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TITLE OF PROPOSED PROJECT **Increasing Public Confidence in Government through Deliberative Online Engagement**

REQUESTED AMOUNT $ **497,634**	PROPOSED DURATION (1-60 MONTHS) **24** months	REQUESTED STARTING DATE **07/01/20**	SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE

THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW
- ☐ BEGINNING INVESTIGATOR
- ☐ DISCLOSURE OF LOBBYING ACTIVITIES
- ☐ PROPRIETARY & PRIVILEGED INFORMATION
- ☐ HISTORIC PLACES
- ☐ VERTEBRATE ANIMALS IACUC App. Date _____
  PHS Animal Welfare Assurance Number _____
- ☒ TYPE OF PROPOSAL **Research**

☒ HUMAN SUBJECTS Human Subjects Assurance Number _____
Exemption Subsection _____ or IRB App. Date **Pending**
☐ FUNDING OF INT'L BRANCH CAMPUS OF U.S IHE   ☐ FUNDING OF FOREIGN ORG
☐ INTERNATIONAL ACTIVITIES: COUNTRY/COUNTRIES INVOLVED

☒ COLLABORATIVE STATUS
Not a collaborative proposal

PI/PD DEPARTMENT **Center for Urban Science and Progress** PI/PD FAX NUMBER	PI/PD POSTAL ADDRESS **370 Jay St Brooklyn, New York,NY 10012 United States**

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PROJECT SUMMARY

Overview:

Democratic governments often have difficulty building and sustaining public confidence in their institutions, but deliberative online public engagement presents one potential means by which governments might obtain high-quality public input and boost public trust. Around the world, there are already hundreds of examples of such processes but there has been too little theoretical development and systematic testing to understand which deliberative designs work much better to accomplish that. We propose launching a research program with an initial set of experiments that test key design features of digital public engagement programs.

Intellectual Merit:

Blending past theory on public deliberation and crowdlaw (the use of online platforms to foster public engagement in policymaking), we develop a simplified model of public engagement that focuses on three engagement design features that require a considerable effort on the part of governments but that may be essential for success. Our principal hypotheses are: (1) an opportunity for deliberation should improve participant satisfaction and decision-making quality; (2) government input during the engagement process should improve participants' process satisfaction and decision-making quality; and (3) official feedback at the close of the engagement directly should boost participants' confidence in the government that sponsored the process.

We will test these hypotheses with a series of three field experiments using an online consultation platform for a government-sponsored public in collaboration with the Office of Innovation of the State of New Jersey. Using self-selected samples of approximately 800 New Jersey residents in each experiment, the three experiments will use open source software created by the nonprofit Citizens Foundation called Your Priorities. This will enable us to randomly assign participants to experimental conditions that turn on or off the three different design features described earlier.

In the first experiment half of the participants will have the opportunity to deliberate together, and the other half will participate on a version of the platform that is identical except that it has the deliberation feature turned off. The second experiment will split participants into those who do or do not receive input from public officials, and the third experiment will randomly assign the participants to either receive official feedback at the close of the process or get no such feedback. We will survey participants before, during, and after the engagement process to measure their levels of process satisfaction and confidence in government, and we will code the recommendations they make to assess the quality of participants' individual decisions.

Broader Impacts:

The NYU Governance Lab has built a mailing list of academics, policymakers, and politicians interested in online public engagement through its CrowdLaw Initiative. We will share the findings of our research via the CrowdLaw mailing list and online newsletter as well as in a special issue of the peer-reviewed ACM Digital Government Journal. Our hope is that this emergent research program should help steer future online engagement efforts toward using deliberative designs for public engagement that could improve the responsiveness of democratic systems of governance, the quality of the policies and budget allocations they make, and, ultimately, the public's confidence in its ability to govern itself fairly and effectively through such institutions.

**Increasing Public Confidence in Government
through Deliberative Online Engagement**

Previous theory and research have chronicled the difficulty democratic governments have building and sustaining public confidence in their institutions (Habermas 1975; Levitsky and Ziblatt 2018). Time-series data show declining public trust in government over the past decade, with the United States experiencing one of the steepest drops among OECD countries (Murtin et al. 2018).

Fortunately, there is solid evidence that public confidence can increase when governments improve their overall institutional performance (Abdullah and Rahman 2015; Murtin et al. 2018). One promising approach to restoring public confidence has been to make government more responsive to the needs of citizens by expanding opportunities for the public to participate in policymaking. With the advent of the Internet, such engagement has become possible via digital platforms that enable the broader public to participate in law and policymaking and governance. Such processes and platforms for online engagement, which we refer to as "crowdlaw" mechanisms, offer the promise of connecting public institutions to diverse forms of public knowledge and experiences (Gordon, Haas, and Michelson 2017; Lerner 2014; Noveck 2018) and creating a two-way dialogue between those who govern and those who are governed.

Such crowdlaw practices enable public institutions to obtain useful information to improve policymaking while strengthening bonds between engaged citizens and their government institutions (Noveck 2009, 2015, 2018). Around the world, there are hundreds of examples from all branches of government of diverse crowdlaw processes using a variety of technologies, such as social media, web-based and mobile discussion tools, group collaboration platforms and even artificial intelligence to involve the public at various stages of policymaking from agenda-setting to evaluation. A common presumption behind these is that effective use of citizen knowledge, in addition to opinions and preferences, can improve the epistemic quality of policies and earn a measure of trust from those who participate in such processes.

Despite proliferating practical experiences with online engagement, literature reviews find that research has not kept pace, thereby limiting our understanding of how to design crowdlaw processes to restore public confidence (Alryalat, Rana, Sahu, Dwivedi, et al. 2017; Meijer and Bekkers 2015; Meijer and Bolivar 2016; Morschheuser, Hamari, Koivisto, and Maedche 2017). Even optimistic reviews of the prospects for digital engagement end with calls for more experimentation (Gastil 2018; Noveck 2018; Peixoto and Fox 2016; Simon, Bass, Boelman, and Mulgan 2017). Given the risk that digital technology can also make politics more toxic and less deliberative (Bimber 1998; Howard 2015; Sunstein 2017), it is imperative to advance our understanding of how to design online public engagement processes to improve institutional performance and public confidence, lest such uses of technology have the opposite effect.

We propose advancing the study of online public engagement by testing the effects of specific dialogic design features (incorporate into the software platform that enables the online engagement) on public confidence. We begin by providing an overview of our field experimental approach. The Intellectual Merit section then introduces our theoretical model, conceptual definitions, and hypotheses. The Research Methods and Plan of Work sections describes our research in more detail, and we conclude by considering potential broader impacts.

Overview of Our Field Experimental Approach

Studies on the impact of public engagement lags behind other areas where experimental research has become the norm. For instance, a 2019 Nobel prize recognized experimental work on the efficacy of alternative methods for alleviating poverty (Smialek 2019). The recipients used randomized controlled trials (RCTs) "in the field" that validated small interventions designed to remediate the conditions of poverty in places like Kenya and India. Similarly, London and Harvard Business School professors Kevin Boudreau and Karim Lakhani, respectively, have pioneered the field of empirical testing of the use of open innovation by governments and companies to accelerate R&D (Boudreau and Lakhani 2016). They have run open innovation competitions to solve a problem for a company and, at the same time, advance the theoretical understanding of open innovation. They found that institutional innovation is complex, which makes it hard to focus on a limited number of experimental and behavioral variables. Despite sometimes imperfect conditions in the wild, however, they have demonstrated the ability to do research in Pasteur's Quadrant, introducing experimentation in real-world, non-lab settings, which effectively balance needs for both internal and external validity.

Just as new forms of experimentation have advanced development policy and open innovation policy, we aim to deepen our understanding of public engagement by leveraging the flexibility of digital technology to test experimentally the impact of different engagement designs on public confidence. Working in collaboration with the Office of Innovation of the State of New Jersey, we propose conducting a series of three experiments to measure the effectiveness of key crowdlaw design features (Alsina and Martí 2018; Noveck 2018).

We hypothesize that three features of online engagement—**deliberation**, **public officials' input**, and **public officials' feedback**—will enhance citizen participants' process satisfaction, decision quality, and confidence in the government sponsoring the engagement. "Deliberation" refers to inviting participants to post and respond to one another's comments (as opposed to participating in an online forum without the ability to respond to other people's submissions). "Official input" refers to participation in this deliberative process by public officials, who will comment on individual public submissions. "Official feedback" refers to having public officials explain to participants after the conclusion of the deliberation how the public's input will be used.

To make these experiments possible, we have enlisted the New Jersey Office of Innovation, which has primary responsibility for aiding the Governor's Office in citizen engagement on a variety of topics. The Office is headed by Beth Simone Noveck, who is also a faculty member at New York University. With the Office and Noveck's assistance, we will work with the policy team in the Office of Innovation to run and instrument a series of three citizen engagement processes.[1] The Office of Innovation will select relevant policy topics for the engagement, such as autonomous vehicle policy or AI ethics, that are of high importance to the Office and of relevance to the public. Our research team will design the engagement processes in collaboration with the Office and tailor the platform prior to the engagement to enable data collection and measure the results afterwards.

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[1] The Special Information and Supplementary Documentation section of our proposal contains a letter of cooperation from our government project partner. Our Data Management Plan contains important details about how we will use and share data collected through the online engagement platform used in our study.

The three experiments will use open source software called Your Priorities created by the nonprofit Citizens Foundation. This will enable us to assign participants randomly to experimental conditions that turn on or off the three different design features described earlier. In the first experiment, for example, half of the participants will have the opportunity to deliberate together, and the other half will participate on a version of the platform that is identical except that it has this deliberation feature turned off. The second experiment will split participants into those who do or do not receive input from public officials, and the third experiment will randomly assign the participants to either receive official feedback at the close of the process or get no such feedback. We will survey participants before, during, and after the engagement process to measure their levels of process satisfaction and confidence in government, and we will work with public officials to code residents' input and recommendations to assess the quality of the individual decisions they make in the course of the consultation.

Intellectual Merit

Having provided an overview of our experimental approach, we now take a step back to explain why we believe studying digital public engagement platforms warrant the use of NSF's limited funds. We then present our theoretical model of public engagement, provide definitions for each concept in the model, and introduce hypotheses we will test in our study.

Justifying a Focus on Digital Platforms for Public Engagement

Our model aims to explain how the use of *digital platforms for public engagement*, or what we call crowdlaw platforms, can increase public confidence in government and its officials. For the purpose of this study, we define *public engagement* as a process whereby a government agency or body seeks public input prior to making a policy, budgetary, or administrative decision (Kies and Nanz 2013). But we focus specifically on *digital platforms*, which are electronic environments that, because they are electronic, can be easily customized, changed and instrumented (Aichholzer and Rose 2020; Anttiroiko 2016; Davies and Chandler 2012; Gordon, Osgood Jr., and Boden 2017; Noveck 2018; Peña-López 2017).

We limit our study to digital platforms for public engagement, rather than broader forms of offline civic engagement, for five reasons (Nabatchi, Gastil, Weiksner, and Leighninger 2012). First and foremost, digital platforms offer methodological advantages. Doing the engagement online enables us to measure experimental treatment effects more easily by randomly varying the platform features that participants can use. Second, we can integrate participant surveys directly into the engagement process. Third, because respondents who respond to surveys may alter their responses, responding to what they think the pollster wants to hear, we can also instrument the platform to gather additional data about participant behavior. Fourth, the ease of online communication via mobile phones and the web makes communication between state government officials and residents cheaper and easier. This is crucial given our theoretical model's inclusion of feedback loops as a means of bolstering public confidence (Barros and Sampaio 2016; Bertone, De Cindio, and Stortone 2015; Gastil In press). Finally, our learnings will have wider applicability because the designs of digital platforms, especially open source platforms, can be scaled and replicated, making it possible to repeat experiments in more jurisdictions.

Summary of Our Theoretical Model

Drawing on deliberative theory, we argue that a key to bolstering public confidence in government institutions is establishing a collaborative relationship between citizens and public officials (Kelshaw and Gastil 2008). This process exists most clearly in the US legal context when judges seat juries in their courtroom, then play complementary roles to resolve criminal cases or civil disputes. This collaboration between judge and jury can translate into heightened faith in the jury process, more favorable views of the city and county judges that run those processes, and extend to greater confidence in the judicial branch generally—even to views of the Supreme Court (Gall and Gastil 2006; Gastil, Deess, Weiser, and Simmons 2010).

In the language of public administration, we focus on efforts to seek a more "conversational bureaucracy" and "horizontal government," in which a public agency provides an "explanation and justification of actions and decisions" after "offering the party to whom [it] is accountable" an "opportunity to respond" (Michels and Meijer 2008, 7). Examples of such efforts abound in the literature on deliberative democracy, in which governments seek to strengthen the interactive ties between residents and the public officials who serve them (Karpowitz and Raphael 2014; Nabatchi and Leighninger 2015).

Within such engagement processes, significant design choices with different organizational costs must be made. Just as one would decide on the moderation process for any good meeting, success in organizing citizen engagement—online or offline—requires designing the rules of engagement, such as choosing participants, picking incentives, and articulating the tasks for citizens to undertake. The three design choices we test all pertain to the information participants receive and exchange with one another and with public institutions during the deliberative process.

We posit that, when properly designed, digital platforms for public engagement provide an opportunity for similar collaboration and relationship-building between the residents of, say, a municipality or state, and the government actors who invite them into such a process. The three design elements that are the focus of our study (deliberation, official input, and official feedback) represent three key pieces of this collaboration. An engagement process stripped of these features provides only an abstract link from residents to officials, akin to taking a public opinion survey. But deliberation provides an opportunity for participants to exchange ideas, official input places the government in the midst of that exchange, and substantive feedback at the close of the process affirms that the public officials heard what the public had to say.

Stated more precisely, we use an input-process-output model adapted from the decision making literature to describe deliberative public engagement (Gastil, Richards, Ryan, and Smith 2017), albeit with a narrower focus on an initial (but by no means exclusive) design elements, processes, and outcomes. We posit that three design variables (deliberation, official input, and official feedback) have direct effects on two process measures (public satisfaction and decision quality) and on our focal outcome, public confidence in government. Figure 1 summarizes these relationships and enumerates the eight hypotheses we will test.[2]

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[2] The figure shows the variables arrayed as if in a path analysis, but this is merely illustrative. Running separate experiments for each design input does not permit the simultaneously testing their effects.
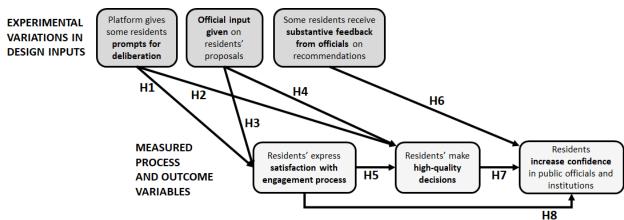
Figure 1. Model linking variations in design inputs, engagement process satisfaction and decision quality, and public confidence outcomes via eight hypotheses

Research Hypotheses

In the discussion that follows, we describe our model in more depth, introducing key concepts as they appear in each of eight hypotheses. We also provide operational details of our proposed study when doing so helps to clarify the nature of the hypothesis itself.

H1: Deliberation and Process Satisfaction

Our first hypothesis (**H1**) is that having the opportunity to respond to other citizens' comments increases participants' satisfaction with the engagement process. *Process satisfaction* serves as a proxy for a range of perceptions about the engagement process. Satisfaction has proven itself a valuable summary judgment of decision-making processes, distinguishable from productivity (Foels, Driskell, Mullen, and Salas 2000; Miller and Monge 1986) and distinct from judgments about decisions (Gastil, Deess, Weiser, and Simmons 2010; Miller, Jackson, Mueller, and Schersching 1987). Moreover, process satisfaction ratings have been used commonly to assess both deliberative civic engagement processes (Crosby and Nethercutt 2005) and online engagements (Abu Bakar, Choy, Lin, and Radzi 2014; Herian, Hamm, Tomkins, and Zillig 2012). In deliberative processes, subjective assessments are also related to, though distinct, from third-party observers' evaluations of process quality (Gastil 2013).

A deliberative opportunity should lead to greater process satisfaction because when a public institution welcomes even a brief deliberative exchange, this can make engagement more meaningful to participants (Neblo, Esterling, Kennedy, Lazer, and Sokhey 2010). The mere inclusion of an interactive feature in an engagement distinguishes it from many other forms of government outreach, such as broadcasting messages or conducting surveys (Kelshaw and Gastil 2008). Some theorists have argued that the best way to test the efficacy of deliberative designs is to use the presence vs. absence of such a design as the key variable, rather than attempting to operationalize deliberation at the micro level by analyzing units of speech (Black, Burkhalter, Gastil, and Stromer-Galley 2011). We take that same approach, which is consistent with our intent to test the efficacy of engagement process *design features*.

It is important to test such deliberative features because many civic participation platforms only allow users to provide input without prompting them to consider what other residents have to say. By contrast, other platforms are tailored to elicit a deliberative form of talk (Davies and Chandler 2012). Such deliberative designs aim to promote both respectful social relations among participants and intensive problem and solution analysis (Black, Welser, Cosley, and DeGroot 2011). *The Common Ground for Action* interface, for example, creates incentives for deliberation by showing discussants how their initial judgments compare and eliciting shared and divergent views (Christelle, Dillard, and Lindaman 2018).

Because of the frequency with which unstructured online discussion peters out or leads to incivility (Muhlberger and Weber 2006; Rowe 2015; Weiksner 2005), we couple the commenting feature with a deliberative prompt (i.e., very brief guidelines for offering constructive comments). In conventional face-to-face public deliberation formats, discussion participants are always given some kind of instruction, whether through printed guidelines or an active facilitator, and are crucial to eliciting thoughtful comments and responses (Carson and Hartz-Karp 2005; Carson and Lubensky 2010; Dillard 2013). The same approach has proven effective for online commenting platforms used by news media, in which stressing discussion norms (Stroud, Scacco, Muddiman, and Curry 2015) or even giving subtle cognitive cues (Manosevitch, Steinfeld, and Lev-On 2014) can elicit more deliberative and pro-social behavior by commenters. Thus, we expect to see higher satisfaction ratings as a result of a straightforward prompt to offer substantive comments and consider others' views.

We will test this hypothesis in our first experiment by randomly assigning half the participating residents in the engagement into a version of the platform that affords them the *opportunity for deliberation*, whereas a control group of equal size will not have that opportunity.[3] We can use IP addresses or email logins to randomly assign participants to one of these two groups. On the Your Priorities platform, participants can add ideas in response to a question (i.e., they can suggest solutions to a policy problem), can view other people's ideas, and others can vote that idea up or down using a customizable Likert scale. In addition, if so configured, people can post comments for or points against the idea ("deliberation feature"). Half the participants will see this deliberation feature, whereas the control group will only be able to add ideas but will not be able to deliberate on the ideas. Commenting for and against will be turned off.

H2: Deliberation and Decision Quality

Our second hypothesis is that (**H2**) the opportunity for deliberation will also improve the *quality of the decisions* made by residents participating in the online engagement. The general relationship between deliberation and decision quality is well established at the individual, group, and collective level (Dewey 1910; Gastil 2008; Hirokawa and Salazar 1999; Landemore 2013; Noveck 2018). Our hypothesis, however, posits that the mere existence of an opportunity to asynchronously post and read comments from fellow participants, coupled with a deliberative prompt, should be sufficient to boost the quality of decision making at the end of each engagement phase.

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[3] We refer to all participants in the public engagement process as "residents," rather than citizens to emphasize the government's interest in hearing from non-citizen residents.

Our conception of "decision quality" requires clarification in the context of a process wherein residents can only make comments, suggestions, or recommendations, rather than binding decisions (Nabatchi and Leighninger 2015). Each individual resident taking part in such an engagement faces a decision-making task, in the same way an advisory body within an organization or government must decide what advice to give higher-level decision makers (Pedrini 2014; Santos and Chess 2003).

How can one assess the quality of such recommendations or decisions? Aside from measuring the accuracy of answers to technical and mathematical questions, there exists no objective way to assess the quality of group decisions—a problem some have described as "irresolvable" short of reverting to process quality measures (Elwyn, Elwyn, and Miron-Shatz 2009). Likewise, some theorists have rejected epistemic accounts of deliberative democracy in favor of symbolic, cognitive, or procedural alternatives owing to the difficulty of defining one public policy as objectively superior to another in a pluralist society (Ingham 2013; Richards and Gastil 2015).

Nonetheless, in many contexts one can use independent assessments of the different dimensions of decision quality to render robust judgments about the creativity, logic, and other features of decisions, recommendations, or choices (Leathers 1972). This approach has been used successfully to assess small-group recommendations on policy questions in an experimental design not unlike a discussion group within a broader public engagement (Gardinier 1999). In that instance, independent coders rated groups' recommendations on separate dimensions, and these were averaged to create a reliable overall decision quality rating. For the purpose of our study, we will use public officials who are not otherwise participating in the engagement to assign scores the full set of proposals that residents offer. We then use those scores to give each resident a total decision quality scores based on which options they chose.

H3-4: Mid-Process Input from Public Officials, Process Satisfaction, and Decision Quality

The design feature we will vary during the second online engagement is *whether public officials provide input* during the consultation process, and we predict that official input will have a direct impact on both (**H3**) process satisfaction and the (**H4**) quality of recommendations that residents make. Prior qualitative research suggests that when public officials participate constructively with residents during engagements, they can make the process more satisfying for the participants, who appreciate seeing the effort (Crosby and Nethercutt 2005; Farrell and Suiter 2019).

Moreover, official input can provide a productivity boost. The addition of high-quality and relevant information from public officials will improve residents' decision making—a prediction consistent with considerable prior research on the value of improving the pool of information in various individual and group judgments (e.g., Abdullah and Rahman 2015; Klocke 2007; Már and Gastil 2019). It is for this reason that input from public officials is the norm in many participatory budgeting programs and part of the reason for their success (Gilman 2016).

In our second experiment, we will have public officials from the State of New Jersey providing feedback on ideas submitted by residents and join in the discussion—identified as state officials —in one online engagement. However, we will randomize whether participants receive such input or whether officials remain silent and do not respond to their submissions. Official input

will come in the form of online comments thanking people for contributing and encouraging more participation, encouraging expansion on ideas, or substantively commenting on the merits of a proposal.

H5: Process Satisfaction and Decision Quality

We also predict that after controlling for experimental variations in design features, (**H5**) residents' satisfaction with the online public engagement process will be positively associated with the quality of the decisions they make. We expect that there will be considerable unexplained variance left in decision quality after taking into account the variations in platform design, and a mid-process satisfaction measure taken before the decision-making phase should be predictive of decision quality. This is consistent with research showing a correspondence between process satisfaction and *subjective* decision quality in deliberative events (Gastil, Deess, Weiser, and Simmons 2010; Knobloch, Gastil, Reedy, and Cramer Walsh 2013), but studies of deliberative interventions have yet to establish such a linkage with third-party ratings of decision quality.

H6: Official Feedback Ex Post and Confidence in Government

Finally, in the third engagement process, we will vary *whether individual residents receive feedback from officials on the process* at its conclusion. We distinguish between mid-process input (in response to specific ideas posted by residents) from official feedback at the end of the process. The latter may summarize what was learned, explain how the residents' proposals will be used, and discuss what next steps the government will take and why. Such feedback on an engagement process is distinct from "political responsiveness," which is often understood as the fit between government action and the public's policy preferences (e.g., Dekker and Bekkers 2015; Erikson, Wright, and McIver 1993; Stimson, MacKuen, and Erikson 1995). Rather, official feedback bears a closer relationship to an older conception of government accountability as an elected representative "giving an account" for a decision in response to a constituent's request or demand for such an explanation (Mansbridge 2019).

We hypothesize that (**H6**) providing official feedback will increase residents' confidence in their government. Public confidence concept gets articulated in numerous ways (Braithwaite and Levi 2003), and although different forms of trust and confidence are empirically associated, they can be distinguished both conceptually and statistically (Hamm et al. 2011). Our concern is with four interrelated forms of public confidence: the degree to which residents have confidence that their state government (a) takes public concerns into account, (b) makes fair decisions, (c) seeks to do what is best for the state, and (d) performs this job competently. These sub-components of public confidence/trust are often labeled, respectively, as perceptions of government's responsiveness (Craig, Niemi, and Silver 1990), procedural fairness (Herian, Hamm, Tomkins, and Zillig 2012), integrity (Murtin et al. 2018), and competence (PytlikZillig, Tomkins, Herian, Hamm, and Abdel-Monem 2012).

We anticipate all four of these elements of public confidence moving in parallel with one another, from pre-engagement measures at the outset of our study to post-engagement measures collected after any direct government feedback to residents' recommendations. A responsive government earns trust directly by taking into account the views expressed by its constituents, thereby offering reassurance that it can be trusted. Indeed, previous studies on deliberative events

have found this connection, with a boost in confidence resulting from perceived responsiveness or a decline following what was perceived as an unresponsive government action (Barros and Sampaio 2016). Nonetheless, others have questioned whether public confidence necessarily flows from responsive public engagements (Boulianne 2018) or from good-faith efforts at balanced responses (Grimmelikhuijsen 2011). After all, a substantive response is not necessarily an agreement with one's recommendations, and it remains an open question whether a meaningful response at the end of a public engagement can yield public confidence even when a government declines to follow some measure of the public's advice.[4]

In the case of our study, we will vary the presence/absence of government feedback altogether. For the sake of the experimental test, we will work with public officials to ensure that the official feedback given is clear, relevant, and substantive. This detail is important because some have theorized that the long-term effect of deliberative engagement could be *declining* public confidence in those instances where participants receive feedback that is dismissive or incoherent (Johnson 2015; Kies and Nanz 2013).

H7-8: Other Direct Effects on Confidence in Government

We also hypothesize that (**H7**) the quality of decisions that residents reach should also improve their confidence in state government. By analogy, when jurors struggle in their deliberations to reach a verdict or have confidence in their own verdict or judgment, it reflects poorly on both themselves and the courtroom and judicial system that put them in the jury box (Gastil, Deess, Weiser, and Simmons 2010; Vidmar and Hans 2007). In the same sense, we expect that residents who make higher-quality decisions will emerge from the public engagement more confidence in the government that convened that same process, as has been seen elsewhere for face-to-face engagements (Boulianne 2018; Knobloch, Barthel, and Gastil 2019). To separate out independent versus subjective sense of decision quality, we will test this relationship using both the aforementioned third-party assessments of decision quality as well as a separate measure of decision quality made by residents themselves.

Even after taking other variables into account, (**H8**) process satisfaction ratings will also predict increased confidence in government. Previous research on group behavior and public deliberation has found a similar association between deliberative process satisfaction and confidence in the public officials who oversaw that process, whether it is judges who preside over a courtroom (Gastil, Deess, Weiser, and Simmons 2010) or the state government that authorized deliberative citizen panels (Knobloch, Barthel, and Gastil 2019; Knobloch and Gastil 2015). A study looking at different dimensions of public trust shifting as a result of participating in Participatory Budgeting found a similar result (Pytlikzillig, Tomkins, Herian, and Hoppe 2012), as have other studies of deliberative public engagement (e.g., Halvorsen 2003).

It bears noting that we do *not* anticipate direct effects from deliberative opportunities or official input to confidence in government. In both cases, we expect those experimental manipulations to only have indirect effects via process satisfaction and decision quality because we theorize that

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[4] Though it is not a main hypothesis, we will test for this possibility by separately measuring whether the changes in confidence ratings can be explained more fully by taking into account the correspondence between individuals' decisions and the substance of officials' feedback in relation to those particular decisions.

deliberation's effect on confidence is mediated by its contribution to process satisfaction and decision quality, akin to the relational and analytic aspects of the deliberative process itself (Black et al. 2011; Gastil 2008). To check the accuracy of this theoretical account, however, we will test for the presence of these direct effects after taking the mediators into account.

Research Methods

Research Setting

As stated earlier, we believe our research program is best suited to field-based experiments (Box-Steffensmeier, Brady, and Collier 2008; McDermott 2002). Though such experiments are all too rare for investigations of the impact of public engagement, there are examples of this approach being used on offline public meetings more generally (e.g., Grimmelikhuijsen and Meijer 2014; Neblo, Esterling, Kennedy, Lazer, and Sokhey 2010). Such studies have an ecological validity by virtue of their location, and the real-world stakes for the participants provide them sufficient motivation to respond conscientiously to surveys, often at high response rates that parallel their willingness to participate in the public process in the first place (Gastil, Deess, Weiser, and Simmons 2010).

In looking for ideal sites for this research, we sought to partner with public entity in the United States with a proven commitment to citizen deliberation and engagement and a willingness to introduce experimental approaches into its citizen engagement practices. The State of New Jersey offers just such a jurisdiction where the state has publicly committed to expanding online public engagement and is willing to work with us to study their practices through these field-based experiments. Because the Chief Innovation Officer for the State is also a tenured faculty member, she understands the importance of research and of running these projects in a way that aligns the needs of the public with the goals of social science research.

The New Jersey (NJ) Office of Innovation will conduct three or more online engagements of three or more weeks duration on topics of relevance to the Governor's Office and the residents of New Jersey. It has a full-time fellow dedicated to leading public engagement processes. Although we cannot specify topics a year in advance, they might relate to AI ethics, autonomous vehicle policy or lifelong learning accounts to take three examples of likely policy topics of urgent interest. The Office of Innovation recently concluded an online engagement with public servants across NJ with 2,200 registered users, 341 submitted ideas and1,039 deliberative comments posted using the Your Priorities Platform. Your Priorities has already been procured and passed security review by the State's Department of Homeland Security.

Your Priorities Platform Details

The Citizens Foundation created Your Priorities in 2008. Based in the United States and Iceland, the Foundation's mission is to create non-partisan methods for public engagement online, and their Your Priorities web tools and mobile app have been used in hundreds of engagement projects in over twenty countries by over 1.5 million people for the past ten years, including the Scottish Parliament crowdsourcing ideas and suggestions for improving community wellbeing, the government of Iceland crowdsourcing education policy and even constitutional questions. In addition to its robustness, this tool is open source and therefore able to be modified and configured to run our experiments. Co-PI Victoria Alsina and the New Jersey Office of Innovation have experience customizing this and related platforms.

Within the platform, working in collaboration with the Office of Innovation, we will set up web pages for topic under discussion. NJ will frame the relevant public problems/challenges on those topics, then invite citizens to offer solutions. Each page will include background information about the issue developed in collaboration between NJ and the research team.

The public can use the website to do three things:

- Post ideas of their own in response to one or more of these topics. People can post solutions in response to the problem. They can choose to add an image to their posts or, if they do not, a default icon/image will be assigned based on the category (i.e. different default image for a policy suggestion vs a tech suggestion).
- Post comments either in support of or against ideas posted by other participants. Unlike many idea generation platforms, users on Your Priorities allows the writing of "pros" and "cons" in response to a posted idea.
- Up-vote or down-vote ideas submitted by others. Once an idea is posted, participants can rate one another's ideas - through a Likert scale-based evaluation system. The rating scale can be customized. For example, people can rate proposals based on importance or feasibility or both.

Though the software allows for anonymous participation, we will require people to login either using their email or using their social media accounts to enable follow up surveys.

Meanwhile, NJ public officials participating in the process will play two roles. They will provide input during the commenting period, then they will provide feedback at the close of the process that responds substantively to the residents' recommendations. Those residents in the appropriate experimental conditions will receive that feedback via email before completing their final participant survey.

Experiment Sequence and Sample Sizes
Working with the Office of Innovation, we will use the Your Priorities to conduct a series of three experiments, each of which randomly assigns participants to conditions in which a single design feature is either present or absent, with the other two features both being present, as shown in Table 1. For example, in the first experiment half of the participants will have the opportunity to deliberate together, and the other half will participate on a version of the platform that is identical except that it has the deliberation feature turned off. Meanwhile, all participants in this first experiment will receive official input and feedback.

Our estimates of a minimum of 800 self-selected participants in each experiment is realistic based on New Jersey's past experience.[5] The Chief Innovation Officer has had success using official government communications to recruit large samples for online engagements, from work with the Obama administration where she ran a public engagement with over a hundred thousand to recent work in 2019-20 with AARP that involved 5700 unique users and over 70,000 online postings.

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[5] To ensure sample independence, residents will be eligible to participate in only one of the experiments.

Table 1. Inclusion of Exclusion of Design Inputs in a Series of Three Experiments

Experiment (Sample size)	Deliberation Opportunity	Official Input	Official Feedback
1 (N = 800)	Randomly assigned to half of sample (n = 400), Not present for other half (n = 400)	Yes	Yes
2 (N = 800)	Yes	Randomly assigned to half of sample (n = 400), Not present for other half (n = 400)	Yes
3 (N = 800)	Yes	Yes	Randomly assigned to half of sample (n = 400), Not present for other half (n = 400)

Measured Variables

The measured variables in our hypotheses will come from resident surveys and textual coding of residents' proposals, recorded in the online platform. The resident survey measures will use previously validated multi-item measures of process satisfaction (Gastil, Deess, Weiser, and Simmons 2010; Miller, Jackson, Mueller, and Schersching 1987). We will also use previously validated multi-item scales measuring confidence in government, which we operationalize in four dimensions: external efficacy (Craig, Niemi, and Silver 1990), perceptions of the municipal government's procedural fairness (Herian, Hamm, Tomkins, and Zillig 2012), perceived integrity (Murtin et al. 2018), and perceived competence (PytlikZillig, Tomkins, Herian, Hamm, and Abdel-Monem 2012). We will also include a short list of demographic measures in the initial registration survey for use as control variables and for further data analysis.

To measure the quality of the rating decisions made by participants, we will enlist public officials from NJ to code the suggestions made by residents using the Your Priorities platform. These officials will be familiar with the policy topic but not otherwise engaged in the experiment. We will employ a two-coder system with inter-rater reliability checks after initial training and periodic spot checks thereafter to avoid coder drift. This task is an adaptation of a decision-quality assessment tool that has been used previously (Gardinier 1999; Leathers 1972) to rate the text input provided by residents to the municipal government.

Plan of Work, IRB Review, Budget, and Collaboration Strategy

Project Schedule

From the time we obtain the research grant our project will span two years (Fall 2020 – Summer 2022), as shown in Table 2. Our project begins and ends by convening face-to-face workshops with program partners. The initial workshop will strengthen our working relationship with municipal government partners and tailor the details of the project (e.g., topic selection for engagement) to maximize its relevance to our partners without modifying our larger research goals. The final workshop will be an opportunity to share initial results with program partners, again with the intention of translating our more theoretical research into language that has more immediate relevance for them and other municipalities.

Table 2. Work Schedule Detailing Research Activity, Project Staff, and Budget Items

Period	Research Activity	Project Staff	Budget Items
Spring 2020 - Summer 2020	Obtain IRB approval	Alsina and Gastil	--
Fall 2020	Convene workshop with project participants	Alsina, Gastil, and RA organize workshop	Workshop RA salary
Spring - Summer 2021	Data collection in New Jersey	Alsina and RA lead experiments Gastil oversees data coding	Salary for Alsina, Gastil, and RA
Fall 2022	Final workshop with project participants	Alsina, Gastil, and RA organize workshop	Workshop RA salary
Spring - Summer 2022	Write publications for academic and public audiences	Alsina, Gastil and RA	Alsina and Gastil salary

Human Subjects Review

In Spring 2020, we will submit all research materials and protocols for IRB review at NYU and Penn State. The study elements requiring review will be surveys of residents participating in public engagements, accessing data collected by municipal governments through online platforms, and interviews conducted with public officials. Importantly, the Your Priorities software platform has already been procured and passed the Department of Homeland Security cyber-security review necessary for NJ to use the platform for official public engagement.

Principal Expenditures

Our budget includes summer salary for co-PIs Alsina (NYU) and Gastil (Penn State), as well as graduate research assistant support at both institutions. It also covers the expense of professional programming for Your Priorities platform customization for this project. The other main expense is the convening of a project workshop in each of the two budget years to bring together the research team and government partners. Such meetings are essential to coordinating topic selections, issue framing, comment input and coding, and feedback. Each of those stages requires careful coordination during the course of the study's three experiments. The first workshop will ensure that these steps are understood by all project partners, and the second workshop will aid in the interpretation and translation of the findings from the studies such that we can reach both academic and public audiences.

Research Collaboration Strategy and Prior NSF Research

Previous NSF grant-funded research has enabled Co-PI John Gastil to develop an intensively collaborative research strategy for collecting and analyzing data and publishing research findings. A 2003 grant ("Jury Deliberation and Civic Engagement," Award 0318513) led to a multi-authored scholarly book and fourteen articles co-authored by seven faculty, seven graduate students, and two undergraduates. A small 2009 grant ("Assessing the Deliberative Quality and Impact of the Australian Citizens and Online Parliaments," Award 0908554) yielded an edited scholarly book and four articles co-authored by eleven faculty, twelve graduate students, and five non-governmental organization officers. Two NSF grants supporting the Oregon Citizens' Initiative Review Research Project (NSF Awards 0961774 and 1357276/1357444) have led to a scholarly book and eighteen articles co-authored by thirteen faculty, five graduate students, and four non-governmental organization officers.

Even as an assistant professor, co-PI Alsina already has experience partnering with governments and academic research partners. This comes from her current position coordinating the CrowdLaw Research Initiative at the Governance Lab and being the Academic Director of the Center for Urban Science and Progress, as well as from previous work at the Ash Center for Democratic Governance and Innovation and the Belfer Center for Science and International Affairs at the Harvard Kennedy School. Likewise, Alsina previously promoted and successfully leaded two European Commission grant-funded research projects.

Broader Impacts

Mentoring Graduate Students and Junior Faculty

Our project will involve one assistant professor (co-PI Alsina) and graduate research assistants. Co-PI Gastil have decades of experience mentoring students and junior faculty, with many of their former advisees and collaborators having become tenured professors at other universities or researchers at nonprofit or commercial organizations. Noveck and Gastil share the same mentoring strategy, which requires working closely with collaborators at each stage of the research process and co-authoring publications with rotating author order and responsibilities.

Data Management

Our project includes the collection of open-ended comments and survey data from state residents, and we will de-identify all datasets after matching online engagement participant identities with their corresponding survey responses. During the coding process, we will also scan the text data for personally identifying information appearing within open-ended comments and edit those to remove any such identifiers. We provide additional detail on our Data Management Plan in the Special Information and Supplementary Documentation portion of this proposal, including the public availability of de-identified data, as requested by NJ.

Theoretical Significance for an Emergent Research Program

The successful execution of this project will merge theories of democratic deliberation online with the emergent practice of crowdlaw. By design, the model presented in this research proposal is a modest one, with a limited number of design variables, straightforward process measures, and a limited number of focal outcomes. Validation of this model will suggest the value of developing this model further to incorporate additional design variables, such as collective intelligence tasks and artificial intelligence systems commonly used in "smart cities" (Noveck 2015) and user-oriented design elements that can motivate long-term participation (Gastil and Broghammer In Press). We also view this project as launching an ongoing research program that will invite other governments, at and beyond the municipal level, to use the same engagement platforms and research protocols to replicate and extend the findings of our study. NYU's Governance Lab is built precisely for such projects, and we envision this becoming one of its flagship programs.

Social Impact

Returning to this proposal's introductory discussion, numerous governments around the world have begun using online public engagement as a means of making better decisions and building up confidence in public institutions. The number and variety of such efforts, however, has been matched by a lack of systematic investigation into which of these work best and why.

We intend our program of research to address this problem by bringing an integrated theoretical account to this practice, which we can test through systematic experimentation in the US. We will share the findings of our research, not only with fellow academics but also with governments, the world over. Given Chief Innovation Officer Noveck's global reputation in governance and both lead investigators' reputations with diverse civic and democratic reform organizations, we should be successful at translating our research into reports that will be widely read.

The NYU Governance Lab has built a mailing list of academics, policymakers, and politicians interested in online public engagement through its CrowdLaw Initiative. We will share the findings of our research via the CrowdLaw mailing list and online newsletter as well as in a special issue of the peer-reviewed ACM Digital Government Journal. Likewise, co-PI Gastil will disseminate our research findings within his professional networks of deliberation practitioners that reach beyond academia, including the National Civic League, the Deliberative Democracy Consortium, Democracy Research & Design, the National Coalition for Dialogue and Deliberation, and parallel networks in Canada, the UK, Europe, and Australia.

More fundamentally, we hope to enlist other governments in our ongoing research program through continued experimentation with online methods of engagement. If successful, we will persuade governments to not only benefit from the results of our research but also to contribute to our unfolding research program by assisting with ongoing collection of data. In the end, the "smartest" governments are those that not only learn from past research but who also recognize the value of joining such research efforts (Noveck 2009, 2015). In the end, this collaboration will serve to deepen our understanding of the demand for, use, and impact of online engagement platforms. If refined systems of engagement are successful, they could improve the responsiveness of democratic systems of governance, the quality of the policies and budget allocations they make, and, ultimately, the public's confidence in its ability to govern itself fairly and effectively through such institutions.

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<center>**Data Management Plan**</center>

Our data management plan will conform to NSF policy on the dissemination and sharing of research results, as well as policies established through international conventions, including the General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679) and the Regulation of the European Parliament and of the Council establishing Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020). We prepared our data management plan with those regulations in mind because we intend this project to launch what will become an international research program, which will require our data plan meeting the highest standards across all participating nations.

Research Participants
- This research project involves controlled social and behavioral experiments involving human participants. All of them will be residents of the state of New Jersey who voluntarily decide to participate in the citizen engagement opportunities promoted by the state government through the citizen participation platform Your Priorities. Considering the current number of registered users who regularly participate in this platform we expect the involvement/participation of a significant number of participants (estimated at roughly 800 participants for each of three experiments).
- In all cases, participants will be recruited only on a voluntary basis according to international declarations (Declaration of Helsinki, Edinburgh, 2000; Council of Europe Convention for the Protection of Human Rights and Dignity of Human Being with regard to the Application of Biology and Medicine, Oviedo, 1997; Universal Declaration on Bioethics and Human Rights adopted by UNESCO's General Conference on 19 October 2005). All participants will be healthy volunteers of legal age and will involve neither children, patients, nor people unable to consent.
- Participants, who will be volunteers, will be informed beforehand about the purpose of the activity they will be involved in, the type of data collected, the intended use of this information, the measures taken to protect their privacy and their right to withdraw from the project or prohibit the use of their data at any time. They will be asked whether they need any further clarification.
- Later on, they will be handed a document containing information about the project and a statement of informed consent, which they will be asked to agree. More specifically, the document will contain the objectives of the research, the institutions involved, the usefulness of the participation of the volunteers, a statement of scientific and confidential use of the data, a statement that participation is voluntary and can be interrupted at any time, clarification about the lack of compensation (financial or otherwise), a statement about the exclusive use of the information on and for the project and an explanation of whom to contact in case of an incident or simply for more information about the project. This informed consent will be written in a language and in terms they can fully understand.
- The Your Priorities software platform has already been procured and passed the Department of Homeland Security cyber-security review necessary for NJ to use the platform for official public engagement.

Privacy and Confidentiality
- Confidentiality of data will be maintained by using research identification numbers/codes that uniquely identify each user. Researchers will ensure that data generated as a result of the trial will be kept securely and that the form of any

exploitation and publication neither directly nor indirectly leads to a breach of agreed confidentiality and anonymity.

- Each participant will be given an ID code. Participants' performance will be anonymous and stored with only this ID code as identifier.
- None of the data collected in this research is, in principle, socially or personally sensitive. Some demographic information about participants is necessary for the study, such as age, gender, handedness and language history, but this information will be also stored with the data files, only identifiable through the ID codes.

Digital Data Collection, Storage, and Protection

- Only relevant data will be collected, not more than what is strictly needed for the project. This digital information will be centrally stored at a NYU server, which is located within a secured environment with controlled access and is provided with a backup service to prevent data loss from accidental deletion or corrupted file systems.
- For the purpose of data collection during the study, databases are stored on single-purposed virtual machines, allowing us to setup security policies higher than the ones deployed on multi-purpose servers. User authentication is restricted over an SSL-enabled OpenLDAP and a policy group based access is configured, restricting access only to selected users. Four times a day an automatic snapshot of the virtual machine is performed, allowing daily non-disruptive backups. Once a night, another snapshot of the running state of the virtual machine is performed and automatically transferred to a secondary storage over a dedicated edge-to-edge 10Gb connection. This secondary storage is placed outside of the main datacenter, and allows recovery if a long-time failure of the main datacenter happens. Backup data access is performed by both project managers and IT staff, without needing direct physical access to any of the devices. Physical security is performed on several ways. Regarding data security, we have implemented restricted access to the main datacenter (based on access cards), allowing a tracking of all people entering the datacenter. Access to the virtualization cluster console is strictly restricted to the IT administration staff. Additionally, the main datacenter has two different power incomes, and also two different UPS devices, allowing prolonged power outages and level power oscillations. Fire and water counter-measures are also installed on the main datacenter.

Data Publication, Retention, and Destruction

- Findings will be summarized and be made available via email before the destruction of the email list of study participants. Once the project is finished, GovLab co-PI Alsina will keep any documents that could be useful for administrative or judicial claims.
- As requested by the State of New Jersey, the data will be made available as anonymized ASCII data, with ID codes but no personally identifiable information such as email or IP addresses. Research instruments (Your Priorities configurations, survey materials) will be retained in that same public archive.
- Data will be available for inspection on request via GovLab co-PI Alsina, and the anonymized data will be shared with researchers interested in reanalysis or replication, so long as that use conforms with IRB regulations at both NYU and the researcher's own institution.