Micro Foundations of Network Formation: Experimental Evidence from American Municipal Governments

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Abstract

The earlier research agenda on intergovernmental collaboration is "too late" and "too aggregated." Existing literature investigates intergovernmental collaborations at a late stage: after networks have formed. And the intergovernmental network analyses are aggregated at the organizational and network levels, which are hard to discern government leaders' individual motivations of collaboration. To help us get a proactive worldview, this study integrates three fundamental network formation theories to predict public officials' collaboration decisions. These theories include rational choice, political homophily, and relational trust. A conjoint experiment of U.S. municipal officials was conducted to test the hypotheses. The results indicate that municipal officials' collaboration decisions on sustainability programs are jointly driven by all three theories, but political homophily contributes relatively smaller explanation power than the other two. This study further reveals different priorities between elected officials and city managers in making collaboration choices. Additional subgroup analysis of party affiliation suggests that Republicans are willing to sacrifice self-interests to achieve costs balance with their co-partisan collaborators. Overall, this experimental approach advances network theories and offers new opportunities to study intergovernmental collaboration.

Keywords: Network formation, Collaborative governance, Conjoint experiment, Municipal governments

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Introduction

What drives governments to collaborate with each other? This is one of the most long-standing research questions in the field of public administration. The basic theoretical rationale for developing scholarship on collaborative network is straightforward: many intergovernmental problems cannot be solved or solved easily, by single organizations (Agranoff and McGuire 2001, 296). The increasing complexities of interorganizational actions facilitate our need to investigate the process of network emergence in public organizations (O'Toole Jr 1997). With this consideration, the ways public organizations connect with each other and the motivations they reach collaborative decisions are pre-conditions for scholars to further study other network activities and outcomes.

In this vein, public policy and management literature integrates diverse theoretical approaches to explain network formation (e.g., Berry et al. 2004; Henry et al. 2011; Provan and Kenis 2008; Scott and Thomas 2017; Yi et al. 2018). Two areas of study, however, need further investigation. The first one is mechanism confusion, which means that multiple theories and hypotheses can explain the same network phenomenon (Siciliano et al. 2021). For example, many scholars agreed that collaboration agreements are functions of risk aversion from network actors: Public organizations seek to bridge with new collaborators when they perceive low risk; and they seek to bond with existing collaborators under high risk (Berardo and Scholz 2010). However, risk is difficult to measure and often inferred by hindsight. Network actors' risk perceptions toward partnerships may result from cost-benefit calculations, attribute-based homophily, relational trust, or other possible factors. Therefore, multiple competing hypotheses may simultaneously contribute to one positive or negative effect of risk on network formation. This issue of mechanism confusion creates barriers for scholars to identify which theories are the ones at work and compare their explanation powers, since many of them have overlapping functions that need to be isolated (Siciliano et al. 2021).

Second, network scholars develop abundant evidence about intergovernmental network

at organizational or network levels, but we paid relatively sparse attention to intergovernmental collaboration at individual-level. By way of definition, the most fundamental elements in intergovernmental networks are individuals who manage organizations within networks, because they "... as actors can be seen simultaneously as occupants of positions within a public administrative organization and as components of one or more multiorganizational web(s) of action built in one way or another around functions or public problems" (O'Toole Jr 2015, 362). However, the previous research agenda is either "too late" or "too aggregated" to explain individual officials' incentives of network activities. By conducting network analyses after networks have been formed, current empirical research focus "too late" at the intergovernmental collaboration stages, which hinder scholars to study the initial motivations of network formation. By analyzing organizational collaboration choices, current empirical research focus "too aggregate" that cannot discern government leaders' individual-level roles in collaborative decisions.

To help us get a proactive worldview, I propose an experimental approach to study network formation. Recently, scholars have applied experiments to re-examine classic public administration problems, and they often obtain critical new insights (e.g., Jilke and Tummers 2018; Meyer-Sahling et al. 2019; Nielsen and Moynihan 2017). I suggest that experimental method is useful to solve the above two problems in network research: 1) Randomization techniques in experiments are effective to achieve mechanism isolation, so researchers can compare effects between different theories in a common standard; 2) vignette experiments allow researchers to predict public managers' willingness to collaborate with other governments before any actual network has formed, so researchers can study network formation at its earliest stage. Based on these premises, this study asks: What micro-level mechanisms motivate municipal leaders to make collaborative decisions in an intergovernmental world?

Specifically, this study compares the relative explanatory power of three fundamental but competing network theories. These theories are rational choice, political homophily, and social capital. In rational choice, collaborative partnerships are functions of cost-benefit calculation between network members (Ostrom 1990). This approach assumes that collaboration is largely based on participants' self-interests. However, political homophily argues that collaborations are determined by participants who share similar political beliefs, which are not always generated from rational considerations (Jenkins-Smith and Sabatier 1993). The theory of social capital is in the middle ground between the above two approaches, which argues that self-interests and political beliefs are respectively under- and over-socialized concepts (Granovetter 1985). In alternative, collaborations are established on the relational trust that comes from prior interactions. Although these three theories are influential to explain intergovernmental network formation, the direct comparison between them is encountered by mechanism isolation issue in observational studies' posterior analyses.

Therefore, I directly examined causal mechanisms of these theories in a survey based conjoint experiment of municipal officials (elected officials and city managers) across the United States. As part of the survey, I provided a vignette about implementing a sustainable development program. Municipal officials were then asked to choose program proposals suggested by potential collaborator cities. The three network theories are manipulated as attribute components in the program proposals, and respondents need to trade off among attributes to make collaborative decisions. Using this strategy, I simultaneously compared treatment effects from the three theories on officials' partner selection choices.

The findings indicate that all three theories contribute significant effects on municipal officials' collaborative decisions. Interestingly, rational choice and social capital theories share
similar and stronger effects than political homophily. In particular, low costs, high benefits,
and good collaborative experiences are major reasons for interlocal collaborations. While
elected officials focus more on benefits and collaborative experiences, city managers majorly rely on collaborative experiences to make collaboration decisions. Additional subgroup
analysis of party affiliation suggests that Republicans are willing to sacrifice self-interests to
achieve costs balance with their co-partisan collaborators. And I do not observe this effect
on Democrats. Overall, collaborative decisions of municipal officials are not solely deter-

mined by a single theory. Conversely, multi-dimensional considerations drive public officials to achieve collaborative decisions.

This article sheds new light on intergovernmental network formation theories at individual-level analysis, and especially on interlocal collaborative decisions of municipal leaders. The establishments of rational choice, political homophily, and social capital theories in the conjoint experiment bridge solid connections with existing literature. Combining the findings from this study and other levels' (meso and macro) network research, scholars can translate collaborative motivations of public managers before networks happened to actual organizational process after networks have formed. From this perspective, we can further advance network theories conceptually and methodologically.

Competing Network Theories

Before proceeding, I wish to be clear at the outset about the definition of network and network formation theory in this article. As a complex concept, network has multiple definitions and structures in public policy and management literature. This article focuses on intergovernmental networks and follows the classic definition from Agranoff and McGuire (2001, 296):

"Networks, as the term is used in the literature, typically refers to multiorganizational arrangements for solving problems that cannot be achieved, or achieved easily, by single organizations. Public management networks are led or managed by government representatives."

This definition not only provides a clear demonstration about the purpose of intergovernmental networks, but also indicates the necessity of studying network activities of government representatives. Leadership matters in networks, and government leaders' behaviors shape network structures and outcomes (McGuire and Silvia 2009). Agranoff and McGuire (2001) argues that activation is one important activity by government leaders.

Activation means that government leaders need to identify and incorporate collaborative partners, resource, and information to achieve collaborative goals. Activation is critical for network management, because the money, resource, information, and personnel have been invested in the starting point of networking may affect the whole process of collaboration between each party (Currie et al. 2011; McGuire and Silvia 2009; Silvia 2011). The critical role of leadership in public networks indicates the necessity of studying organizational leaders' decision-making processes in collaborations.

For network formation theories, the literature distinguishes networks by multiple types given their different functions, such as learning networks (Nisar and Maroulis 2017; Siciliano 2015), service networks (Romzek et al. 2014), and policy networks (Ingold and Leifeld 2016; Yi et al. 2018). However, members in any of these networks have demands to find new collaborative connections for achieving organizational goals, such as information learning, service co-delivery, and policy implementation (Silvia 2018). Regarding this feature, I use collaborative decisions between two units as the measurement of network formation.

The network literature also distinguishes network activities by different structures, such as nodes, dyads, triads, and multi-layer relationships (Berardo and Scholz 2010). As a micro level study to examine the fundamental theories of collaborative behaviors, this article only emphasizes on the most basic network activity: collaborative willingness from one actor to another. I recognize that this simplistic two-actor mode is limited to describe many multi-dimensional network activities embedding in complex network structures, but it serves well as an outcome measurement to isolate interdependency of other confounding factors in the institutional environment. Therefore, it fits with the research purpose of this study.

Revising the Three Traditions of Network Research

Scholarship on interorganizational collaboration has been "treating networks seriously" for more than two decades (O'Toole Jr 2015). As an applied science, the field of public administration incorporates interdisciplinary traditions into the network research agenda

(Berry et al. 2004). Berry and her colleagues sort network research traditions into sociology, political science, and public management. These authors categorize network traditions by different assumptions about human behaviors: social embeddedness in sociology, rational choice in political science, and instrumentalism in public management. The sociology tradition assumes that human behaviors are embedded in structural social contexts. Therefore, network formations are related to norms, ongoing social relations, and institutional trust. Unlike sociology, the political science tradition assumes that human behaviors are economic self-interest, so public network activities are rationally instrumental in both policy process and governance issues (Berry et al. 2004). The public management tradition integrates assumptions from both sociology and political science tradition to manage public program implementation process. Every tradition provides theories to explain network formations, and these theories remain influential today and help network scholars to progressively study public networks in different institutional contexts.

However, after almost 20 years evolution, social science research has developed more plentiful theories to explain human behaviors, which cannot always be categorized by either rational choice or social embeddedness. For example, the fast-growing field of political motivated reasoning challenges the rational choice theory in political science. Rather than using accuracy goals to motivate rational decision-making, individuals often use partisan goals to justify their actions (Bisgaard and Slothuus 2018; Graham and Svolik 2020; James and Van Ryzin 2017; Taber and Lodge 2006). So, network activities are not necessary products of rational choice, but products of political alignments. This stream suggests that public officials' ideological views strongly shape their affinity of policy actions (Butler et al. 2017). Combining this theoretical development and Berry et al.'s seminal article of network categorization, I revise intellectual traditions in network research and break down the political science tradition into neo-institutional economics with rational choice assumption (Ostrom 1990; Williamson 1981) and political psychology with motivated reasoning assumption. In addition, this revision aligns with Berry et al.'s (2004, 543) opinion on public management

in the network tradition category, which integrates diverse traditions into the public network research agenda and "...geared toward instrumental concerns." Table 1 summarizes Berry et al.'s (2004) categorized network traditions and the current revision as well as their corresponding assumptions about behavior.

Table 1: The Network Traditions

Berry et al. (2004)	Current Revision	Assumptions About Behavior	
Sociology	Sociology	Social embeddedness	
Political science	Neo-institutional economics	Rational choice	
	Political psychology	Political motivated reasoning	
\downarrow	\downarrow	↓	
Public management	Public management	Integration and instrumentalism	

The following parts in this section introduce each network research tradition and its representative theory. There are numerous theories under each network research tradition, but it is impossible for one study to compare all. Therefore, this study only includes one theory from each research tradition, and I encourage future studies to extend the theoretical comparisons between other network theories. In particular, this study investigates cost-benefit analysis from neo-institutional economics, ideological homophily from political psychology, and relational trust from sociology. These theories are competing with each other, because their basic assumptions about human behaviors are different: Cost-benefit analysis is built on rational choice assumption, ideological homophily is based on motivated reasoning assumption, and relational trust is developed by social capital assumption. Although these theories offer unique explanations of network formation, they are not mutually exclusive, because network decisions are often combinations of multi-dimensional considerations in complex information environments (Silvia 2018). Therefore, the purpose of this study is not to choose an optimal network solution for public managers. Rather, the two aims of this study are:1) comparing the power of different network formation theories; 2) extending these theories to municipal government leaders and identify how they trade off different institutional factors in forming collaborative decisions.

Rational Choice Assumption and Cost-Benefit Analysis

Neo-institutional economics assumes that human behaviors are generally rational (Williamson 1981). Therefore, network members' self-interested utility maximization should predict their decisions, and rational factors should explain the major variations of network activities. Collaborative behaviors are functions of costs and benefits between network actors, so network actors' decisions should depend on their expectations of economic gains in the actions they involved.

The rational choice theory and cost-benefit analysis are powerful in network literature. Finishing intergovernmental tasks in collaboration is an attractive strategy for network actors, because they can complement each other in works (Olson 1965). Through effective communication and coordination, each network actor learns from each other, and eventually achieve costs reduction and benefits maximization in an ideal condition. The rational choice theory is immense in the context of polycentric governance. For example, Lubell et al. (2002) investigate American watershed management and argue that partnerships are more likely to emerge when organizations need to offset costs associated with severe environmental problems. Similarly, other authors find that organizations join partnership to access knowledge for policy solutions (Berardo and Lubell 2016; Hileman and Bodin 2019). The rational choice theory also fits with individual level (Ostrom 1990). In studying networks of frontline bureaucrats, individuals like to build connections with peers with strong expertise, so they can maximize their own benefits (Nisar and Maroulis 2017; Siciliano 2015). In addition, frontline bureaucrats also search for advice from peers who are most accessible to reduce social costs (Siciliano 2017).

On the other side, social scientists not always agree with the pure rational model, even if they consider the importance of costs and benefits in making collaborative decisions. (Ostrom 1998) suggests that the cost-benefit calculus should condition on fairness of cost allocation between collaboration parties, and sharing the costs unequally between parties can reduce the levels of cooperation. Abbink et al. (2001, 5) call this argument as "punishment hypothesis", in which "... punishment attributes a motive to the second mover's rejection of an unequal division asserting that it is done to punish the first mover for unfair treatment." Therefore, cost fairness is important in a partnership, otherwise actors may reject the collaboration proposal regardless how much utility they can gain from it. For example, Shrestha (2012) find that conflicts about fair sharing critically affect success of collaborative public programs. Nonetheless, cost fairness has not been popularly examined yet in network literature. Thus, this study integrates both the pure rational model and a cost fairness assumption into the hypothesis testing.

H1a: Municipal officials are more likely to form collaborations with partners that offer lower costs.

H1b: Municipal officials are more likely to form collaborations with partners that offer fair sharing of costs.

H2: Municipal officials are more likely to form collaborations with partners that offer larger benefits.

Motivated Reasoning Assumption and Ideological Homophily

Political psychology offers a different view about human behaviors rather than the conventional rational model. It suggests that "all reasoning is motivated" (Taber and Lodge 2006, 756). People "...generate theories that view their own attributes as more predictive of desirable outcomes" (Kunda 1987, 636). When this assumption applied to political life, people process information by their partisan goals rather than accuracy, which means that people no longer make decisions by actual evidence they observe but by prior political beliefs they defend (Taber and Lodge 2006).

The theory of political motivated reasoning is widely used in political science and public administration. It affects citizens' policy judgements and voting decisions (e.g., Bisgaard

and Slothuus 2018; Graham and Svolik 2020; James and Van Ryzin 2017). Compared to citizens, some authors suggest that the effect of motivated reasoning is even stronger among public officials (Baekgaard et al. 2019, 2021; Christensen and Moynihan 2020). Christensen and Moynihan (2020) provide an exploratory analysis about this phenomenon: unlike general citizens, elected officials are trained to stay consistent with their political identities, if else they would be punished by voters and other political stakeholders. Therefore, the professional role of public officials may lead them to prioritize political considerations in intergovernmental actions, which will eventually affect network outcomes.

In network literature, the impact of prior political beliefs on collaborative decisions has been introduced by the Advocacy Coalition Framework (ACF), which argues that network actors with similar beliefs comprise coalitions and they learn policy knowledge within the coalitions (Jenkins-Smith et al. 2018). Different from rational choice, the ACF assumes that network activities are boundedly rational, because network actors have limited ability to access information, allocate time, and learn relevant knowledge before they make decisions (Simon 1957). Therefore, cost-benefit analysis cannot fully predict public officials' collaboration choices. In alternative, "individuals simplify the world through their belief system and are, therefore, prone to biased assimilation of stimuli" (Jenkins-Smith et al. 2018, 108). The ACF suggests a three-tiered belief system (deep core beliefs, policy beliefs, and secondary beliefs) to predict network formation. Deep core beliefs are fundamental normative values, which are often measured by individuals' cultural and political identities (Ripberger et al. 2014). Policy core beliefs are network actors' value priorities in the policy subsystem. Secondary beliefs are specific instrumental means for achieving policy goals of the policy beliefs (Jenkins-Smith et al. 2018). Among these beliefs, deep core beliefs underpin policy beliefs and secondary beliefs in network activities, so it is crucial for scholarship development in investigating how deep core beliefs (e.g., party affiliation, ideology, and culture) motivate collaborative decisions. Comparing the effect of political motivated reasoning and other theories will advance our theoretical understanding of network formation.

Following this stream, Leach and Sabatier (2005) find that when considering network actors' political deep core beliefs and policy beliefs, rational choice variables are no longer significant to determine partnership. And the deep core beliefs (measured by the respondent's conservatism) contribute strongest effects. Similarly, Henry (2011) investigates policy networks in California regional planning system, he finds that political elites tend to collaborate with political ideology similar actors and avoid connecting with political ideology dissimilar actors. Some network scholars classify political belief coalition into attribute based homophily, which argues that network actors create ties with those who share similar attributes (Siciliano et al. 2021). Although network formation may be affected by multiple attributes (such as gender and ethnicity), political homophily is the prominent one since partisanship is one of the strongest predictors in analyzing interlocal politics (Butler et al. 2017; Gerber and Hopkins 2011). For example, Song et al. (2018) discover the political homophily effect among Korean municipal council members in interlocal collaborations. Gerber et al. (2013) find that interlocal collaborations in regional planning are more likely to happen when local governments' constituents are similar politically. Rabovsky and Rutherford (2016) also find that presidential and state policy makers' ideologies affect American universities' external networking efforts. Accordingly, I assume that municipal officials will select collaborators who match with their party affiliations.

H3: Municipal officials are more likely to form collaborations with partners that share the similar political beliefs.

Social Capital Assumption and Relational Trust

Sociologists study human behaviors by structural social contexts (Burt 1997). Granovetter (1985, 481) argue that "behavior and institutions are affected by social relations." He criticizes both the over- and under-socialized concepts in understanding economic actions: under-socialized account is too narrow to explain behaviors from utilitarian self-interest; over-socialized account over internalizes behaviors. In these two accounts, ongoing social

relations are omitted in analysis. Under this argument, the rational choice assumption is an under-socialized account, because it analyzes network formation by the economic self-interest tools (such as: cost-benefit analysis), which ignore social and institutional contexts of network activities. On the other hand, the political motivated reasoning assumption is an over-socialized account, because actors are operating in political systems and their behaviors are guided by those political systems, which overlook individual differences in the systems (Granovetter 1985). Therefore, network analysis should not only emphasize on cost-benefit analysis or political homophily, but also the relational trust created by interactions between people (Burt 1997).

The theory of social capital assumes that prior interactions between network actors are likely to build relational trust, and relational trust will lead network actors to extend collaborations (Granovetter 1985; Krackhardt et al. 2003). For example, Metz et al. (2019) study interconnectedness in environmental policy networks and find that prior interactions create trust and social capital, which further build joint policy preferences. In addition, Bunger (2013) find that interorganizational trust boost administrative coordination among nonprofit organizations. Scott and Thomas (2015) also observe social capital effect from environmental collaboration. Their results indicate that the probability of tie formation increases if two organizations both participate in the same collaborative group.

Although the effect of social capital on collaboration has been repeatedly tested, some limitations remain. Siciliano et al. (2021) points out that the theoretical direction between trust and collaboration is unclear. Collaboration builds trust, but trust can also result in further collaboration. This reverse causality issue hinders scholars to confirm the internal mechanisms between these two variables. Some authors like Metz et al. (2019) argue that prior interactions boost relational trust, but some other authors like Scott and Thomas (2015) and Bunger (2013) suggest that relational trust results in collaboration. Including longitudinal analysis in network research to study the coevolution of trust and collaboration is a remedy of this problem, but data availability issue hinders more authors to use this

method (Berardo et al. 2020; Isett and Provan 2005). Rather than longitudinal analysis, I purpose an experimental method to solve the theoretical direction problem. Through manipulating information about past collaborative experience, I examine municipal officials' collaborative decisions in a hypothetical experimental scenario. I expect that good collaborative experiences (rather than bad experiences or no experience) reflect relational trust between network actors and further increase the likelihood of future collaborations. This expectation stays aligned with Huang's (2014) correlational results, which indicate that intense interaction increases the likelihood of information sharing, but this effect is only conditional on actors' perceived trustworthiness between each other. Although my experimental design cannot observe the coevolution of trust and collaboration that requires longitudinal data, this study still moves a little step forward to identify causality in network analysis.

H4: Municipal officials are more likely to form collaborations with partners that they shared good collaborative experiences (compared to no previous experience or bad experiences) in history.

Empirical Strategy

Recently, public policy and management scholars have achieved significant progress in studying intergovernmental networks by embracing new methods, such as agent-based simulation (Choi and Robertson 2019; Scott et al. 2019), longitudinal analysis (Siciliano et al. 2020), and coded meeting records (Berardo et al. 2014). However, the field still faces some obstacles. For example, it is difficult to isolate mechanisms of the above theories from each other and simultaneously compare their effects directly. In addition, dyadic connections often arise dependently with other surrounding connections in the network (Scott and Ulibarri 2019).

Conjoint Experimental Design and Identification Strategy

To overcome these difficulties and test the above hypotheses causally, I introduce a conjoint experimental approach to study intergovernmental network formation. The design and data analysis plan were pre-registered at [anonymous for peer-review] (see Appendix A). Within a sustainable development program vignette, I constructed the above theories into four program attributes: Program costs (own cost and partnership city's cost), job creation benefits, collaborator's party affiliation (Democrats or Republicans), and previous collaborating experiences with this city. Respectively, these four attributes corresponded to the three theories we interested: cost-benefit analysis, political homophily, and relational trust. Table 2 displays detailed information of each attribute. It is worth noting that the cost attribute contains two elements for hypotheses testing. It tested whether respondents prefer the lowest cost (H1a, component (1)) or fair sharing of cost (H1b, component (2)). To confirm H1b, respondents should show at least the same levels of preferences between the "500:500" and "250:750" costs options, which means that they are willing to tradeoff the lower self-costs (\$250,000 < \$500,000) to achieve input balance for both cities (\$500,000 for both).

After briefly introducing the program scenario, the survey presented three pairs of hypothetical city partnership opportunities. In each pair, respondents compared two program proposals from two cities. Each program proposal contains information of the four attributes. Then, respondents were requested to indicate which city they prefer to collaborate with. The chosen proposals were coded as 1, otherwise 0. After the conjoint comparison tasks, respondents answered questions about their party affiliation, ideology, and position tenure. Finally, they also answered demographic questions of race, gender, age, and education. Survey instruments are reported in Appendix B.

As aforementioned, every proposal was randomly assigned a component from each attribute, thus these components were independent treatments in the between and within subject design (Hainmueller et al. 2014). There were totally $54 = 3 \times 3 \times 2 \times 3$ possible

Table 2: Attributes for Collaborative Program Proposals

Attributes	Components		
Cost of the program Theory: cost aversion/cost fairness (H1a, H1b)	(1) You pay: \$250,000; your partner pays: \$750,000 (2) You pay: \$500,000; your partner pays: \$500,000 (3) You pay: \$750,000; your partner pays: \$250,000		
The program will create Theory: benefit (H2)	(1) 200 jobs in your city(2) 500 jobs in your city(3) 800 jobs in your city		
The program is proposed by Theory: ideological homophily (H3)	(1) Democrats(2) Republicans		
Previous working experiences with this city Theory: Relational trust (H4)	(1) Good(2) Bad(3) No experience		

combinations of attribute components in program proposals (see Table 2). Moreover, the conjoint experiment not only randomized attribute components, but also the order of attributes across respondents. This design reduced order effects, which made the results more robust¹ (Hainmueller et al. 2014).

Based on fully randomization, proposal attributes were independent and identically distributed random variables. I regressed them in one linear probability model that used proposals as units of analysis (Hainmueller et al. 2014). Standard errors were clustered at individual level to control non-independence of the within subject proposal comparison. Moreover, I adopted the same strategy as Butler et al. (2017) to measure political homophily (the same party effect). Based on H3, if respondents' self-partisanship identities match with the partisanship attribute components, for example a Democrat respondent see a Democrats proposed program proposal, the probability of she or he chooses this proposal will be increased. So, I coded the political homophily variable as 1, if the respondents were from the same party as the collaborators in the conjoint program proposals and 0 if they were from different parties. The full model specification is showed in the following equation.

$$Collaboration = \beta_1 Cost + \beta_2 Benefit + \beta_3 Homophily + \beta_4 Trust + \mu \tag{1}$$

¹Order of attributes within respondents are fixed, which avoided the within subject confusion.

Since Hainmueller and his colleagues developed conjoint experiment (Hainmueller and Hopkins 2015; Hainmueller et al. 2014), this method has been widely used in political science and public administration (e.g., Hollibaugh Jr et al. 2020; Jankowski et al. 2020; Jilke and Tummers 2018; Michael Auerbach and Thachil 2020). The advantages of this method are threefold. First, it simultaneously tests multiple theories in one model, so effects of these theories can be compared with a common standard (Hainmueller et al. 2014). Second, it requires respondents to trade-off between different attributes by the force choice outcome measurement, which improves realism relative to traditional factorial experiments (Hainmueller et al. 2015). Finally, the multiple information environment of conjoint experiment reduces the concerns about social desirability, and the experimental purpose thereby is hard to detected by respondents (Bansak et al. 2021). And this feature is important when the design includes sensitive variables like partisanship identity. Combining these advantages, conjoint experiment is an ideal identification technique to isolate mechanisms from multiple network theories and test hypotheses on individual officials.

Data Collection and Sample Representativeness

This study targets municipal officials in the United States, which include elected officials (mayors, councilors, or the equivalent) and municipal managers (city managers, assistant city managers, or the equivalent). As aforementioned, these public officials often serve as policy makers and government representatives in managing networks, so their leadership shape organizational collaborative actions.

To build the sample pool of municipal officials, I collected information of their names, gender, and email addresses from municipalities' official websites. The sample pool included large and medium size American municipalities having population above 30,000 (1352 municipalities in total). About half of the United States' population are living in these areas. Municipalities without email addresses for public officials were removed from this study. I used Qualtrics to create the survey and sent it out to municipal officials via emails. To

increase response rate, I fielded one initial invitation with two friendly reminders in two months (from April to early June, 2021). Appendix C reports the email invitation context.

Finally, 9928 emails have successfully arrived this sample pool of municipal officials. The final sample contained 772 individual officials (39% female, 78% White, Mage = 57), including 674 elected officials and 98 city managers. Overall, 363 respondents are Democrats, 193 are Republicans, and 216 are independent or other parties. All respondents completed at least one conjoint proposal comparison task and provided party affiliation and ideology information². The effective response rate was about 8%, which was comparable with other surveys in recent studies that using similar samples (e.g., Lee and Stecula 2021; Malhotra et al. 2019; Shaffer et al. 2020).

The final sample were broadly representative of the whole sample pool. The final sample covered 49 states and the District of Columbia; 533 (39%) municipalities had at least one official effectively responded to the survey³. Appendix D provides the full description of the sample characteristics. To test the sample representativeness, I collected municipal level demographic data from the U.S. Census Bureau 2019 American Community Survey, including population, median household income, home value, labor force participation, unemployment rate, and information of ethnicity distribution (Black and White population). I also calculated municipalities' female official ratio in the contact information collection process. With this information, I compared municipalities of these variables that had at least one respondent and municipalities without respondent by two sample t-tests. Although responded municipalities have slightly higher female official ratio and White population, there were few statistical difference between responded and no-response municipalities in other aspects. Figure 1 shows the visualized results, and Table D.1 in Appendix D reports more information of the sample representativeness with these variables.

²Overall, 987 (10%) respondents had opened the survey and answered at least one question. I excluded respondents who did not answer the party affiliation and ideology survey questions, because the information for political homophily matching was missing.

³Delaware was the only State without any effective response.

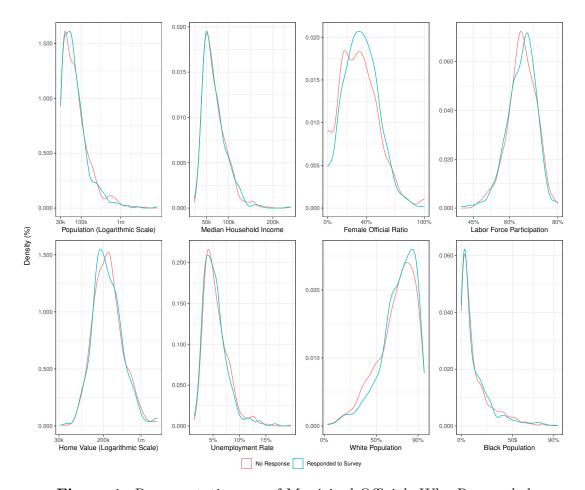


Figure 1: Representativeness of Municipal Officials Who Responded

Results

Main Findings

Average marginal component effect (AMCE) is the standard estimation strategy in conjoint experiments (Hainmueller et al. 2014). In the fully randomized context, AMCEs are identical to coefficients in a linear probability model. For example, we can compare the marginal effect on collaboration formation between "good collaborative experience" and "bad collaborative experience", holding all other possible attribute components at average levels.

Table 3 shows the main findings of this study. Model (1) estimates overall effects for the four attributes, and we use it to test hypotheses H1a, H1b, H2, H3, and H4. Among these

attributes, the political homophily effect may be stronger on elected officials than appointed city managers, because city managers are less motivated by local political preferences than by their loyalty to the larger professional community (Connolly 2018; Teodoro 2011). Therefore, I conducted subgroup analysis for both groups respectively in Model (2) and (3). In general, these models support H1a, H2, H3, and H4, but reject H1b.

Table 3: Probability of Intergovernmental Collaboration

	(1)	(2)	(3)		
	Full Sample	Elected Officials	City Managers		
H1a & H1b: Self vs Partner's Cost (Ref: 250:750)					
750:250 500:500	$-0.229 (0.017)^{***} -0.069 (0.017)^{***}$	$-0.225 (0.019)^{***}$ $-0.056 (0.018)^{**}$	$-0.241 (0.046)^{***} -0.154 (0.047)^{***}$		
H2: Benefit (Ref: 200 Jobs)					
800 Jobs 500 Jobs	$0.343 (0.016)^{***} 0.199 (0.016)^{***}$	$0.351 (0.017)^{***} 0.201 (0.017)^{***}$	$0.281 (0.051)^{***}$ $0.191 (0.047)^{***}$		
H3: Political Homophily					
Same Party	$0.093 (0.013)^{***}$	$0.097 (0.014)^{***}$	$0.065 \ (0.038)$		
H4: Collaborative Experience (Ref: Bad Exp)					
Good Exp No Exp	0.360 (0.017)*** 0.238 (0.016)***	$0.355 (0.018)^{***}$ $0.237 (0.018)^{***}$	0.399 (0.045)*** 0.245 (0.039)***		
Constant	$0.186 (0.018)^{***}$	$0.177 (0.020)^{***}$	$0.243 (0.047)^{***}$		
R ² Observation	0.213 4534	0.215 3956	0.211 578		

Note: All models are linear probability models. Political homophily is measured by taking a value of 1 if respondents were from the same party as the collaborators in the conjoint program proposals and 0 if they were from different parties. Standard errors are in brackets (clustered by individuals). ***p < 0.001; **p < 0.05

H1a assumes that municipal officials will prefer lower cost when comparing collaborative partners. Results in Model (1) support this hypothesis. Respondents were 23% (p = 0.00) less likely to collaborate with cities that costed them \$750,000, when compared to the cities that costed them \$250,000. Similarly, respondents were 7% (p = 0.00) less likely to

collaborate with cities that costed them \$500,000, when compared to the cities that costed them \$250,000. To support H1b, the component "500:500" should has at least the same level of the magnitude as "250:750", which means that fair sharing of cost is equally important as the lowest self-cost in a partnership. However, the model does not detect the effect of fair sharing of costs, because respondents' willingness to collaborate is a linear function of program cost in the negative direction. Therefore, H1b is rejected.

H2 assumes that municipal officials will prefer high benefit when comparing collaborative partners. Results in Model (1) support this hypothesis. Respondents were 34% (p = 0.00) more likely to prefer the collaborative programs that offered them 800 job creations, when compared to the programs that offered them 200 job creations. Similarly, respondents were 20% (p = 0.00) more likely to prefer the programs that offered them 500 job creations, when compared to the programs that offered them 200 job creations. Respondents' collaborative willingness became stronger when benefits increase.

H3 assumes that municipal officials will prefer partners that in the same party as them. Results in Model (1) support this hypothesis. Respondents are 9% (p = 0.00) more likely to collaborate when the program was proposed by the same party in the partner city. Model (2) and (3) show that the political homophily effect is mainly driven by elected officials, which are 10% (p = 0.00) more likely to collaborate with co-partisan cities. However, the political homophily effect is not distinguishable among city managers in Model (3).

H4 assumes that municipal officials will prefer collaborative partners that they have good interactions before. Results in Model (1) support this hypothesis. Respondents were 36% (p = 0.00) more likely to collaborate when they had good rather than bad working experiences with the partner cities. Even for cities that had no interaction before, respondents were 24% (p = 0.00) more likely to collaborate with them than cities with bad interactions.

In Model (1) – (3), we clearly see that municipal officials' intergovernmental collaboration choices are jointly explained by rational choice, political homophily, and relational trust theories. However, political homophily contributes smaller explanation power (the coefficient

is lower than 10%) than the other two theories. Elected officials are more likely to prioritize job creation benefits and previous collaboration experiences in making future collaboration choices. Both the sizable job creation and good prior interaction increase more than 30% of probability of intergovernmental collaboration decisions. The relational trust is more important for city managers to make collaboration decisions than costs-benefits calculation and the co-partisan status. Good prior interactions with a city lead about 40% probability increase of intergovernmental collaboration decisions among city managers. Explanation powers of other theories are all less than 30% in this sample.

Although Table 3 indicate encouraged results for hypotheses testing, some mechanisms need to be further explained. First, the coding strategy of political homophily only allows us to see the same party effect for the full sample, but whether this effect is heterogenous between different parties is unknown. Therefore, I conducted a subgroup analysis by party affiliation. Second, the main findings reveal that political homophily has relatively smaller explanation power than the other two theories, but we do not know whether municipal officials' costs-benefits calculation and relational trust are conditional on the political homophily effect and whether this conditional effect is the same for Democrats and Republicans. Therefore, I interacted the political homophily attribute with all other attributes in each party affiliation subgroup. The next two sections provide detailed explanations of both analyses.

Subgroup Analysis by Party Affiliation

The left panel of Figure 2 shows the AMCE results for Democrat respondents, Republican respondents, and other respondents (including who were independent or from other parties). The right panel of Figure 2 shows the difference-in-AMCE results between each subgroup, using Democrat respondents as the reference group. The difference-in-AMCEs were identical to the interaction coefficients between respondents' party affiliation and each attribute in linear probability models by party affiliation subgroups.

In the left panel, both Republican respondents and Democrat respondents expressed

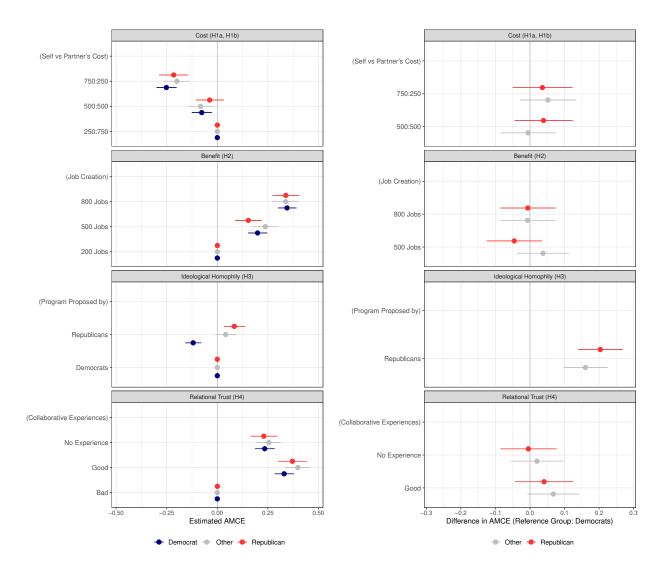


Figure 2: Subgroup Analysis by Party Affiliation *Note*: Bars are 95% confidence intervals.

stronger preferences to their political matched collaborators, and the effects were similar: 12% (p = 0.00) among Democrats and 8% (p = 0.00) among Republicans. By contrast, other respondents had no preference toward either party. These results further confirm the political homophily hypothesis (H3). The right panel indicates that respondents from different party affiliations had similar preferences of each attribute component, except for political homophily. Although the political homophily was prominent in the result, it had relatively smaller effects than other attributes. Lower costs, higher benefits, and good prior interactions consistently increase more than 25% of probability of municipal officials to collaborate,

in each party affiliation subgroup.

It is worth noting that respondents from different party affiliations had diverse views on fair sharing of cost. The effects of cost aversion among Democrats and others were consistent with the full sample analysis, but Republicans did not express preference difference between "500:500" and "250:750" (effect = 4%; p = 0.27). Although the statistical difference between Democrats and Republicans on cost fairness was insignificant with the Difference-in-AMCE measurement, this variable is worth to be further investigated. And in the next section, the political homophily interactions in each party affiliation subgroup provide more evidence for us to understand its heterogenous effect on collaboration, including the consideration of cost fairness.

It is worth noting that respondents from different party affiliations had diverse views on fair sharing of cost. The effects of cost aversion among Democrats and others were consistent with the full sample analysis, but Republicans did not express preference difference between "500:500" and "250:750" (effect = 4%; p = 0.27). Although the statistical difference between Democrats and Republicans on cost fairness was not significant with the Difference-in-AMCE measurement, this variable is worth to be further study. Therefore, I conducted an interaction analysis between cost and collaborator's party in each party affiliation subgroup in the next section.

Exploratory Analysis: The Conditional Effect of Political Homophily

Analysis in this section has not been pre-registered, because it was an exploratory and post-hoc analysis that based on the above findings. The purpose of this exploratory analysis is to further understand the conditional effects of political homophily on other attributes in intergovernmental collaboration decisions.

Figure 3 combines the interaction results of each party affiliation subgroup. In general, respondents in each subgroup have similar collaboration preferences regardless collaborators' party affiliation. Political homophily has no conditional effect on benefits calculation

or relational trust. For costs calculation, Democrats and others show stronger preferences on lower self-costs and care less about collaborators' costs, regardless collaborators' party affiliation. The fair but more expensive cost option (500:500) is indistinguishable to the unfair but cheaper option (250:750) among Republican respondents when the collaborators are also Republicans. In contrast, Republican respondents were 10% (p = 0.04) less likely to collaborate with Democrat cities that costed them \$500,000, when compared to the Democrat cities that costed them \$250,000 (Figure 3, the rightmost panel). These results indicate that Republican respondents use pure rational cost calculation to evaluate potential collaborations when the collaborators are Democrats but consider more of cost fairness when the collaborators are Republicans.

In summary, the conditional effect of political homophily only appears to Republican respondents in cost calculation. The political homophily literature in public policy and management has limit explanation about this heterogenous phenomenon. Most studies only test the overall homophily effect with the binary co-partisanship measurement without conducting subgroup analysis in each party (e.g., Butler et al. 2017; Gerber et al. 2013; Song et al. 2018). The theoretical gap I revealed in this exploratory analysis suggests a potential for future studies to make in-depth investigations about the connections between political homophily and cost fairness in intergovernmental collaboration. In this study, I offer one possible explanation from the social psychology literature.

Drawing on the moral foundation theory, liberals and conservatives have different degrees of dependency on their in-group identity (Graham et al. 2009). Compared to liberals, conservatives are more likely to prioritize interests for ingroup members over outgroup members (Clifford 2014). Conservatives' ingroup loyalty motivate them to sacrifice self-interests for achieving group level goals. In this study, municipal officials' ideology overlaps with their partisanship, in which most of Democrats were liberals and most of Republicans were conservatives (see Appendix E). Therefore, Republican respondents are more likely to sacrifice their costs to make the input balance in co-partisan collaboration relationships. In alterna-

tive, Democrats are less contingent on the ingroup loyalty in decision-making, so their cost calculations incline to the pure rational choice model.

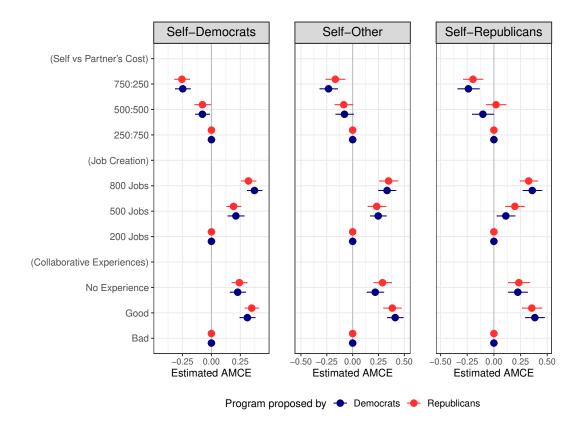


Figure 3: Attribute Interaction: AMCE of Cost Conditional on Ideological Homophily *Note*: Bars are 95% confidence intervals.

Robustness Check

In addition to the above analyses, I performed multiple robustness checks. First, I examine the conditional effect of ideology on political homophily. My main findings in Table 3 and Figure 2 argue that political homophily contribute relatively smaller explanation power to intergovernmental collaboration, but Butler et al. (2017) suggest that the political homophily effect is stronger on people who have extreme ideological identities and is weaker on people who have moderate ideological identities. Therefore, interaction analysis is needed. The variable: ideological extremism is measured by taking both "very liberal" and "very conservative" as 2, both "liberal" and "conservative" as 1, "moderate" as 0. Table 4 reports

that the interaction between political homophily and ideological extremism and turns out insignificant results for both elected officials and city managers. Therefore, the political homophily effect has relatively smaller explanation power than the other two theories, and this finding is robust across the ideology spectrum. I also report the descriptive relationship between party affiliation and ideology in Appendix E.

Table 4: Probability of Intergovernmental Collaboration by Ideological Extremism

	(4)	(5)	(6)		
	Full Sample	Elected Officials	City Managers		
H1a & H1b: Self vs Partner's Cost (Ref: 250:750)					
750:250	$-0.228 (0.017)^{***} -0.069 (0.017)^{***}$	$-0.225 (0.019)^{***} -0.056 (0.018)^{**}$	$-0.238 (0.047)^{***} -0.153 (0.047)^{**}$		
H2: Benefit (Ref: 200 Jobs)					
800 Jobs 500 Jobs	$0.343 (0.016)^{***} 0.199 (0.016)^{***}$	$0.352 (0.017)^{***} 0.201 (0.017)^{***}$	$0.283 (0.051)^{***} 0.193 (0.047)^{***}$		
H3: Political Homophily					
Same Party	$0.076 (0.019)^{***}$	$0.080 (0.020)^{***}$	$0.066\ (0.063)$		
H4: Collaborative Experience (Ref: Bad Exp)					
Good Exp No Exp	$0.360 (0.017)^{***} 0.238 (0.016)^{***}$	$0.355 (0.018)^{***}$ $0.237 (0.018)^{***}$	$0.399 (0.045)^{***}$ $0.247 (0.040)^{***}$		
Ideological Extremism	-0.009 (0.008)	-0.005 (0.009)	$-0.033\ (0.029)$		
Ideological Extremism ×Same Party	0.024 (0.019)	0.023 (0.019)	0.019 (0.067)		
Constant	$0.191 (0.019)^{***}$	$0.180 (0.021)^{***}$	$0.248 (0.046)^{***}$		
R ² Observation	0.213 4534	0.215 3956	0.212 578		

Note: All models are linear probability models. Political homophily is measured by taking a value of 1 if respondents were from the same party as the collaborators in the conjoint program proposals and 0 if they were from different parties. Ideological Extremism is measured by taking both "very liberal" and "very conservative" as 2, both "liberal" and "conservative" as 1, "moderate" as 0. Standard errors are in brackets (clustered by individuals). ***p < 0.001; *p < 0.01; *p < 0.05

Second, I conducted two more subgroup analyses to address potential selection bias

issues (Appendix F). Although my sample is representative in general, it has higher response rate from female officials and from White dominated cities. To test whether there is systematic difference between female and male respondents as well as White and non-white respondents, I compared results between these subgroups. The results turn out no heterogeneity by gender or race in making intergovernmental collaboration decisions, which confirm the external validity of the findings in this study.

Discussion and Conclusion

Intergovernmental collaboration are driven by diverse theoretical mechanisms, but we have yet to systematically theorize and compare the explanatory power between different theories. Inspired from Berry et al.'s (2004) categorization of network research traditions, this study offers a novel perspective to compare three fundamental network theories. In order to advance the network scholarship, I provide new evidence of these theories from the micro level data, which explain municipal officials' collaboration decisions in an earlier stage of network formation.

The experimental evidence indicates that cost-benefit analysis under rational calculation, political homophily, and relational trust built on prior interaction are jointly important to explain public officials' collaboration decisions. As I mentioned at the outset, these theories are not mutually exclusive. They demonstrate the complexity of collaboration decisions and encourage public administration scholars to develop more careful theoretical comparisons. Although elected officials and city managers have similar collaboration preferences, elected officials put more focuses on job creation benefit and collaborative experiences, while city managers majorly rely on collaborative experiences to make collaboration decisions.

Moreover, my results highlight that the effect of political homophily is not as large as rational choice and relational trust in predicting intergovernmental collaboration decisions. Subgroup analysis by party affiliation shows similar magnitudes of political homophily in Democrats and Republicans. And this finding is robust across the ideology spectrum. In

addition, the interaction results between political homophily and other attributes in each party affiliation subgroup reveals the heterogenous effect of cost fairness between Democrats and Republicans. Democrats have consistent rational choice pattern in calculating costs in collaboration, but Republicans are willing to sacrifice self-interests to achieve costs balance with their co-partisan collaborators. I use the moral foundation theory to explain this ingroup preference, and I also invite scholars to further investigate the complex interaction between political homophily and fairness in collaboration behaviors.

Overall, the findings from this study complement and extend earlier scholarship on intergovernmental network formation. Although abundant studies on intergovernmental network formation rely on aggregating survey data of government employees to estimate organizational and network levels collaboration preferences (e.g., Berardo and Lubell 2016; Ingold and Leifeld 2016; Scott and Thomas 2017), no studies of which explicitly test intergovernmental collaboration in the level of government leaders. This is a surprising omission considering the importance of leadership in organizational decision-making (McGuire and Silvia 2009; O'Toole Jr 2015). Moreover, organizational level collaboration analyses often happen after the network formations have finished. How to predict decision-making in earlier stages of collaboration is another theoretical challenge for network scholars. Some simulation studies attempted to overcome the "hindsight paradigm" in network research (e.g., Choi and Robertson 2019; Scott et al. 2019), but the motivations behind government leaders' initial collaborative decisions are still unknown. As O'Toole Jr (2015) suggested, future network analysis should move the unit of analysis from organizations to managers, because who the public managers interact externally and how do they interact can eventually affect organizational collaboration outcomes. Therefore, bridging individual decision-makers' collaboration motivations at the beginning of networking process and organizational collaboration outcomes after network formations could be interested to more network scholars. In this study, I move a little step forward to examine and compare classical network theories on municipal officials in the intergovernmental world. Its results generally align with organizational level evidence in other studies, which confirm theoretical consistency in network research across different units of analysis.

Mechanism isolation is the other important contribution for this study. Interdependency is always a technical obstacle in network research, and it brings complexity and mechanism confusion when we estimate determinants of network formations. Although the challenges of making causal claims are not unique to network research, the nature of interdependency hinders network scholars to disentangle theoretical mechanisms when one network activity can be explained by multiple network theories. Conjoint experiment is a remedy for this problem. It encourages decision-makers to make choice of connection to another partner; meanwhile the randomization technique allows it to isolate and compare theoretical mechanisms. On these grounds, my conjoint experimental approach provides a template for the network research community to further investigate other network theories at the level of government leaders.

Moving beyond the traditional network theories, this study also challenges the explanatory power of motivated reasoning and its political homophily effect on government actions. Although motivated reasoning is strong when researchers design party information as the single manipulation factor in experiments (e.g., Baekgaard et al. 2021; James and Van Ryzin 2017), its impact can be mitigated when more policy information is available to individuals (Butler et al. 2017). The conjoint design in this study provides a multi-dimensional policy information environment, which is closer to the actual decision-making situations (Hainmueller et al. 2015). Compared to previous studies, I obtain a more optimistic finding: The political homophily effect still exists, but municipal officials are generally rational in interlocal collaboration decisions. Although Republicans may sacrifice self-interests to achieve cost balance for their co-partisan collaborators, this effect is around 10%, which is still smaller than effects from other attributes.

While this study offers new research opportunities for intergovernmental network research, more work can be done to improve its limitations. First, policy contexts may affect collaboration process. Although I demonstrate the program's benefits neutrally, which include economy development, community development, and environmental protection, the sustainability is still a lean Democrats policy area. Future experimental vignettes could include more policy areas with favorability to either party and compare political homophily effects under different policy scenarios. Second, the conjoint design can only observe willingness to collaborate from one actor to another. This simple function does not allow us to conduct network analysis on triads and other more complex network structures. Finally, the survey experimental data in this study is cross-sectional, which cannot observe longitudinal causal patterns of network activities. Future studies could embed experiment in multi-wave surveys or embrace field experiments to further explore network evolution and tie dissolution.

In a broader sense, this article is the first to provide a proactive worldview of intergovernmental network formation by capturing municipal officials' collaboration decisions before actual networks have been formed. Using the conjoint experimental method, this study integrates the two important areas in public administration: behavioral public administration and collaborative governance. With a representative sample and constructive analysis, I believe that the findings of this study advance public administration theory from a new angle.

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Supplemental Information

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Appendix A Pre-registration Report

Have any data been collected for this study already?

No, no data have been collected for this study yet

What's the main question being asked or hypothesis being tested in this study?

- i Rational Choice Hypothesis: Local governments are more likely to form collaborations with partners which offer lower costs and higher benefits.
- ii Political Homophily Hypothesis: Local governments are more likely to form collaborations with partners which share the same party affiliation.
- iii Institutional Trust Hypothesis: Local governments are more likely to form collaborations with partners which they shared good collaborative experiences in history.

Describe the key dependent variable(s) specifying how they will be measured.

Choice: We will code choice as a dummy variable: 1 or 0, based on whether the participants select the program profile.

How many and which conditions will participants be assigned to?

We employ a choice-based conjoint design to obtain a more comprehensive picture of local government officials' opinions on collaboration partner selection. A hypothetical sustainable development program scenario will be introduced. I will ask subjects to compare 3 pairs of program proposals from different cities and indicate which city (in each pair) they are more willing to collaborate with. Each program profile includes 4 attributes:

- 1. Cost of the program: you pay: \$250,000; this city pays \$750,000/you pay: \$500,000; this city pays \$500,000/you pay: \$750,000; this city pays \$250,000 (theory: Cost)
- 2. Job creation: 200/500/800 jobs (theory: Benefit)
- 3. The program is proposed by either Democrats/Republicans (theory: Political Homophily)
- 4. Collaborative experience with this city: good/bad/no experience (theory: Institutional Trust)

Specify exactly which analyses you will conduct to examine the main question/hypothesis.

Analyses will be based on the standard practices in the conjoint experimental design:

i Average Marginal Component Effect (AMCE).

ii Marginal Means (MM).

Any secondary analyses?

We will conduct subgroup analyses by participants' characteristics, such as partisanship and ideology.

How many observations will be collected or what will determine the sample size? No need to justify decision, but be precise about exactly how the number will be determined.

This survey will be sent to American municipal government officials, including mayor, council members, and city managers. Based on power analysis of the conjoint attribute design, minimal requirement for sample size is 300.

Anything else you would like to pre-register? (e.g., data exclusions, variables collected for exploratory purposes, unusual analyses planned?)

Subjects' demographic information will be collected after they have answered the questions regarding key dependent variables. The information is collected for detecting the heterogeneity of the treatment effect.

Appendix B Survey Instruments

First, the respondents saw an introduction to the sustainable development program vignette.

Introduction

We are interested in the intergovernmental collaborative decisions of American local governments. In the following part, we will show you several **hypothetical** decision-making situations and ask you to provide opinions. Please try to be honest in answering the questions. Describe what you would **really** do if a similar situation occurs in your working live. Remember that your answers to all questions in this survey will be kept **completely confidential**.

Assuming you and your municipal government plan to collaborate with another city on an interlocal sustainable development program. The potential benefits of the program include:

- Economic development
- Community development
- · Environmental protection

Based on your consideration for the best option to develop your municipality, please evaluate the following hypothetical city partners and their proposals. In total, you are asked to evaluate 3 pairs of cities in 3 separate pages. Please provide your choice in each pair.

Note: There is no right or wrong answer to any comparisons.

Next, the respondents completed three pairs of comparison task like the following.

Suppose you can only collaborate with one out of the two cities:

Program Attributes:	City A	City B
The program will create	500 jobs in your city	800 jobs in your city
The program is proposed by	Democrats	Republicans
Your previous working experiences with this city	Good	No experience
Cost of the program	You pay: \$250,000; This city pays: \$750,000	You pay: \$500,000; This city pays: \$500,000

Please indicate which city do you prefer to collaborate with:



Next, the respondents answered political background questions and demographic questions.

Generally speaking, do you usually think of yourself as a...

- Democrat
- Republican
- Independent
- Other party (please specify)

How would you describe your political views as of today?

- Very liberal
- Liberal
- Moderate
- Conservative
- Very Conservative
- No opinion

How many years have you been in your current government position?

- Less than 1 year
- Less than 5 years
- Less than 10 years
- More than 10 years

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

Which of the following best describes your gender identity?

- Male
- Female

- Non-binary/third gender
- prefer not to say

T 7		
Your	age:	

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)

Appendix C Email Invitation Context

Subject line: Survey Research Invitation

Dear [Job Title] [Last Name]

As local governments have more opportunities and pressures to collaborate with other local governments, local government scholars seek to understand optimizing contexts based on your opinion as a local government [elected official/manager]. I value your perspective and I invite you to complete a very short and anonymous survey (about 3 minutes). This survey is conducted by researchers at [institution name]. The purpose of this survey is to study the intergovernmental collaborative decisions of American local governmental officials.

Follow this link to the survey: [survey link is here]

You are being invited to participate in this survey because you are currently serving or formerly served as an [elected official/manager] in an American local government. We will keep the information you provide confidential. Your participation in this study is completely voluntary. You may choose not to take part in it or you may stop participating at any time.

Thank you very much for your consideration of and participation in this research study, the results of which will be shared with you via email after we finish this study.

Your sincerely

Appendix D Sample Characteristics

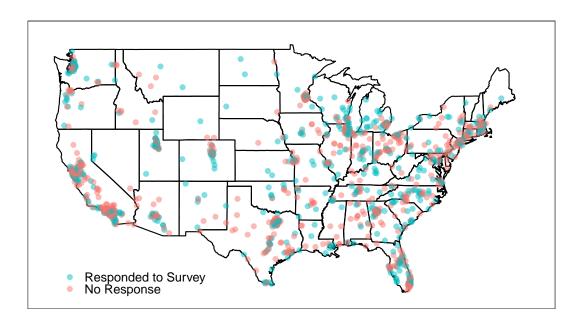


Figure D.1: Geographic Location of Survey Respondents

Table D.1: Representativeness of City Level Variables

	Responded Cities	No Response Cities	P-value
Population	114995.24	117051.15	0.92
Median houshold income	67833.97	68341.71	0.74
Female official ratio	34.24	31.73	0.03
Labor force participation	64.91	64.99	0.81
Home value	299108.16	301116.71	0.89
Unemployment rate	5.36	5.56	0.13
White percentage	71.18	68.98	0.03
Black percentage	12.98	13.23	0.78

Table D.2: Descriptive Summary: Overall

	Mean	SD	Min	Max
City Level Variables				
Population (in 1000)	117.09	397.70	30.07	8336.82
Median houshold income (in \$1000)	67.83	26.40	21.92	235.28
Female official ratio	34.24	17.92	0.00	100.00
Labor force participation	64.91	5.92	39.90	79.90
Home value (in \$1000)	299.11	255.25	40.44	2000.00
Unemployment rate	5.36	2.25	1.40	16.90
White percentage (residents)	71.18	17.01	5.60	95.50
Black percentage (residents)	12.98	15.64	0.10	91.80
Individual Level Variables				
Democrats	0.47	0.50	0.00	1.00
Republicans	0.25	0.43	0.00	1.00
Ideology	2.89	0.97	1.00	5.00
Tenure	2.52	0.97	1.00	4.00
White	0.78	0.41	0.00	1.00
Black	0.09	0.29	0.00	1.00
Hispanic	0.07	0.26	0.00	1.00
Asian	0.02	0.15	0.00	1.00
Other	0.03	0.18	0.00	1.00
Female	0.39	0.49	0.00	1.00
Age	56.51	12.59	19.00	89.00
Grad School	0.57	0.49	0.00	1.00

 ${\bf Table~D.3:~Descriptive~Summary:~Elected~Official}$

	Mean	SD	Min	Max
City Level Variables				
Population (in 1000)	122.86	384.82	9.74	8336.82
Median houshold income (in \$1000)	66.01	24.32	21.92	235.28
Female official ratio	35.10	17.45	0.00	88.89
Labor force participation	64.97	6.02	39.90	79.90
Home value (in \$1000)	278.07	203.00	40.44	2000.00
Unemployment rate	5.36	2.25	1.40	16.90
White percentage (residents)	71.44	16.67	5.60	95.50
Black percentage (residents)	13.67	16.02	0.10	91.80
Individual Level Variables				
Democrats	0.50	0.50	0.00	1.00
Republicans	0.26	0.44	0.00	1.00
Ideology	2.87	1.01	1.00	5.00
Tenure	2.47	0.97	1.00	4.00
White	0.77	0.42	0.00	1.00
Black	0.10	0.29	0.00	1.00
Hispanic	0.08	0.27	0.00	1.00
Asian	0.02	0.15	0.00	1.00
Other	0.03	0.18	0.00	1.00
Female	0.40	0.49	0.00	1.00
Age	56.93	13.03	19.00	89.00
Grad School	0.53	0.50	0.00	1.00

Table D.4: Descriptive Summary: City Manager

	Mean	SD	Min	Max
City Level Variables				
Population (in 1000)	87.17	163.98	16.26	1343.57
Median houshold income (in \$1000)	73.81	29.35	22.15	160.78
Female official ratio	34.80	20.09	0.00	100.00
Labor force participation	65.49	5.88	43.80	74.80
Home value (in \$1000)	351.31	349.64	82.46	2000.00
Unemployment rate	4.93	1.98	1.60	11.30
White percentage (residents)	72.75	14.54	15.70	92.30
Black percentage (residents)	10.37	10.68	0.50	55.10
Individual Level Variables				
Democrats	0.27	0.44	0.00	1.00
Republicans	0.16	0.37	0.00	1.00
Ideology	2.98	0.61	1.00	4.00
Tenure	2.82	0.98	1.00	4.00
White	0.86	0.35	0.00	1.00
Black	0.06	0.24	0.00	1.00
Hispanic	0.04	0.20	0.00	1.00
Asian	0.01	0.10	0.00	1.00
Other	0.03	0.17	0.00	1.00
Female	0.32	0.47	0.00	1.00
Age	53.73	8.67	35.00	75.00
Grad School	0.88	0.33	0.00	1.00

Appendix E Party Affiliation and Ideology

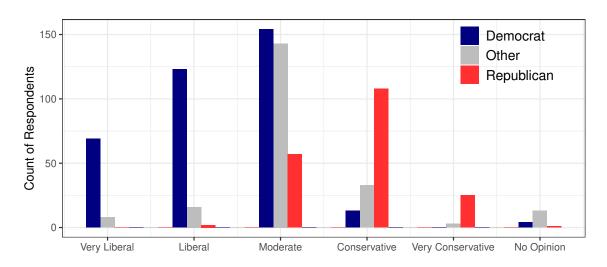


Figure E.1: Party Affiliation and Ideology of Municipal Officials Who Responded *Note*: The final sample contained 363 Democrats, 193 Republicans, and 216 respondents who identified themselves either "Independent" or "Other Party".

Appendix F Additional Subgroup Analysis

Table F.1: Probability of Intergovernmental Collaboration by Subgroups

	Female	Male	White	Nonwhite			
H1a & H1b: Self vs Partner's Cost (Ref: 250:750)							
750:250	-0.236^{***}	-0.224***	-0.222***	-0.256^{***}			
	(0.026)	(0.023)	(0.019)	(0.041)			
500:500	-0.084**	-0.056**	-0.067^{***}	-0.080^*			
	(0.028)	(0.021)	(0.019)	(0.039)			
H2: Benefit (R	Ref: 200 Jobs)						
800 Jobs	0.353***	0.336***	0.352***	0.315***			
	(0.026)	(0.021)	(0.019)	(0.035)			
500 Jobs	0.207***	0.193***	0.208***	0.174***			
	(0.027)	(0.020)	(0.019)	(0.033)			
H3: Political H	Homophily						
Same Party	0.115***	0.080***	0.095***	0.089***			
v	(0.020)	(0.016)	(0.015)	(0.026)			
H4: Collaborative Experience (Ref: Bad Exp)							
Good Exp	0.377***	0.352***	0.366***	0.346***			
_	(0.027)	(0.021)	(0.019)	(0.037)			
No Exp	0.265***	0.217***	0.248***	0.199***			
	(0.028)	(0.020)	(0.019)	(0.033)			
R^2	0.230	0.203	0.221	0.192			
Observation	1748	2746	3508	998			

Note: All models are linear probability models. Political homophily is measured by taking a value of 1 if respondents were from the same party as the collaborators in the conjoint program proposals and 0 if they were from different parties. Standard errors are in brackets (clustered by individuals). ***p < 0.001; **p < 0.01; *p < 0.05