective efficacy question for future comparison purposes and emphasized outcomes by the local government: "When people like me speak up about important issues, my local government takes the steps to enact change."

Demographic Questions

SeeClickFix does not currently collect any demographic information about users, which is why they must be included in the survey. Age, gender, race/ethnicity, education level (as a common proxy for socioeconomic status) are all factors known to affect civic and political participation as well as perceived political efficacy. In order to protect privacy better, multiple choice questions offering options for age ranges rather than specific ages or birthdays was used.

To reduce the overall number of questions and allow for easier analysis between ethnicities, questions for race and ethnicity (to determine Hispanic/Latinx versus non-Hispanic/Latinx participants) were collapsed into a single question. I attempted to follow the 2007 U.S. Department of Education reporting standards for racial and ethnic data format that includes a first category for "Hispanic or Latino or Spanish Origin of any race," followed by the remaining racial categories in approximately alphabetical order. However, this standard still recommends a two question format to arrive at the first category designation. I should have followed the two question format. Final versions of the demographic questions can be reviewed in Appendix A.

Final Survey Construction and Its Limitations

Unfortunately, the pilot survey with SeeClickFix users needed to be run before the cognitive interviews were completed, and so the final questions were not tested among

SeeClickFix users. Furthermore, the final age, education, ethnicity, and gender questions were neither tested with cognitive interviews nor with SeeClickFix users. Ideally, the full survey including demographic questions would have been tested through cognitive interviews with SeeClickFix users and piloted with them before final administration. This lack of proper testing ultimately resulted in corrupted ethnicity results in the final survey, where a clear misunderstanding of the question led to highly suspect responses. The vast majority of participants put their ethnicity as "Hispanic or Latino or Spanish Origin of any race," perhaps fixating on the "of any race" part of the first option.

5.3.5 Political Efficacy Dependent Variables

All three political efficacy outcome measures are derived from survey questions. Those with multiple survey questions related to the underlying factor are turned into weighted scales. Based on existing literature for the items in the survey, each set of questions should have a reasonably good fit when modeling their latent constructs. I use Cronbach's alpha as a starting point for evaluating internal consistency among the items, where greater than 0.65 is reasonably consistent and less than 0.5 is inconsistent. Additionally, I use and report on a confirmatory factor analysis to examine the loading estimates and fit index using the Root Mean Square Error of Approximation (RMSEA) of the weighted model to understand how well the individual questions load on an underlying factor.

To weigh and combine the four questions comprising the internal political efficacy measure to create a single score that best represents the underlying unidimensional construct, I use item response theory (IRT). My inspiration for using IRT comes from the IEA CivicEd Study's method for creating their EFFIC scale of internal political efficacy:

> "Although IRT scaling does not preserve the original metric of the items
> in the questionnaire [...], the resulting scales offer several advantages over
> simple composite scales. First, item response theory better takes into

123

account missing and incomplete information in measuring the latent (or underlying) abilities and attitudes of individuals confirmed in the factor analysis. As long as individuals answered at least one of the questions included in the scales, an estimate of their knowledge or attitudes can be made. Second, it allows the researchers to create a standardized metric upon which attitudes fall." (Husfeldt et al. 2005, p. 5)

Additionally, IRT parameter estimates are theoretically invariant to the population as well as other survey items, which allows the scales to have greater flexibility in relating to other surveys and populations.

Growth Model

Because political efficacy is a result of an individual's personality and experiences and not simply their easily categorized demographic profiles, it is impossible to control for the distribution of political efficacy using demographic controls. This makes the pretest an important benchmark for political efficacy that can change over time for each individual—strengthening a growth-based research design over a standard randomized experiment that simply looks at posttest surveys to measure differences between treatment and control groups.

To model the change in the forms of political efficacy between the pretest and posttest, I use mixed models that control for the pretest score as a predictor of the posttest scores rather than mean gain. I use this approach rather than creating simple gain scores for the outcome measures as a reasonable response to Lord's Paradox (Lord 1967; Pearl 2016). IRT scores mitigate the problem of ceiling effects by basing pretest and posttest scores on distributions of the latent variable rather than our survey question responses and controlling for pretest scores. The theory invoked in the research design implies prior political efficacy will predict future efficacy regardless of intervention, thus the within subject design allows me to minimize error in measurement that would otherwise increase when using mean gain scores.

Below is an example growth model for the internal political efficacy (IPE) from the IRT-based proficiency estimates for the pretest and posttest scores. The external

and SeeClickFix political efficacy scores will look the same. The models used for testing the experimental hypotheses discussed in the next section are derived from the growth model in Equation 5.1.

$$IPE_{post[i]} = \beta_0 + \beta_1 IPE_{pre[i]} + \beta_2 TREAT_i + \epsilon_i \qquad (5.1)$$

Because I am using IRT pretest and posttest scores based on identical survey questions, linking and equating the pretest and posttest surveys is not strictly necessary for reliability. However, when I fit the IRT models I did so on all responses from both the pretest and posttest scores to maximize the information on the relationship between the questions and the underlying traits and ensure the predicted individual respondent efficacy estimates for the pretest and posttest scores used in hypothesis testing were based on the same IRT model.

5.3.6 Political Efficacy Hypotheses

The evaluation of SeeClickFix involves both exploratory data analysis as well as estimating treatment effects of a randomized experiment.

Survey Correlations

Within the exploratory data analysis, I am investigating the likelihood that:

- One or more platform data points and demographic characteristics will be correlated with each political efficacy measure reported in the first survey, and

- One or more platform data points from activity during the month between the first and second survey will be correlated with changes in reported political efficacy measures between the two surveys.

Estimating Treatment Effects

For the randomized experiment, I am estimating the complier average treatment effect (CATE) of sending an email to a participant using an intention to treat design. I

tested the following hypotheses, adjusting the models for the primary hypotheses (1, 2, and 3) for multiple comparisons using the Bonferroni correction. The decision rule is $\alpha = 0.05/m$ ($p < 0.05/m$), where m=3 or m=4 for each scale and based on how well the two SeeClickFix Political Efficacy questions load on a common underlying factor. The SeeClickFix Political Efficacy questions are aimed at a factor without existing theory to suggest that they can form a single scale. The secondary hypotheses (4 and 5) are evaluated as exploratory tests with a standard decision rule using $\alpha = 0.05$ ($p < 0.05$).

In my model, I account for block randomization by local governments to which users have been most recently active (sending reports or commenting on local reports). To account for ceiling effects among those starting with a high political efficacy in pretest, I will use an analysis of covariance model that uses the posttest political efficacy scale values as dependent variables and controls for their pretest scale value as a covariates.

Primary Hypotheses

- H_0: There is no causal effect between yearly active SeeClickFix users' exposure to an email message about recently closed issues in their local community and changes in their perceived political efficacy.

- H_1: On average, yearly active SeeClickFix users exposed to an email message about recently closed issues report a greater increase in Internal Political Efficacy (IPE) than those exposed to a placebo message.

- H_2: On average, yearly active SeeClickFix users exposed to an email message about recently closed issues report a greater increase in External Political Efficacy (EPE) than those exposed to a placebo message.

- H_3: On average, yearly active SeeClickFix users exposed to an email message about recently closed issues report a greater increase in SeeClickFix Political Efficacy (SPE) than those exposed to a placebo message.

Platform Data Hypothesis

We also explore a hypothesis about platform activity: On average, yearly active SeeClickFix users exposed to an email message about recently closed issues are more likely to be active during the month following the intervention—reporting an issue or commenting on an issue—than those exposed to a placebo message. The decision rule is $p < 0.05$. This is a logistic regression on an outcome variable defined as 0 (user had no reports or comments) or 1 (user had at least one report or comment).

Chapter 6

Case Study: Evaluating SeeClickFix's Impact on Political Efficacy

6.1 Sampling Strategy

As of December 2017, SeeClickFix had over a million registered users. However, less than two-thirds of users have ever created content on the site in the form of an issue report or comment. Internally, SeeClickFix tracks active monthly and yearly users. Monthly user registration is an important measure of growth, but few users post on a monthly basis. Yearly content creation is a better measure of activity. Not all active users participate in a community where their submitted issues can be fixed by partner organizations such as municipal governments (almost all of which are located in the United States) who have a contract with SeeClickFix to integrate formally their work order systems to the SeeClickFix API. Because partners fix issues and we want to understand the relationship between external political efficacy and having a partner respond to a user's request, our study population includes just those active SeeClickFix users whose last content was submitted to an official SeeClickFix partner account in the past year.

Table 6.1: Sample Sizes of SeeClickFix Users Compliant with Different Stages of the Study

Invited	Survey 1	Survey 2	Experiment
115493	9166	3482	601

Between February 20, 2017 and February 20, 2018, SeeClickFix had 115,693 yearly active users affiliated with partner organizations. We ended up emailing survey invitations to 115,493 of them. This excluded the sample of 200 new users we invited to take a pilot survey in December 2017 to test survey response rates and the need for reimbursement. Of those invited, 9328 users submitted a completed survey within a week of the invitation (roughly 8%). Of those, 9166 users answered at least two IPE questions (half of these questions), EPE questions (two-thirds of these questions), and SPE questions (all of these questions), which is required to create the item-response theory (IRT) models using the "eRm" package in R (Mair and Hartzinger 2007).

Of the 9328 first survey respondents, 3563 (roughly 38%) responded to the second survey. Of those, 3482 users had sufficiently answered the political efficacy questions in Survey 1 and Survey 2 to create the IRT models. Among those compliant users, 601 were from the five largest partner communities we included in the experimental design. These samples are laid out in Table 6.1.

These data were cleaned to remove eight submissions to the first survey that were duplicate responses under the same User IDs—only the first submission was kept in the sample, assuming that the invitation had been forwarded to others to take.[1] It is important to note that while these sample sizes represent the data eligible for analysis with the political efficacy outcome measures, the sample sizes will vary based on which predictors and covariates are used since not all respondents filled out all questions (the research ethics adopted for the survey allowed participants to refrain from answering any question).

---

[1] If these were in fact retakes of the survey by the same users, I preferred to use the first submission because it was more important to protect the integrity of the association with account platform data.

Table 6.2: Variable Names for Political Efficacy Survey Questions

Variable	Survey Question
ipe1	I consider myself well-qualified to participate in local affairs.
ipe2	I feel that I have a pretty good understanding of the important issues facing my local area.
ipe3	I think that I am better informed about local issues and local government than most people.
ipe4	When local issues are being discussed, I usually have something to say.
epe1	People like me DON'T have any say about what my local government does. (reverse coded)
epe2	My local government DOESN'T care much what people like me think. (reverse coded)
epe3	When people like me speak up about important issues, my local government takes the steps to enact change.
spe1	SeeClickFix and its partner platforms help make my local government pay attention to what the people want.
spe2	Actions by community members on SeeClickFix and its partner platforms can affect my local government's actions.

6.2 Creating the Political Efficacy IRT Scores

To develop the political efficacy scores, I replicated the process used for creating the EFFIC internal political efficacy scale in the IEA CivicEd study. Throughout this section, I will refer to individual questions using the variable names in Table 6.2, whereby internal political efficacy is ipe, external is epe, and SeeClickFix is spe; "reverse coded" denotes that the responses have been reverse coded to match the ordinal scale of the other questions in the indices.

First, I examined the distributions of responses to each question in the first and second surveys. The graphs in Figures 6-1, 6-2, and 6-3 on the next few pages illustrate the potential for ceiling effects over time in the data as SeeClickFix users already are starting at very high levels and are unlikely able to be moved to greater

Proportion of Responses to Internal Political Efficacy Questions in Survey 1 (n=9166)

ipe1 (m=5.89, sd=1.14)
ipe2 (m=5.86, sd=1.05)
ipe3 (m=5.17, sd=1.27)
ipe4 (m=5.15, sd=1.21)

Proportion of Responses to Internal Political Efficacy Questions in Survey 2 (n=3482)

ipe1 (m=5.74, sd=1.13)
ipe2 (m=5.77, sd=1.01)
ipe3 (m=5.21, sd=1.27)
ipe4 (m=5.22, sd=1.19)

Figure 6-1: Proportional Distributions of Responses to the Internal Political Efficacy Questions

Proportion of Responses to External Political Efficacy Questions in Survey 1 (n=9166)

Legend:
- epe1 (m=4.83, sd=1.65)
- epe2 (m=4.49, sd=1.74)
- epe3 (m=4.07, sd=1.37)

X-axis: Response — Strongly Disagree (1), Disagree (2), Disagree Somewhat (3), Neither (4), Agree Somewhat (5), Agree (6), Strongly Agree (7)

Proportion of Responses to External Political Efficacy Questions in Survey 2 (n=3482)

Legend:
- epe1 (m=4.81, sd=1.67)
- epe2 (m=4.49, sd=1.76)
- epe3 (m=4.09, sd=1.39)

X-axis: Response — Strongly Disagree (1), Disagree (2), Disagree Somewhat (3), Neither (4), Agree Somewhat (5), Agree (6), Strongly Agree (7)
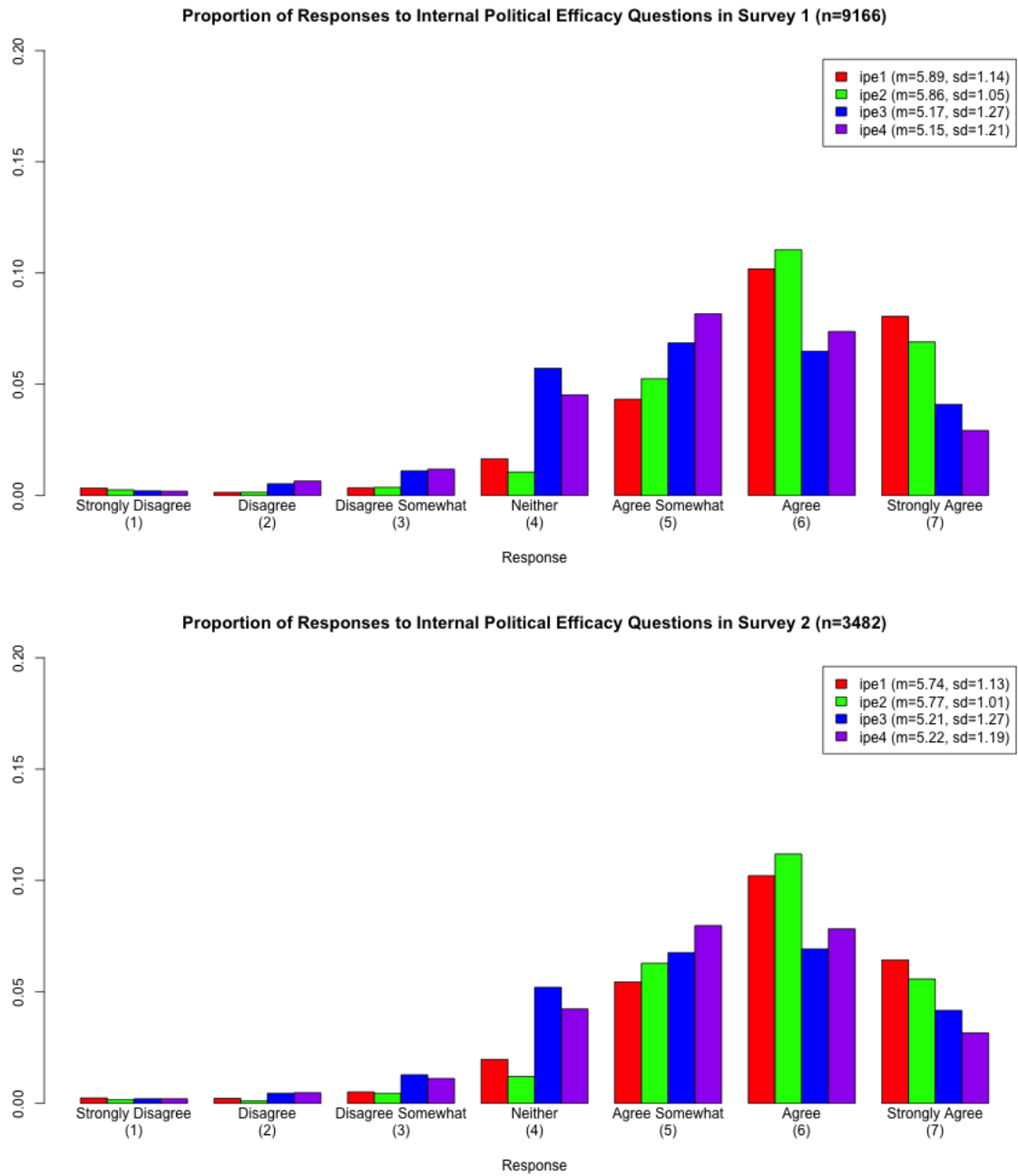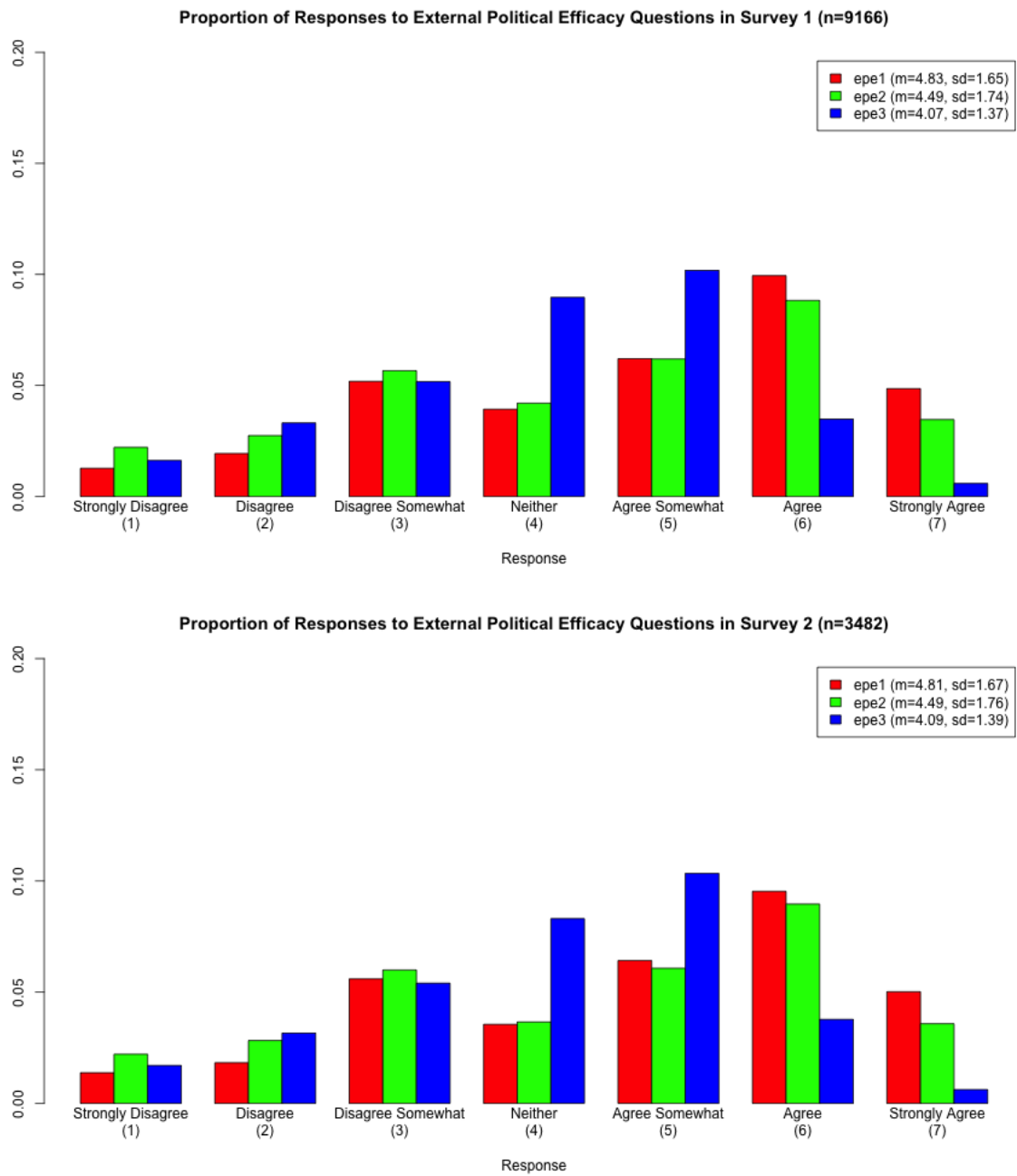
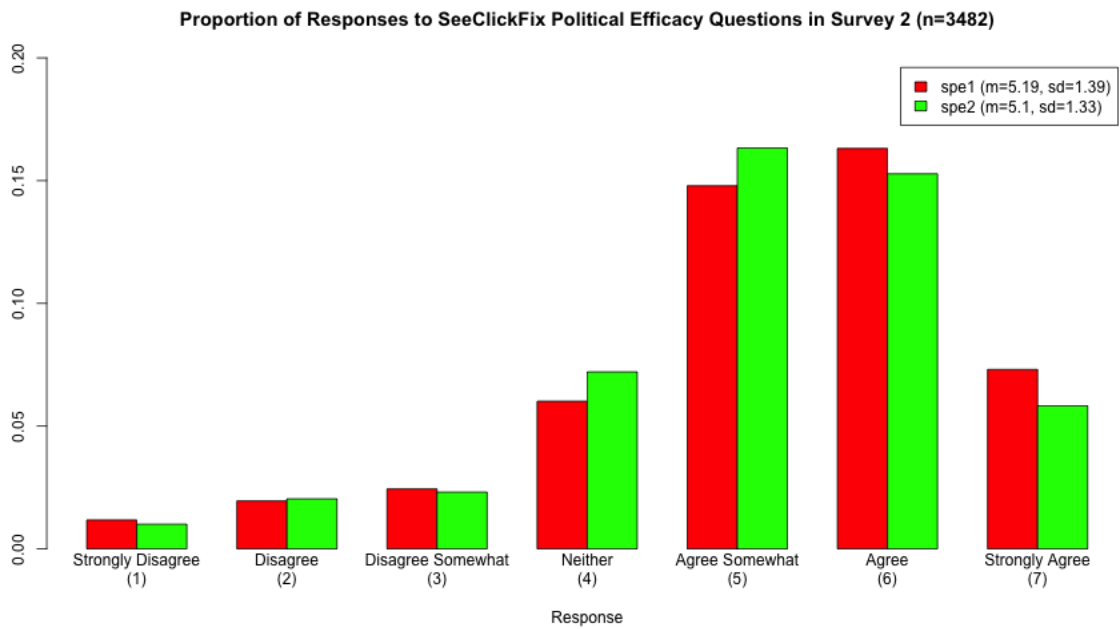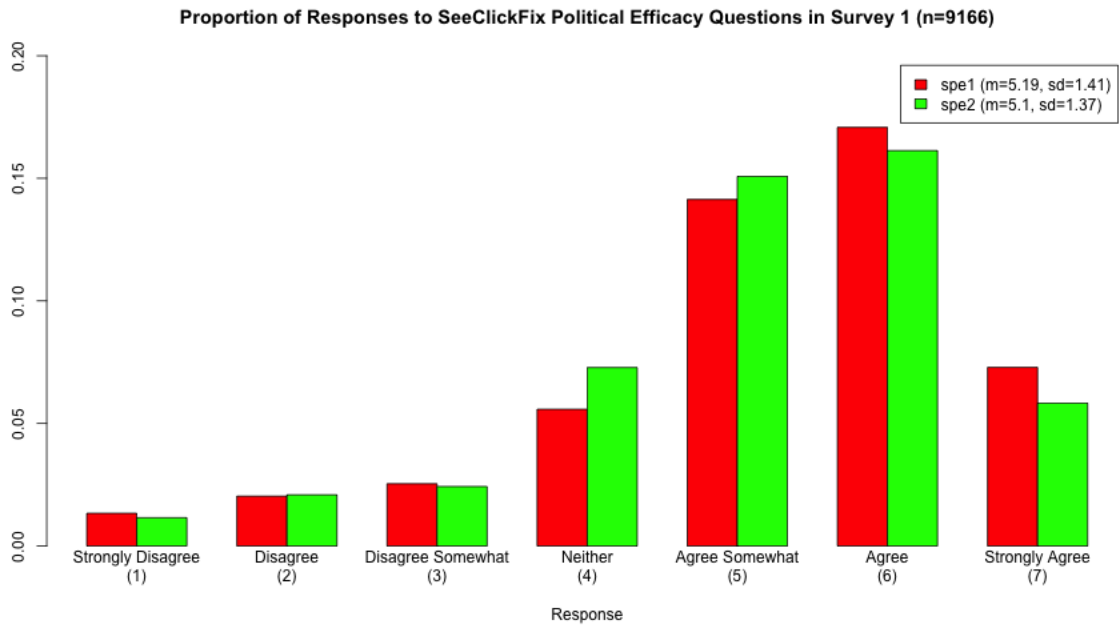Figure 6-2: Proportional Distributions of Responses to the External Political Efficacy Questions

Figure 6-3: Proportional Distributions of Responses to the SeeClickFix Political Efficacy Questions

Table 6.3: Cronbach's Alpha Consistencies for Political Efficacy Questions

	Cronbach's Alpha					
	Survey 1			Survey 2		
	IPE	EPE	SPE	IPE	EPE	SPE
All	0.835	0.796	0.888	0.853	0.833	0.902
Houston	0.839	0.758	0.909	0.902	0.77	0.906
Detroit	0.831	0.718	0.835	0.823	0.825	0.86
Memphis	0.826	0.741	0.886	0.839	0.837	0.884
St. Petersburg	0.85	0.818	0.872	0.843	0.885	0.919
Oakland	0.828	0.782	0.880	0.841	0.854	0.928

efficacy via a uniform complier average treatment effect. Users appear to perceive substantial IPE and SPE on average. In contrast, the Survey 1 and 2 EPE means nearer to 4 (neutral) suggest that SeeClickFix users do not agree as strongly that their local government is responsive as SeeClickFix is helpful or they themselves are efficacious.

Second, I examined the internal consistency of the political efficacy questions for each political efficacy type using Cronbach's alpha, additionally examining the consistency of the subsets of responses from each partner community included in the experiment, since we are comparing them directly. Using the rough guide of 0.65 or greater to represent reasonable consistency and less than 0.5 as inconsistent, the results listed in Table 6.3 indicate more than reasonable consistency among the questions for each subset of the sample.

Third, because we already have a strong theoretical basis for the political efficacy scores, I used confirmatory factor analysis (CFA) to assess the structure of relationships between the questions and the underlying political efficacy constructs using the "lavaan" R package (Rosseel 2012). The path diagrams in Table 6.4 illustrate satisfactory loadings for each question on their expected political efficacy construct and demonstrate good model fit indices (CFI, TLI, RMSEA). Additionally, the CFA

Table 6.4: Factor loadings and Fit Indices for Confirmatory Factor Analysis of Political Efficacy Models

Survey 1	Survey 2
χ^2=1266.965, df=24, p-value=0.000	χ^2=433.969, df=24, p-value=0.000
CFI=0.965, TLI=0.948	CFI=0.974, TLI=0.961
RMSEA=0.075, p-value=0.000	RMSEA=0.070, p-value=0.000

models indicate strong covariance between the EPE and SPE constructs and weak correlations between the IPE and SPE constructs, with insignificant covariance between the IPE and EPE constructs. This matches our theory that SeeClickFix through SPE may serve as a mediator between users and their local governments, and confirms the separation between IPE and EPE constructs consistent with prior literature.

Finally, having checked the consistency and fit indices and confirming good fit for the proposed political efficacy models, I used the eRm package to fit IRT models to the data (Mair and Hatzinger 2007). I used a rating scale model (RSM) because the questions all use an ordered rating scale—in this case, a seven option Likert scale. I fit the models to both the Survey 1 and Survey 2 data, using the latter as additional observations for fitting each model (see Tables 6.5, 6.6, and 6.7). This improves the fits of the models and directly links the pretest and posttest IRT scores.

An item-response theory model infers the relationship between the survey questions and a true score for each form of political efficacy telling us what true level of political efficacy is likely needed to report different levels of agreement with the statements in the survey. The design matrix, rendered as a person-item map illustrates this relationship for each question on the y-axis and the latent true efficacy scores on the x-axis and the distribution of IRT scores for participants from the observed data along the top.[2] The item location parameters (closed dots) indicate the average "difficulty" of the question—essentially, the further to the right of the graph the greater the sense of political efficacy necessary to prompt a person to agree with the statement. The first threshold (open dot) indicates that for a respondent at that level of political efficacy there is an equal chance of them choosing either "Strongly Disagree" or "Disagree." Each threshold represents a similar probability point between the responses for that item. The information criteria statistics offer a way to compare the relative quality of different IRT models were I to compare different modeling techniques are combinations of questions. The item-fit statistics use a Chi-squared test to provide a sense of whether the fitted model could have produced the observed data in response to each question—a measure of absolute quality. The separation reliability is a ratio of true to observed variance, essentially the signal-to-noise ratio of the fitted model.

According to the item location parameters, it appears that active SeeClickFix users require a higher internal political efficacy (latent dimension) on average to "agree" on questions ipe3 and ipe4. Users seem not to see a need for the "Slightly Disagree" option on any of the IPE items as the thresholds on either side of that response are very close—it is probably that users discriminate primarily between "Neutral" and "Disagree." The EPE items require increasing amounts of external political efficacy to agree with them. The two SPE items have similar requirements of respondents' SeeClickFix Political Efficacy.

---

[2]The bars with much lower frequencies in the person parameter distributions represent participants who did not respond to all political efficacy items. Their parameters deviate from the more frequent parameter clusters because they lack the information from the missing items.

Table 6.5: Internal Political Efficacy Item-Response Theory Parameters, Fit Statistics, and Person-Item Map

Internal Political Efficacy IRT Model

```
Design Matrix Block 1:
      Location Threshold 1 Threshold 2 Threshold 3 Threshold 4 Threshold 5 Threshold 6
ipe1  1.44778    -0.59535     0.06671     0.07658     1.53695     2.70472     4.89703
ipe2  1.46321    -0.57991     0.08215     0.09202     1.55239     2.72016     4.91246
ipe3  2.61712     0.57400     1.23606     1.24593     2.70629     3.87406     6.06637
ipe4  2.64438     0.60126     1.26332     1.27319     2.73356     3.90133     6.09363
```

```
Information Criteria:
                      value npar      AIC       BIC      cAIC
joint log-lik      -47013.79   59  94145.57  94580.59  94639.59
marginal log-lik   -64921.09    8 129858.18 129917.74 129925.74
conditional log-lik -31309.25    8  62634.50  62694.06  62702.06
```

```
Itemfit Statistics:
          Chisq    df p-value Outfit MSQ Infit MSQ Outfit t Infit t
ipe1   9833.577 11762       1      0.836     0.917   -12.54   -5.94
ipe2   7171.094 11754       1      0.610     0.640   -32.88  -28.94
ipe3   8868.120 11747       1      0.755     0.723   -20.09  -21.97
ipe4  10711.189 11753       1      0.911     0.881    -6.85   -8.89
```

```
Separation Reliability: 0.8407
```

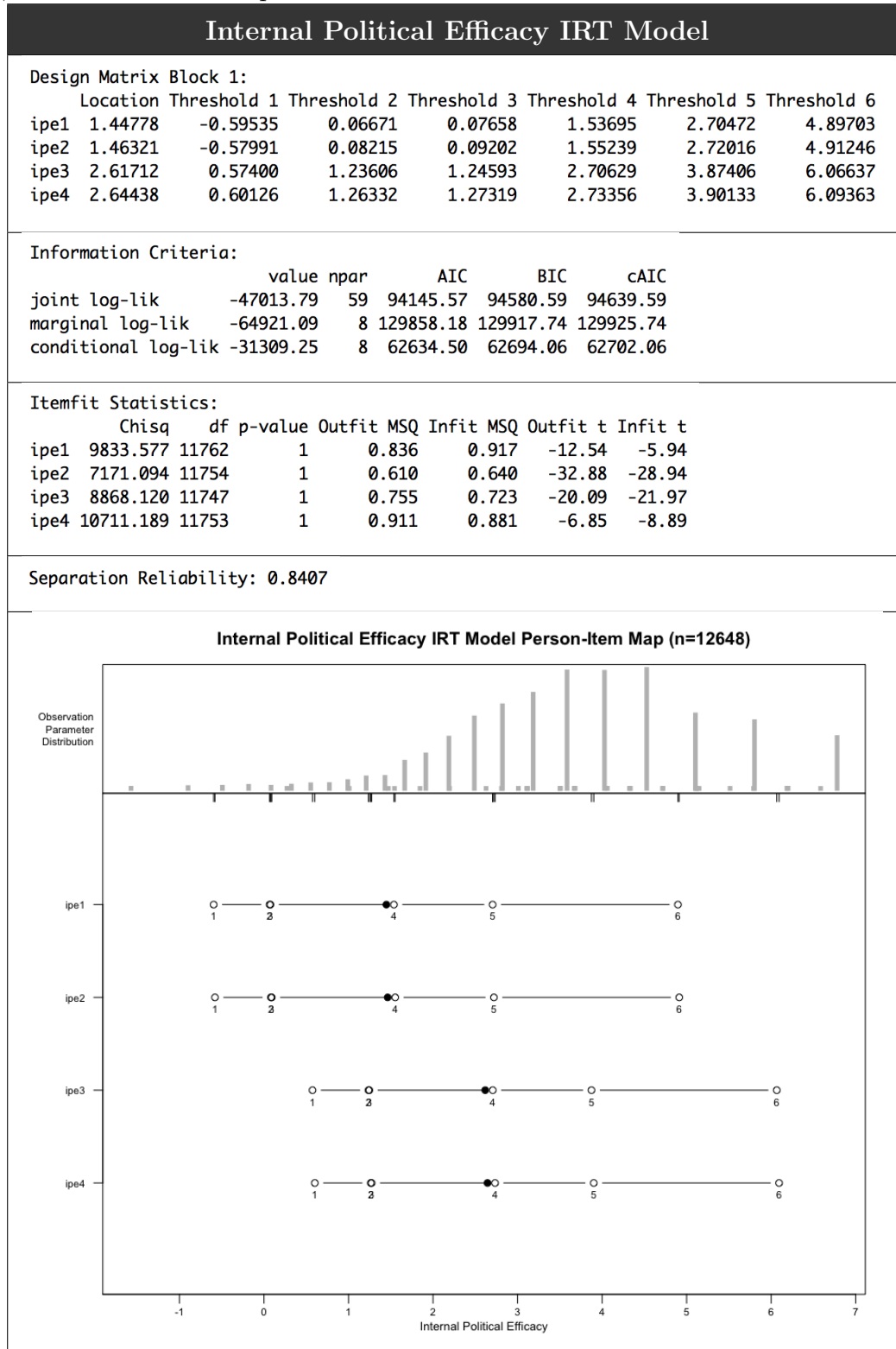

Internal Political Efficacy IRT Model Person-Item Map (n=12648)

Table 6.6: External Political Efficacy Item-Response Theory Parameters, Fit Statistics, and Person-Item Map


```
External Political Efficacy IRT Model

Design Matrix Block 1:
      Location Threshold 1 Threshold 2 Threshold 3 Threshold 4 Threshold 5 Threshold 6
epe1  1.70659    -0.34500     0.37961     1.66421     1.88658     2.64973     4.00442
epe2  2.03081    -0.02078     0.70383     1.98843     2.21080     2.97395     4.32864
epe3  2.41737     0.36578     1.09038     2.37498     2.59736     3.36051     4.71520


Information Criteria:
                      value npar       AIC        BIC       cAIC
joint log-lik      -46058.04   49  92214.08   92577.62   92626.62
marginal log-lik   -62665.93    7 125345.87 125397.99 125404.99
conditional log-lik -27863.76    7  55741.52   55793.63   55800.63


Itemfit Statistics:
          Chisq    df p-value Outfit MSQ Infit MSQ Outfit t Infit t
epe1  8758.279 12312       1      0.711     0.773   -24.80  -19.23
epe2  6536.867 12304       1      0.531     0.545   -44.74  -43.44
epe3 10448.210 12309       1      0.849     0.808   -12.64  -16.50


Separation Reliability: 0.8075
```
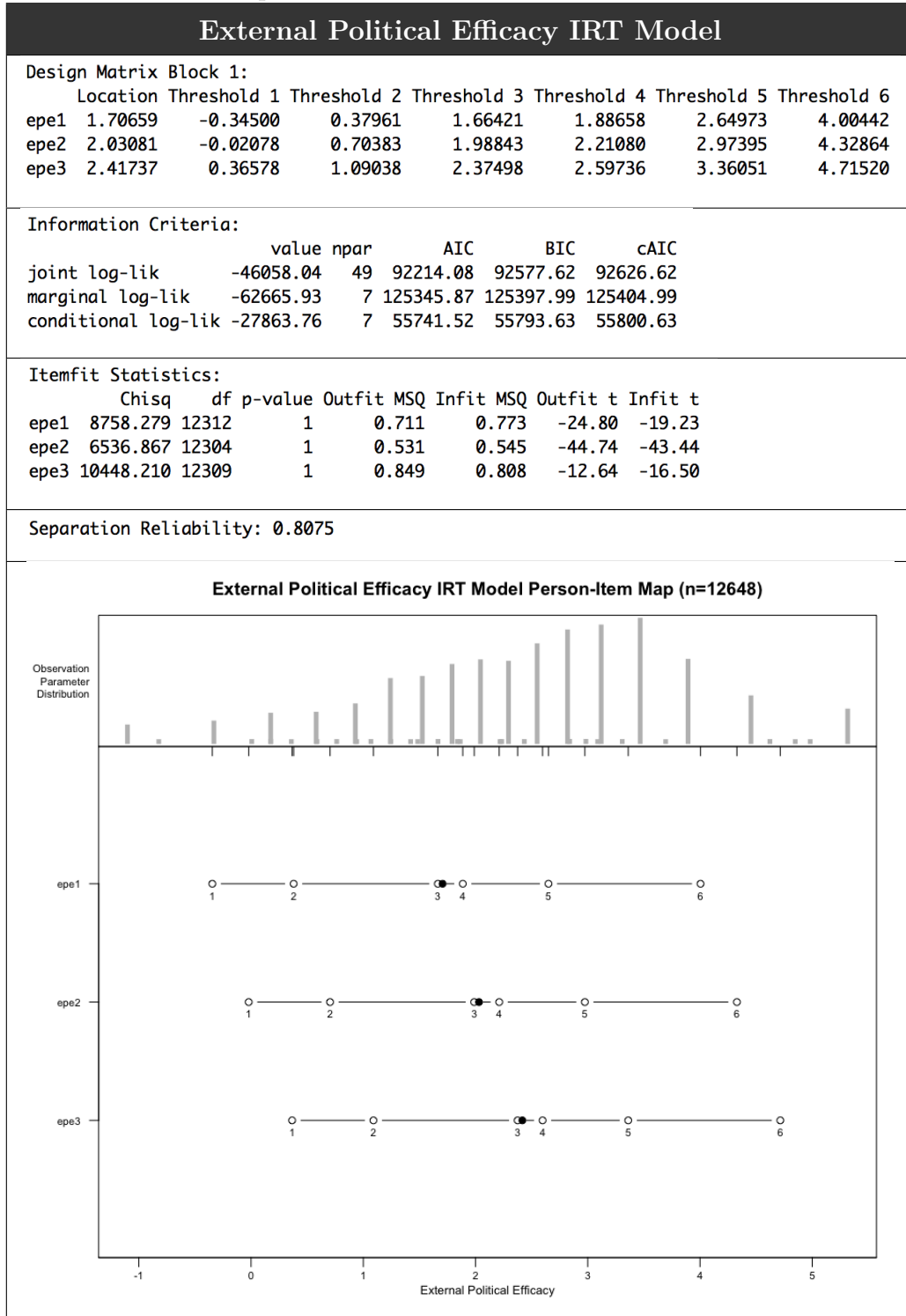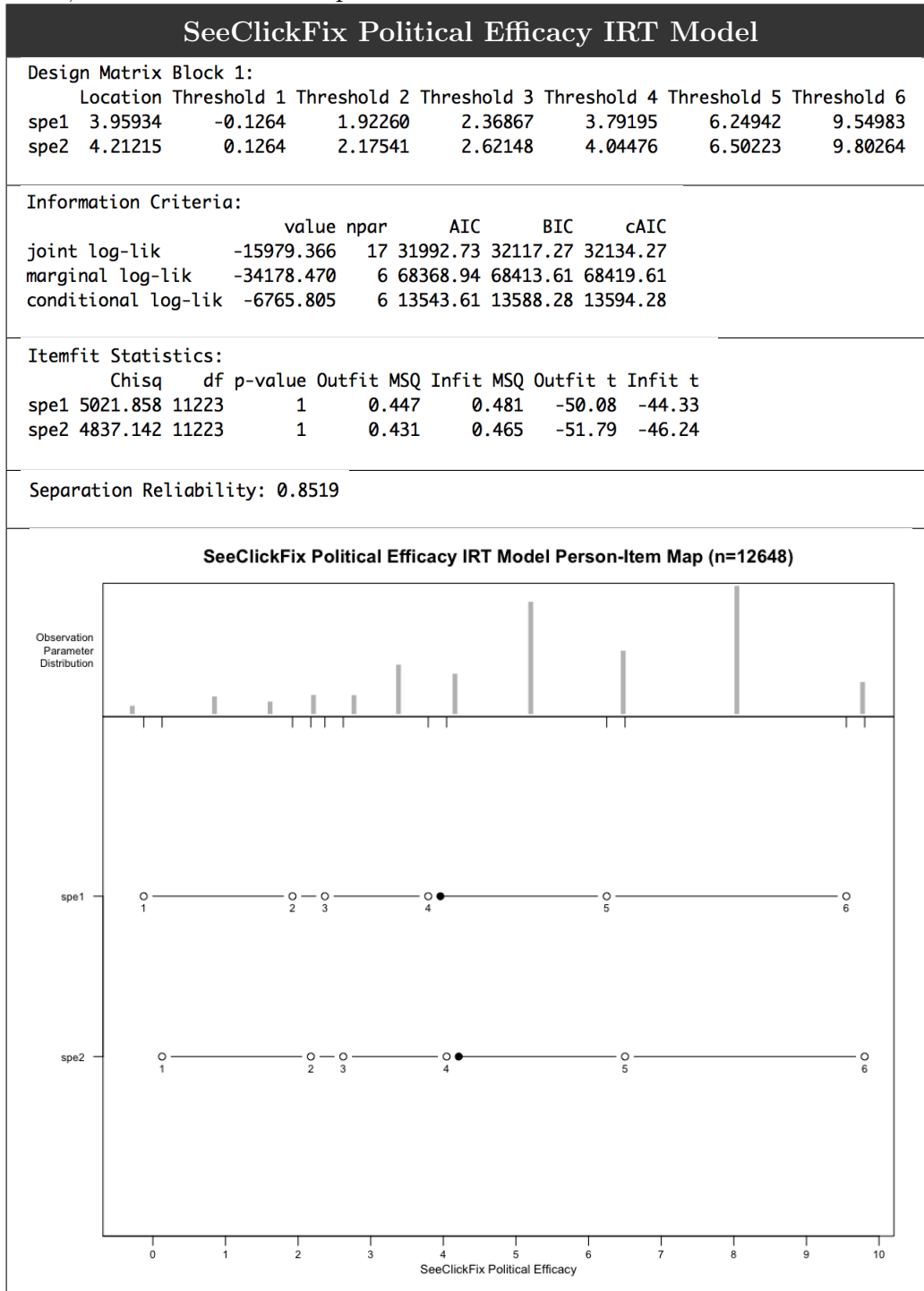
Table 6.7: SeeClickFix Political Efficacy Item-Response Theory Parameters, Fit Statistics, and Person-Item Map

SeeClickFix Political Efficacy IRT Model

```
Design Matrix Block 1:
     Location Threshold 1 Threshold 2 Threshold 3 Threshold 4 Threshold 5 Threshold 6
spe1  3.95934     -0.1264     1.92260     2.36867     3.79195     6.24942     9.54983
spe2  4.21215      0.1264     2.17541     2.62148     4.04476     6.50223     9.80264
```

```
Information Criteria:
                      value npar      AIC       BIC      cAIC
joint log-lik      -15979.366   17 31992.73 32117.27 32134.27
marginal log-lik   -34178.470    6 68368.94 68413.61 68419.61
conditional log-lik -6765.805    6 13543.61 13588.28 13594.28
```

```
Itemfit Statistics:
        Chisq    df p-value Outfit MSQ Infit MSQ Outfit t Infit t
spe1 5021.858 11223       1      0.447     0.481   -50.08  -44.33
spe2 4837.142 11223       1      0.431     0.465   -51.79  -46.24
```

```
Separation Reliability: 0.8519
```


SeeClickFix Political Efficacy IRT Model Person-Item Map (n=12648)

140

Although political efficacy has been studied many times, there is not a clear base-line average or set of anchors to interpret the IPE scores as representing the presence or absence of political efficacy in absolute terms—this is another reason why a growth model will be a useful metric as opposed to an isolated measure of IPE. Because the IRT scores per participant are z-standardized with a mean of 0 and standard deviation of 1 with each person parameter representing the standard deviations from the mean of the latent construct, I can transform the score scale for easier comparison to other populations.

What is clear from both the distributions of the individual questions presented earlier and the average IRT scores in Tables 6.5, 6.6, and 6.7 is that yearly active SeeClickFix users exhibit high levels of internal, external, and SeeClickFix political efficacy. Nearly all of the groups tabulated below have mean IRT scores well above the Threshold 4s for agreeing with all the relevant individual questions in the survey for IPE and SPE. However, few groups have sufficient average EPE to agree with all the questions assessing that trait. In particular, the other gendered users and those ages 18–24 have average EPE scores are below the threshold for "easiest" question epe1—meaning that they have a neutral opinion of local government on average.

Table 6.8: Survey 1 Means and Standard Deviations from the IRT Model

| | | Survey 1 | | | | | |
| | | IPE | | EPE | | SPE | |
	n	m	sd	m	sd	m	sd
ALL	9166	3.98	1.75	2.45	1.36	6.19	2.94
Houston	328	4.13	1.79	2.3	1.27	5.76	2.85
Detroit	267	4.43	1.97	2.43	1.29	7.19	2.81
Memphis	308	4.18	1.78	2.27	1.3	5.74	3.03
St. Petersburg	328	4.09	1.78	2.49	1.38	6.52	2.88
Oakland	446	4.14	1.72	2.28	1.26	5.83	2.78
Male	4798	4.08	1.75	2.42	1.39	6.17	2.96

Table 6.8 continued from previous page

Female	4220	3.86	1.73	2.49	1.33	6.23	2.91
Other	41	3.59	1.7	1.8	1.44	4.63	2.74
Under 18	5	3.69	1.92	2.52	1.12	8.38	3.37
18 - 24	45	3.85	2.46	1.84	1.29	5.82	3.67
25 - 34	835	3.78	1.77	2.41	1.3	6.12	3.03
35 - 44	1641	3.88	1.74	2.39	1.31	5.9	2.96
45 - 54	2019	3.91	1.71	2.44	1.38	6.05	2.89
55 - 64	2465	4.04	1.76	2.45	1.39	6.2	2.94
65 - 74	1797	4.11	1.75	2.52	1.38	6.53	2.89
75 - 84	301	4.13	1.64	2.59	1.31	6.8	2.78
85 or older	16	3.97	1.7	2.94	1.46	6.16	2.29
Less than high school	17	3.9	2	2.55	1.21	7.3	2.99
High school	550	3.29	1.73	2.13	1.34	6.09	3.06
Some college	1554	3.81	1.72	2.25	1.4	6.11	2.98
2 year degree	798	3.91	1.65	2.26	1.44	6.25	2.96
4 year degree	3098	4	1.73	2.51	1.33	6.22	2.91
Professional degree	2574	4.19	1.76	2.6	1.34	6.24	2.9
Doctorate	499	4.13	1.73	2.62	1.26	6.01	2.96

Thanks to the features of item-response theory, IRT parameter scores as measures of political efficacy are particularly useful for description and comparison across different contexts as illustrated in Table 6.8. However, their use as outcome variables like in our experiment will be limited because the scale is not interpretable in plain language. Moving 1 unit up or down the internal political efficacy curve refers to standard deviations from the mean of a latent construct rather than discrete item responses.

The ANES uses a simple sum score approach to create their external political efficacy scale from 0 to 100, using the original forms of questions epe1 and epe2 (The American National Election Studies, 2015). Their scale is also arbitrary, but its

consistency over many surveys allows for comparative trends. With a sense of history, it's possible to set a goal to increase average political efficacy over time or improve it for particular demographic categories over time. For instance, men, older people, and people with more education, on average report a higher sense of internal political efficacy. One goal might be to look at how women and other genders can be provided specific empowering experiences that might bring us closer to equality among the genders. It is also important to support younger and less educated people to build up their knowledge and skills which they might lack because of less schooling and fewer civic experiences overall. For SeeClickFix, they might try to understand why Detroit and St. Petersburg have stronger average beliefs in the efficacy of the SeeClickFix platform: What could they bring from those cities to their work in Houston, Memphis, and Oakland?

6.3   User Demographics

In Figures 6-4 and 6-5, I include distribution plots of the four demographic characteristics from the initial survey: gender, age, highest education level completed, and ethnicity. As mentioned earlier, I believe the ethnicity data was corrupted by a poorly worded and untested question. It will not be used as a predictor or covariate in the analyses in this study.

These distributions give us a window into the demographic character of SeeClick-Fix's yearly active users. They appear to be slightly more male than female, middle aged to older (45–74), and well educated. The gender ratio may actually be inflating the female user numbers as the percentage of women who took the second survey was greater than men, suggesting that they may be more likely to respond to surveys and thus be over-representing their numbers—a trend found in other studies (Smith 2008). Over 75% of the sample has at least a four year degree, 28% of which also have a professional degree. The United States Census 2016 population estimates only 30.3% of Americans have a bachelor's degree or higher.

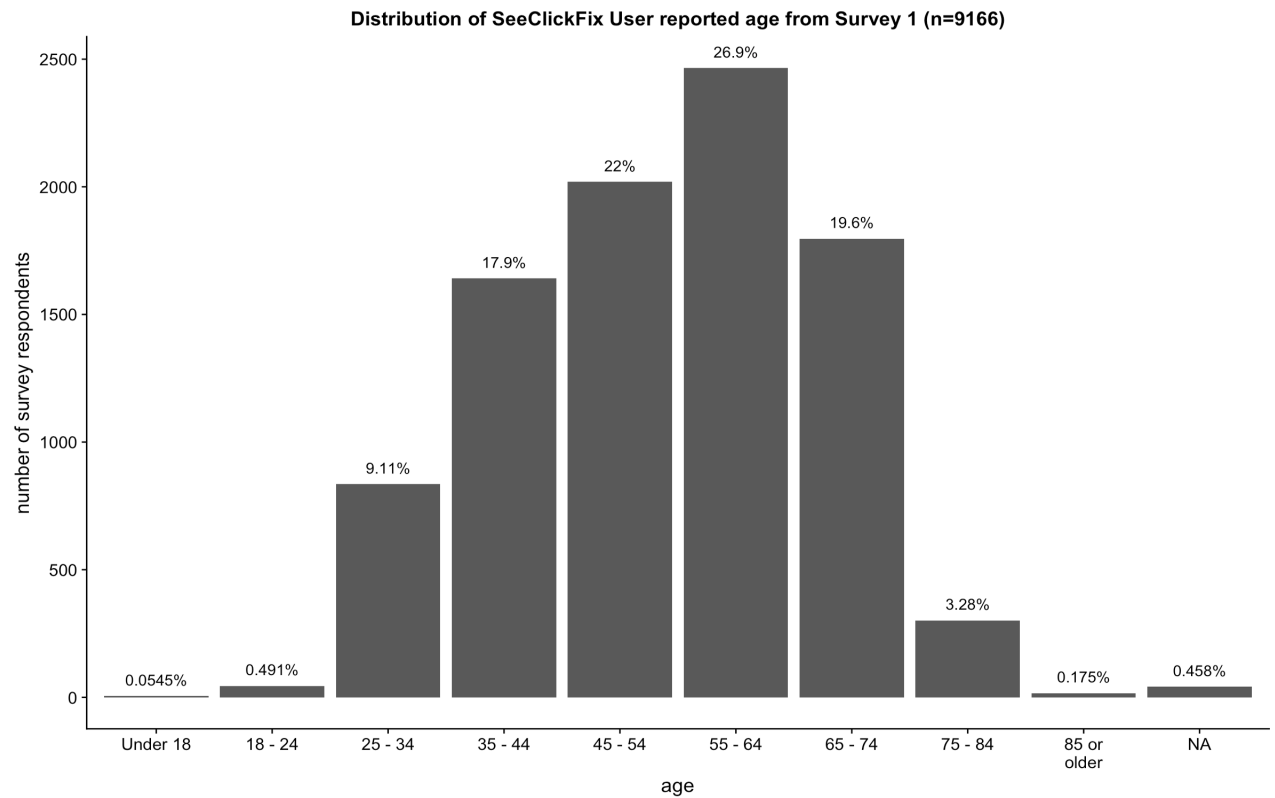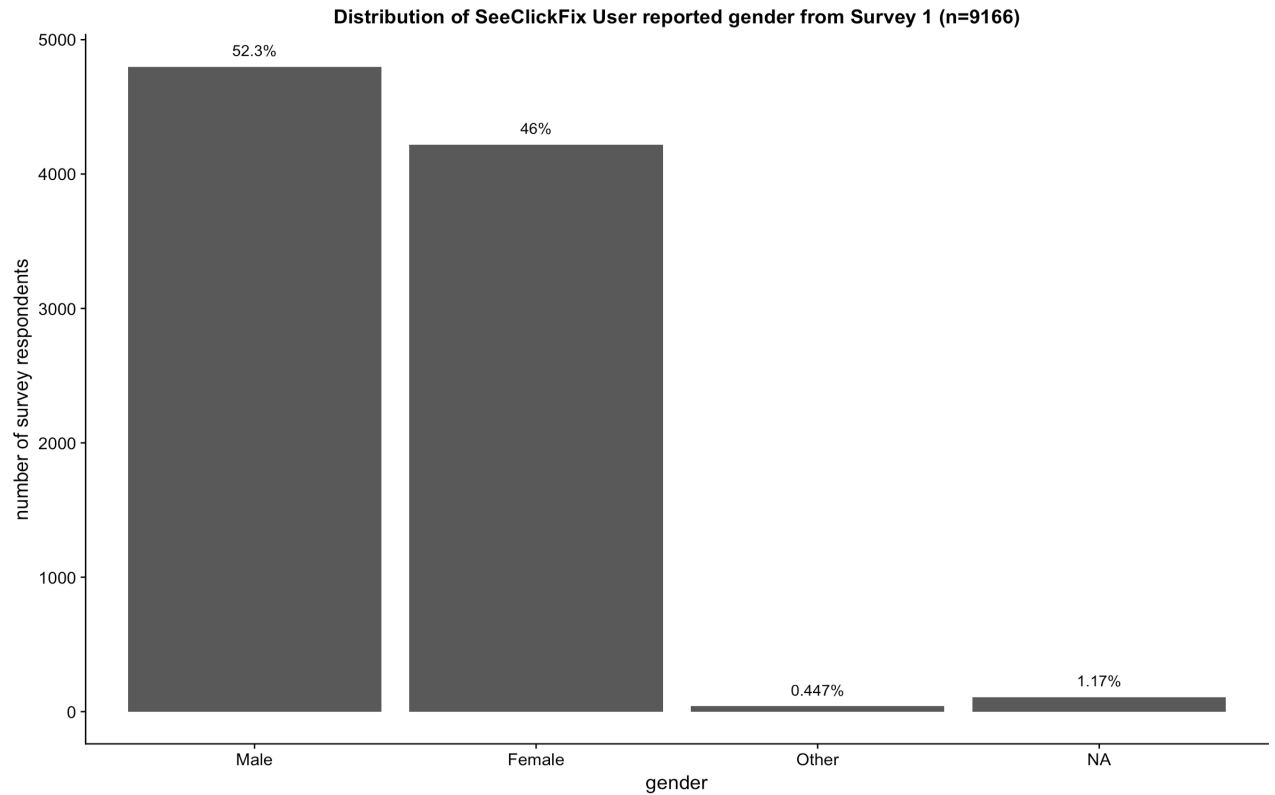In Table 6.9 are the relationships between the demographic predictors and the

Distribution of SeeClickFix User reported gender from Survey 1 (n=9166)

Distribution of SeeClickFix User reported age from Survey 1 (n=9166)

Figure 6-4: Distributions of Gender and Age reported by SeeClickFix Users who took Survey

Distribution of SeeClickFix User reported education from Survey 1 (n=9166)

Distribution of SeeClickFix User reported ethnicity from Survey 1 (n=9166)
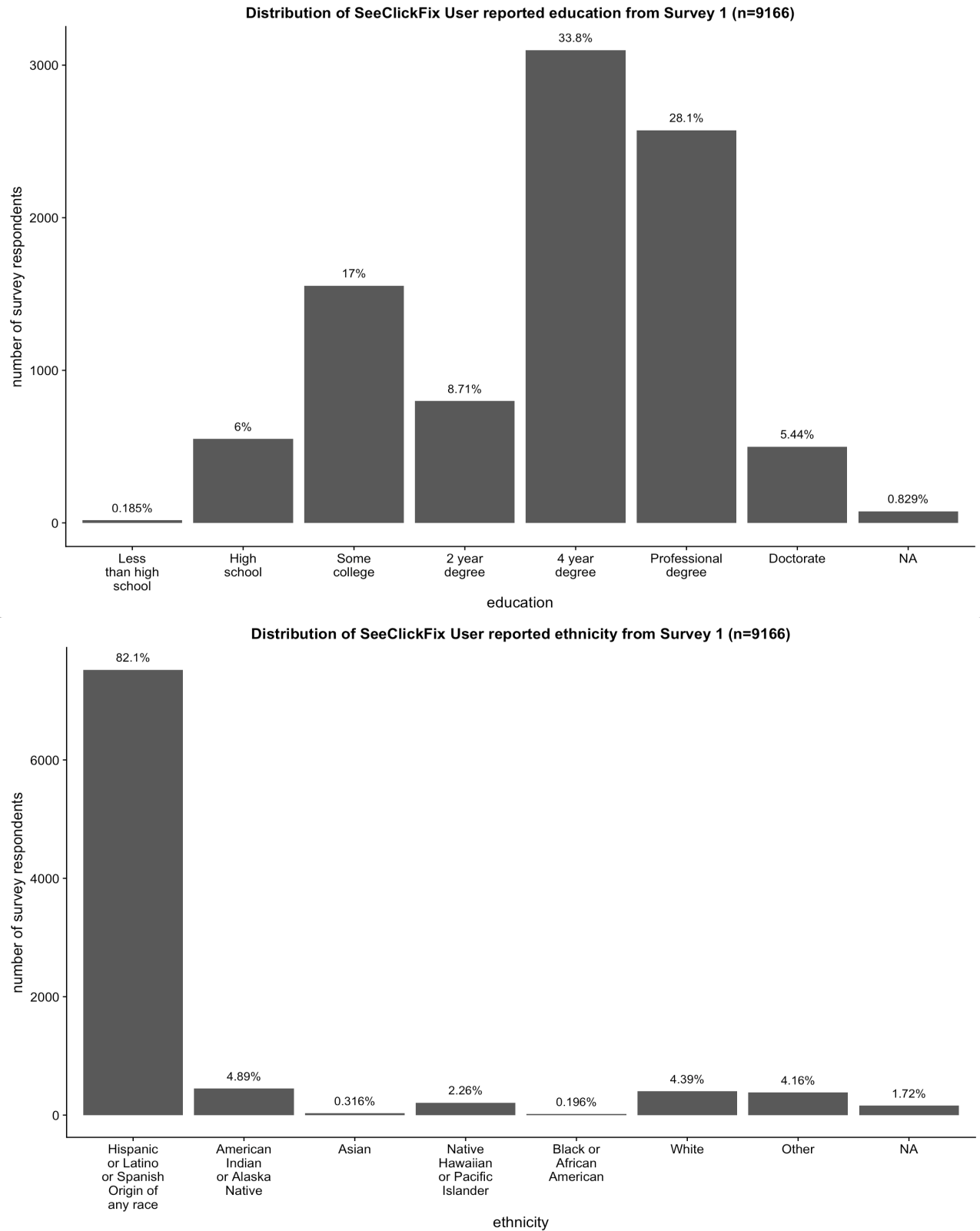
Figure 6-5: Distributions of Education and Ethnicity reported by SeeClickFix Users who took Survey

Table 6.9: Regression Table of Demographic Predictors on Political Efficacy Outcomes

	Internal Political Efficacy			External Political Efficacy			SeeClickFix Political Efficacy		
	B	*CI*	*p*	*B*	*CI*	*p*	*B*	*CI*	*p*
(Intercept)	3.96	3.75 – 4.18	**<.001**	2.39	2.23 – 2.56	**<.001**	6.44	6.08 – 6.80	**<.001**
gender									
Female	-0.22	-0.29 – -0.15	**<.001**	0.08	0.02 – 0.14	**.005**	0.08	-0.04 – 0.21	.180
Other	-0.58	-1.12 – -0.04	**.034**	-0.66	-1.08 – -0.23	**.002**	-1.62	-2.53 – -0.71	**<.001**
age									
18 - 24	0.12	-0.83 – 1.07	.809	0.43	-0.32 – 1.17	.262	-0.44	-2.06 – 1.17	.589
25 - 34	-0.00	-0.98 – 0.97	.998	0.32	-0.44 – 1.09	.409	1.08	-0.57 – 2.74	.199
35 - 44	-0.25	-1.07 – 0.56	.539	-0.14	-0.77 – 0.50	.672	-1.32	-2.69 – 0.06	.060
45 - 54	-0.10	-0.73 – 0.52	.744	0.37	-0.12 – 0.86	.143	0.23	-0.84 – 1.29	.674
55 - 64	0.08	-0.36 – 0.52	.723	-0.25	-0.59 – 0.10	.158	-0.65	-1.39 – 0.09	.087
65 - 74	-0.09	-0.37 – 0.18	.512	0.20	-0.02 – 0.41	.077	0.21	-0.25 – 0.68	.371
75 - 84	0.04	-0.11 – 0.19	.610	-0.10	-0.22 – 0.02	.091	-0.21	-0.47 – 0.05	.115
85 or older	-0.05	-0.14 – 0.04	.318	0.07	-0.00 – 0.14	.056	0.11	-0.04 – 0.26	.150
education									
High school	0.54	0.03 – 1.04	**.038**	0.30	-0.09 – 0.70	.134	-0.44	-1.30 – 0.42	.313
Some college	0.07	-0.41 – 0.56	.769	0.23	-0.15 – 0.61	.231	0.29	-0.53 – 1.11	.490
2 year degree	-0.35	-0.72 – 0.01	.060	-0.25	-0.53 – 0.04	.093	-0.52	-1.14 – 0.10	.102
4 year degree	0.23	-0.01 – 0.46	.063	0.04	-0.15 – 0.22	.688	0.21	-0.20 – 0.61	.311
Professional degree	-0.26	-0.39 – -0.13	**<.001**	-0.04	-0.14 – 0.06	.443	-0.10	-0.33 – 0.12	.367
Doctorate	0.08	-0.02 – 0.19	.124	0.11	0.03 – 0.19	**.010**	-0.01	-0.19 – 0.17	.903
Observations	9014			9014			9014		
R² / adj. R²	.024 / .022			.018 / .016			.009 / .007		
F-statistics	13.802***			10.447***			5.189***		

political efficacy scores, for respondents who answered the three meaningful demographic questions in addition to the political efficacy question (n=9014), using the simple linear regression model in Equation 6.1.

$$IPE_i | EPE_i | SPE_i = \alpha_i + \beta_{gender} gender_i + \beta_{age} age_i + \beta_{education} education_i + \epsilon_i \quad (6.1)$$

The categories folded into the intercept are "Male" for gender, "Under 18" for age, and "Less than high school" for education.

These models indicate a negative relationship between being female or other gendered and internal political efficacy relative to their male SeeClickFix user counterparts. Women reported a slightly higher average external political efficacy perception than men. Those identifying as other gendered (n=41) reported lower EPE and SPE. However, the text responses for this small sample include entries indicating that some respondents do identify as a non-binary gender, while others were seeking anonymity or to make another kind of statement. Thus, it is not possible to describe this as a category. The ethnicity data would have been helpful here to make claims about the relationship between marginalized groups and systems of power.

Age does not appear to be related to political efficacy. However, education level may be relevant. Considering, internal political efficacy is a measure of knowledge and skill, we would expect to see an association with education level. Unexpectedly, we find a negative relationship between professional degree holders and IPE relative to those with less than a high school education, but a positive relationship between high school diploma holders and their IPE relative to those without a diploma. This could be a cause of "knowing what you do not know" for the better educated people versus an inflated level of self-confidence for the modestly educated, sometimes called the Dunning-Kruger effect (Kruger and Dunning 1999). Future research should explore the intersectionality of these demographic attributes to identify where certain factors (such as education and gender) may together have a multiplicative impact on efficacy.

147

6.4   How Municipalities (Contexts) Matter

When designing this study, SeeClickFix staff and I were interested in users active in places where a partner organization would be receiving the requests for service that way we could compare the level of government responsiveness rather than worry about error from including users who had no hope of getting a response. However, having a partner account in the system is not an indicator of whether that partnership was truly active. Some partners had inactive accounts (some had been cancelled in the course of the prior year) and some were demo accounts that allowed prospective clients to test the service. We did not discover the prevalence of these essentially inactive (and often small) city user bases until I shared a few comparative statistics with SeeClickFix. They created a list of accounts they deemed inactive, which I then added as a flag in the dataset. This allows us to compare only active city samples to one another, and also to look at any differences between active cities and cities lacking a formal partnership, i.e. lacking a theoretically responsive set of public servants minding issues on SeeClickFix. We also have average times necessary to close issues and user populations to understand how those factors relate to people's sense of efficacy.

Table 6.10 breaks down the attributes of the SeeClickFix partner accounts in the case study. Mean yearly active users offers a window into the size of the community on SeeClickFix (although this will be highly dependent on the number of residents living in that municipality). Mean total reports closed offers a window into the total amount of activity by those partners on SeeClickFix. SeeClickFix reports that almost all reports are eventually closed, which is why I am proposing mean time to close a report as a better indicator of a partner's performance.[3] Future research should look at other aspects of the municipalities partnered with SeeClickFix: for instance, their forms of government (e.g. strong mayor versus city manager) and their urban density scores (e.g. Can SeeclickFix users walk a lot from place to place?).

---

[3]There may be some error in this measure from users closing their own issues, but this is a small fraction of report closures.

Table 6.10: Descriptive Statistics of SeeClickFix Partner Account Attributes

	All Accounts	Active Accounts	Inactive Accounts
Number in Study	311	274	37
Mean Users per Account in Study (sd)	29.38 (57.48)	28.56 (57.63)	0.81 (5.49)
Number of Users in Study	9166	8912	254
Percent of Users in Study	100%	97.23%	2.77%
Median Yearly Active Users on SeeClickFix	100	123.5	16
Median Total Reports Closed in Past Year	372	523.5	19
Mean Response Time to Close an Issue in Days in Past Year (sd)	84.95 (173.68)	64.63 (116.43)	235.46 (361.30)
Mean Internal Political Efficacy (sd)	3.98 (1.75)	3.97 (1.74)	4.17 (1.86)
Mean External Political Efficacy (sd)	2.45 (1.36)	2.46 (1.36)	2.21 (1.57)
Mean SeeClickFix Political Efficacy (sd)	6.19 (2.94)	6.21 (2.92)	5.49 (3.23)

Table 6.11: Regression Table of Account-level Predictors on Political Efficacy Outcomes

	Internal Political Efficacy			External Political Efficacy			SeeClickFix Political Efficacy		
	B	CI	p	B	CI	p	B	CI	p
Fixed Parts									
(Intercept)	3.87	3.55 – 4.19	**<.001**	2.91	2.64 – 3.18	**<.001**	6.79	6.18 – 7.40	**<.001**
log2(1 + city.usercount)	0.00	-0.03 – 0.03	.968	-0.03	-0.05 – -0.00	**.033**	-0.01	-0.07 – 0.05	.827
log2(1 + city.responsetime)	0.01	-0.03 – 0.05	.594	-0.04	-0.08 – -0.01	**.024**	-0.08	-0.16 – -0.01	**.037**
Random Parts									
σ^2		3.002			1.790			8.262	
$\tau_{00, \text{city.id}}$		0.329			0.279			0.141	
ϱ_{01}		-0.997			-1.000			-0.775	
$N_{\text{city.id}}$		274			274			274	
Observations		8912			8912			8912	
R^2 / Ω_0^2		.024 / .019			.046 / .040			.046 / .043	

Only 2.77% of the users came from inactive partner communities. However, users in those places did have lower EPE and SPE as expected. I exclude the inactive partners from the regressions on city-level variables below because their level of activity on SeeClickFix would not be comparable to the active partners.

In Table 6.11, I report the results of regressing the key account-level predictors of yearly active users (user count) and mean response time to close issues (response time) on the political efficacy outcome scores using varying-intercept, varying-slope models in Equation 6.2.

$$IPE_i | EPE_i | SPE_i = \alpha_{j[i]} + \beta_{user.count} log_2(1 + user.count)_{j[i]}$$
$$+ \beta_{response.time} log_2(1 + response.time)_{j[i]} + \mu_j + \epsilon_i$$
(6.2)

I transformed the predictors using log base 2 to reduce the skew in such count-based distributions and ensure that they are on similar scales to improve model fit.

When comparing individual people's efficacy between cities, we would expect to see relationships with external political efficacy because those scores are based on users talking about the responsiveness of their local government. In these models, we are looking at the relationship among users within a city to aspects of those cities. We

find a two-fold difference in a city's mean response time to close an issue is associated with a 0.04 difference in the external political efficacy score perceived by yearly active users and 0.08 difference in the SeeClickFix political efficacy score. Because of the nature of the EPE and SPE scales, it is not possible to describe what this means in meaningful terms, but the existence of an association might indicate that active users are paying attention to city responsiveness. The design insights for SeeClickFix here should be that working with partners to reduce average response time could have an impact on their perception of the city's responsiveness and the value of SeeClickFix as a tool.

A counterintuitive finding is that a two fold difference in yearly total users in a municipality is associated with a 0.03 difference in the external political efficacy score of yearly active users there. This may represent a perception of less personal attention from government officials within a larger user community.

6.5   SeeClickFix Platform Behavior

Because the active users invited to participate in the study were active on a yearly basis, yearly counts of behaviors on the platform are most relevant for analysis. Figure 6-6 provides a grid of kernel density plots for behavior variables such as the age of a user's account in days (accountage) and their civic points earned for actions on the site (points.year); their number of issue reports (reports.year), comments on issues (comments.year), votes for issues (votes.year), and watched issues (watches.year); also the number of reports posted anonymously (anonymous.year), the number of their issues closed (closed.year), and the proportion of those issues closed (closed.year.percent).[4]

The density plots in Figure 6-6 illustrate how the vast majority of users report only one issue and rarely if ever, comment on, vote on, or watch issues. Also, most of the user accounts have been created in the past two years, suggestive of SeeClickFix's user growth curve.

---

[4]Once again, issue reports can be closed by other users, not just official partner accounts, which introduces some error when interpreting these numbers as performance measures for municipalities.
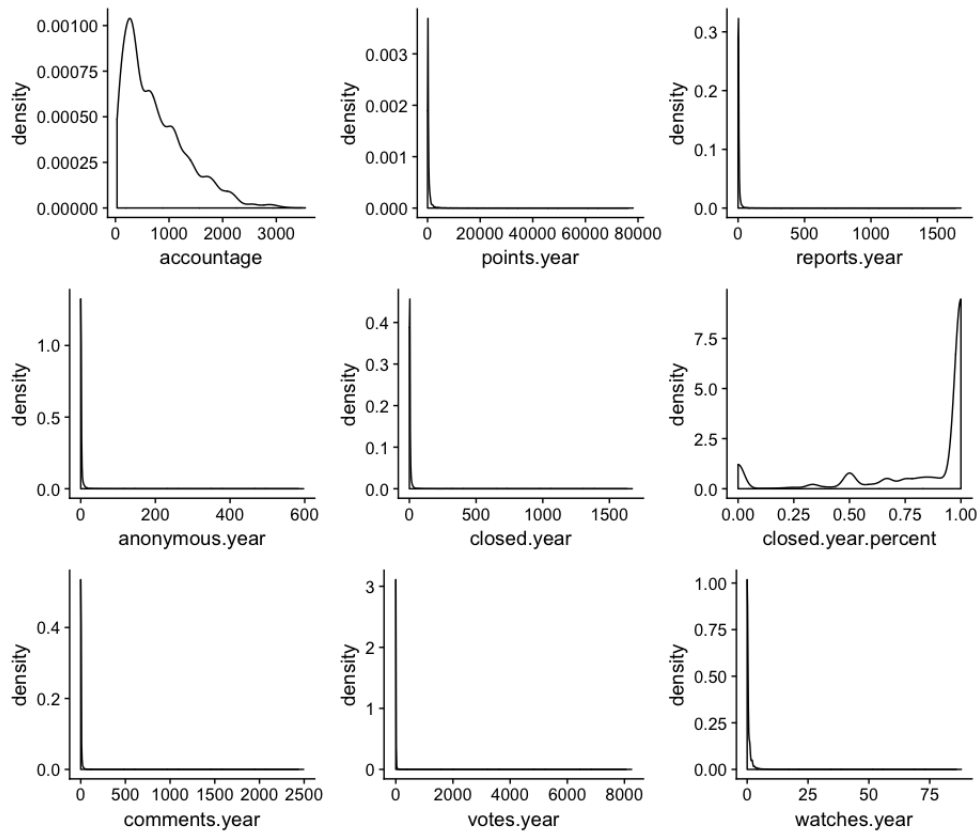
Figure 6-6: Kernel Density Plots of SeeClickFix Platform Behavior Variables

Table 6.12: Regression Table of SeeClickFix Platform Behavior Predictors on Political Efficacy Outcomes

	Internal Political Efficacy			External Political Efficacy			SeeClickFix Political Efficacy		
	B	*CI*	*p*	*B*	*CI*	*p*	*B*	*CI*	*p*
(Intercept)	3.12	2.86 – 3.38	**<.001**	2.14	1.94 – 2.34	**<.001**	5.05	4.63 – 5.48	**<.001**
log2(1 + accountage)	0.07	0.05 – 0.10	**<.001**	0.02	-0.00 – 0.04	.133	0.01	-0.03 – 0.06	.552
log2(1 + reports.year)	0.13	0.09 – 0.17	**<.001**	0.08	0.05 – 0.12	**<.001**	0.21	0.14 – 0.27	**<.001**
log2(1 + anonymous.year)	-0.01	-0.05 – 0.03	.591	-0.16	-0.19 – -0.13	**<.001**	-0.15	-0.21 – -0.08	**<.001**
closed.year.percent	-0.15	-0.27 – -0.03	**.017**	0.30	0.21 – 0.40	**<.001**	1.05	0.85 – 1.25	**<.001**
log2(1 + comments.year)	0.06	0.02 – 0.09	**<.001**	-0.09	-0.12 – -0.06	**<.001**	-0.11	-0.16 – -0.05	**<.001**
log2(1 + votes.year)	-0.01	-0.04 – 0.02	.475	-0.01	-0.03 – 0.01	.365	-0.00	-0.05 – 0.05	.921
log2(1 + watches.year)	-0.03	-0.09 – 0.04	.430	0.02	-0.03 – 0.07	.444	0.02	-0.09 – 0.13	.716
Observations	8558			8558			8558		
R^2 / adj. R^2	.020 / .019			.027 / .027			.019 / .018		

In Table 6.12, I present the results of using linear regression (see Equation 6.3 to associate platform variables, where all count-based variables have been base 2 log transformed, with the three political efficacy scores from Survey 1.

$$IPE_i|EPE_i|SPE_i = \alpha_i + \beta_{accountage}log_2(1 + accountage)_i$$
$$+\beta_{reports.year}log_2(1 + reports.year)_i$$
$$+\beta_{anonymous.year}log_2(1 + anonymous.year)_i$$
$$+\beta_{closed.year.percent}log_2(1 + closed.year.percent)_i \qquad (6.3)$$
$$+\beta_{comments.year}log_2(1 + comments.year)_i$$
$$+\beta_{votes.year}log_2(1 + votes.year)_i$$
$$+\beta_{watches.year}log_2(1 + watches.year)_i + \epsilon_i$$

The users with the oldest accounts appear to have higher IPE on average, which would be an expected trait of early adopters of civic technology. Each of these behavior variables, except for the proportion of reports closed, is in part a function of account age, as users who were on the platform all year have more opportunities to create content, which is why it is important to control for account age in this model.

For all three forms of political efficacy, reporting and commenting more often are associated with greater perceived efficacy. However, reporting issues anonymously is associated with less external and SeeClickFix political efficacy, which may represent a distrust of local governments or SeeClickFix to handle their personal requests properly. Supporting the theory that evidence of impact is empowering, the proportion of reports closed was positively associated with both external and SeeClickFix political efficacy (see graphs in Figures 6-7 and 6-8). The difference between a user who has no reports closed (0) and one who has all of their reports closed (1) is a 1.02 difference in SPE. The magnitude of this difference should be enough to convert a user from feeling neutral about the platform's efficacy to believing that it can make a difference. If substantiated in future experiments, this would be an important validation that closing reports matters to users, which is the core design goal of SeeClickFix and is core to user empowerment. In contrast, this model finds a weak negative association
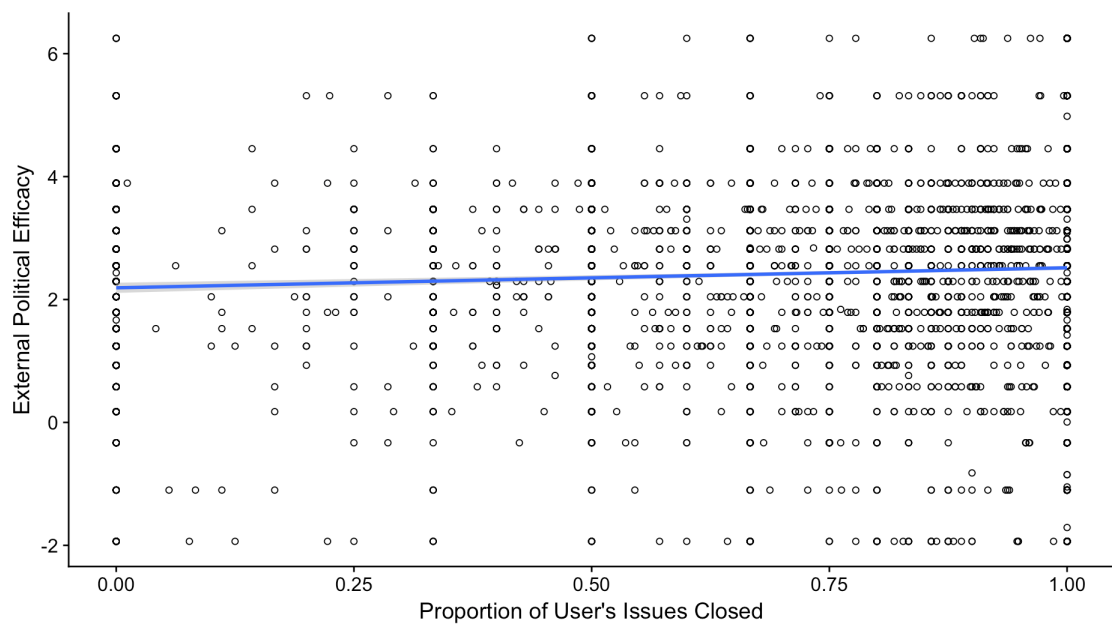
Figure 6-7: Linear relationship between Proportion of User's Issues Closed and External Political Efficacy in Survey 1
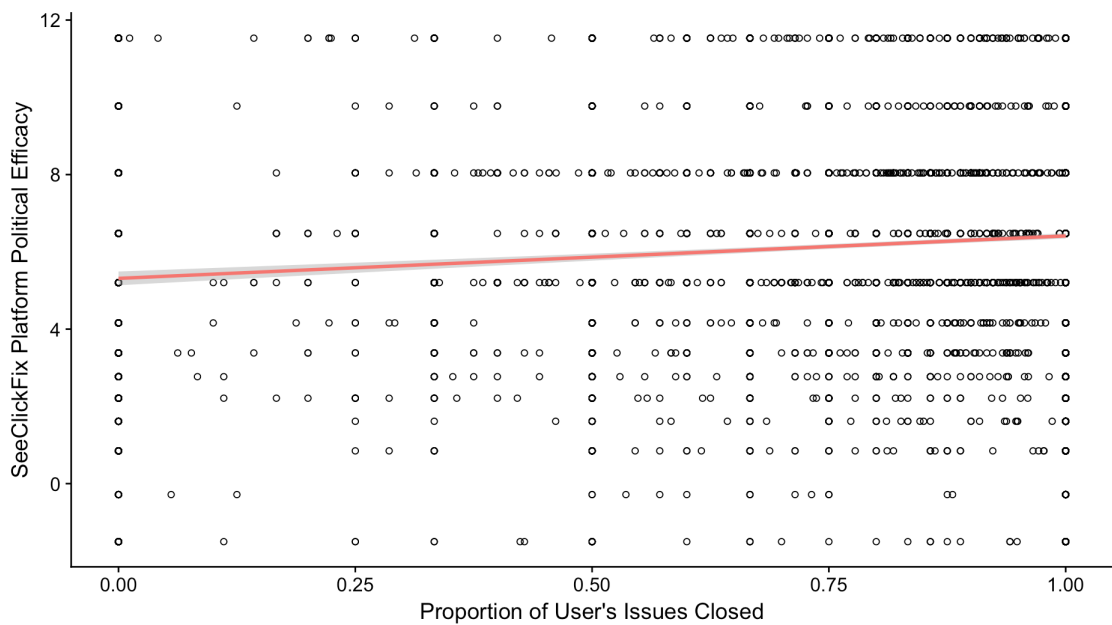
Figure 6-8: Linear relationship between Proportion of User's Issues Closed and SeeClickFix Political Efficacy in Survey 1

154

between having a greater proportion of reports closed and internal political efficacy; the reason for which is unclear.[5]

Voting and watching activity may be too rare on the platform to create sufficient data for detecting any associations. In the next section, I use civic points, which is a summation of all behaviors, to control for total user activity in the regression models examining treatment effects.

6.6 The Experiment

As detailed in the previous chapter, I designed a randomized experiment to test the effect of receiving an email message about recently closed issues in a user's local community (TREAT) on their internal, external, and SeeClickFix political efficacy. I used varying-intercept models to account for my block randomization within five cities [j]—Houston, Detroit, Memphis, St. Petersburg, and Oakland) run using the package "lme4" (Bates et al. 2015).

6.6.1 Balance Table

The balance table (Table 6.13) for the experimental sample indicates reasonable randomization balance. The mean political efficacy scores all vary within a standard deviation between treatment and control groups. Three notable differences between treatment and control groups do exist: the treatment group in St. Petersburg is slightly more active and less educated on SeeClickFix on average compared to the control group and the treatment group in Detroit has slightly younger accounts on average than the treatment group. This slight differences make it particularly important to control for these characteristics in the regression models rather than relying on the base models.

---

[5]A sensitivity analysis of this result conducted by reproducing the IPE scores using only the subset of participants in the sample who have reported an issue found the same direction in its association—suggesting it is likely not an artifact of missing data from the 608 users whose survey responses contributed to the original IPE scores but were not included in the original platform behavior variable regression model because they have never reported an issue.

Table 6.13: Balance Table for Experimental Sample

	Detroit		Houston		Oakland		Memphis		St. Petersburg	
	treat	ctrl	treat	ctrl	treat	ctrl	treat	ctrl	treat	ctrl
n	51	58	32	51	50	70	63	62	79	85
mean IPE (sd)	4.52 (1.58)	3.93 (1.52)	5.01 (2.09)	4.23 (2.11)	4.12 (1.46)	4.32 (1.92)	3.86 (1.49)	4.34 (1.83)	4.33 (1.69)	4.06 (1.71)
mean EPE (sd)	2.21 (1.45)	2.27 (1.22)	2.29 (1.62)	2.65 (1.14)	2.3 (1.38)	2.4 (1.48)	2.7 (1.14)	2.52 (1.66)	2.56 (1.2)	2.04 (1.39)
mean SPE (sd)	6.1 (3.04)	5.68 (3.17)	7.75 (2.82)	7.31 (2.69)	6.01 (3)	5.49 (3.13)	6.58 (2.42)	6.97 (3.18)	6.44 (2.79)	5.86 (2.74)
median civic points	250	265	252	330	228	250	225	275	805	505
median account age	738	980	683	693	626	596	676	658	1100	1020
Male	26	31	11	16	22	33	33	28	35	47
Female	25	27	20	33	28	37	30	34	42	35
Other	0	0	0	1	0	0	0	0	0	0
Under 18	0	0	0	0	0	0	0	0	0	0
18 - 24	0	1	1	0	0	0	0	1	1	0
25 - 34	4	10	1	7	3	1	3	3	6	7
35 - 44	16	14	5	4	10	10	8	6	13	17
45 - 54	11	12	6	13	12	12	15	11	18	16
55 - 64	13	16	12	18	16	28	29	21	16	21
65 - 74	7	5	6	6	8	18	6	15	20	21
75 - 84	0	0	0	2	1	1	2	5	4	3
85 or older	0	0	0	1	0	0	0	0	0	0
Less than high school	0	0	0	0	1	0	0	0	0	0
High school	5	1	2	6	3	7	7	3	1	1
Some college	5	7	7	12	8	13	6	14	13	9
2 year degree	1	3	2	3	5	2	8	5	4	2
4 year degree	20	30	8	12	15	27	23	22	27	24
Professional degree	16	13	11	12	13	16	18	15	27	43
Doctorate	4	4	1	5	4	4	0	3	6	6
# who Created Content	14	16	14	17	17	26	18	15	37	41

6.6.2 Primary Hypotheses

The base regression models are:

$$H_0 : \beta_{treat} = 0 \tag{6.4}$$

$$H_1 : IPE.post_i = \alpha_{j[i]} + \beta_{treat}TREAT_i + \beta_{IPE.pre}IPE.pre_i + \epsilon_i \tag{6.5}$$

$$H_2 : EPE.post_i = \alpha_{j[i]} + \beta_{treat}TREAT_i + \beta_{EPE.pre}EPE.pre_i + \epsilon_i \tag{6.6}$$

$$H_3 : SPE.post_i = \alpha_{j[i]} + \beta_{treat}TREAT_i + \beta_{SPE.pre}SPE.pre_i + \epsilon_i \tag{6.7}$$

Hypothesis 1

In Table 6.14, the regression table shows that in all versions of the model, we fail to reject the null hypothesis (even without the Bonferroni correction): no causal effect was observed between yearly active SeeClickFix users' exposure to an email message about recently closed issues in their local community and changes in their internal political efficacy.

Hypothesis 2

In Table 6.15, the regression table shows that in all versions of the model, we fail to reject the null hypothesis (even without the Bonferroni correction): no causal effect was observed between yearly active SeeClickFix users' exposure to an email message about recently closed issues in their local community and changes in their external political efficacy.

Hypothesis 3

In Table 6.16, the regression table shows that in all versions of the model, we fail to reject the null hypothesis (even without the Bonferroni correction): no causal effect was observed between yearly active SeeClickFix users' exposure to an email message about recently closed issues in their local community and changes in their SeeClickFix political efficacy.

Table 6.14: Regression Table for Experimental Hypothesis 1: Internal Political Efficacy

	Internal Political Efficacy (posttest)			Internal Political Efficacy (posttest)			Internal Political Efficacy (posttest)		
	B	$std.\,Error$	p	B	$std.\,Error$	p	B	$std.\,Error$	p
Fixed Parts									
(Intercept)	1.16	0.15	<.001	1.24	0.41	.002	1.27	0.45	.005
treat	-0.07	0.10	.469	-0.07	0.10	.475	-0.10	0.10	.326
ipe.pre	0.70	0.03	<.001	0.70	0.03	<.001	0.72	0.03	<.001
log2(1 + points.year)				0.01	0.03	.714	0.01	0.03	.696
log2(1 + accountage)				-0.02	0.04	.671	-0.03	0.04	.451
gender (Female)							0.00	0.10	.982
gender (Other)							-2.04	1.24	.101
education (High school)							0.24	0.72	.736
education (Some college)							-0.06	0.69	.932
education (2 year degree)							0.24	0.52	.649
education (4 year degree)							0.12	0.34	.730
education (Professional degree)							-0.15	0.19	.413
education (Doctorate)							0.12	0.17	.483
Random Parts									
σ^2		1.562			1.566			1.518	
$\tau_{00,\,city.id}$		0.000			0.000			0.000	
$N_{city.id}$		5			5			5	
Observations		601			601			590	
R^2 / Ω_0^2		.492 / .492			.492 / .492			.514 / .514	

Table 6.15: Regression Table for Experimental Hypothesis 2: External Political Efficacy

	External Political Efficacy (posttest)			External Political Efficacy (posttest)			External Political Efficacy (posttest)		
	B	*std. Error*	*p*	B	*std. Error*	*p*	B	*std. Error*	*p*
Fixed Parts									
(Intercept)	0.49	0.09	<.001	0.43	0.31	.170	0.04	0.34	.911
treat	0.02	0.08	.758	0.03	0.08	.746	0.04	0.08	.601
epe.pre	0.79	0.03	<.001	0.80	0.03	<.001	0.80	0.03	<.001
log2(1 + points.year)				0.02	0.02	.242	0.03	0.02	.190
log2(1 + accountage)				-0.02	0.03	.577	-0.03	0.03	.420
gender (Female)							-0.10	0.08	.210
gender (Other)							-1.05	0.95	.266
education (High school)							1.91	0.55	<.001
education (Some college)							-1.97	0.53	<.001
education (2 year degree)							1.34	0.40	<.001
education (4 year degree)							-0.75	0.26	.004
education (Professional degree)							0.39	0.14	.007
education (Doctorate)							-0.30	0.13	.023
Random Parts									
σ^2		0.906			0.907			0.888	
$\tau_{00, \text{city.id}}$		0.003			0.003			0.002	
$N_{\text{city.id}}$		5			5			5	
Observations		601			601			590	
R^2 / Ω_0^2		.570 / .570			.571 / .571			.589 / .589	

Table 6.16: Regression Table for Experimental Hypothesis 3: SeeClickFix Political Efficacy

	SeeClickFix Political Efficacy (posttest)			SeeClickFix Political Efficacy (posttest)			SeeClickFix Political Efficacy (posttest)		
	B	$std.\,Error$	p	B	$std.\,Error$	p	B	$std.\,Error$	p
Fixed Parts									
(Intercept)	1.94	0.23	<.001	2.35	0.68	<.001	2.34	0.76	.002
treat	-0.09	0.17	.622	-0.08	0.17	.630	-0.09	0.18	.604
spe.pre	0.69	0.03	<.001	0.69	0.03	<.001	0.69	0.03	<.001
log2(1 + points.year)				-0.02	0.05	.684	-0.01	0.05	.826
log2(1 + accountage)				-0.03	0.07	.673	-0.04	0.07	.562
gender (Female)							0.07	0.18	.707
gender (Other)							0.47	2.13	.827
education (High school)							0.08	1.23	.945
education (Some college)							-0.44	1.19	.712
education (2 year degree)							-0.01	0.90	.995
education (4 year degree)							0.11	0.59	.856
education (Professional degree)							-0.02	0.32	.955
education (Doctorate)							-0.25	0.29	.402
Random Parts									
σ^2		4.441			4.452			4.506	
$\tau_{00,\,city.id}$		0.000			0.000			0.000	
$N_{city.id}$		5			5			5	
Observations		601			601			590	
$R^2 / \Omega_0{}^2$		.485 / .485			.485 / .485			.488 / .488	

Although all of our primary hypotheses results are null, these findings are helpful. There are several possible explanations why we failed to observe an effect: the treatment intervention was too subtle and we need a larger sample, there were ceiling effects in the political efficacy measures, there were heterogeneous treatment effects[6] that will require further exploration into segments of the sample, or our theory is wrong that learning about other users' experiences on SeeClickFix has no impact on people's sense of efficacy. Opportunities for future research designs should investigate what kind of an effect a more substantial platform design change can have and should find ways to control for the early adopter behavior of high political efficacy individuals. There is also utility in these political efficacy measures being used recurrently as lagging indicators of overall trends in user empowerment relative to ongoing design iteration.

6.6.3   Platform Data Hypothesis

The secondary hypothesis posed in this experiment asked whether yearly active SeeClickFix users exposed to an email message about recently closed issues are more likely to be active during the month following the intervention—creating an issue report or commenting on an issue (CREATED.post)—than those exposed to a placebo message. Data from SeeClickFix show that 215 of the 601 subjects did create content of some kind after the initial survey. Here is the base regression model for this hypothesis:

$$H_0 : treat = 0 \tag{6.8}$$

$$H_a : Pr(CREATED.post_i = 1) = logit^{-1}(\alpha_{j[i]} + \beta_{treat}TREAT_i) \tag{6.9}$$

In Table 6.17, the regression table shows that in all versions of the model, we fail to reject the null hypothesis: there is no causal effect between yearly active SeeClick-Fix users' exposure to an email message about recently closed issues in their local

---

[6]In a study of political efficacy in rural Tanzania among parents of primary school learners, Lieberman and Zhou found their intervention had stronger effects among the poorest parents (2017).

Table 6.17: Regression Table for Platform Data Hypothesis: Content Creation

Predictors	Dependent Variables					
	Probability of Content Creation			Probability of Content Creation		
	Odds Ratio	CI	p	Odds Ratio	CI	p
Fixed Parts						
(Intercept)	0.55	0.38 – 0.79	**.001**	0.00	0.00 – 0.02	**<.001**
treat	0.95	0.68 – 1.33	.760	0.95	0.65 – 1.39	.801
log2(1 + points.year)				1.88	1.65 – 2.14	**<.001**
log2(1 + accountage)				0.93	0.80 – 1.08	.336
Random Parts						
$\tau_{00, \text{city.id}}$		0.088			0.000	
$N_{\text{city.id}}$		5			5	
Observations		601			601	
Deviance		766.963			645.991	
Family		binomial (logit)			binomial (logit)	

Predicted probabilities of creating content according to total civic points in the past year
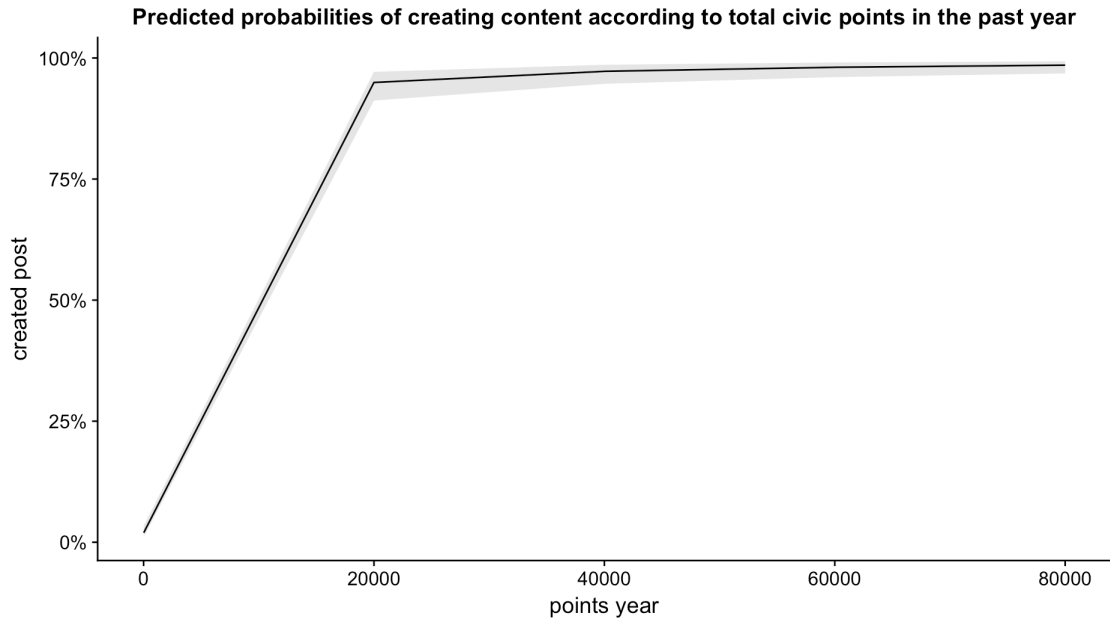
Figure 6-9: Predicted Probabilities of Creating Content according to Total Civic Points in the Past Year

community and the probability that they will create a report or comment afterwards.

This finding reinforces the idea that this intervention was too subtle. However, we do see that past activity does predict future activity in the second model. According to Figure 6-9, having 20,000 civic points or more is associated with a greater than 90% chance of creating content in the following month.

6.7 Predicting Engagement with Political Efficacy

Using the probability of creating content after the initial survey also offers an opportunity to explore our theory that political efficacy (empowerment) should predict long-term engagement. I created binomial logit regressions of content creation on the political efficacy scores from Survey 1 (base models with varying intercepts for cities), as seen in Equations 6.10, 6.11, and 6.12.:

$$Pr(CREATED.post_i = 1) = logit^{-1}(\alpha_{j[i]} + \beta_{IPE.pre}IPE.pre_i) \tag{6.10}$$

$$Pr(CREATED.post_i = 1) = logit^{-1}(\alpha_{j[i]} + \beta_{EPE.pre}EPE.pre_i) \tag{6.11}$$

$$Pr(CREATED.post_i = 1) = logit^{-1}(\alpha_{j[i]} + \beta_{SPE.pre}SPE.pre_i) \tag{6.12}$$

In Table 6.18, I report on the fitted models predicting engagement with prior political efficacy scores. As seen in the platform data hypothesis model above, these models all indicate the importance of past activity (civic points) predicting future activity.

An encouraging finding is that two active users whose SeeClickFix political efficacy scores differ by 1 unit on the SPE scale have fitted odds of creating content that differ by a factor of 1.03 to 1 when controlling for the base 2 log transformations of civic points in the past year (aggregate activity) and account age. This difference in fitted odds is very small but must be considered in terms of thousands of users and tens of thousands of opportunities for content creation per year. Looking at the predicted probabilities of creating content in Figure 6.4, the difference between the lowest SPE and highest SPE is over 10 percentage points.[7] For SeeClickFix, this suggests that

[7]These predicted probabilities are all less than 50% because on average, rarely do users create

Table 6.18: Regression Table for Probability of Content Creation given Political Efficacy

	IPE.0: Probability of Content Creation			IPE: Probability of Content Creation			EPE.0: Probability of Content Creation			EPE: Probability of Content Creation			SPE.0: Probability of Content Creation			SPE: Probability of Content Creation		
	Odds Ratio	CI	p	Odds Ratio	CI	p	Odds Ratio	CI	p	Odds Ratio	CI	p	Odds Ratio	CI	p	Odds Ratio	CI	p
Fixed Parts																		
(Intercept)	0.27	0.23 – 0.31	**<.001**	0.00	0.00 – 0.01	**<.001**	0.36	0.32 – 0.41	**<.001**	0.00	0.00 – 0.01	**<.001**	0.28	0.24 – 0.32	**<.001**	0.00	0.00 – 0.01	**<.001**
ipe.pre	1.07	1.04 – 1.09	**<.001**	1.02	1.00 – 1.05	.105												
log2(1 + points.year)				1.81	1.75 – 1.88	**<.001**				1.82	1.75 – 1.88	**<.001**				1.82	1.75 – 1.88	**<.001**
log2(1 + accountage)				0.95	0.91 – 0.99	**.017**				0.95	0.92 – 0.99	**.022**				0.95	0.92 – 0.99	**.019**
epe.pre							0.98	0.95 – 1.02	.305	1.01	0.97 – 1.04	.761						
spe.pre													1.04	1.02 – 1.05	**<.001**	1.03	1.01 – 1.05	**<.001**
Random Parts																		
$\tau_{00,\ city.id}$	0.193			0.140			0.195			0.141			0.198			0.144		
$N_{city.id}$	311			311			311			311			311			311		
Observations	9166			9166			9166			9166			9166			9166		
Tjur's D	.033			.182			.031			.181			.033			.183		
Deviance	10547.364			9241.433			10566.455			9243.412			10546.166			9229.595		
Family	binomial (logit)			binomial (logit)			binomial (logit)			binomial (logit)			binomial (logit)			binomial (logit)		

Predicted probabilities of creating content according to pretest SPE
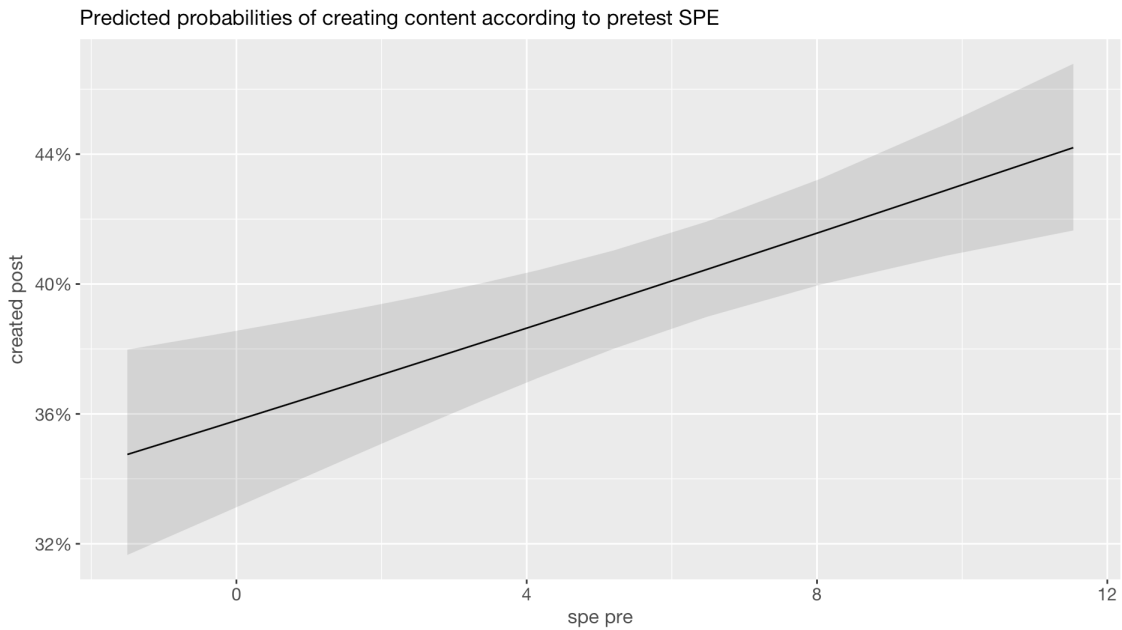
Figure 6-10: Predicted Probabilities of Creating Content according to SeeClickFix Political Efficacy Score in Survey 1

designing not only for participation but for increased perception of SeeClickFix as an effective tool can boost the probability of future participation even more.

Additionally, 1 unit increases in the internal political efficacy scale also differ by a better than random factor of 1.07 to 1 of creating content before controlling for the log transformations of civic points in the past year and account age. While the better model according to Tjur's D accounts for these covariates, IPE scores are positively associated with reporting and commenting activity, so improving internal political efficacy may also be a worthwhile design goal. Furthermore, although EPE scores are not significant predictors in these models, the confirmatory factor analysis showed the close relationship between EPE and SPE, which suggests improving EPE is also likely to be a worthwhile design goal.

6.8   Summary

Based on this case study, IPE, EPE, SPE are reasonable survey-based measures for evaluating empowerment on SeeClickFix, although more testing is necessary to support their validity arguments. Data from Survey 1 indicate that women on SeeClickFix have lower political efficacy on average and people with high IPE seem to also be early adopters of SeeClickFix, a finding worth investigating on other civic technology platforms. In general, activity is associated with efficacy among active users, which supports the theory that participation and empowerment are related. Furthermore, platform efficacy may predict future participation beyond past participation. Although our experiments using a subtle email intervention around awareness of aggregate efficacy in one's community found no observable effect, platform efficacy and external efficacy are associated with closing issues and response times. This suggests that if cities put in the work to serve their residents on SeeClickFix and that work is reflected on the platform, it may be possible to improve these efficacy scores among active users.

IRT scales of political efficacy are probably most useful as lagging indicators of ag-

———————————————————

content on a monthly basis.

gregate design changes (and meaningful local government performance). The finding that SeeClickFix political efficacy may be a leading indicator related to future activity on the platform supports the measure's utility and would, if found true in further research, support my call for civic technology designers to design to enhance their users' senses of empowerment. The relationships between platform behavior and political efficacy point toward the virtuous cycle between empowerment and civic engagement. This is the promise of empowerment-based design: designing for empowerment serves the goal of increasing participation as a positive externality without perverting our democratic efforts by aiming for and measuring participation itself. In the next chapter, the need for more research to confirm this promise.

Chapter 7

Implications, Limitations, and Next Steps

The central question of democratic renewal and empowerment might be, 'Are citizens "co-creating" their world?' (Boyte 2017). To enact citizenship in this way, citizens require "free spaces" that foster civic learning through deliberation, action, and reflection: producing "knowledge power" through shared experiences with other citizens (Boyte 2017). In Chapter 1, I propose a framework for contemporary democracy in which civic technologies should function as free spaces, cultivating citizen empowerment to keep virtuous cycles of civic learning and efficacy in motion for its citizen-users.

In Chapter 4, I proposed a set of design principles that I believe can help civic technology designers create the kind of civic infrastructure online and offline that this model of democracy demands. And in Chapter 6, I offer a case study to illustrate what an empowerment-based research toolkit can do to evaluate user impact in partnership with civic technology designers.

7.1 Discussion of Findings and Reflections from SeeClickFix

Before finishing this dissertation, I shared preliminary findings from the evaluation with SeeClickFix design staff, including their CEO, director of product, director of engineering, and the manager of mobile products. I then interviewed them individually to capture their reactions to the research and reflections on the process.

To put their responses in context, it is important to characterize SeeClickFix's ethos as atypical within the technology industry. The mobile product manager is a former theology and ethics scholar and the director of engineering is the state director for Connecticut's YMCA Youth and Government program. The company's public statements, especially the CEO's, about transparency, responsibility, and citizen empowerment arise from what is likely a deliberate effort of civic-minded designers to create a corporate culture with its own free space qualities and to attract other similarly civic-minded people to join. Their level of receptiveness to empowerment-based design and research methods cannot be generalized to the wider Silicon Valley-influenced civic technology landscape. Future efforts to forward the research and practice agenda prescribed in this dissertation will require cultural changes within companies to make them more like SeeClickFix, rather than expecting my proposed toolkit to be able to impose such change from the outside.

Reflecting on the tension between designing for government partners versus citizen users, one staffer noted, "There is a lot of lip-service given to the concept of citizens being engaged. People just want to be heard. SeeClickFix is a really valuable thing—the fact that it is a forum in which a voice can be given and the word can be spoken, whether or not that need is addressed though is out of our hands, but that is where the tension lies." An example of how the design of the platform has bent away from user empowerment toward government interests is the onboarding page on the mobile app. Local governments often insist that the first screen to load for their residents be a menu of various city services and announcements, rather than a streamlined path toward reporting an issue, which is usually the main objective when a SeeClickFix

users opens the app.

One of the design ideas that came out of our discussion of the research findings was a renewed interest in making the first screen a reminder of the recent success of other users in their community getting their issues closed with a prominent invitation to then report a new issue. This version would serve both the interest of efficiency for the main purpose of the platform and provide a feedback loop that reflects the aggregate efficacy of the user community and performance of the local government. In general, communicating activity and results on the platform was cited as a design goal. The staff want to find ways to show users the impact they are having and can have, but they need to overcome resistance from local governments to more transparency. The CEO noted that the fundamental transparency of all user reports and comments being public (and not removable by city officials) has been a design principle they have refused to compromise on, despite lucrative requests, since day one.

For all staff I interviewed, the research findings highlighting the relationships between political efficacy and closed issues and shorter response times made "visible and tangible" assumptions they had long held about the importance of city responsiveness to user experience and the central objective of their design to empower citizens. Similarly, the skews in the demographic attributes of their user population suggested by the participant sample reinforced long-suspected concerns about whether they were helping the disempowered or just further empowering the privileged (like our respondents with professional degrees). However, the findings also prompted a discussion brainstorming follow-up studies that would allow us to further examine highly active and diverse cities like Oakland and Detroit. They want these partner communities to drive future iterations of their designs. In fact, their most recent user interview trips were to meet users in Oakland.

The null results of the experiment were disappointing but not surprising to anyone given the nature of the intervention. The findings served as a starting point for brainstorming new experiments and analyses that we could try given longer timelines and the ability to sync with new community partner launches. During the early stages of our research planning, our interest was in studying the impact of SeeClickFix's

point-of-interest (POI) notifications. The CEO reaffirmed his eagerness to find a study design that could work for examining the relationship between POI notifications and user empowerment, perhaps by conducting a experiment that withholds this feature from a random subset of new users connected to a future municipal partnership launch in that area. We could use the same measures and email-based methods already established and simply disable the POI notification emails for those users assigned to the control group.

Other staff, when asked after possible future research, envisioned opportunities for ongoing measurement of political efficacy (one staffer wanted "real-time" stats on political efficacy). But they also saw departure points for following up with deep, qualitative research, such as going out to talk to users in the contexts where they use the platform and to get regular prototypes in their hands. They want a closer relationship with their users, and this form of evaluation makes them hungry for more. If they had more resources for research, they would conduct user interviews and build custom experimental infrastructure into their platform, but SeeClickFix is still very small compared to a company like Facebook.

This research project came about because the CEO believed it was important and directed staff to help me undertake it. The future of the research toolkit, which requires no custom software outside of existing user mailing lists and access to database queries, will be to make these methods even easier to implement across different platforms and to inspire leaders and design staff at other civic technology companies to see the value in this approach.

7.2 Professional Ethics for Engineers and Designers

In 2017, the Markkula Center for Ethics at Santa Clara University hosted a symposium on how machines are reshaping civil society. Irina Raicu, director of the Internet Ethics program at the center, writes about the need to rethink ethics training in Sil-

icon Valley (2017). Her program has even produced curricular modules for software engineering courses that ask students to reflect on dilemmas posed by their work and its potential consequences (Vallor and Narayanan 2015). Using classical texts, the module puts software engineering within frameworks of virtue, human flourishing, and the public good. Ethics evolve along with society as well as technology. However, it is the responsibility of both citizens and technology creators to ask: What kind of a society do we want to create?

The goal of this dissertation might be framed as an attempt to assemble the building blocks of a "professional realm" for civic technology design (Gardner, Csikszentmihalyi, and Damon 2002). Professional realms like medicine or law represent individual practitioners aligning together as a field to support institutions that maintain high standards for relevant technical competency as well as ethical expectations of professionals to serve other stakeholders and ensure individual members reflect well on whole guild; this alignment in practice might be called "good work" (Gardner, Csikszentmihalyi, and Damon 2002). I believe that the location of digital technology within democracy demands a similar movement for ethical alignment with the field of civic technology design.

Despite this dissertation's limited scope, my goal is to find ways to transform how civic technology designers design their platforms and tools. This project is in the mold of what Harry Boyte calls public work, a way to orient our personal and professional lives toward the practice of everyday politics that serves the public interest (2004). Code for Americas programs and the United States Digital Service's launch helped make civic technology design an attractive career. There is a difference between building more civic apps and making all apps more civic, to quote Nick Grossman (2013). We need to equip technologists to make good on a vision for empowerment against the status quo Silicon Valley mindset of platform-centric growth.

Returning to Chapter 1's description of the creators of civic technology as stewards of democracy with an ethical obligation to serve the public good, we should consider the context of civic technology design in the same way Bernardo Zacka depicts street-level bureaucrats who have an enormous influence over how well people are served

171

by the state, including access to public services (2017). Zacka writes about the need for these public servants to be able to handle complex and competing normative obligations in their work, otherwise they may retreat to a reductive moral framework, which makes decision-making easier but serves many citizens poorly. He argues that these institutions must be able to respond to a "plurality of normative standards" and the stewards—bureaucrats in this case—must be sensitive to such standards, which will only occur if their organizational environments reflect that pluralism (Zacka 2017, p. 13). Not maintaining a diverse environment or keeping in mind the needs of a variety of stakeholders leads to one "normative world" taking "systematic precedence" (p. 14). This becomes the logic of efficiency in technology design.

There is another path for civic technology that this dissertation hopes to propagate as a cultural shift. SeeClickFix and its staff, who explicitly privilege a logic of democracy over a logic of efficiency—fighting to integrate evidence of citizen efficacy on the opening page of their app and to encourage cities to improve their performance—illustrate what an alternative or plural normative framework looks like in the context of a technology company.

7.3 Contributions

The overarching contribution of this dissertation is its proposal for an empowerment-based design framework for civic technology that synthesizes civic engagement, civic learning, and civic technology design and makes an ethical argument for its adoption within the technology industry. Four pieces of research and theory-building support this framework:

1. A new definition of "monitorial citizenship" for use in the literature on civic engagement and civic technology,

2. A set of design principles for civic technology and monitorial citizenship oriented around the goal of citizen empowerment,

3. A proposal for empowerment measures and specific methods based on political

efficacy for evaluating the impact of civic technology, including the newly defined measure of *platform political efficacy*, and

4. An original case study exploring the empowerment of users on SeeClickFix, validating the application of novel political efficacy measures and contributing helpful insights to the company's understanding of their impact and new ideas for future research and design.

7.4 Free Spaces and Instrumental versus Associative Civic Technology

Free spaces offer a paradigm for how civic technologies might best support civic learning. They emphasize reflection and discourse in addition to action. However, this may not be suitable or feasible for every tool and platform built for civic and political engagement. Some platforms like Facebook are associative and include many of the generative features that can support building and empowering communities. Other platforms like SeeClickFix or We The People are more instrumental in solving one problem of disempowerment for citizens when seeking influence over an institution like municipal government. However, as detailed in Chapter 4, SeeClickFix also creates associative opportunities, although not to the degree that would qualify it as a free space in the eyes of Evans and Boyte. Given the framework of democracy proposed in this dissertation, should all civic technology aspire to be free spaces? The answer is Yes and No.

Citizens are growing and hopefully being empowered through their use of civic technology. But these tools and platforms are not complete systems themselves, they are embedded in complex ecosystems that stretch both online and offline. An instrumental tool like a digital camera on a smartphone when wielded by Cop Watchers becomes part of a system of empowerment rooted in the social practices of that organization, the community that the individual users live and work in, and the local media that can help amplify their narratives. We should not expect the smartphone

camera, or even the smartphone and its various applications, to replace all those pieces of the ecosystem. However, if civic technology replaces some of those associational components or creates whole new ecosystems, either purposefully as in the case of SeeClickFix or as a result of their salience to networks of citizens as in the case of Facebook, then the designers of those tools and platforms assume a new responsibility for those citizens, their empowerment, and for the health of democracy more generally. These challenges and responsibilities become more evident when looking at how contentious politics and relational organizing play out over digital technology.

7.5 Contentious Politics

Returning to Levinson's prescriptions for addressing the civic empowerment gap in schools, she notes, "As schools become more civically engaged and empowering communities [...] they also are forced to confront issues that trouble the wider polity, such as political partisanship and diversity of conscience" (2012 p. 57). Emphasizing the porous boundary between school and the real world, she advocates doing more to tear down that boundary and concedes that this is risky for educators. Creators of social media and civic technology are aware of that risk in their designs too.

Facebook was accused of suppressing conservative voices on their site in spring 2016, which led to a high profile meeting with conservative leaders at the company headquarters in which Zuckerberg assured them that the platform is politically neutral. In response, Facebook shut down the program in which journalists curated and edited headlines for the trending topics list and relied on an algorithm to surface them instead. In early 2018, Twitter shut down thousands of accounts traced back to Russian disinformation agents suspected of influencing American political discourse since the 2016 election. These affected the follower counts of conservative figures on the site who complained on the hashtag "#twitterlockout" that their community was being targeted by site administrators.

Smaller civic technology companies also struggle with these questions. In 2011, Salsa Labs, which provides management and communication tools for advocacy or-

174

ganizations, took venture capital funding. This precipitated a shake up in leadership and strategy in October 2012, where the CEO was replaced and the organization removed the word "Progressive" from its website, which was a staple of its mission (Pedersen 2012), as an indicator that Salsa Labs would start serving non-ideologically progressive clients. Outrage by progressive clients online promising to leave the platform prompted the new management to reaffirm their commitment to progressive principles (Leichtman and Schaefer 2012).

Designing for citizen empowerment, just like designing good policy, is fraught when political partisans are identified with the use of a certain platform or are disproportionately affected by design changes to it. This dissertation intentionally focuses on practicing and designing for monitorial citizenship, forms of which exist all along the spectrum of instrumental to associational tools and non-contentious to contentious politics. Although SeeClickFix does not appear to exhibit much contention (though their local government partners may argue otherwise), other examples of monitorial citizenship tools and practices covered in this dissertation certainly exhibit contentiousness and ideological orientations.

One of the features of free spaces is an openness to competing ideas and deliberation and an attempt to reassert the reality that politics is a fundamental part of our everyday lives and not something to designate to certain venues or a class of professionals. Tools like SeeClickFix can put us in conversation with government and make governance more participatory. The fear of civic educators like Harry Boyte is that instead technologies will narrow the range of civic experiences and strip us of our agency in the name of efficiency (2017).

It is incumbent on the civic technology community to navigate these challenges and own it as their duty to democracy, as their "public work," delivering truly empowering technology. By taking advantage of the design principles proposed in this dissertation and assuming a stewardship role of the communities on their platforms, civic technology designers can buttress democratic participation.

7.6 Future Work

In July 2017, a controversy over the ethics of academic engagement with technology companies started with an article in *The Wall Street Journal* alleging that Google was a key funder of research into technology's effect on society and may be biasing the field as a result (Mullins and Nicas 2017). Amidst the calls for academic independence from the objects of their study, Mary Gray argued that what we need is more engagement with companies rather than less (2017). Researchers studying technology and society "cant do their job without accessing the proprietary data sets of the tech world, now that so many of us shop, debate, and flirt online" (Gray 2017). Jacob Metcalf and Casey Fiesler arrive at similar conclusions amidst an even more recent and relevant controversy surrounding the use of Facebook data by Cambridge Analytica for political campaign microtargeting (2018). Gray believes, "The question shouldnt be how to avoid working with tech companies; the question should be how best to ensure that collaborations between tech and social research, like those in pharmacology and biomedicine, mutually benefit not only a companys interests and scientific inquiry but the publics right to respectful, just, and beneficial research" (2017).

In the interest of civic technology evaluation, I endorse Gray's recommendations that researchers be clear about public disclosure of funding sources for projects and the nature of the data used. Furthermore, researchers inside organizations should work on public interest datasets that can be shared widely without fewer concerns over proprietariness, ideally creating special public research data portals that offer anonymized user data from those that consent to such research (Metcalf and Fiesler 2018).

Researchers and civic technology creators have a mutual interest in and an ethical obligation to the public good. Research projects and evaluations with companies other than SeeClickFix (although that collaboration should also continue and deepen) are necessary to validate and to continue to build the proposed research toolkit as well as prove its utility to companies. We know that technological design gets "locked in"

over time, narrowing how we think and act with these technical extensions of ourselves and narrowing what is possible in follow-on designs (Lanier 2010). It is critical that researcher and technology communities embrace this effort sooner rather than later as our civic technology design decisions and migrations of political behavior online continue to add up to the future of democracy. The goal is generating a culture and logic of democracy within civic technology design, steering designers away from the dominant culture and logic of efficiency. This dissertation is an effort to show how that might be possible in close collaboration with a technology company.

Appendix A

SeeClickFix Survey Protocol

Instructions

Please select the degree to which you agree or disagree with the following statements. Think of your local area and local government as those in which you have been active through SeeClickFix or one of its community partners.

Internal Political Efficacy

1. I consider myself well-qualified to participate in local affairs.
Strongly Disagree
Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

2. I feel that I have a pretty good understanding of the important issues facing my local area.
Strongly Disagree
Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

3. I think that I am better informed about local issues and local government than most people.
Strongly Disagree

Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

4. When local issues are being discussed, I usually have something to say.
Strongly Disagree
Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

External Political Efficacy

5. People like me DON'T have any say about what my local government does.
Strongly Disagree
Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

6. My local government DOESN'T care much what people like me think.
Strongly Disagree
Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

7. When people like me speak up about important issues, my local government takes the steps to enact change.
Strongly Disagree
Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat

Agree

Strongly Agree

"Internal" Collective Efficacy

8. People in my local area are able to band together in order to address important issues.
Strongly Disagree
Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

"External" Collective Efficacy

9. If people banded together and demanded change, my local government would take the steps to enact change.
Strongly Disagree
Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

SeeClickFix Platform Political Efficacy

10. SeeClickFix and its partner platforms help make my local government pay attention to what the people want.
Strongly Disagree
Disagree
Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

11. Actions by community members on SeeClickFix and its partner platforms can affect my local government's actions.
Strongly Disagree
Disagree

Disagree Somewhat
Neither Agree nor Disagree
Agree Somewhat
Agree
Strongly Agree

Demographics

12. How old are you?
Under 18
18 - 24
25 - 34
35 - 44
45 - 54
55 - 64
65 - 74
75 - 84
85 or older

13. What is your gender?
Male
Female
Other

14. What is your ethnicity?
Hispanic or Latino or Spanish Origin of any race
American Indian or Alaska Native
Asian
Native Hawaiian or Pacific Islander
Black or African American
White
Other

15. What is the highest level of formal education you have completed?
Less than high school
High school
Some college
2 year degree
4 year degree
Professional degree
Doctorate

Appendix B

SeeClickFix Platform Variables

User's Account

- Days since account opened

- City organization where most recently active

User's City

- # of current yearly active users in their city (from the data pull for past 365 days)

- Average time in days between reports being opened and closed in their city (during the past 365 days)

Aggregate User Activity

- # of Civic Points ALL TIME

- # of Civic Points PAST YEAR

- # of Civic Points PAST MONTH

- # of Reports ALL TIME

- # of Reports PAST YEAR

- # of Reports PAST MONTH

- # of Reports that have been Closed ALL TIME

- # of Reports that have been Closed PAST YEAR

- # of Reports that have been Closed PAST MONTH

- # of Votes ALL TIME

- # of Votes PAST YEAR

- # of Votes PAST MONTH

- # of Comments ALL TIME

- # of Comments PAST YEAR

- # of Comments PAST MONTH

- # of Follows ALL TIME

- # of Follows PAST YEAR

- # of Follows PAST MONTH

Aggregate Reporting Statistics for the User

- % of User's Reports Closed ALL TIME

- % of User's Reports Closed PAST YEAR

- % of User's Reports Closed PAST MONTH

- % of User's Reports that were anonymous ALL TIME

- Most Recent User Activity

- Days since most recently created comment by user

- Days since most recently created report by user (opened)

- Type of most recently created report

- Days since most recently created report was CLOSED

- Type of most recently created report that was CLOSED

Appendix C

Experimental Control and Intervention Emails

Thank you for taking our survey to help us improve our service! If you have any questions regarding the survey, please contact Erhardt Graeff at erhardt@media.mit.edu.
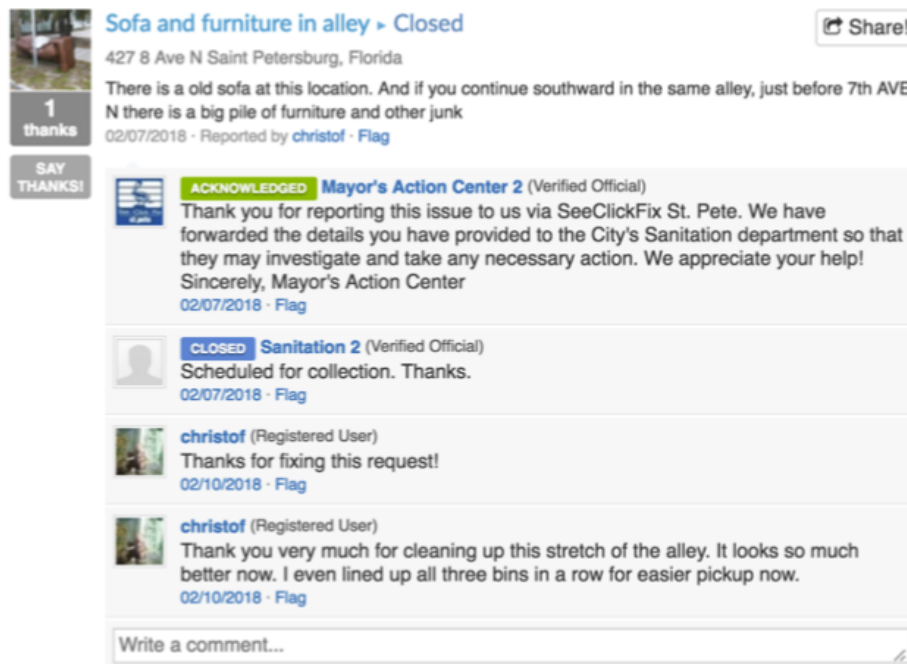

Thank you!

Tucker Severson
Director of Product, SeeClickFix

Tucker at SeeClickFix

770 Chapel Street, New Haven, CT 06517

Unsubscribe - Unsubscribe Preferences

Figure C-1: Control Email

Thank you for taking our survey to help us improve our service! If you have any questions regarding the survey, please contact Erhardt Graeff at erhardt@media.mit.edu.

Did you know that 56,603 issues were closed in Houston last year? Here is one reported by user M M Robles:

Thank you!

Tucker Severson
Director of Product, SeeClickFix

Figure C-2: Intervention Email for Houston

Thank you for taking our survey to help us improve our service! If you have any questions regarding the survey, please contact Erhardt Graeff at erhardt@media.mit.edu.

Did you know that 41,587 issues were closed in Detroit last year? Here is one reported by user Jefe:

Thank you!

Tucker Severson
Director of Product, SeeClickFix

Figure C-3: Intervention Email for Detroit

Thank you for taking our survey to help us improve our service! If you have any questions regarding the survey, please contact Erhardt Graeff at erhardt@media.mit.edu.

Did you know that 24,063 issues were closed in Memphis last year? Here is one reported by user HeatherT:

Thank you!

Tucker Severson
Director of Product, SeeClickFix

Tucker at SeeClickFix

770 Chapel Street, New Haven, CT 06517

Unsubscribe - Unsubscribe Preferences

Figure C-4: Intervention Email for Memphis

Thank you for taking our survey to help us improve our service! If you have any questions regarding the survey, please contact Erhardt Graeff at erhardt@media.mit.edu.

Did you know that 19,042 issues were closed in St. Petersburg last year? Here is one reported by user christof:

Thank you!

Tucker Severson
Director of Product, SeeClickFix

Figure C-5: Intervention Email for St. Petersburg

Thank you for taking our survey to help us improve our service! If you have any questions regarding the survey, please contact Erhardt Graeff at erhardt@media.mit.edu.

Did you know that 36,811 issues were closed in Oakland last year? Here is one reported by user Geovibe:

Thank you!

Tucker Severson
Director of Product, SeeClickFix

Figure C-6: Intervention Email for Oakland

Bibliography

Achen, C. H. & Bartels, L. M. (2016), *Democracy for Realists: Why Elections Do Not Produce Responsive Government*, Princeton University Press, Princeton.

Allen, D. (2004), *Talking to Strangers: Anxieties of Citizenship since Brown v. Board of Education*, The University of Chicago Press, Chicago.

Allen, D. (2014), *Our Declaration: A Reading of the Declaration of Independence in Defense of Equality*, Liveright, New York.

Allen, D. (2016*a*), *Education and Equality*, University of Chicago Press, Chicago.
URL:
http://www.press.uchicago.edu/ucp/books/book/chicago/E/bo23530445.html

Allen, D. (2016*b*), 'What Is Education For?', *Boston Review* (May/June 2016).
URL: *https://bostonreview.net/forum/danielle-allen-what-education*

Allen, D., Earl, J. & Soep, E. (n.d.), 'Why the 10 Questions?'.
URL: *https://yppactionframe.fas.harvard.edu/action-frame-0*

Almagor, L. (2016), 'Lelac Almagor responds to Danielle Allen', *Boston Review* (May/June 2016).
URL: *https://bostonreview.net/forum/what-education/lelac-almagor-lelac-almagor-responds-danielle-allen*

Almond, G. A. & Verba, S. (1963), *The Civic Culture: Political Attitudes and Democracy in Five Nations*, Princeton University Press, Princeton.

American Statistical Association (1997), How to conduct pretesting, Technical report, Alexandria, VA.

Anderson, M. (2016), 'Social media causes some users to rethink their views on an issue'.
URL: *http://www.pewresearch.org/fact-tank/2016/11/07/social-media-causes-some-users-to-rethink-their-views-on-an-issue/*

Anderson, M. R. (2010), 'Community Psychology, Political Efficacy, and Trust', *Political Psychology* **31**(1), 59–84.
URL:
http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9221.2009.00734.x/abstract

Andrews, K. T., Ganz, M., Baggetta, M., Han, H. & Lim, C. (2010), 'Leadership, Membership, and Voice: Civic Associations That Work', *American Journal of Sociology* **115**(4), 1191–1242.
URL: *https://www.journals.uchicago.edu/doi/10.1086/649060*

AsiaBarometer Project (2006), Asia Barometer English Master Questionnaire 2006, Technical report.
URL: *https://www.asiabarometer.org/files/English_Master.pdf*

Atwell, M. N., Bridgeland, J. & Levine, P. (2017), Civic Deserts: America's Civic Health Challenge, Technical report, National Conference on Citizenship, The Jonathan M. Tisch College of Civic Life and Tufts University, and Civic Enterprises.
URL: *https://tischcollege.tufts.edu/research/civic-deserts-americas-civic-health-challenge*

Baack, S. (2015), 'Datafication and empowerment: How the open data movement re-articulates notions of democracy, participation, and journalism', *Big Data & Society* **2**(2), 2053951715594634.
URL: *https://doi.org/10.1177/2053951715594634*

Balch, G. I. (1974), 'Multiple Indicators in Survey Research: The Concept "Sense of Political Efficacy"', *Political Methodology* **1**(2), 1–43.
URL: *http://www.jstor.org/stable/25791375*

Barber, B. R. (1984), *Strong Democracy: Participatory Politics for a New Age*, University of California Press, Berkeley.

Bardzell, S. (2010), Feminist HCI: Taking Stock and Outlining an Agenda for Design, *in* 'Proceedings of the SIGCHI Conference on Human Factors in Computing Systems', CHI '10, ACM, New York, NY, USA, pp. 1301–1310.
URL: *http://doi.acm.org/10.1145/1753326.1753521*

Bardzell, S. & Bardzell, J. (2011), Towards a Feminist HCI Methodology: Social Science, Feminism, and HCI, *in* 'Proceedings of the SIGCHI Conference on Human Factors in Computing Systems', CHI '11, ACM, New York, NY, USA, pp. 675–684.
URL: *http://doi.acm.org/10.1145/1978942.1979041*

Bates, D., Mchler, M., Bolker, B. & Walker, S. (2015), 'Fitting Linear Mixed-Effects Models Using lme4', *Journal of Statistical Software* **67**(1), 1–48.
URL: *https://www.jstatsoft.org/article/view/v067i01*

Beaumont, E. (2011), 'Promoting political agency, addressing political inequality: A multilevel model of internal political efficacy', *Journal of Politics* **73**(1), 216–231.
URL: *https://experts.umn.edu/en/publications/promoting-political-agency-addressing-political-inequality-a-mult*

Bell, G. & Dourish, P. (2007), 'Yesterday's tomorrows: notes on ubiquitous computing's dominant vision', *Personal and Ubiquitous Computing* **11**(2), 133–143.
URL: *https://link.springer.com/article/10.1007/s00779-006-0071-x*

Bennett, W. L. (2008), Changing Citizenship in the Digital Age, *in* W. L. Bennett, ed., 'Civic Life Online: Learning How Digital Media Can Engage Youth', MIT Press, Cambridge, MA.

Bennett, W. L. & Segerberg, A. (2012), 'The Logic of Connective Action: Digital media and the personalization of contentious politics', *Information, Communication & Society* **15**(5), 739–768.
URL: *http://dx.doi.org/10.1080/1369118X.2012.670661*

Bennett, W. L. & Segerberg, A. (2013), *The Logic of Connective Action: Digital Media and the Personalization of Contentious Politics*, Cambridge University Press, Cambridge.

Bennett, W. L., Wells, C. & Freelon, D. G. (2009), Communication citizenship online: Models of Civic learning in the youth web sphere, Technical report, Center for Communication and Civic Engagement, University of Washington.

Berkowitz, B. (2016), 'Now is The Time for Transparent Algorithms in Civic Technologies'.
URL: *https://medium.com/fixer-stories/now-is-the-time-for-algorithmic-transparency-in-civic-technologies-456d6afa31e6*

Bonanni, L. (2013), Accountability TechTools for Internal Activism, *in* D. Offenhuber & K. Schechtner, eds, 'Accountability Technologies: Tools for Asking Hard Questions', Ambra, Vienna, pp. 58–59.

Bopp, C., Harmon, E. & Voida, A. (2017), Disempowered by Data: Nonprofits, Social Enterprises, and the Consequences of Data-Driven Work, *in* 'Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems', CHI '17, ACM, New York, NY, USA, pp. 3608–3619.
URL: *http://doi.acm.org/10.1145/3025453.3025694*

Bowker, G. C. & Star, S. L. (2000), *Sorting Things Out: Classification and Its Consequences*, The MIT Press, Cambridge, Mass.

boyd, d. (2010), 'Facebook is a utility; utilities get regulated'.
URL: *http://www.zephoria.org/thoughts/archives/2010/05/15/facebook-is-a-utility-utilities-get-regulated.html*

Boyte, H. (2004), *Everyday Politics: Reconnecting Citizens and Public Life*, University of Pennsylvania Press, Philadelphia.

Boyte, H. (2016), 'Free Spaces in Schools and Colleges'.
  URL: *https://www.huffingtonpost.com/harry-boyte/free-spaces-in-schools-and_b_9138744.html*

Boyte, H. (2017), 'John Dewey and Citizen Politics: How Democracy Can Survive Artificial Intelligence and the Credo of Efficiency', *Education and Culture* **33**(2), 13–47.
  URL: *https://muse.jhu.edu/article/680656*

Boyte, H. C. (2009), Civic Agency and the Cult of the Expert, Technical report, Kettering Foundation.
  URL: *https://www.kettering.org/catalog/product/civic-agency-and-cult-expert*

Buolamwini, J. A. (2017), Gender shades : intersectional phenotypic and demographic evaluation of face datasets and gender classifiers, Thesis, Massachusetts Institute of Technology.
  URL: *http://dspace.mit.edu/handle/1721.1/114068*

Campbell, A., Gurin, G. & Miller, W. E. (1954), *The Voter Decides*, Row, Peterson and Company, Evanston, Illinois.

Canning, D. & Reinsborough, P. (2012), Think narratively, *in* A. Boyd & D. O. Mitchell, eds, 'Beautiful Trouble: A Toolbox for Revolution', OR Books, New York, pp. 186–187.

Caplan, R. & boyd, d. (2018), 'Isomorphism through algorithms: Institutional dependencies in the case of Facebook', *Big Data & Society* .
  URL: *http://journals.sagepub.com/doi/full/10.1177/2053951718757253*

Chakrabarti, S. & Mason, W. (2016), 'Civic Engagement Research at Facebook'.
  URL: *https://www.slideshare.net/mysociety/civic-engagement-research-at-facebook*

Chakrabarti, S. & Moehler, D. (2017), 'Increasing voter knowledge of the ballot with Facebook'.
  URL: *https://www.slideshare.net/mysociety/increasing-voter-knowledge-of-the-ballot-with-facebook-devra-moehler-and-samidh-chakrabarti*

Ciociola, C. & Reggi, L. (2015), A Scuola di OpenCoesione: From open data to civic engagement, *in* J. Atenas & L. Havemann, eds, 'Open Data and Open Educational Resources: Case studies of emerging practice', Open Knowledge, Open Education Working Group, London.
  URL: *http://dx.doi.org/10.6084/m9.figshare.1590031*

Cohen, C. & Kahne, J. (2011), Youth Participatory Politics Survey, Technical report, MacArthur Network on Youth and Participatory Politics, Oakland, CA.
  URL: *https://ypp.dmlcentral.net/content/ypp-survey-project-2011-data*

Cohen, C. & Kahne, J. (2012), Participatory Politics: New Media and Youth Political Action, Technical report.
  URL: *http://ypp.dmlcentral.net/publications/107*

Conniff, R. (2017), 'Opinion | Amid the Plunder of Forests, a Ray of Hope', *The New York Times* .
  URL:
  https://www.nytimes.com/2018/01/27/opinion/protecting-forests-technology.html

Costanza-Chock, S. (2018), 'If we shift paradigms to an intersectional framework, one of the implications is that we must restructure testing at all stages, from early prototypes through quality control in production lines, around what @jovialjoy has described as intersectional benchmarks.'.
  URL: *https://twitter.com/schock/status/949455920467193856?s=03*

Cushing, T. (2012), 'White House Responses To 'We The People' Petitions Slowing To A Hand-Picked Crawl Of Canned Responses'.
  URL:
  https://www.techdirt.com/articles/20121228/10470921512/white-house-responses-to-we-people-petitions-slowing-to-hand-picked-crawl-canned-responses.shtml

Deibert, R., Palfrey, J., Rohozinski, R. & Zittrain, J., eds (2011), *Access Contested: Security, Identity, and Resistance in Asian Cyberspace*, The MIT Press, Cambridge, MA.

Department of Education (2007), 'Final Guidance on Maintaining, Collecting, and Reporting Racial and Ethnic Data to the U.S. Department of Education', *Federal Register* **72**(202), 59266–59279.
  URL: *https://www.gpo.gov/fdsys/pkg/FR-2007-10-19/pdf/E7-20613.pdf*

Design Justice Network (2017), Design Justice Network Principles.
  URL: *http://designjusticenetwork.org/network-principles/*

Desimone, L. M. & Le Floch, K. C. (2004), 'Are We Asking the Right Questions? Using Cognitive Interviews to Improve Surveys in Education Research', *Educational Evaluation and Policy Analysis* **26**(1), 1–22.

Dimond, J. P., Dye, M., Larose, D. & Bruckman, A. S. (2013), Hollaback!: The Role of Storytelling Online in a Social Movement Organization, *in* 'Proceedings of the 2013 Conference on Computer Supported Cooperative Work', CSCW '13, ACM, New York, NY, USA, pp. 477–490.
  URL: *http://doi.acm.org/10.1145/2441776.2441831*

DiSalvo, C. & Le Dantec, C. (2017), 'Civic Design', *interactions* **24**(6), 66–69.

Downs, A. (1957), *An Economic Theory of Democracy*, Harper and Row, Boston.

Duggan, M. & Smith, A. (2016), The Political Environment on Social Media, Technical report, Pew Research Center.
URL: *http://www.pewinternet.org/2016/10/25/the-political-environment-on-social-media/*

Earl, J. (2014), 'Something Old and Something New: A Comment on New Media, New Civics', *Policy & Internet* **6**(2), 169–175.
URL: *https://onlinelibrary.wiley.com/doi/abs/10.1002/1944-2866.POI357*

Erikson, E. (1968), *Identity: Youth and Crisis*, W. W. Norton & Company, New York.

Eubanks, V. (2012), *Digital Dead End: Fighting for Social Justice in the Information Age*, The MIT Press, Cambridge, MA.

Eubanks, V. (2018), *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*, St. Martin's Press, New York, NY.

Evans, S. M. & Boyte, H. C. (1986, new edition in 1992)), *Free Spaces: The Sources of Democratic Change in America*, University of Chicago Press, Chicago.

Falk, R. (1994), The Making of Global Citizenship, *in* B. van Steenbergen, ed., 'The Condition of Citizenship', SAGE Publications Ltd, London, pp. 127–140.
URL: *http://sk.sagepub.com/books/the-condition-of-citizenship/n10.xml*

Farrell, H. (2014), 'New Problems, New Publics? Dewey and New Media', *Policy & Internet* **6**(2), 176–191.
URL: *https://onlinelibrary.wiley.com/doi/abs/10.1002/1944-2866.POI363*

Flanagan, C. A. (2013), *Teenage Citizens: The Political Theories of the Young*, Harvard University Press, Cambridge, Mass.

Flock, E. (2012), 'The White House Still Hasn't Responded to Any of the Secession (or Other Strange) Petitions', *US News & World Report* .
URL:
https://www.usnews.com/news/blogs/washington-whispers/2012/12/27/the-white-house-still-hasnt-responded-to-any-of-the-secession-or-other-strange-petitions

Fung, A. (2002), 'Creating Deliberative Publics: Governance After Devolution and Democratic Centralism', *The Good Society* **11**(1), 66–71.
URL: *https://muse.jhu.edu/article/12229*

Fung, A., Russon Gilman, H. & Shkabatur, J. (2013), 'Six Models for the Internet + Politics', *International Studies Review* **15**(1), 30–47.
URL: *http://onlinelibrary.wiley.com/doi/10.1111/misr.12028/abstract*

Fung, A. & Wright, E. O. (2001), 'Deepening Democracy: Innovations in Empowered Participatory Governance', *Politics & Society* **29**(1), 5–41.
URL: *http://journals.sagepub.com/doi/abs/10.1177/0032329201029001002*

Gaby, S. (2017), Media Use and Participant Inclusion: Influences on Efficacy in Paid Staff Youth Nonprofit Civic Organizations, *in* 'Social Movements and Media', Vol. 14 of *Studies in Media and Communications*, Emerald Publishing Limited, pp. 209–240.
URL:
https://www.emeraldinsight.com/doi/abs/10.1108/S2050-206020170000014012

Galston, W. A. (2001), 'Political Knowledge, Political Engagement, and Civic Education', *Annual Review of Political Science* **4**(1), 217–234.
URL: *https://doi.org/10.1146/annurev.polisci.4.1.217*

Ganz, M. (2011), Public Narrative, Collective Action, and Power, *in* S. Odugbeni & T. Lee, eds, 'Accountability Through Public Opinion: From Inertia to Public Action', The World Bank, Washington, DC, pp. 273–289.

Garber, M. (2013), 'The White House Petition Site Is a Joke (and Also the Future of Democracy)', *The Atlantic* .
URL: *https://www.theatlantic.com/technology/archive/2013/01/the-white-house-petition-site-is-a-joke-and-also-the-future-of-democracy/267238/*

Gardner, H. E., Csikszentmihalyi, M. & Damon, W. (2002), *Good Work: When Excellence and Ethics Meet*, Basic Books, New York.

Gascó-Hernández, M., Martin, E. G., Reggi, L., Pyo, S. & Luna-Reyes, L. F. (2017), Citizen Co-production Through Open Data: Cases of Citizen Training and Engagement, *in* 'Proceedings of the 18th Annual International Conference on Digital Government Research', dg.o '17, ACM, New York, NY, USA, pp. 562–563.
URL: *http://doi.acm.org/10.1145/3085228.3085252*

Gastil, J. (2016), Building a Democracy Machine: Toward an Integrated and Empowered Form of Civic Engagement, Technical report, Ash Center for Democratic Governance and Innovation, Harvard Kennedy School.
URL: *http://ash.harvard.edu/files/ash/files/democracy_machine.pdf*

Gaver, W. W., Bowers, J., Boucher, A., Gellerson, H., Pennington, S., Schmidt, A., Steed, A., Villars, N. & Walker, B. (2004), The Drift Table: Designing for Ludic Engagement, *in* 'CHI '04 Extended Abstracts on Human Factors in Computing Systems', CHI EA '04, ACM, New York, NY, USA, pp. 885–900.
URL: *http://doi.acm.org/10.1145/985921.985947*

Gerbaudo, P. & Treré, E. (2015), 'In search of the 'we' of social media activism: introduction to the special issue on social media and protest identities', *Information, Communication & Society* **18**(8), 865–871.
URL: *https://doi.org/10.1080/1369118X.2015.1043319*

Gibson, C. & Levine, P. (2003), The Civic Mission of Schools, Technical report, Carnegie Corporation of New York and CIRCLE: The Center for Information and

Research on Civic Learning and Engagement.
URL: *http://www.civicyouth.org/special-report-the-civic-mission-of-schools/*

Gillespie, T. (2010), 'The politics of 'platforms'', *New Media & Society*
12(3), 347–364.
URL: *https://doi.org/10.1177/1461444809342738*

Goldman, J. (2015), 'How We're Changing the Way We Respond to Petitions'.
URL: *https://obamawhitehouse.archives.gov/blog/2015/07/28/how-we-are-changing-way-we-respond-petitions*

Gordon, E. & Walter, S. (2016), Meaningful Inefficiencies: Resisting the Logic of
Technological Efficiency in the Design of Civic Systems, *in* E. Gordon &
P. Mihailidis, eds, 'Civic Media: Technology, Design, Practice', MIT Press,
Cambridge, MA.

Gott, M. (2017), 'Research for the Resistance: Map the Power Takes Off!'.
URL: *https://news.littlesis.org/2017/06/28/research-for-the-resistance-map-the-power-takes-off/*

Gray, M. L. (2017), 'We Need More, Not Fewer, Collaborations With Tech
Companies', *The Chronicle of Higher Education* .
URL: *https://www.chronicle.com/article/We-Need-More-Not-Fewer/240726*

Greenwood, S., Perrin, r. & Duggan, M. (2016), 'Social Media Update 2016'.
URL: *http://www.pewinternet.org/2016/11/11/social-media-update-2016/*

Grossman, N. (2013), 'Beyond Civic Apps: Making All Apps More Civic'.
URL: *http://civic.mit.edu/blog/nickgrossman/beyond-civic-apps-making-all-apps-more-civic*

Hale, T. (2017), 'This Viral Video Of A Racist Soap Dispenser Reveals A Much,
Much Bigger Problem'.
URL: *http://www.iflscience.com/technology/this-racist-soap-dispenser-reveals-why-diversity-in-tech-is-muchneeded/*

Hammerbacher, J. (2009), Information Platforms and the Rise of the Data Scientist,
in T. Segaran & J. Hammerbacher, eds, 'Beautiful Data: The Stories Behind
Elegant Data Solutions', O'Reilly Media, pp. 73–84.

Hargittai, E. & Shaw, A. (2013), 'Digitally Savvy Citizenship: The Role of Internet
Skills and Engagement in Young Adults' Political Participation around the 2008
Presidential Election', *Journal of Broadcasting & Electronic Media*
57(2), 115–134.
URL: *http://dx.doi.org/10.1080/08838151.2013.787079*

Hart, D. & Youniss, J. (2017), *Renewing Democracy in Young America*, Oxford
University Press, New York.

Hart, R. A. (1997), *Children's Participation: The Theory and Practice of Involving Young Citizens in Community Development and Environmental Care*, UNICEF, New York.

Hartmann, M. (2013), 'The White House Knows Its Petition Website Has Become Ridiculous', *New York Magazine* .
URL: *http://nymag.com/daily/intelligencer/2013/01/white-house-knows-its-petition-website-is-silly.html*

Highfield, T. (2016), *Social Media and Everyday Politics*, Polity Press, Malden, MA.

Hirschman, A. O. (1970), *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*, Harvard University Press, Cambridge, MA.

Hooghe, M. & Dejaeghere, Y. (2007), 'Does the 'Monitorial Citizen' Exist? An Empirical Investigation into the Occurrence of Postmodern Forms of Citizenship in the Nordic Countries', *Scandinavian Political Studies* **30**(2), 249–271.

Houston, L., Jackson, S. J., Rosner, D. K., Ahmed, S. I., Young, M. & Kang, L. (2016), Values in Repair, *in* 'Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems', CHI '16, ACM, New York, NY, USA, pp. 1403–1414.
URL: *http://doi.acm.org/10.1145/2858036.2858470*

Howe, J. (2008), *Crowdsourcing: Why the Power of the Crowd Is Driving the Future of Business*, Crown Business, New York.

Hudson, Jr., D. L. (2012), 'Kennedy invokes counterspeech doctrine in Stolen Valor case'.
URL: *http://www.firstamendmentcenter.org/kennedy-invokes-counterspeech-doctrine-in-alvarez/*

Human Rights Campaign (n.d.), Marriage at the U.S. Supreme Court: A Transformative Moment for Equality, Technical report.
URL: *http://hrc-assets.s3-website-us-east-1.amazonaws.com//files/assets/resources/SupremeCourt_Accomplishments-FINAL_1.pdf*

Husfeldt, V., Barber, C. & Torney-Purta, J. (2005), Students' Social Attitudes and Expected Political Participation: New Scales in the Enhanced Database of the IEA Civic Education Study, Technical report, Civic Education Data and Researcher Services, University of Maryland.
URL: *https://www.terpconnect.umd.edu/j̃tpurta/Original%20Documents/CEDARS%20new%20scales%20report.pdf*

Jackson, S. J. (2014), Rethinking Repair, *in* T. Gillespie, P. J. Boczkowski & K. A. Foot, eds, 'Media Technologies: Essays on Communication, Materiality, and Society', MIT Press, Cambridge, MA, pp. 221–239.

Jacobs, J. (1961), *The Death and Life of Great American Cities*, Random House, New York.

Jain, V. (2003), 'The Problem with Bowling Alone', *Stanford Social Innovation Review* **1**(2), 14–14.

James, C. & Lee, A. (2017), Speaking Up Online: Civic Identity and Expression in the Digital Age, *in* 'Social Movements and Media', Vol. 14 of *Studies in Media and Communications*, Emerald Publishing Limited, pp. 119–146.
URL:
https://www.emeraldinsight.com/doi/full/10.1108/S2050-206020170000014003

Jenkins, H. (2006), Confronting the Challenges of Participatory Culture: Media Education for the 21st Century, Technical report.
URL: *https://mitpress.mit.edu/sites/default/files/titles/free_download/9780262513623_Confronting_the_Challenges.pdf*

Jenkins, H., Ford, S. & Green, J. (2013), *Spreadable Media: Creating Value and Meaning in a Networked Culture*, NYU Press, New York.

Judd, N. (2011*a*), 'Nerding Out on White House's We the People'.
URL: *http://techpresident.com/blog-entry/nerding-out-white-houses-we-people*

Judd, N. (2011*b*), 'With 'We The People,' White House Promises to Go E-to-the-People'.
URL:
http://techpresident.com/blog-entry/we-people-white-house-promises-go-e-people

Kabeer, N., ed. (2005), *Inclusive Citizenship: Meanings and Expressions*, Zed Books.

Kahne, J. & Bowyer, B. (2017), 'Educating for Democracy in a Partisan Age: Confronting the Challenges of Motivated Reasoning and Misinformation', *American Educational Research Journal* **54**(1), 3–34.
URL: *http://journals.sagepub.com/doi/abs/10.3102/0002831216679817*

Kahne, J. & Bowyer, B. (2018), 'The Political Significance of Social Media Activity and Social Networks', *Political Communication* pp. 1–24.
URL: *https://doi.org/10.1080/10584609.2018.1426662*

Kahne, J., Middaugh, E. & Allen, D. (2015), Youth, New Media, and the Rise of Participatory Politics, *in* D. Allen & J. S. Light, eds, 'From Voice to Influence: Understanding Citizenship in a Digital Age', University Of Chicago Press, Chicago, pp. 35–58.

Kahne, J. & Westheimer, J. (2006), 'The Limits of Political Efficacy: Educating Citizens for a Democratic Society', *PS: Political Science & Politics* **39**(2), 289–296.

URL: *https://www.cambridge.org/core/journals/ps-political-science-and-politics/article/the-limits-of-political-efficacy-educating-citizens-for-a-democratic-society/EFC896B2BB0E61616F8E6F08A9BFC72B*

Karpf, D. (2012), *The MoveOn Effect: The Unexpected Transformation of American Political Advocacy*, Oxford University Press, New York.

Karpf, D. (2014), 'How the White House's We the People E-Petition Site Became a Virtual Ghost-Town'.
URL: *http://techpresident.com/news/25144/how-white-houses-we-people-e-petition-site-became-virtual-ghost-town*

Karpf, D. (2016), *Analytic Activism: Digital Listening and the New Political Strategy*, Oxford University Press, New York, NY.

Kaun, A. (2015), 'This Space Belongs to Us!': Protest Spaces in Times of Accelerating Capitalism, *in* L. Dencik & O. Leistert, eds, 'Critical Perspectives on Social Media and Protest: Between Control and Emancipation', Rowman & Littlefield International, New York, pp. 89–106.

Kawashima-Ginsberg, K. & Sullivan, F. (2017), 'Study: 60 percent of rural millennials lack access to a political life'.
URL: *http://theconversation.com/study-60-percent-of-rural-millennials-lack-access-to-a-political-life-74513*

Keane, J. (2009), 'Monitory Democracy and Media-saturated Societies', *Griffith Review* **24**.

Keane, J. (2013), *Democracy and Media Decadence*, Cambridge University Press, New York.

Kenski, K. & Stroud, N. J. (2006), 'Connections Between Internet Use and Political Efficacy, Knowledge, and Participation', *Journal of Broadcasting & Electronic Media* **50**(2), 173–192.

Kleine, D. (2011), 'The capability approach and the 'medium of choice': steps towards conceptualising information and communication technologies for development', *Ethics and Information Technology* **13**(2), 119–130.
URL: *http://link.springer.com/article/10.1007/s10676-010-9251-5*

Kleine, D. (2013), *Technologies of Choice?: ICTs, Development, and the Capabilities Approach*, The MIT Press, Cambridge, Mass.

Klofstad, C. (2010), *Civic Talk: Peers, Politics, and the Future of Democracy*, Temple University Press, Philadelphia.

Klopfer, E. (2008), *Augmented learning: research and design of mobile educational games*, MIT Press, Cambridge, Mass.

Kruger, J. & Dunning, D. (1999), 'Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments.', *Journal of Personality and Social Psychology* **77**(6), 1121–1134.

LaBarre, S. (2018), '10 New Principles Of Good Design'.
URL: *https://www.fastcodesign.com/90154519/10-new-principles-of-good-design*

Lampe, C. (2016), 'Citizen Interaction Design: Teaching HCI Through Service', *interactions* **23**(6), 66–69.
URL: *http://doi.acm.org/10.1145/2991895*

Lanier, J. (2011), *You Are Not a Gadget: A Manifesto*, Vintage, New York.

Lave, J. & Wenger, E. (1991), *Situated Learning: Legitimate Peripheral Participation*, Cambridge University Press, Cambridge England ; New York.

Leichtman, D. & Schaefer, C. (2012), 'Forward: Salsa Will Stand by the Principles of the Founders'.
URL:
https://web.archive.org/web/20121226195458/http://www.salsalabs.com/blog/2012/10/staying-true-to-salsa-mission

Lenhart, A. (2015), 'Teens, Social Media & Technology Overview 2015'.
URL:
http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/

Lerner, J. A. (2014), *Making Democracy Fun: How Game Design Can Empower Citizens and Transform Politics*, The MIT Press, Cambridge, Massachusetts.

Lessig, L. (1999, new edition in 2006), *Code: And Other Laws of Cyberspace*, version 2.0 edn, Basic Books, New York.
URL: *http://pdf.codev2.cc/Lessig-Codev2.pdf*

Levine, P. (2007), *The Future of Democracy: Developing the Next Generation of American Citizens*, Tufts University Press.

Levine, P. (2013), *We Are the Ones We Have Been Waiting For: The Promise of Civic Renewal in America*, Oxford University Press, New York.

Levine, P. (2015), 'Media Literacy for the 21st Century. A Response to "The Need for Media Education in Democratic Education"', *Democracy and Education* **23**(1).
URL: *http://democracyeducationjournal.org/home/vol23/iss1/15*

Levine, P. (2016), 'we need SPUD (scale, pluralism, unity, depth)'.
URL: *http://peterlevine.ws/?p=17725*

Levine, P. (2017), 'The Hollowing Out of US Democracy'.
URL: *http://evidencebase.usc.edu/the-hollowing-out-of-us-democracy/*

Levinson, M. (2012), *No Citizen Left Behind*, Harvard University Press, Cambridge, Mass.

Lieberman, E. S. & Zhou, Y.-Y. (2017), Efficacy and Active Citizenship in Development: Experimental Evidence on Validated Participation in Tanzania, SSRN Scholarly Paper ID 3047566, Social Science Research Network, Rochester, NY.
URL: *https://papers.ssrn.com/abstract=3047566*

Lippmann, W. (1922), *Public Opinion*, Harcourt, Brace and Company, New York.

Liu, E. (2017), *You're More Powerful than You Think: A Citizen's Guide to Making Change Happen*, PublicAffairs, New York.

Lokhandwala, M. & Gott, M. (2018), 'Mapping the Power in 2018'.
URL: *https://news.littlesis.org/2018/02/20/mapping-the-power-in-2018/*

Lord, F. M. (1967), 'A paradox in the interpretation of group comparisons', *Psychological Bulletin* **68**(5), 304–305.

Madianou, M., Ong, J. C., Longboan, L. & Cornelio, J. S. (2016), 'The Appearance of Accountability: Communication Technologies and Power Asymmetries in Humanitarian Aid and Disaster Recovery', *Journal of Communication* **66**(6), 960–981.

Maher, T. V. & Earl, J. (2017), Pathways to Contemporary Youth Protest: The Continuing Relevance of Family, Friends, and School for Youth Micromobilization, *in* 'Social Movements and Media', Vol. 14 of *Studies in Media and Communications*, Emerald Publishing Limited, pp. 55–87.
URL:
https://www.emeraldinsight.com/doi/abs/10.1108/S2050-206020170000014001

Mair, P. & Hatzinger, R. (2007), 'Extended Rasch Modeling: The eRm Package for the Application of IRT Models in R', *Journal of Statistical Software* **20**(9), 1–20.
URL: *http://www.jstatsoft.org/v20/i09/paper*

Mann, S. (2016), MannGlass, SpeedGlass, GOOGlass, and "The Veillance Contract".
URL: *http://wearcam.org/VeillanceContract/VeillanceContract.htm*

Mann, S., Nolan, J. & Wellman, B. (2002), 'Sousveillance: Inventing and Using Wearable Computing Devices for Data Collection in Surveillance Environments.', *Surveillance & Society* **1**(3), 331–355.
URL: *http://ojs.library.queensu.ca/index.php/surveillance-and-society/article/view/3344*

Manning, M., Beierlein, C., Preiser, S. & Wermuth, S. (2008), 'Towards a four-factor model of political efficacy: The role of collective political efficacy', *Unpublished manuscript, University of Massachusetts Amherst, University of Frankfurt/Main* .

Manzini, E. (2015), *Design, When Everybody Designs: An Introduction to Design for Social Innovation*, The MIT Press, Cambridge, Massachusetts.

Marks, J. (2011*a*), 'We the People draws a curious crowd'.
URL: *http://www.nextgov.com/cio-briefing/2011/11/we-the-people-draws-a-curious-crowd/50188/*

Marks, J. (2011*b*), 'White House defends We the People petition responses'.
URL: *http://www.nextgov.com/cio-briefing/2011/11/white-house-defends-we-the-people-petition-responses/50072/*

Martano, A., Reiser, E. & Craveiro, G. (2017), Promise Tracker Phase II Summary Report, Technical report, Colaboratory for Development and Participation, University of So Paulo and MIT Center for Civic Media.

Martin, J. D., Martins, R. J. & Naqvi, S. (2018), 'Media use predictors of online political efficacy among Internet users in five Arab countries', *Information, Communication & Society* **21**(1), 129–146.
URL: *http://dx.doi.org/10.1080/1369118X.2016.1266375*

Matias, J. N., Johnson, A., Boesel, W. E., Keegan, B., Friedman, J. & DeTar, C. (2015), 'Reporting, Reviewing, and Responding to Harassment on Twitter', *arXiv:1505.03359 [cs]* .
URL: *http://arxiv.org/abs/1505.03359*

Matias, J. N., Sauter, M. & Stempeck, M. (2013), 'Green Vs Pink: Change Your Picture, Change The World | MIT Center for Civic Media'.
URL: *https://civic.mit.edu/blog/natematias/green-vs-pink-change-your-picture-change-the-world*

McCann, L. (2014), 'So You Think You Want to Run a Hackathon? Think Again.'.
URL: *https://medium.com/@elle_mccann/so-you-think-you-want-to-run-a-hackathon-think-again-f96cd7df246a*

McDowell, C. (2016), 'Crisis or Opportunity? A Dialogue on Democracy, Inclusion, and Community'.
URL: *https://www.youtube.com/watch?time_continue=1183&v=OKXzJ8hwjlI*

McIntosh, H. & Youniss, J. (2010), Toward a Political Theory of Political Socialization of Youth, *in* L. R. Sherrod, J. Torney-Purta & C. A. Flanagan, eds, 'Handbook of Research on Civic Engagement in Youth', John Wiley & Sons, Inc., pp. 23–41.
URL: *http://onlinelibrary.wiley.com/doi/10.1002/9780470767603.ch1/summary*

McLeod, J., Shah, D., Hess, D. & Lee, N.-J. (2010), Communication and Education: Creating Competence for Socialization into Public Life, *in* L. R. Sherrod, J. Torney-Purta & C. A. Flanagan, eds, 'Handbook of Research on Civic Engagement in Youth', John Wiley & Sons, Inc., pp. 363–391.
URL: *http://onlinelibrary.wiley.com/doi/10.1002/9780470767603.ch14/summary*

Meier, D. (2016), 'Deborah Meier responds to Danielle Allen', *Boston Review* (May/June 2016).
URL: *https://bostonreview.net/forum/what-education/deborah-meier-deborah-meier-responds-danielle-allen*

Metcalf, J. & Fiesler, C. (2018), 'The Cambridge Analytica Scandal Shows Facebook Needs to Give Researchers More Access, Not Less', *Slate Magazine* .
URL: *https://slate.com/technology/2018/03/cambridge-analytica-demonstrates-that-facebook-needs-to-give-researchers-more-access.html*

Milan, S. (2016), *Social Movements and Their Technologies: Wiring Social Change*, Palgrave Macmillan, Basingstoke.

Morozov, E. (2009), 'The Brave New World of Slacktivism'.
URL:
http://foreignpolicy.com/posts/2009/05/19/the_brave_new_world_of_slacktivism

Morrell, M. E. (2003), 'Survey and Experimental Evidence for a Reliable and Valid Measure of Internal Political Efficacy', *Public Opinion Quarterly* **67**(4), 589–602.

Mullins, B. & Nicas, J. (2017), 'Paying Professors: Inside Google's Academic Influence Campaign', *Wall Street Journal* .
URL: *https://www.wsj.com/articles/paying-professors-inside-googles-academic-influence-campaign-1499785286*

mySociety (2015), Research Strategy, Technical report.
URL: *https://research.mysociety.org/strategy*

Naparstek, A. (2016), 'A Brief History of UncivilServants.org'.
URL: *https://medium.com/@naparstek/a-brief-history-of-uncivilservants-org-6f452f492444*

Napier, N. (2018), 'Seven hours, three researchers, ten stories returned.'.
URL: *https://inwithforward.com/2018/02/ten-stories-returned/*

Niemi, R. G., Craig, S. C. & Mattei, F. (1991), 'Measuring Internal Political Efficacy in the 1988 National Election Study', *The American Political Science Review* **85**(4), 1407–1413.

Nussbaum, M. C. (2001), *Upheavals of Thought: The Intelligence of Emotions*, Cambridge University Press, New York.

Obama White House, The (2012), 'We the People - Your voice in our government'.
URL: *https://www.youtube.com/watch?v=L6BCjBjltfk*

O'Brien, D. T. (2016), '311 hotlines, territoriality, and the collaborative maintenance of the urban commons: Examining the intersection of a coproduction policy and evolved human behavior.', *Evolutionary Behavioral Sciences* **10**(2), 123–141.

Offenhuber, D. & Schechtner, K., eds (2013), *Accountability Technologies: Tools for Asking Hard Questions*, Ambra, Vienna.

Olivier, P. & Wright, P. (2015), 'Digital Civics: Taking a Local Turn', *interactions* **22**(4), 61–63.
URL: *http://doi.acm.org/10.1145/2776885*

O'Reilly, T. (2011), 'Government as a Platform', *Innovations: Technology, Governance, Globalization* **6**(1), 13–40.
URL: *https://doi.org/10.1162/INOV_a_00056*

Papacharissi, Z. (2009), The Citizen is the Message: Alternative Modes of Civic Engagement, *in* Z. Papacharissi, ed., 'Journalism and Citizenship: New Agendas in Communication', Routledge, New York, pp. 29–43.

Papacharissi, Z. (2010), *A Private Sphere: Democracy in a Digital Age*, Polity Press, Malden, MA.

Pearl, J. (2016), 'Lord's Paradox Revisited (Oh Lord! Kumbaya!)', *Journal of Causal Inference* **4**(2).

Pedersen, A. (2012), 'Proudly Progressive'.
URL:
https://web.archive.org/web/20120715051154/http://www.salsalabs.com/blog/2012/07/proudly-progressive

Peixoto, T. & Fox, J. (2016), 'When Does ICT-Enabled Citizen Voice Lead to Government Responsiveness?', *IDS Bulletin* **47**(1).
URL: *http://bulletin.ids.ac.uk/idsbo/article/view/34*

Phillips, M. (2011*a*), 'We the People Takes the Next Step: Responding to Your Petitions'.
URL: *https://obamawhitehouse.archives.gov/blog/2011/10/26/we-people-takes-next-step-responding-your-petitions*

Phillips, M. (2011*b*), 'We the People Update'.
URL: *https://obamawhitehouse.archives.gov/blog/2011/11/03/we-people-update*

Phillips, M. (2012*a*), 'Official White House Response to "Actually take these petitions seriously instead of just using them as an excuse to pretend you are listening"'.
URL:
https://web.archive.org/web/20150724092421/https://petitions.whitehouse.gov/petition/actually-take-these-petitions-seriously-instead-just-using-them-excuse-pretend-you-are

Phillips, M. (2012*b*), 'We the People: 3 Million Signatures Later'.
URL: *https://obamawhitehouse.archives.gov/blog/2012/09/04/we-people-3-million-signatures-later*

Phillips, M. (2013), 'Why We're Raising the Signature Threshold for We the People'.
URL: *https://obamawhitehouse.archives.gov/blog/2013/01/15/why-we-re-raising-signature-threshold-we-people*

PlagDoc (2013), Reflections on a Swarm, *in* D. Offenhuber & K. Schechtner, eds, 'Accountability Technologies: Tools for Asking Hard Questions', Ambra, Vienna, pp. 76–84.

Polletta, F. (1999), '"Free Spaces" in Collective Action', *Theory and Society* **28**(1), 1–38.
URL: *http://www.jstor.org/stable/3108504*

Polletta, F. (2002), *Freedom Is an Endless Meeting: Democracy in American Social Movements*, University Of Chicago Press, Chicago.

Polletta, F. (2016), 'Participatory enthusiasms: a recent history of citizen engagement initiatives', *Journal of Civil Society* **12**(3), 231–246.
URL: *https://doi.org/10.1080/17448689.2016.1213505*

Pope, R. (2016), 'Software Is Politics'.
URL: *https://www.fastcodesign.com/3066631/software-is-politics*

Portwood-Stacer, L. (2013), 'Media refusal and conspicuous non-consumption: The performative and political dimensions of Facebook abstention', *New Media & Society* **15**(7), 1041–1057.

Prior, M. (2007), News Junkies as Monitorial Citizens? Conditions for Political Accountability in a High-Choice Media Environment, Center for the Democratic Study of Politics, Princeton University.
URL: *https://www.princeton.edu/csdp/events/ChangingMedia1107/PriorCM.pdf*

Public Lab (2018), 'About Public Lab'.
URL: *https://publiclab.org/about*

Putnam, R. D. (2000), *Bowling Alone: The Collapse and Revival of American Community*, Simon & Schuster, New York.

Raicu, I. (2017), 'Rethinking Ethics Training in Silicon Valley', *The Atlantic* .
URL: *https://www.theatlantic.com/technology/archive/2017/05/rethinking-ethics-training-in-silicon-valley/525456/*

Rebell, M. (2016), "Participatory Readiness" and the Courts, *in* 'Education and Equality', University of Chicago Press, Chicago.
URL:
http://www.press.uchicago.edu/ucp/books/book/chicago/E/bo23530445.html

Reich, R. (2016), 'Rob Reich responds to Danielle Allen', *Boston Review* (May/June 2016).
URL: *https://bostonreview.net/forum/what-education/rob-reich-rob-reich-responds-danielle-allen*

Riker, W. H. & Ordeshook, P. C. (1968), 'A Theory of the Calculus of Voting', *The American Political Science Review* **62**(1), 25–42.
URL: *http://www.jstor.org/stable/1953324*

Rosanvallon, P. (2008), *Counter-Democracy: Politics in an Age of Distrust*, Cambridge University Press, New York.

Russon Gilman, H. (2016), *Democracy Reinvented: Participatory Budgeting and Civic Innovation in America*, Brookings Institution Press, Washington, DC.
URL: *https://www.brookings.edu/book/democracy-reinvented/*

Sampson, R. J. (2013), *Great American City: Chicago and the Enduring Neighborhood Effect*, University of Chicago Press, Chicago, Ill.

Sasaki, D. (2018), 'Why don't civic tech apps give me feedback on how my contributions have been used by others like...'.
URL: *https://twitter.com/oso/status/979365628300615681*

Schön, D. A. (1983), *The Reflective Practitioner: How Professionals Think in Action*, Basic Books, New York.

Schön, D. A. (1990), *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions*, Jossey-Bass, San Francisco, Calif.

Schudson, M. (1998), *The Good Citizen: A History of American Civic Life*, Martin Kessler Books, New York.

Schudson, M. (2000), 'Good citizens and bad history: Today's political ideals in historical perspective', *The Communication Review* **4**(1), 1–19.
URL: *http://dx.doi.org/10.1080/10714420009359458*

Schudson, M. (2015), *The Rise of the Right to Know: Politics and the Culture of Transparency, 19451975*, Harvard University Press, Cambridge, MA.
URL: *https://www-degruyter-com.libproxy.mit.edu/viewbooktoc/product/463042*

SeeClickFix (2016), 'SeeClickFix Year in Review 2016'.
URL: *https://medium.com/@SeeClickFix/seeclickfix-year-in-review-2016-609b4beea8c7#.u4r1lcpk3*

Selman, R. L. & Kwok, J. (2010), Informed Social Reflection: Its Development and Importance for Adolescents' Civic Engagement, *in* L. R. Sherrod, J. Torney-Purta & C. A. Flanagan, eds, 'Handbook of Research on Civic Engagement in Youth', John Wiley & Sons, Inc., pp. 651–683.
URL: *http://onlinelibrary.wiley.com/doi/10.1002/9780470767603.ch24/summary*

Sen, A. K. (1999), *Development as Freedom*, Oxford University Press, New York.

Sengers, P., Boehner, K., David, S. & Kaye, J. J. (2005), Reflective Design, *in*
'Proceedings of the 4th Decennial Conference on Critical Computing: Between
Sense and Sensibility', CC '05, ACM, New York, NY, USA, pp. 49–58.
URL: *http://doi.acm.org/10.1145/1094562.1094569*

Shaffer, T. J. (2017), *Deliberative Pedagogy: Teaching and Learning for Democratic
Engagement*, Michigan State University Press, East Lansing.

Shawcross, P. (2013), 'This Isn't the Petition Response You're Looking For', *Wired* .
URL: *https://www.wired.com/2013/01/white-house-death-star/*

Shirky, C. (2008), *Here Comes Everybody: The Power of Organizing Without
Organizations*, Penguin Press, New York.

Sifry, M., Stempeck, M. & Simpson, E. (2017), 'Civic Tech Field Guide'.
URL: *https://docs.google.com/presentation/d/1waLGHHBgsv_ga-
WVl42faIwlaJRMyffzm8CZyQT5WZY*

Skocpol, T. (2004), *Diminished Democracy: From Membership to Management in
American Civic Life*, University of Oklahoma Press, Norman.

Smith, W. G. (2008), *Does Gender Influence Online Survey Participation? A
Record-Linkage Analysis of University Faculty Online Survey Response Behavior*.
URL: *https://eric.ed.gov/?id=ED501717*

Snider, J. H. (2011), 'The Case of the Missing White House Petitions'.
URL: *https://www.huffingtonpost.com/jh-snider/we-the-people-petition-
website_b_1062883.html*

Stanczyk, L. (2016), 'Lucas Stanczyk responds to Danielle Allen', *Boston Review*
(May/June 2016).
URL: *https://bostonreview.net/forum/what-education/lucas-stanczyk-lucas-
stanczyk-responds-danielle-allen*

Steinberg, T. (2011), 'Tom Steinberg's answer to What lessons did the Obama
administration learn from the United Kingdom's use of e-petitions when designing
'We The People'? - Quora'.
URL: *https://www.quora.com/What-lessons-did-the-Obama-administration-learn-
from-the-United-Kingdoms-use-of-e-petitions-when-designing-We-The-
People/answer/Tom-Steinberg*

Stoddard, J. (2014), 'The Need for Media Education in Democratic Education',
Democracy and Education **22**(1).
URL: *http://democracyeducationjournal.org/home/vol22/iss1/4*

Strathern, M. (1997), ''Improving ratings': audit in the British University system',
European Review **5**(3), 305–321.

URL: *https://www.cambridge.org/core/journals/european-review/article/improving-ratings-audit-in-the-british-university-system/FC2EE640C0C44E3DB87C29FB666E9AAB*

The American National Election Studies (2015), External Political Efficacy Index 1952-2012, Technical report, University of Michigan, Center for Political Studies, Ann Arbor, MI.
URL: *http://electionstudies.org/nesguide/toptable/tab5b_4.htm*

Tilly, C. (2004), *Social Movements, 1768-2004*, Routledge, Boulder.

Torney-Purta, J., Lehmann, R., Oswald, H. & Schulz, W. (2001), *Citizenship and education in twenty-eight countries: Civic knowledge and engagement at age fourteen*, IEA, Amsterdam.
URL: *https://www.terpconnect.umd.edu/ jtpurta/interreport.htm*

Transparency International (2014), Transparency in corporate reporting: assessing the world's largest companies, Technical report, Transparency International.
URL: *https://www.transparency.org/whatwedo/publication/transparency _in_corporate_reporting_assessing_worlds_largest_companies_2014*

Tsai, L. L. (2007), 'Solidary Groups, Informal Accountability, and Local Public Goods Provision in Rural China', *American Political Science Review* **101**(2), 355–372.
URL: *https://www.cambridge.org/core/journals/american-political-science-review/article/solidary-groups-informal-accountability-and-local-public-goods-provision-in-rural-china/8ABA59F14428CE53F631AE65E1370B30*

Tsai, L. L. (2015), 'Constructive Noncompliance', *Comparative Politics* **47**(3), 253–279.

Tufekci, Z. (2014), 'The Medium and the Movement: Digital Tools, Social Movement Politics, and the End of the Free Rider Problem', *Policy & Internet* **6**(2), 202–208.
URL: *https://onlinelibrary.wiley.com/doi/abs/10.1002/1944-2866.POI362*

United States Census Bureau (2016), 'U.S. Census Bureau QuickFacts'.
URL: *https://www.census.gov/quickfacts/fact/table/US/PST045216*

Valentino, N., Gregorowicz, K. & Groenendyk, E. (2009), 'Efficacy, Emotions and the Habit of Participation', *Political Behavior* **31**(3), 307–330.

Verba, S. & Nie, N. H. (1972), *Participation in America: Political Democracy and Social Equality*, Harper & Row.

Verba, S., Schlozman, K. L. & Brady, H. (1995), *Voice and Equality: Civic Voluntarism in American Politics*, Harvard University Press, Cambridge, MA.

Warren, J. Y. (2010), Grassroots mapping : tools for participatory and activist cartography, Thesis, Massachusetts Institute of Technology.
URL: *http://dspace.mit.edu/handle/1721.1/65319*

Watson Strong, A. (2014), 'The Three Levers of Civic Engagement'.
URL: *http://www.antheawatsonstrong.com/writing/2014/6/8/the-three-levers-of-civic-engagement*

Wells, C. (2014), 'Civic Identity and the Question of Organization in Contemporary Civic Engagement', *Policy & Internet* **6**(2), 209–216.
URL: *https://onlinelibrary.wiley.com/doi/abs/10.1002/1944-2866.POI359*

Westheimer, J. & Kahne, J. (2004), 'What Kind of Citizen? The Politics of Educating for Democracy', *American Educational Research Journal* **41**(2), 237–269.

We the People, By the Numbers (2015).
URL: *https://obamawhitehouse.archives.gov/share/we-people-numbers*

White, M. (2010), 'Clicktivism is ruining leftist activism', *The Guardian* .
URL: *http://www.theguardian.com/commentisfree/2010/aug/12/clicktivism-ruining-leftist-activism*

Wolfe, M. (2015), 'A Look Back at We the People Petitions: 2011 to Today'.
URL: *https://obamawhitehouse.archives.gov/blog/2015/07/23/look-back-we-people-petitions-2010-today*

Youniss, J. (2011), 'Civic Education: What Schools Can Do to Encourage Civic Identity and Action', *Applied Developmental Science* **15**(2), 98–103.
URL: *http://dx.doi.org/10.1080/10888691.2011.560814*

Youniss, J. & Yates, M. (1997), *Community Service and Social Responsibility in Youth*, University Of Chicago Press, Chicago, IL.

Zacka, P. B. (2017), *When the State Meets the Street: Public Service and Moral Agency*, Belknap Press: An Imprint of Harvard University Press, Cambridge, Massachusetts.

Zaller, J. (2003), 'A New Standard of News Quality: Burglar Alarms for the Monitorial Citizen', *Political Communication* **20**(2), 109–130.
URL: *http://dx.doi.org/10.1080/10584600390211136*

Zick, T. (2009), *Speech Out of Doors: Preserving First Amendment Liberties in Public Places*, Cambridge University Press, New York.

Zimmerman, M. A. (2000), Empowerment Theory, *in* 'Handbook of Community Psychology', Springer, Boston, MA, pp. 43–63.

Zittrain, J. (2008), *The Future of the Internet: And How to Stop It*, Yale University Press, New Haven & London.

Zúñiga, H. G. d., Diehl, T. & Ardévol-Abreu, A. (2017), 'Internal, External, and Government Political Efficacy: Effects on News Use, Discussion, and Political Participation', *Journal of Broadcasting & Electronic Media* **61**(3), 574–596.
URL: *https://doi.org/10.1080/08838151.2017.1344672*

Zuckerberg, M. (2017*a*), 'Building Global Community'.
URL: *https://www.facebook.com/notes/mark-zuckerberg/building-global-community/10154544292806634/*

Zuckerberg, M. (2017*b*), 'Mark Zuckerberg - I believe the most important thing we can do is...'.
URL: *https://www.facebook.com/photo.php?fbid=10103818114983761&set=a.612287952871.2204760.4&type=3&theater*

Zuckerman, E. (2013), 'The "good citizen" and effective citizen'.
URL: *http://www.ethanzuckerman.com/blog/2013/08/19/the-good-citizen-and-the-effective-citizen/*

Zuckerman, E. (2014), 'New Media, New Civics?', *Policy & Internet* **6**(2), 151–168.

Zuckerman, E. (2015), 'Insurrectionist Civics in the Age of Mistrust'.
URL: *http://www.ethanzuckerman.com/blog/2015/10/19/insurrectionist-civics-in-the-age-of-mistrust/*

Zuckerman, E. (2016), Effective Civics, *in* E. Gordon & P. Mihailidis, eds, 'Civic Media: Technology, Design, Practice', MIT Press, Cambridge, MA, pp. 49–75.