

Public Trust and Collaborative Governance: An Instrumental Variable Approach

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Abstract

This research investigates the effects of trust in government on citizens' perceptions of collaborative governance. To overcome endogeneity of measuring trust in traditional surveys, I proposed an alternative design that uses randomly assigned public integrity information as the instrumental variable of trust in government. The results from two online experiments indicate that citizens have strong preferences on public-citizen partnership, regardless the variations of trust in government. Moreover, trust in government has nonlinear effects on perceived public-private partnership and willingness to coproduce. These findings provide new opportunities to study public trust and offer implications to further develop collaborative governance theory.

Keywords: public trust, collaborative governance, coproduction, priming experiment

Introduction

Does public trust matter, and matter to what? This research question has been examined rarely in the field of public management, although the study of public trust is central in explaining why trust increases or declines, given that it is an important social outcome ([Grimmelikhuijsen et al. 2013](#); [Im et al. 2014](#)). The rising antipathy toward government in Western democracies increases the need for scholars to advance their knowledge about the causes of public distrust¹. However, as the level of trust in government is already at its historical low, we should view it not only as a social outcome, but also explore its costs and consequences to citizen-state interaction.

The normative argument about public trust and citizen-state interaction is prominent. As [Bryson et al. \(2014, 446\)](#) argued, government should include citizens in public affairs as active problem-solvers and coproducers when the traditional belief in using performance effectiveness and efficiency to govern is challenged “... at a time of historic distrust of a broad range of institutions.” In today’s diverse society, public interest is not based upon aggregated self-interests but “open, inclusive, and informed discussion of values” ([Denhardt and Denhardt 2015, 667](#)). Therefore, government should include diverse and cross-sector actors, such as local communities, nonprofits, and business groups in a collaborative decision-making process. In this way, government can improve the democratic institution in policy implementation and response to the current prevailing public distrust.

Nevertheless, there are two contradictory empirical assumptions in this normative argument. Some scholars assume that distrust in government will increase citizen participation in public affairs because they have strong motivations to exercise their rights of checks and balances ([Parry 1976](#); [Van De Walle and Six 2014](#)). Therefore, the emerging collaborative governance forms hold government accountable. In contrast, others predict that the erosion of trust in government may cause citizens to hold cynical views of any government action and discourage them from participating in public affairs ([Van De Walle and Six 2014](#)). If so, col-

¹See report from [Edelman Trust Barometer 2021](#).

laborative governance may fail before civic engagement. The unclear theoretical mechanism between public trust and collaborative governance hinders the development of scholarship in this area and makes it difficult for practitioners to design effective institutional tools to ameliorate adversarial citizen-state relationships.

The existing literature relies on survey questions to measure the degree of trust, which creates endogeneity issues that avoid scholars to further investigate the effect of trust on potential outcomes, such as perceived collaborative governance. With this method, trust is associated with other survey items and suffers from common source bias in establishing a causal argument (Meier and O'Toole 2012). In addition, it is difficult to create a counterfactual world between people who trust and do not trust government in surveys. Therefore, what public trust affects is an enduring puzzle in the public management literature.

The purpose of this article is to overcome the endogeneity issue in measuring public trust and enrich our theoretical knowledge of the causal relation between public trust and collaborative governance. To make the concept of trust exogenous, I conducted two online experiments that assigned information randomly to prime subjects into different levels of trust in government. Then, I estimated the effects of public trust on evaluations of different collaborative governance forms, including public-private partnership, public-citizen partnership, and willingness to coproduce.

The findings suggested that public trust has no effect on perceived public-citizen partnership, but it has a nonlinear effect on willingness to coproduce. Distrust in government declines citizens' willingness to coproduce, but high trust in government does not boost their willingness to coproduce. Moreover, I find mixed effect of trust in government on perceived public-private partnership. When asking citizens to provide general opinions on collaborative governance, distrust in government declines their support for public-private partnership, but high trust in government does not increase this support. However, this result is not replicated when citizens evaluated public-private partnership in an environmental program.

In the following section*s, I introduce the definition of trust in government in this study

and discuss the need for developing trust in government as independent variables in the field of public management. Then, I theoretically demonstrate why trust in government matters for collaborative governance and list out my hypotheses. Next, I introduce the instrumental variable approach to estimate trust in government, and examine my hypotheses with this method in two online experiments (Study 1 & 2). Finally, I discuss the theoretical implications of the findings.

Trust in Government

Trust is a basic concept that appears in many social science disciplines. Understanding its causes and outcomes is fundamentally important for us to study the way society works. As a widely used concept, trust has diverse definitions. In this article, I follow the interdisciplinary definition that [Rousseau et al. \(1998, 395\)](#) proposed, “Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another.” Other public administration scholars have accepted this definition ([Berg and Johansson 2020](#); [Grimmelikhuijsen et al. 2013](#); [Grimmelikhuijsen and Meijer 2014](#)). Specifically, this article focuses on public trust, which demonstrates citizens’ positive expectations of government’s intentions or behaviors ([Beshi and Kaur 2020](#); [Cheema and Popovski 2010](#)).

A large body of literature in public administration has investigated why and how people trust government. Most of the factors that affect public trust derive from three dimensions: competence; benevolence, and honesty ([Mayer et al. 1995](#)). Competence describes government’s effectiveness and capacity to provide public goods ([Hetherington and Husser 2012](#)). Different from competence, benevolence states whether the intention of government action is committed to public interests ([Levi and Stoker 2000](#)). The final dimension, honesty, reflects the government’s integrity, which is measured by the willingness to tell the truth ([Grimmelikhuijsen et al. 2013](#)). These dimensions are interrelated, but they also demonstrate separately the derivation of public trust.

Based upon these dimensions, public administration scholars have identified multiple institutional factors that may explain the variation in trust, such as government performance, transparency, e-government, political affiliation, and coproduction (e.g., [Farazmand and Carter 2004](#); [Houston and Harding 2013](#)). For example, [Yang and Holzer \(2006\)](#) established a comprehensive framework to test the performance-trust link. To improve public trust, they suggested that a performance measurement should be citizen-centric, systematic across agencies, and include external actors in the evaluation process. In addition to performance, government openness is another important concept that affects public trust. Transparency, e-government, and coproduction can all be categorized as explanatory variables in this stream. Transparency has mixed effects on public trust ([Cucciniello et al. 2017](#)). On the one hand, it creates an open culture in governance, but on the other, citizens may become uncertain and confused when they are exposed to overwhelming amounts of government information ([Grimmelikhuijsen et al. 2013](#)). [Im et al. \(2014\)](#) found that e-government can moderate the negative effect of internet use on trust in government. Their results offer considerable implications for practitioners' efforts to mitigate the erosion of public trust. More relevant to this study, [Kang and Van Ryzin \(2019\)](#) investigated the causal relation between coproduction and public trust in a survey experiment. They predicted that coproduction generates "...positive feelings toward self-made products" and eventually has a positive effect on public trust ([Kang and Van Ryzin 2019](#), 1649). However, they obtained null finding from this hypothesis, which suggests that the theoretical relation between coproduction and public trust is more complex than expected.

As these studies have shown, the theoretical development of public trust has increased greatly in the last two decades. Nevertheless, what public trust affects when it serves as an explanatory variable has attracted much less attention. Therefore, the theoretical foundation of public trust is incomplete. Referring to [Citrin and Stoker \(2018, 50\)](#), "...A trusts B to do X. Trust always has an object or target (B), which could be a person, group, or institution, and a domain of action (X) where trust is given or withheld." What we know is

the reasons why citizens (A) trust or mistrust their government (B); what we have yet to explore is the action (X) where trust is given or withheld. The political science literature uses trust to predict policy preferences and political participation. For example, trust in federal government leads people to support government involvement in international issues (Hetherington and Husser 2012), but does not cause them to support redistribution policies (Peyton 2020). On the other hand, distrust in government spurs political engagement, such as making financial contributions and contacting elected officials (Miller and Krosnick 2004; Miller et al. 2016). In summary, trust in government shapes the public legitimacy of government's discretionary power and affects citizens' willingness to add their own voice in public affairs.

These phenomena also apply to the field of public administration. Cooper et al. (2008) investigated the association between public trust and approval in zoning, and found that local administrators' discretion in zoning is correlated positively with trust in local government. Im et al. (2014) also showed that citizen compliance is associated positively with trust in government. Although the existing literature has not used public trust to predict social outcomes frequently, both studies have important implications that public trust can be a critical factor in citizen-state interactions.

Trust Regimes

The normative foundation between public trust and citizen-state interaction derives from the development of trust regimes. Bouckaert (2012) categorized three types of trust regimes: institution-based; calculus-based, and relational, each of which corresponds with a specific historical era. The institution-based trust regime occurred in the traditional public administration era. In this approach, public trust is built on clear rules and regulations in a Weberian hierarchical system, which defines professional bureaucrats' rights and duties clearly. Moving beyond the traditional public administration, the New Public Management marketized public services, so government performance became the main predictor of public

trust. In this era, public trust was calculus-based, which suggests that government should maintain a high level of public trust by collecting data on expectations, satisfaction, and making quality models of public services explicit.

Today, we are living in the relational trust regime. Political communication is no longer one-way in the government-to-citizen direction. Trust is the outcome of not only institutional rules or public performance information, but also is an attribute embedded in ongoing citizen-state interactions. As [Bouckaert \(2012, 16,17\)](#) argued, “Citizens’ trust could be influenced by a willingness for partnerships, co-production, volunteering, public-service motivation and sharing policy objectives of the public sector and society”; and citizens’ trust also “... pushes for co-design, co-decision, co-production and co-evaluation.” These two-way effects urge the public trust scholarship to give attention to the way public trust affects collaborative governance.

In the following sections, I demonstrate theoretical links between public trust and perceptions of two different forms of collaborative governance: public-private partnership and public-citizen partnership. Further, I compare the competing theories of public trust on willingness to coproduce. It is worth noting that all three hypotheses in the next sections are exploratory, because we do not have well established theories in these areas yet.

Perceived Collaborative Governance

This article uses [Ansell and Gash \(2008, 544\)](#) classic statement to define collaborative governance: “A governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented and deliberative and that aims to make or implement public policy or manage public programs or assets.” This definition has been widely used in public management literature (e.g., [Dupuy and Defacqz 2021](#); [Lee and Esteve 2022](#)). In this section, I demonstrate theoretical links between public trust and perceptions of two different forms of collaborative governance: public-private partnership and public-citizen partnership. Further, I compare

the competing theories of public trust on willingness to coproduce. It is worth noting that all three hypotheses in the next sections are exploratory, because we do not have well established theories in these areas yet.

Trust and Public-private Partnerships

Public-private partnership is a prevalent governance strategy. It is defined as the “...integrated risk-sharing agreements that hold both public and private partners to account for project’s success” (Boyer and Van Slyke 2019). By participating in the decision-making process of public goods production, private sector organizations bring special technical expertise, financial resources, and innovation ideas into public management. However, accountability is always a concern in public-private partnerships. As Forrer et al. (2010, 477) argued, “Accountability in PPPs requires the creation of proper safeguards to ensure that public services are not compromised for the sake of private profits.”

A successful public-private partnership should be accountable not only to its partners, but also to citizens. In this sense, citizens’ attitudes toward public-private partnerships are normatively important. Indeed, citizens are more likely to be critical of public-private partnerships than contracting or privatization (Boyer and Van Slyke 2019). The latter two are often simple to understand in citizens’ minds, because the private role is clear and the mechanism is market-based (Thompson and Elling 2000). Service performance and goods quality describe private sector organizations’ capacity. However, the private role is vague in public-private partnerships. One cannot simply attribute service failure to the private capacity, because the decision-making process between government and private organizations is a black box.

When information is asymmetric, trust becomes crucial, as it helps individuals establish heuristics toward government actions. I expect that trust in government affects citizens’ perception toward public-private partnerships positively. When citizens trust government and have a positive expectation of its intentions or behaviors, they will be more likely to

believe that the public-private partnership will benefit public interest. In contrast, distrustful citizens will be skeptical about the motivation of a public-private partnership and assume that it is created for public officials' personal benefits or business groups' private profits.

The most relevant evidence of this argument is from [Boyer and Van Slyke \(2019\)](#). They hypothesized a negative relation between trust in government and attitude toward public-private partnerships, because trust in government may reduce public support for market-oriented reforms. In contrast, their survey results showed that trust in government is associated positively with support for public-private partnerships, because trustworthy civil servants can be relied upon to manage partnerships with private organizations. Based upon the above argument and this evidence, I assume that:

H1: Trust in government affects citizens' attitude toward public-private partnerships positively.

Trust and Public-citizen Partnership

In contrast, the theoretical relations between trust in government and the attitude toward public-citizen partnerships may be negative. When trust in government declines, citizens may be more likely to favor public-citizen partnerships, because they want government actions to be monitored.

This argument is rooted in the classical liberal theory in which citizens have rights to exercise checks and balances in public affairs. In this sense, a certain level of distrust in government is not necessarily a problem because citizens remain alert to government actions and hold the government accountable thereby ([Van De Walle and Six 2014](#)). Otherwise, a high level of trust in government may be risky to society and the authorities in power will face less control. Several empirical studies on government discretion have supported this idea. For example, [Cooper et al. \(2008\)](#) found that public trust is associated positively with citizens' support of local government's discretion in zoning decisions. Similarly, some authors have observed that when citizens have little trust in government, they prefer that

social organizations rather than the government design social policies and welfare programs (Chanley et al. 2000; Hetherington and Husser 2012).

Rather than monitoring government actions passively by evaluating public performance, involving citizens actively in public affairs is an innovative way to hold the government accountable. Compared to other forms of third sector monitoring, citizen involvement is a direct mode to monitor government actions. Including citizens in making policy decisions can add their vision and voice into public affairs effectively (Meijer et al. 2012). It can not only improve government accountability, but also improve the diversity of opinions in the policy process. Therefore, government-citizen coproduction is a prominent and long-standing concept in public administration literature. However, scholars have limited knowledge of the way citizens perceive coproduction. Is it a necessary tool to create public goods when the government's capacity to serve public interests is in doubt? Or, do citizens view coproduction as too great a burden to their daily lives when the government can be trusted to manage public goods production? These questions are important for us to disentangle the complex citizen-state interactions, but we lack empirical evidence of them. Therefore, I propose the following hypothesis:

H2: Trust in government affects citizens' attitude toward public-citizen partnerships negatively.

Trust and Willingness to Coproduce

If public-citizen partnership is an important governance tool to enhance the quality of public goods, we should study why citizens choose to coproduce or not. Therefore, the existing literature has discussed several predictors of willingness to coproduce, such as representative bureaucracy (Ricucci et al. 2016), socioeconomic status (Clark et al. 2013), and public service motivation (Uzochukwu and Thomas 2018).

As Kang and Van Ryzin (2019) found that trust in government is not attributable to coproduction, the theoretical mechanism between these two variables is more complex than

scholars expected. In this study, I suggest a reverse causality approach, in which trust affects citizens' willingness to coproduce. Although few studies in the field of public administration have discussed this causal direction, political scientists have provided some implications from studying trust and political participation. There are two competing approaches: trust-participate and mistrust-participate. On the one hand, trust could be a catalyst for citizen participation, because citizens believe that their inputs are meaningful in a trustworthy institution. Without trust, citizens would hold cynical views toward government and hesitate to participate in anything related to it (Van De Walle and Six 2014). On the other hand, trust may generate satisfaction with government and "... view it as needing little monitoring" (Citrin and Stoker 2018, 62). In this sense, distrustful citizens may be more willing to monitor government and participate in the decision-making process.

It is worth noting that the attitude toward public-citizen partnerships and willingness to coproduce is based upon two different psychological foundations. When individuals believe others should participate more in monitoring government actions, it does not necessarily mean that they will do the same. Therefore, H2 corresponds only with the second approach in the trust and willingness to coproduce link. Individuals may also use the first approach. They may decline to join coproduction activities because of their cynical views toward government, but they may still wish others to do so and hold government more accountable. With respect to this theoretical complexity, it is valuable for us to test the theoretical link between trust and willingness to coproduce empirically.

H3: Trust in government affects citizens' willingness to coproduce positively (or negatively).

Instrumental Variable Estimation for Trust in Government

To test the hypotheses above, I designed two online experiments. To identify the trust effect on individuals' perceived collaborative governance causally, I adopted an instrumental

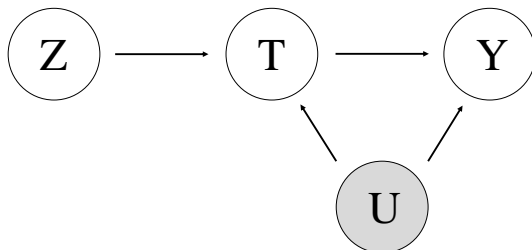
variable (IV) approach in both experiments in the following steps. First, I primed subjects' trust in government by randomly assigned them to read information about government integrity in one of three arms: *Corrupt*, *Control*, and *Honest*. Second, I asked subjects to indicate their trust in government. Finally, I measured the outcome variables: perceived collaborative governance.

With these steps, the randomized government integrity information serves as the instrumental variable to estimate trust in government and helps us to further predict the causal relations between trust in government and the outcome variables (Peyton 2020). This experimental design satisfies two core assumptions of IV: (1) The instrument should be strongly correlated with the explanatory variable; (2) the instrument should not be correlated with any confounders between the explanatory variable and the outcome variables (Angrist and Pischke 2008). The diagram in Figure 1 displays both assumptions. The positive relation between government integrity (Z) and trust in government (T) is established well in the political science and economic literature (see Green et al. 2018; Kuziemko et al. 2015; Peyton 2020). So, my design theoretically satisfies the first assumption. As Imbens (2014, 16) suggested, the second assumption "...requires that the instrument is as good as randomly assigned." Accordingly, the government integrity information is randomly assigned in our experiment, which fits with Imbens's definition and would not be correlated with any confounder (U) between T and the outcome variables (Y).

My priming experiments with the IV approach overcome the endogeneity of using self-reported trust in a regression analysis, as self-reported trust may raise several identification issues, such as reverse causality (Peyton 2020; Van de Walle and Bouckaert 2003) and common source bias (Meier and O'Toole 2012). These issues hinder the theoretical development of public trust and avoid researchers to use trust in government as an explanatory variable to predict public management outcomes. Especially in this case, both trust in government and perceived collaborative governance are self-reported survey items from the same questionnaires. The common source bias issue would be salient if we simply regressed collaborative

governance items on trust in government. Therefore, the IV approach is a remedy to this problem.

Figure 1: Instrumental Variable Estimation for Trust in Government



Note: The instrumental variable Z is the randomly assigned government integrity information. Z should have strong correlation with the treatment variable: trust in government T . Y is the outcome variable: perceived collaborative governance. Based on the random assignment, Z is not correlated with any confounder U between T and Y .

Based on the design, I use the two-stage least squares model (2SLS) to estimate trust effects on the outcomes. Following [Peyton's 2020](#) recommendation, I coded the experimental conditions: *Corrupt* = 0; *Control* = 1; *Honest* = 2. In this way, the government integrity variable Z is standardized based on its level from low to high. The following equation displays the IV estimator (also see [Angrist and Pischke \(2008\)](#) Chapter 4.1).

$$\hat{\beta}_{IV} = \frac{\widehat{Cov}(Y_i, Z_i)}{\widehat{Cov}(T_i, Z_i)} = \frac{\widehat{Cov}(Y_i, Z_i)/\widehat{Var}(Z_i)}{\widehat{Cov}(T_i, Z_i)/\widehat{Var}(Z_i)} \quad (1)$$

This coding scheme assumes a linear relation between government integrity and trust in government. However, one can also interpret *Corrupt* and *Honest* as two mutually exclusive instruments to prime subjects separately into distrust and trust in government conditions. It is worthy to discuss the effect of distrust and trust in government separately, because declining trust and increasing trust may lead different behavioral outcomes ([Van De Walle and Six 2014](#)). Therefore, I conduct subgroup analyses. When comparing subjects in *Corrupt* and *Control*, I coded $Z_{corrupt} = 1$ if assigned *Corrupt* and $Z_{corrupt} = 0$ if assigned *Control*. When comparing subjects in *Honest* and *Control*, I coded $Z_{honest} = 1$ if assigned *Honest* and

$Z_{honest} = 0$ if assigned *Control*. I compare results using both coding schemes in both Study 1 & 2. In the following, I elaborate my design, sample, result, and discussion for each study (replication data are available at [Harvard Dataverse](#)).

Study 1: A Vignette Experiment

Study 1 is pre-registered at Open Science Framework (<https://osf.io/4gcfz>). This study examines the trust in government effect on perceived collaborative governance in a hypothetical environmental program vignette. The purpose of using hypothetical scenario is to exclude pre-experimental effects from real-world confounders, such as individuals' prior attitudes toward government (Kang and Van Ryzin 2019).

Design

I assigned subjects randomly to three groups: *Corrupt*, *Control*, and *Honest*, and asked them to read government integrity information about a hypothetical American municipality: Midtown. Table 1 displays the treatment information.

Table 1: Experimental Conditions in Study 1

[Introduction] Assuming that Midtown is a medium-sized American city, which has 100,000 population. The Midtown government is led by 1 city mayor and 10 city council members. All of them are elected officials.		
<i>Corrupt</i>	<i>Control</i>	<i>Honest</i>
Midtown has an historical problem with corruption. In the last 20 years, 15 elected officials and 50 private individuals have been charged for corruption.	No additional information	Midtown is well known for its public integrity. In the last 20 years, no elected official or private individual has been charged for corruption.

Next, I measured subjects' trust level by asking (0-100, from never to always): "How much of the time do you think you can trust the government in Midtown to make decisions in a fair way?" This question was adapted from American National Election Studies

(ANES) measures of political trust. In the following page, subjects were introduced to a public program: community choice aggregation (CCA). CCA is an actual energy program that empowers municipal governments to purchase renewable energy for local communities (O’Shaughnessy et al. 2019). Next, subjects need to state their perceptions of public-private and public-citizen partnership in the following statements (0-100, from strongly disagree to strongly agree): “The CCA implementation board should include [business groups/local citizens] to monitor the policy decision-making process. The [government-private/government-citizen] partnerships will benefit local interests in your community.” I also included two veiled questions on the same survey page, both of which were about their attitude toward renewable energy. I randomized the order of these questions (two dependent variable questions and two veiled questions) to avoid order effect. Next, subjects were asked to indicate their willingness to coproduce (0-100, definitely not to definitely yes): “As a local resident, are you willing to participate in the CCA implementation board and oversee the decision-making process of the Midtown government?”. Finally, I asked the manipulation check, attention test, and demographic questions including sex, age, race, ideology, income, education, and climate beliefs. I also include a debriefing page at the end of survey to demonstrate the experimental purpose. [Appendix A.1](#) reports the full survey questionnaire in Study 1.

Sample

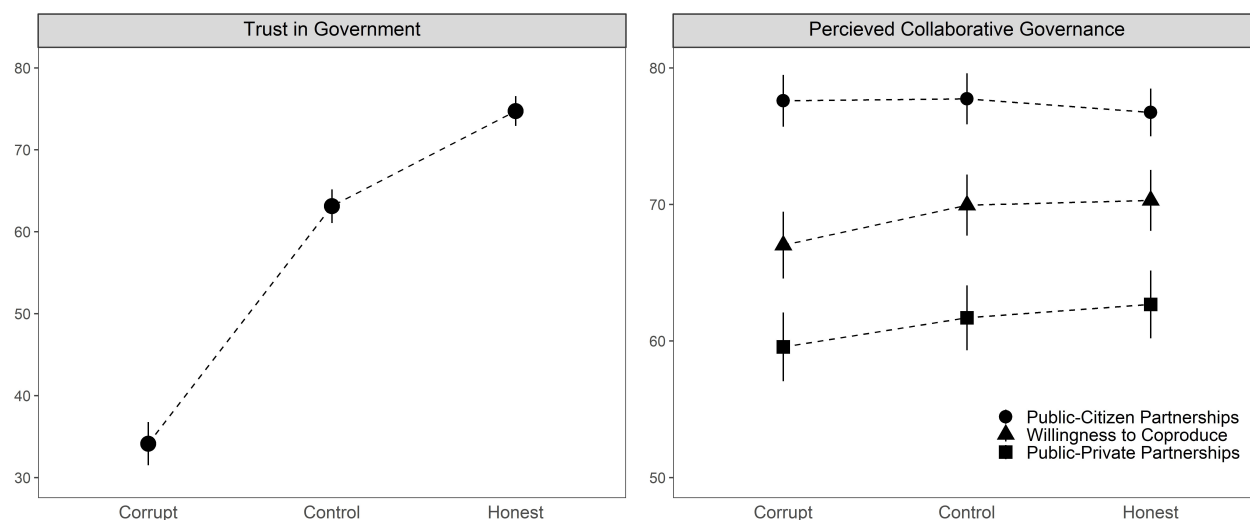
This experiment was conducted in May 2021 via Amazon Mechanical Turk (MTurk). I recruited MTurk registered workers to complete a voluntary survey for small payment. The survey invited only adults who are living in the United States currently. The final sample included 1198 subjects (48% female, Mean(age) = 40) from MTurk. The survey invited only adults who are living in the United States currently. The *Control* group included 406 individuals, *Corrupt* group 406, and *Honest* group 386. The sample was balanced essentially across the experimental groups overall. 76% of the subjects answered both the manipulation check and attention test questions correctly. [Appendix A.2](#) reports the more detailed sample

characteristics and randomization checks.

Result

The analysis began with an initial assessment of analysis of variance (ANOVA) between the experimental conditions. This analysis shows that the experimental groups significantly differ of their levels of trust in government ($F(2, 1195) = 345.40, p = 0.00$). I visualize this result in the left panel of Figure 2. In *Corrupt* group, the mean degree of trust was 34.13 ($SD = 27.05$), and it increased to 63.11 ($SD = 21.06$) in *Control* group and 74.72 ($SD = 18.19$) in *Honest* group. This evidence indicates that the government integrity priming manipulation effectively ranked subjects' levels of trust in government from low to high. Therefore, coding government integrity as an integrated instrumental variable (from 0 to 2) of trust in further analyses is appropriate. The right panel of Figure 2 reports the descriptive differences in preferences between the forms of collaborative governance in each experimental group. I demonstrate the results of hypotheses testing in the following.

Figure 2: Trust in Government and Perceived Collaborative Governance by Experimental Conditions in Study 1



Note: Bars are 95% confidence intervals.

Table 2 displays the causal analysis for hypotheses testing in 2SLS models. Model 1 in Table 2 is the first-stage model that uses government integrity as the instrument to

predict trust in government, and Model 2-4 in Table 2 are second-stage models regarding different collaboration forms as dependent variables. Model 1 shows that 1 level increase in government integrity (from *Corrupt* to *Honest*) leads to 20.40 degree ($SE = 0.80, p = 0.00$) increase in trust in government. This evidence suggests that the 2SLS estimator is justified by strong first-stage effect and random assignment. In the following paragraphs, I test second-stage effects of trust on each dependent variable.

Table 2: 2SLS Estimate in Study 1

	First-stage		Second-stage	
	Trust in Government	Public-private Partnership	Public-citizen Partnership	Willingness to Coproduce
	(1)	(2)	(3)	(4)
Trust in Government		0.08 [†] (0.04)	-0.02 (0.03)	0.08* (0.04)
Government Integrity	20.37*** (0.81)			
Constant	37.00*** (1.04)	56.92*** (2.54)	78.54*** (1.94)	64.44*** (2.39)
R ²	0.35	0.04	-0.00	0.03
Observation	1198	1198	1198	1197

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; [†] $p < 0.1$. Standard errors are in parentheses. Government integrity is measured by coding experimental conditions as: 2 = *Honest*; 1 = *Control*; 0 = *Corrupt*. The first-stage regressions for Model (2) – (4) are the same, which all use government integrity as the instrument of trust in government.

Model 2 in Table 2 suggests a weak positive effect of trust in government on perceived public-private partnership ($\hat{\beta}_{IV} = 0.08, SE = 0.04, p = 0.07$). Model 3 in Table 2 shows null effect of trust in government on perceived public-citizen partnership ($\hat{\beta}_{IV} = -0.02, SE = 0.03, p = 0.53$). Model 4 in Table 2 indicates a positive effect of trust in government on willingness to coproduce ($\hat{\beta}_{IV} = 0.08, SE = 0.04, p = 0.04$).

Next, I treat *Corrupt* and *Honest* as separate instruments. Panel A in Table 3 only includes subjects from *Honest* and *Control* groups, and Panel B in Table 3 only includes subjects from *Corrupt* and *Control* groups. Models A1 and B1 in Table 3 suggests that *Corrupt*

and *Honest* both contributes strong first-stage effect. For public-private partnership and public-citizen partnership, Models A2-3 and B2-3 in Table 3 have indistinguishable effects, which are consistent with results using government integrity as the integrated instrument in Table 2 (rejecting *H1* and *H2*). However, the trust effect on willingness to coproduce is only observed moderately in using *Corrupt* as the instrument (Model B4 in Table 3), but this effect is not observed in using *Honest* as the instrument (Model A4 in Table 3). Therefore, distrust in government moderately declines willingness to coproduce comparing to the *Control* group, but high trust in government does not increase willingness to coproduce comparing to the *Control* group (partially supporting *H3*).

Table 3: 2SLS Estimate Using *Honest* and *Corrupt* as Separate Instruments in Study 1

	First-stage		Second-stage	
	Trust in Government	Public-private Partnership	Public-citizen Partnership	Willingness to Coproduce
Panel A	(A1)	(A2)	(A3)	(A4)
Trust in Government		0.08 (0.15)	-0.09 (0.12)	0.03 (0.14)
Honest	11.61*** (1.40)			
Constant	63.11*** (0.98)	56.36*** (10.16)	83.16*** (7.96)	68.04*** (9.48)
R ²	0.08	0.04	-0.06	0.01
Observation	792	792	792	791
Panel B	(B1)	(B2)	(B3)	(B4)
Trust in Government		0.07 (0.06)	0.01 (0.05)	0.10† (0.06)
Corrupt	-28.98*** (1.70)			
Constant	63.11*** (1.20)	57.05*** (3.01)	77.42*** (2.37)	63.56*** (2.89)
R ²	0.08	0.04	-0.06	0.01
Observation	812	812	812	812

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. Standard errors are in parentheses. In Panel A, *Honest* is measured by coding experimental conditions as: 1 = *Honest*; 0 = *Control*. The first-stage regressions for Model (A2) – (A4) are the same, which all use *Honest* as the instrument of trust in government. In Panel B, *Corrupt* is measured by coding experimental conditions as: 1 = *Corrupt*; 0 = *Control*. The first-stage regressions for Model (B2) – (B4) are the same, which all use *Corrupt* as the instrument of trust in government.

Discussion

Results from Study 1 suggests a positive relation between trust in government and willingness to coproduce. This relation is driven by moving subjects from neutral trust to distrust in government, but there is no difference in willingness to coproduce between subjects have neutral trust and high trust in government. The trust effect on public-private partnership or public-citizen partnership are indistinguishable from zero. I also include two robustness checks in appendices. In [Appendix A.3](#), I run 2SLS models with the two veiled

questions as placebo dependent variables. Trust in government has null effect on either of them. In [Appendix A.4](#), I treat government integrity as the categorical explanatory variable and run OLS regressions. I obtain similar findings as the results in [Table 3](#).

However, this study still has three limitations that need to be addressed. First, individuals' trust in the hypothetical "Midtown" government may not be translated into their actual trust in government in the real world. Second, the single item ANES measurement of trust may not be generalizable to the multi-dimensional concept of trust in government. By saying that, we do not know whether the government integrity information can simultaneously prime subjects trust in government's competence, benevolence, and honesty. Finally, Study 1 tests the trust effects on an environmental program, so its external validity should be discussed in a more general approach. Therefore, I conducted Study 2 to improve these limitations and test the robustness of above findings.

Study 2: A General Opinion Experiment

Study 2 is pre-registered at Open Science Framework (<https://osf.io/jg2vb>). The purpose of this study is to replicate findings in Study 1 in a general context with providing real local government information.

Design

I randomly assigned subjects to read different integrity information of U.S. local governments, which are real information available from U.S. Department of Justice. Subjects in *Control* group saw no information about government integrity. Subjects in *Corrupt* group saw a bar plot that local governments have more corruptions than state governments. Subjects in *Honest* group saw a bar plot that local governments have fewer corruptions than federal and state government. Both *Corrupt* and *Honest* groups were also asked to record what they saw in the bar plot. [Table 4](#) displays the actual treatment information subjects received.

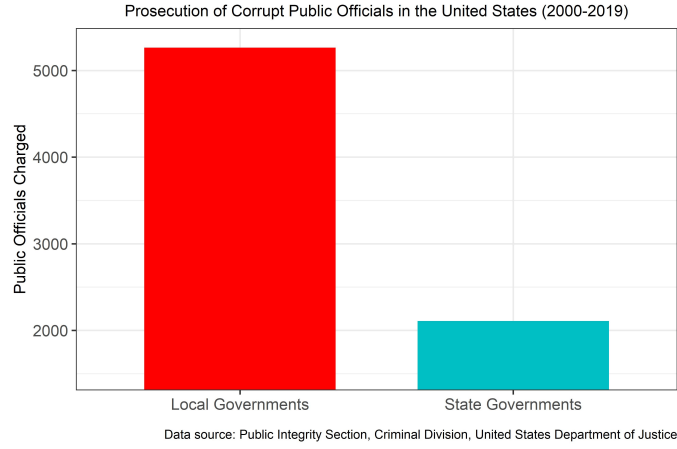
Next, subjects need to state their trust in local governments in three items in a random order. The items were the following statements (1-7, from strongly disagree to strongly agree): (1) Local governments have the competence to provide good public programs, (2) local governments exert their best efforts to meet the needs of their citizens, (3) local governments are honest. These statements are adapted from [Berg and Johansson \(2020\)](#) and respectively indicate the three conceptual dimensions of trust: competence, benevolence, and honesty. I took the average score of these three items to measure trust in government².

After the trust items, subjects were asked to state their perceptions of three collaborative governance items in a random order. To measure perceptions on public-private partnership and public-citizen partnership, subjects were asked to state (0-100, strongly disagree to strongly agree): “[Business groups/Local citizens] should be included in local policy decision-making process. The [government-private/government-citizen] collaboration will benefit local interests.” To measure willingness to coproduce, subjects were asked to state (0-100, definitely not to definitely yes): “As a local citizen, are you willing to participate in your city or town government’s policy decision-making processes?” Finally, subjects answered the same set of demographic questions in Study 1 as well as two additional questions about Covid19 concerns . We also include a debriefing page at the end of survey to demonstrate the experimental purpose. [Appendix B.1](#) reports the full survey questionnaire in Study 2.

²Computation: (competence + benevolence + honest)/3.

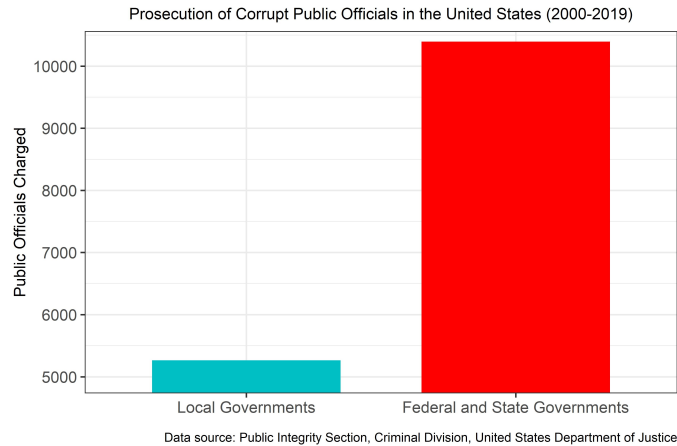
Table 4: Experimental Conditions in Study 2

Corrupt According to data from the Department of Justice, American local governments have more corruptions than we assumed.



Control No information

Honest According to data from the Department of Justice, American local governments are very honest, comparing to the federal and state governments.



Note: Corruption data in Study 2 is from the annual reports of government Integrity, which is available on the website of U.S. Department of Justice.

Sample

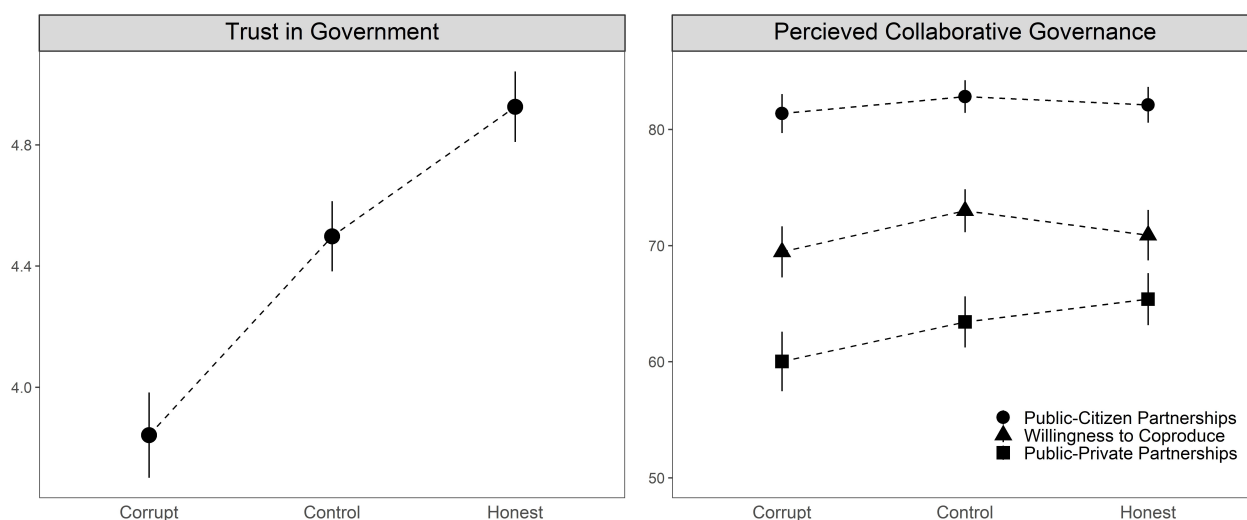
This experiment was conducted in January 2022 via MTurk using the same recruiting process as Study 1. The final sample included 1337 subjects (60% female, Mean(age) = 38). The *Control* group included 476 individuals, *Corrupt* group 418, and *Honest* group 443. The sample was balanced essentially across the experimental groups overall. 96% of

the subjects answered the attention test questions correctly. [Appendix B.2](#) reports the more detailed sample characteristics and randomization checks.

Result

The ANOVA analysis shows that the experimental groups significantly differ of their levels of trust in government ($F(2, 1334) = 71.95, p = 0.00$). I visualize this result in the left panel of [Figure 3](#). In *Corrupt* group, the mean degree of trust was 3.84 ($SD = 1.46$), and it increased to 4.50 ($SD = 1.29$) in *Control* group and 4.93 ($SD = 1.25$) in *Honest* group. I also compare each trust item (competence, benevolence, and honesty) between experimental groups, which show consistent patterns as the main trust index (see [Appendix B.3](#)). Therefore, the government integrity priming manipulation successfully reflects the trust concept multi-dimensionally. The right panel of [Figure 3](#) reports the descriptive differences in preferences between the forms of collaborative governance in each experimental group. I demonstrate the results of hypotheses testing in the following.

Figure 3: Trust in Government and Perceived Collaborative Governance by Experimental Conditions in Study 2



Note: Bars are 95% confidence intervals.

Model 1 in [Table 5](#) suggests that the government integrity information has a strong first-stage effect on trust in government, which replicates the result in Study 1. Therefore,

using actual integrity information as the instrument of trust in government is valid. Model 2-4 in Table 5 are second-stage models regarding different collaboration forms as dependent variables. Comparing to the weak positive effect (Model 2 in Table 2) in Study 1, Model 2 in Table 5 suggests a strong positive effect of trust in government on perceived public-private partnership ($\hat{\beta}_{IV} = 4.95$, $SE = 1.51$, $p = 0.00$). Consistent with results in Study 1, Model 3 in Table 5 shows null effect of trust in government on perceived public-citizen partnership ($\hat{\beta}_{IV} = 0.67$, $SE = 1.04$, $p = 0.52$). Model 4 in Table 5 also suggests null effect of trust in government on willingness to coproduce ($\hat{\beta}_{IV} = 1.28$, $SE = 1.39$, $p = 0.36$).

Table 5: 2SLS Estimate in Study 2

	First-stage		Second-stage	
	Trust in Government	Public-private Partnership	Public-citizen Partnership	Willingness to Coproduce
	(1)	(2)	(3)	(4)
Trust in Government		4.95** (1.51)	0.67 (1.04)	1.28 (1.39)
Government Integrity	0.54*** (0.05)			
Constant	3.88*** (0.06)	41.04*** (6.71)	79.15*** (4.63)	65.54*** (6.21)
R ²	0.10	0.09	0.00	0.01
Observation	1337	1337	1337	1337

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. Standard errors are in parentheses. Government integrity is measured by coding experimental conditions as: 2 = *Honest*; 1 = *Control*; 0 = *Corrupt*. The first-stage regressions for Model (2) – (4) are the same, which all use government integrity as the instrument of trust in government.

Next, I treat *Corrupt* and *Honest* as separate instruments. Panel A in Table 6 only includes subjects from *Honest* and *Control* groups, and Panel B in Table 6 only includes subjects from *Corrupt* and *Control* groups. Models A1 and B1 in Table 6 suggests that *Corrupt* and *Honest* both contributes strong first-stage effect. Models A2 and B2 in Table 6 suggest that the trust effect on perceived public-private partnership is only observed in using *Corrupt* as the instrument, but this effect is not observed in using *Honest* as the instrument.

Table 6: 2SLS Estimate Using *Honest* and *Corrupt* as Separate Instruments in Study 2

	First-stage		Second-stage	
	Trust in Government	Public-private Partnership	Public-citizen Partnership	Willingness to Coproduce
Panel A	(A1)	(A2)	(A3)	(A4)
Trust in Government		4.59 (3.58)	-1.66 (2.52)	-4.93 (3.61)
Honest	0.43*** (0.08)			
Constant	4.50*** (0.06)	42.77* (16.86)	90.30*** (11.88)	95.15*** (17.01)
R ²	0.03	0.08	-0.04	-0.14
Observation	919	919	919	919
Panel B	(B1)	(B2)	(B3)	(B4)
Trust in Government		5.19* (2.47)	2.23 (1.71)	5.40* (2.28)
Corrupt	-0.66*** (0.09)			
Constant	4.50*** (0.06)	40.06*** (10.40)	72.81*** (7.19)	48.70*** (9.61)
R ²	0.05	0.10	-0.02	-0.06
Observation	894	894	894	894

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. Standard errors are in parentheses. In Panel A, *Honest* is measured by coding experimental conditions as: 1 = *Honest*; 0 = *Control*. The first-stage regressions for Model (A2) – (A4) are the same, which all use *Honest* as the instrument of trust in government. In Panel B, *Corrupt* is measured by coding experimental conditions as: 1 = *Corrupt*; 0 = *Control*. The first-stage regressions for Model (B2) – (B4) are the same, which all use *Corrupt* as the instrument of trust in government.

Therefore, distrust in government declines support for public-private partnership, but high trust in government does not increase support for public-private partnership (partially supporting *H1*). Models A3 and B3 in Table 6 show that trust in government has consistent null effect on perceived public-citizen partnership, which confirms the result of Model 3 in Table 6 (rejecting *H2*). Finally, I find positive effect of trust in government on willingness to coproduce when using *Corrupt* as the instrument (Model B4 in Table 6), but this effect is not observable when using *Honest* as the instrument (Model A4 in Table 6). Therefore, distrust in government declines willingness to coproduce comparing to the *Control* group,

but high trust in government does not increase willingness to coproduce comparing to the *Control* group (partially supporting $H3$). I discuss these results in the following.

Discussion

The strong first-stage effect in Study 2 replicates the result in Study 1, even after I changed the measurement of trust in government into a 3-item multi-dimensional index. Therefore, government integrity information is a reliable instrument of trust in government in both studies. The second-stage effects in Study 2 extend Study 1's findings in a general approach. Trust in government has positive effect on perceived public-private partnership. This relation is driven by moving subjects from neutral trust to distrust in government, but there is no difference in perceived public-private partnership between subjects have neutral trust and high trust in government. Similarly, trust in government has a nonlinear effect on willingness to coproduce. Willingness to coproduce declines when trust in government decreases from a neutral level to a lower level, but this effect is not hold when trust in government increases from a neutral level to a higher level. In addition, we observe consistent null effect of trust in government on public-citizen partnership in both Study 1 & 2.

I include two robustness checks. In [Appendix B.4](#), I treat government integrity as the categorical explanatory variable and run OLS regressions. I obtain similar findings as the results in [Table 6](#). Moreover, I test individuals' Covid19 concerns and their effects on willingness to coproduce (see [Appendix B.5](#)). Although this study was conducted in the Covid19 pandemic, I do not find interacting effects between Covid19 concerns and trust in government on willingness to coproduce.

General Discussion and Conclusion

The theoretical development of trust as an independent variable has attracted less attention in the existing literature than as a dependent variable. However, I argue that investigating the consequences of trust and distrust in government is timely and important for

public management in today's complex society. This article employed a novel measurement strategy of trust in government to explore the causal relations between trust and perceived collaborative governance. The results from two experiments indicate that trust in government does not change citizens' perceptions of public-citizens partnership easily. Distrust in government decreases citizens support for public-private partnership in general, but this effect is less significant when citizens evaluate environmental programs. Distrust in government also decreases citizens willingness to coproduce with local governments. In contrast, high level of trust does not boost citizens' support for public private-partnership or willingness to coproduce. Accordingly, these findings offer the following contributions to public management theory.

The normative value of public-citizen partnership is persistent. Citizens have strong beliefs that public-citizen partnership will benefit local interests in their communities, regardless of their levels of trust in government. This evidence validates the value of citizen participation in local policy implementation. Citizens across the trust continuum remain alert to government actions, and do not wish to relinquish control to the authorities. As [Denhardt and Denhardt \(2015\)](#) argued, citizens' engagement and coproduction have become increasingly important to solve public management problems across all levels of governments. Inclusive governance is not only a practical tool to mitigate public distrust, but also a normative value that holds the government accountable to all citizens and represents public interests. Nevertheless, public management scholars should further investigate deeper reasons behind support for public-citizen partnership, which may not be the same for citizens who trust and distrust in government ([Van De Walle and Six 2014](#)). I suggest that the public management research community should further explore this research area in the future.

The mixed findings on public-private partnership suggest that the theoretical relation between trust and public-private partnership is more complex than expected. In Study 2, distrust in government harms the legitimacy of collaborations between government and private sector ([Maurya and Srivastava 2019](#)). This finding match well with [Boyer and Van Slyke's](#)

(2019) results that, public-private partnerships are unreliable to citizens because untrustworthy governments do not provide accurate information to the public. I Argue that there are two possible reasons contribute to the mixed findings between Study 1 and 2. First, null effect on public-private partnership in Study 1 indicates that the link between trust in government and public approval on public-private partnerships may be context based. Similarly, [Guo and Ho \(2019\)](#) also discover mixed findings for citizens' public-private partnership support: Trustworthy mayors can increase public support for establishing public-private partnerships in building parks and performing arts, but not for certain services such as street maintenance and utility services. Therefore, future research should extend the empirical test for this relation to more policy areas. Second, citizens' trust in government may not necessarily increases their perception of public-private partnership, but their attitude toward the private sector instead. As [Boyer and Van Slyke \(2019\)](#) stated, citizens are more likely to support public-private partnership if they have a better understanding of the role a private partner plays in the policy implementation process. Therefore, future research should test the effect of trust in the private sector on public-private partnership with the same priming method used in this study.

Moreover, the negative effect of distrust in government on willingness to coproduce partially supports the trust-participate approach and rejects the mistrust-participate approach. On the one hand, cynical views of government will make citizens hesitant to join in public affairs discussions. On the other hand, trustworthy governments do not boost citizens to coproduce in local policy implementation. This finding has two important implications for public managers. First, trustworthy government is the baseline not booster of citizen participation. Regarding the literature, problematic organizational outputs such as corruption, poor performance, and weak representation will erode trust in government and discourage citizens participation ([Lee and Esteve 2022](#)). As [Van De Walle and Six \(2014, 169\)](#) suggested, "active distrust generates suspicion vis-à-vis all government communications and actions." Therefore, government should maintain good management practices and be

accountable to citizens in daily work. Second, government should develop more behavioral tools to actively encourage citizens to coproduce, such as establishing accessible digital platforms (Zou and Zhao 2021), increasing communications with citizens (Jo and Nabatchi 2019), and providing emotional care to citizens in coproduction process (Mortensen and Needham 2022). Corresponding to Bryson et al.'s (2013) argument, managing uncertainty among citizens, improving adaptive capacity, and emphasizing social capital are all pivotal in designing the public participation process. Therefore, public management scholars and practitioners should integrate diverse management practices to motivate citizen coproduction.

In addition to the theoretical contribution above, this study moves one step forward to improve the ability to identify causality in the effect of trust in the public administration literature. The IV approach overcomes the endogeneity problem of trust in surveys. This innovation provides fertile ground for the theoretical development of public trust. Further, it allows scholars to use trust as an exogenous explanatory variable and test its theoretical effects on other social outcomes, such as public approval of government actions and managerial reforms. However, the priming approach I used in this research only creates a short-term effect of trust in government. Whether we can use similar strategies to examine the long-term effect of trust in government is unknown. I discuss the limitations of this research in the following.

While this study highlights the effect of trust in government on perceived collaborative governance, it still has several limitations that should encourage further research. First, the two survey experiments only observe willingness to coproduce but not coproduction behaviors. Although I find the effects of trust in both hypothetical and real scenarios, the measurements of coproduction are based on perceptions. As Yang (2007) mentioned, attitudes toward participation and level of actual participation are two different concepts, and their connections need to be further investigated. Therefore, I suggest that future research can combine the survey measurement of trust and the behavioral measurement of coproduction in field experiments (e.g., Jo and Nabatchi 2019). Second, short-term surveys in

this research cannot observe the long-term recursive relations between trust and collaborative governance. Several studies suggest that citizen participation leads to stronger trust in government (e.g., [Fledderus et al. 2014](#); [He and Ma 2021](#)). And this mutual trust from citizen-state interaction can further motivate citizens to continuously coproduce with government. Therefore, future studies should include panel data methods to further disentangle this long-term and two-way effect. In addition, trust's effect may differ in some countries in which citizens have less anti-government sentiment. Therefore, including comparative perspectives in theoretical development should be an important research agenda in the area of public trust (e.g., [Grimmelikhuijsen et al. 2013](#)).

Even when these limitations are considered, this study provides important contributions that help us understand the theoretical associations between trust in government and citizens' perceptions of collaborative governance. In summary, the prominent and normative values that motivate public participation and the consequences of public trust or distrust both indicate that we should advance the theory of collaborative governance further and design the citizen-state interactions unburdened in practice.

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Supplemental Information

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Appendix A Study 1

Appendix A i Survey Protocol in Study 1

Page 1: Priming information

[Control Condition]

Please read the following hypothetical scenario and answer questions. We will ask you some questions about the topic after reading.

Assuming that Midtown is a medium-sized American city, which has 100,000 population. The Midtown government is led by 1 city mayor and 10 city council members. All of them are elected officials.

[Corrupt Condition]

Please read the following hypothetical scenario and answer questions. We will ask you some questions about the topic after reading.

Assuming that Midtown is a medium-sized American city, which has 100,000 population. The Midtown government is led by 1 city mayor and 10 city council members. All of them are elected officials. Midtown has historical problem in corruption. In the last 20 years, 15 elected officials and 50 private individuals have been charged for corruption.

[Honest Condition]

Please read the following hypothetical scenario and answer questions. We will ask you some questions about the topic after reading.

Assuming that Midtown is a medium-sized American city, which has 100,000 population. The Midtown government is led by 1 city mayor and 10 city council members. All of them are elected officials. Midtown is well known for its public integrity. In the last 20 years, no elected official or private individual has been charged for corruption.

Page 2: Trust question

How much of the time do you think you can trust the government in Midtown to make decisions in a fair way? (Moving a 0-100 slide bar: 0 = never, 100 = always)

Page 3: Policy scenario

Assuming the government in Midtown plans to adopt an energy program: Community Choice Aggregation (CCA).

CCA allows local elected officials to choose where the energy comes from for their community. It's a program to purchase power in bulk for virtually all homes within the participating jurisdiction. The Midtown government promises that CCA can allow whole communities to participate in the clean energy economy by ensuring that a greater percentage of electricity is coming from renewable sources.

Based on this information, please evaluate the following statement.

[The order of following questions are randomized]

The CCA should promote wind power rather than solar power.

Moving a 0-100 slide bar: 0 = strongly disagree, 100 = strongly agree

The CCA implementation board should include business groups to monitor the policy decision-making process. The government-private partnership will benefit local interests in your community.

Moving a 0-100 slide bar: 0 = strongly disagree, 100 = strongly agree

The CCA should promote solar power rather than coal.

Moving a 0-100 slide bar: 0 = strongly disagree, 100 = strongly agree

The CCA implementation board should include local citizens to monitor the policy decision-making process. The government-citizen partnership will benefit local interests in your community.

Moving a 0-100 slide bar: 0 = strongly disagree, 100 = strongly agree

Page 4: Willingness to coproduce

As a local resident, are you willing to participate in the CCA implementation board and oversight the decision-making process of the Midtown government?

Moving a 0-100 slide bar: 0 = definitely not, 100 = definitely yes

Page 5

[Manipulation check] Have you seen the information below from any previous part of this survey?

“Local and state government have more corruption than we assumed”

- Yes
- No

Page 6: Demographics

Are you...

- Male
- Female

Do you consider yourself to be...

- White, not Hispanic or Latino
- Black, not Hispanic or Latino
- Hispanic or Latino
- Asian, not Hispanic or Latino

- Other

Your age: _____

How would you describe your political views as of today?

- Very liberal
- Liberal
- Moderate
- Conservative
- Very conservative

What was your total household income before taxes during the past 12 months?

- Less than \$25,000
- \$25,000 to \$34,999
- \$35,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 to \$149,999
- \$150,000 or more

What is the highest level of education you have completed?

- Less than high school
- High school/GED
- Some college
- 2-year college degree
- 4-year college degree
- master degree
- doctoral degree
- Professional Degree (JD, MD)

This is just to screen out random clicking. Please move the slide to the answer of the following question: $17 + 63 = ?$

Do you think that global warming is happening?

- Yes
- No
- Don't know

Assuming global warming is happening, do you think it is...

- Caused mostly by human activities
- Caused mostly by natural changes
- Neither because global warming isn't happening

Page 7: Debriefing Thank you for your participation in this study! The goal of this study was to understand shifts in public opinion based on certain government information.

First, you have been randomly assigned to one of three groups:

Control group (basic information of midtown government)

Corrupt group (Midtown has historical problem of corruption)

Honest group (Midtown is well known for its public integrity)

Information you saw about Midtown is hypothetical, it does not reflect real situation of any American city.

The purpose of this design was to test whether different government information affects public trust in government and further affects people's attitude toward government-private collaboration or government-citizen collaboration in the energy program.

We apologize for hiding research purpose during the survey.

Appendix A ii Study 1 Sample

Table A.1: Study 1 Sample and Randomization Check

	Mean	SD	Min	Max	Randomization Check (P-value)
Female	0.48	0.50	0.00	1.00	0.73
White	0.71	0.46	0.00	1.00	0.10
Black	0.13	0.33	0.00	1.00	0.56
Hispanic	0.06	0.24	0.00	1.00	0.10
Asian	0.08	0.28	0.00	1.00	0.06
Other	0.02	0.14	0.00	1.00	0.92
Ideology	2.76	1.17	1.00	5.00	0.41
Age	39.85	12.82	18.00	91.00	0.93
Education	4.51	1.36	1.00	8.00	0.28
Income	3.73	1.72	1.00	7.00	0.73
GW	0.75	0.60	-1.00	1.00	0.61
GWH	0.69	0.56	-1.00	1.00	0.45
Climate Change Beliefs	0.72	0.52	-1.00	1.00	0.72

Note: GW refers to the question “Do you think global warming is happening?” (yes = 1, don’t know = 0, no = -1); GWH refers to the question “Assuming global warming is happening, do you think it is...” (caused mostly by human activities = 1, caused mostly by natural changes = 0, Neither because global warming isn’t happening = -1). Climate change belief takes the average value from GW and GWH. *P*-value in randomization check was obtained by ANOVA *F*-test.

Appendix A iii Placebo Test

Table A.2: 2SLS Estimate of Trust in Government on Placebo DVs

	Placebo DV1	Placebo DV1
	(1)	(2)
Trust in Government	0.04 (0.04)	0.06 (0.04)
Constant	54.71*** (2.27)	73.10*** (2.38)
R ²	0.03	0.01
Observation	1198	1198

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. Standard errors are in parentheses. Standard errors are in parentheses. Placebo DV1 is measured by the question: “The CCA should promote wind power rather than solar power.” Placebo DV2 is measured by the question: “The CCA should promote solar power rather than coal.” Subjects answered both questions by moving a 0-100 slide bar (0 = strongly disagree, 100 = strongly agree). The first-stage regressions are the same as the main analysis, so their results are omitted in this table.

Appendix A iv OLS Estimate of Trust in Government as Categorical Variable

Table A.3: OLS Estimate of Trust in Government as Categorical Variable in Study 1

	Trust in Government	Public-private Partnership	Public-citizen Partnership	Willingness to Coproduct
	(1)	(2)	(3)	(4)
Government Integrity (Baseline group: Control)				
Honest	11.61*** (1.60)	0.98 (1.78)	-1.00 (1.33)	0.35 (1.67)
Corrupt	-28.98*** (1.58)	-2.13 (1.75)	-0.15 (1.31)	-2.93† (1.65)
Constant	63.11*** (1.12)	61.69*** (1.24)	77.73*** (0.93)	69.95*** (1.16)
R ²	0.37	0.00	0.00	0.00
Observation	1198	1198	1198	1198

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. Standard errors are in parentheses.

Appendix B Study 2

Appendix B i Survey Protocol in Study 2

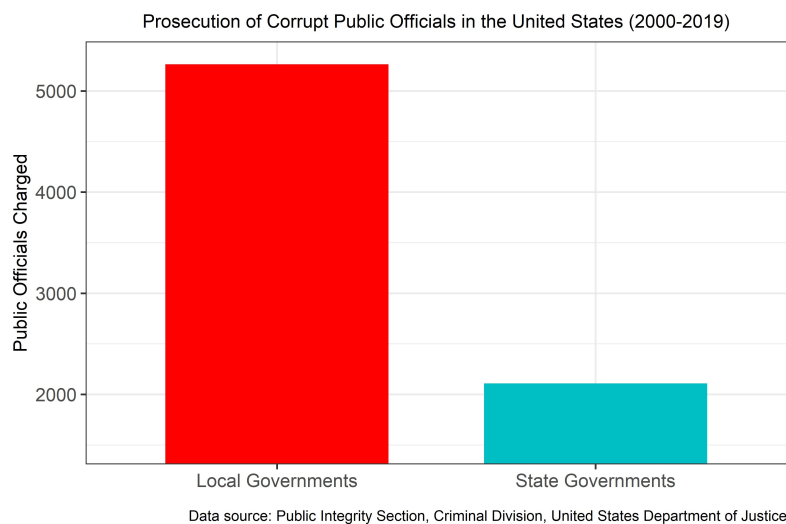
Page 1: Priming information

[Control Condition]

No information

[Corrupt Condition]

According to data from the Department of Justice, American local governments have more corruptions than we assumed.



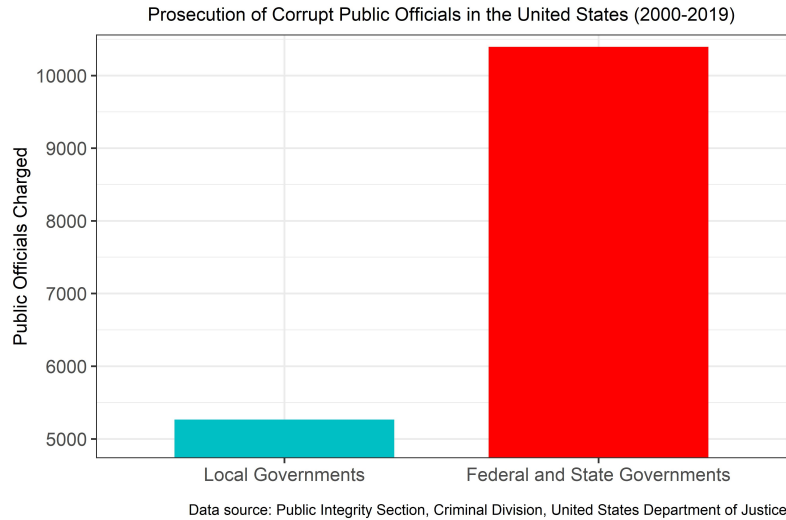
Follow up question: The bar graph shows the government corruption data of the United States from 2000 to 2019. Based on this information, American local governments are:

- Very corrupted = 1
- Somewhat corrupted = 2
- Neither corrupted nor honest = 3
- Somewhat honest = 4
- Very honest = 5

[Honest Condition]

According to data from the Department of Justice, American local governments are very honest, comparing to the federal and state governments.

Follow up question: The bar graph shows the government corruption data of the United States from 2000 to 2019. Based on this information, American local governments are:



- Very corrupted = 1
- Somewhat corrupted = 2
- Neither corrupted nor honest = 3
- Somewhat honest = 4
- Very honest = 5

Page 2: Trust items

In the following questions, please tell us your opinions of American local governments (strongly disagree = 1, disagree = 2, somewhat disagree = 3, neither agree nor disagree = 4, somewhat agree = 5, agree = 6, strongly agree = 7).

[Competence item] Local governments have the competence to provide good public programs. [Benevolence item] Local governments exert their best efforts to meet the needs of their citizens. [Honesty item] Local governments are honest.

Page 3: Based on your opinions of American local governments, please answer questions in the next page.

Page 4: Dependent variable items (question order is randomized)

Business groups should be included in local policy decision-making process. The government-private collaboration will benefit local interests. (0-100, definitely not to definitely yes)

Local citizens should be included in local policy decision-making process. The government-citizen collaboration will benefit local interests. (0-100, definitely not to definitely yes)

As a local citizen, are you willing to participate in your city or town government's policy decision-making processes? (0-100, definitely not to definitely yes)

Page 5: Demographics

Are you...

- Male
- Female

Do you consider yourself to be...

- White, not Hispanic or Latino
- Black, not Hispanic or Latino
- Hispanic or Latino
- Asian, not Hispanic or Latino
- Other

Your age: _____

How would you describe your political views as of today?

- Very liberal
- Liberal
- Moderate
- Conservative
- Very conservative

What was your total household income before taxes during the past 12 months?

- Less than \$25,000
- \$25,000 to \$34,999
- \$35,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 to \$149,999
- \$150,000 or more

What is the highest level of education you have completed?

- Less than high school
- High school/GED
- Some college
- 2-year college degree
- 4-year college degree
- master degree
- doctoral degree
- Professional Degree (JD, MD)

This is just to screen out random clicking. Please move the slide to the answer of the following question: $17 + 63 = ?$

Do you think that global warming is happening?

- Yes
- No
- Don't know

Assuming global warming is happening, do you think it is...

- Caused mostly by human activities
- Caused mostly by natural changes
- Neither because global warming isn't happening

How concerned do you feel about the novel coronavirus, COVID-19?

- Not at all concerned
- A little concerned
- Moderately concerned
- Very concerned
- Extremely concerned

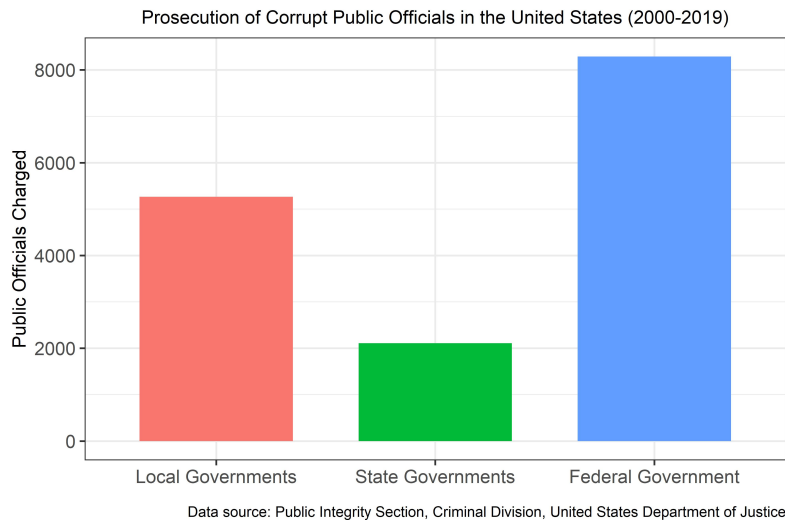
I am very concerned about job loss due to the pandemic and not being able to find a new job for a very long time.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Page 6: Debriefing Thank you for your participation in this study! The goal of this study was to understand shifts in public opinion based on certain government information. First, you have been randomly assigned to one of three groups:

- Control group
- Corrupt group (local governments have more corrupted officials than state governments)
- Honest group (local governments have fewer corrupted officials than state + federal governments)

Although we framed the corruption of local governments differently in different groups, all information you saw are real data from the Department of Justice (DOJ). The figure below shows the full picture of corruption in American governments. More information, please see: Annual Reports from the DOJ [website link provided here].



The purpose of this design was to test whether different government information affects public trust in government and further affects people’s attitude toward government-private collaboration or government-citizen collaboration.

We apologize for hiding research purpose during the survey.

Appendix B ii Study 2 Sample

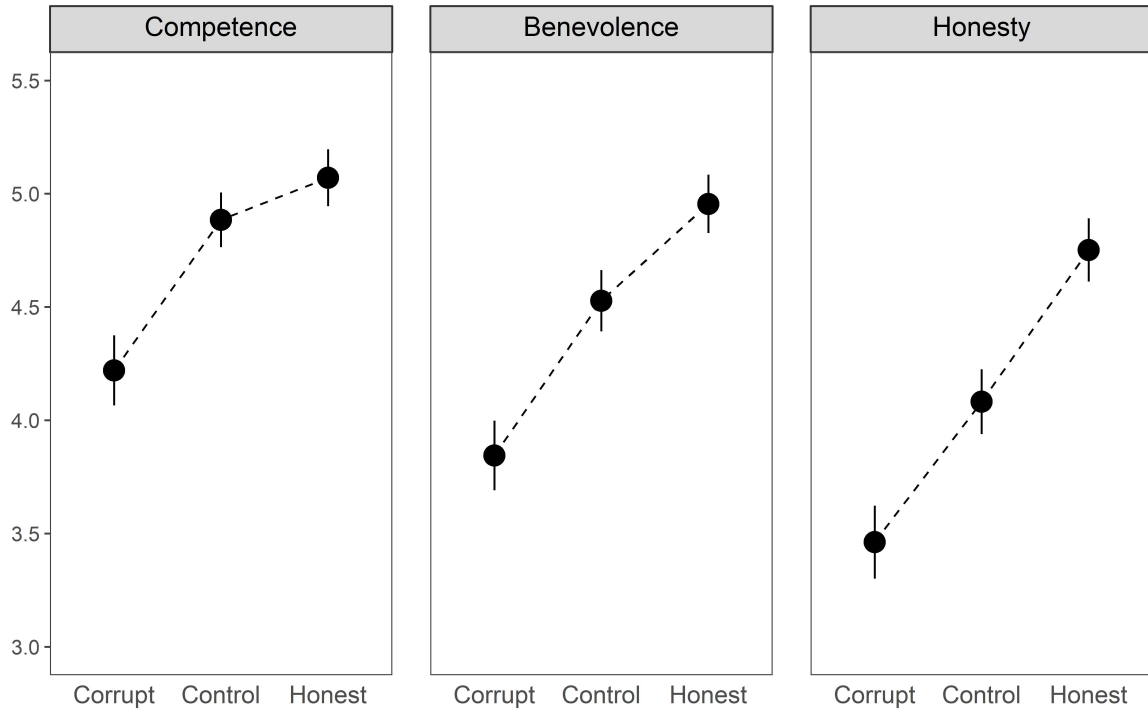
Table B.1: Study 2 Sample and Randomization Check

	Mean	SD	Min	Max	Randomization Check (P-value)
Female	0.60	0.49	0.00	1.00	0.33
White	0.72	0.45	0.00	1.00	0.72
Black	0.13	0.33	0.00	1.00	0.23
Hispanic	0.07	0.25	0.00	1.00	0.34
Asian	0.06	0.23	0.00	1.00	0.50
Other	0.03	0.17	0.00	1.00	0.43
Ideology	2.76	1.09	1.00	5.00	0.24
Age	38.23	12.11	18.00	79.00	0.03
Education	4.30	1.41	1.00	8.00	0.31
Income	3.65	1.72	1.00	7.00	0.12
GW	0.78	0.56	-1.00	1.00	0.66
GWH	0.72	0.53	-1.00	1.00	0.77
Climate Change Beliefs	0.75	0.49	-1.00	1.00	0.70
COVID Concern	3.32	1.23	1.00	5.00	0.67
COVID Job Concern	3.09	1.40	1.00	5.00	0.71

Note: GW refers to the question “Do you think global warming is happening?” (yes = 1, don’t know = 0, no = -1); GWH refers to the question “Assuming global warming is happening, do you think it is...” (caused mostly by human activities = 1, caused mostly by natural changes = 0, Neither because global warming isn’t happening = -1). Climate change belief takes the average value from GW and GWH. *P*-value in randomization check was obtained by ANOVA *F*-test.

Appendix B iii Perceived Competence, Benevolence, and Honest by Experimental Conditions

Figure B.1: Perceived Competence, Benevolence, and Honest by Experimental Conditions



Note: Bars are 95% confidence intervals.

Table B.2: ANOVA analysis for Competence, Benevolence, and Honest by Experimental Conditions

Trust Item	Test
Competence	$F(2,1334) = 41.67, p = 0.00$
Benevolence	$F(2,1334) = 60.19, p = 0.00$
Honesty	$F(2,1334) = 71.07, p = 0.00$

Appendix B iv OLS Estimate of Trust in Government as Categorical Variable

Table B.3: OLS Estimate of Trust in Government as Categorical Variable in Study 2

	Trust in Government	Public-private Partnership	Public-citizen Partnership	Willingness to Coproduct
	(1)	(2)	(3)	(4)
Government Integrity (Baseline group: Control)				
Honest	0.43*** (0.09)	1.96 (1.65)	-0.71 (1.09)	-2.11 (1.46)
Corrupt	-0.66*** (0.09)	-3.41* (1.67)	-1.46 (1.11)	-3.54* (1.49)
Constant	4.50*** (0.06)	63.42*** (1.15)	82.83*** (0.76)	73.00*** (1.02)
R ²	0.10	0.01	0.00	0.00
Observation	1337	1337	1337	1337

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. Standard errors are in parentheses.

Appendix B v Effects of Covid19 Concerns

Table B.4: Effects of Covid19 Concerns

	Trust in Government (OLS)	Willingness to Coproduce (2SLS)	
	(1)	(2)	(3)
Trust in Government		0.94 (4.07)	0.86 (2.96)
Covid Concern	0.15*** (0.03)	2.38 (4.89)	
Covid Job Concern	0.02 (0.03)		1.31 (4.49)
Trust in Government \times Covid Concern		0.06 (1.12)	
Trust in Government \times Covid Job Concern			0.11 (1.00)
Constant	3.90*** (0.12)	58.28*** (17.31)	61.82*** (13.05)
R ²	0.02	0.03	0.02
Observation	1337	1337	1337

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. Standard errors are in parentheses. Model (1) uses OLS regression to estimate association between Covid 19 concerns and trust in government. Models (2)-(3) use 2SLS regressions to estimate interaction effects between Covid19 concerns and trust in government on willingness to coproduce. First stage regressions (IV: government integrity) in Models (2)-(3) are omitted.