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

Yixin Liu

Abstract

The earlier research agenda on intergovernmental collaboration is "too late" and "too aggregated." The existing literature investigates intergovernmental collaborations in the late stage after networks have formed. Further, intergovernmental network analyses are aggregated at the organizational and network levels, which makes it difficult to discern government leaders' individual motivations to collaborate. To help us achieve a proactive worldview, this study integrates three fundamental network formation theories, rational choice, political homophily, and social capital, to predict public officials' decisions to collaborate. A conjoint experiment of U.S. municipal officials was conducted to test the hypotheses. The results indicated that all three theories determine municipal officials' decisions to collaborate in sustainability programs jointly, but political homophily has relatively less explanatory power than the other two. This study revealed further the different priorities between elected officials and city managers' choice to collaborate. An additional subgroup analysis of party affiliation suggested that Republicans are willing to sacrifice self-interests to balance costs with their copartisan collaborators. Overall, this experimental approach advances network theories and offers new opportunities to study intergovernmental collaboration.

Keywords: Network formation, Intergovernmental collaboration, Conjoint experiment, Municipal governments

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Introduction

What motivates 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 networks is straightforward: Single organizations cannot solve, or solve easily, many intergovernmental problems (Agranoff and McGuire 2001, 296). The increasing complexities of interorganizational actions increase our need to investigate the process of network emergence in public organizations (O'Toole Jr 1997). With this consideration, the ways public organizations associate with each other and the motivations that encourage them to reach collaborative decisions are pre-conditions for scholars to study other network activities and outcomes further.

In this vein, the public policy and management literature integrates diverse theoretical approaches to explain intergovernmental network formation (e.g., Berry et al. 2004; Provan and Kenis 2008; Scott and Thomas 2017). However, two areas of study require further investigation. First, the previous research agenda is "too late" to explain network phenomena. With some exceptions (e.g., Scott et al. 2019), the mainstream literature of network formation emphasizes on analyzing network ties in ongoing or complete partnerships (e.g., Berardo and Lubell 2016; Ulibarri and Scott 2017). Collecting data after networks have been established, researchers rarely have chance to study earlier stages of intergovernmental collaborations. However, collaborative governance is an integrated process (Emerson et al. 2012), and initial drivers of collaborations are important to affect later processes of network formations, so they should attract more scholarly attentions.

Second, the existing literature is "too aggregated" to explain individual officials' incentives to engage in network activities. Network scholars have obtained abundant evidence about intergovernmental networks at the organizational or network levels, but have given relatively little attention to intergovernmental collaboration at the individual level. By way of definition, the most fundamental elements in intergovernmental networks are individu-

als 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). By analyzing organizational collaboration choices, the current empirical research focus is "too aggregated" and cannot discern government leaders' roles in collaborative decisions. Furthermore, different leadership positions of government officials may affect their emphases in collaborations. For example, aggregated data do not allow us to detect heterogenous decision-making incentives for elected policy makers and appointed public managers within the same organization.

In addition to these two theoretical constraints, network research often faces methodological difficulties in isolating mechanisms to identify causal mechanisms (Siciliano et al. 2021). While the challenge of causal identification is not unique to network research, networks' nature of interdependency makes this challenge become salient. Actors' interconnectedness brings confounders from the surrounding environment. Therefore, collecting observational data from established networks may not tease out individual decision-makers' exogenous motivations to initiate collaborations.

To help us achieve a proactive worldview and overcome the above research obstacles, I propose an experimental approach to study network formation. Recently, scholars have conducted experiments to re-examine classic public administration problems, and have obtained critical new insights (e.g., Jilke and Tummers 2018; Meyer-Sahling et al. 2019; Nielsen and Moynihan 2017). I suggest that the experimental method is useful to solve the three problems in network research above: 1) Experimental vignettes allow researchers to predict government representatives' willingness to collaborate with other governments before any actual network has formed, so researchers can study network formation in its earliest stage; 2) survey experiments of individual officials help researchers to obtain micro level data of willingness to collaborate; 3) randomization techniques in experiments are promising to test causal claims, which exclude interdependent confounders between network actors.

Based upon these premises, this study asks: What micro-level mechanisms motivate municipal leaders to make collaborative decisions in an intergovernmental world? Specifically, this study compared the relative explanatory power of three fundamental, but competing network theories, rational choice (Ostrom 1990), political homophily (Jenkins-Smith and Sabatier 1993), and social capital (Granovetter 1985). Although these three theories are influential in explaining intergovernmental network formation, previous network research do not compare causal effects between them in the same model.

Therefore, I examined and compared the causal mechanisms of these theories directly 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 of potential collaborating cities. The three network theories were manipulated as attribute components in the program proposals, and respondents needed to trade off among attributes to make collaborative decisions. Using this strategy, I compared the three theories' treatment effects on officials' partner selection choices simultaneously.

The findings indicated that all three theories have significant effects on municipal officials' collaborative decisions. Interestingly, rational choice and social capital theories exert 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 rely largely on collaborative experiences when they make decisions to collaborate. An additional subgroup analysis of party affiliation suggested that Republicans are willing to sacrifice self-interests to balance costs with their co-partisan collaborators. However, I did not observe this effect on Democrats.

This article sheds new light on intergovernmental network formation theories with an individual-level analysis, and particularly on municipal leaders' interlocal collaborative decisions. The use of rational choice, political homophily, and social capital theories in the

conjoint experiment make solid connections with the existing literature. Combining the findings from this study and network research at other levels (meso and macro), scholars can translate public managers' collaborative motivations before networks form into actual organizational processes. From this perspective, we can advance network theories further both conceptually and methodologically.

Competing Network Theories

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

> "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 provides not only specifies intergovernmental networks' purpose clearly, but also indicates the necessity to study government representatives' network activities. Leadership is key in networks, and government leaders' behaviors shape network structures and outcomes (McGuire and Silvia 2009). Agranoff and McGuire (2001) argued that activation is an important function of government leaders. Activation refers to government leaders' need to identify and incorporate collaborative partners, resources, information, and personnel to achieve collaborative goals, and making such investments when the networking is initiated are critical in network management, because they may affect the entire 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 to study organizational leaders' decision-making in earlier stage of collaborations.

The literature on network formation theories distinguishes networks according to multiple types based upon 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 associations to achieve organizational goals, such as information learning, service co-delivery, and policy implementation (Silvia 2018). Therefore, I use collaborative decisions between two units to measure network formation.

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

Extending Intellectual Traditions of Network Research to Government Leaders

Scholarship on interorganizational collaboration has been "treating networks seriously" for more than two decades (O'Toole Jr 2015). To develop network formation theories, public network research incorporates three intellectual traditions: sociology, political science, and public management (Berry et al. 2004). These intellectual traditions are grounded in different assumptions about human behaviors: social capital in sociology; rational choice in political science, and instrumentalism in public management (Berry et al. 2004). However, most network studies examine intergovernmental collaborations at the level of organizations or networks, which do not study individuals who directly make decisions in organizations.

Moreover, the fast-growing field of political psychology assumes that human behaviors

can be motivated by politics. Rather than using accuracy goals to motivate rational decision-making, individuals often use partisan goals to justify their actions (James and Van Ryzin 2017; Taber and Lodge 2006). Thus, network activities are not necessarily products of rational choice or social capital, but of political homophily. This research stream suggests that organizational leaders' political views influence their affinity for policy actions strongly (Butler et al. 2017), which urges network scholars to develop and compare network theories at the level of individual officials. Whether rational choice and social capital are still powerful in explaining collaboration decisions when we take political motivation into consideration? Do these theories drive elected officials and appointed managers differently in making network decisions?

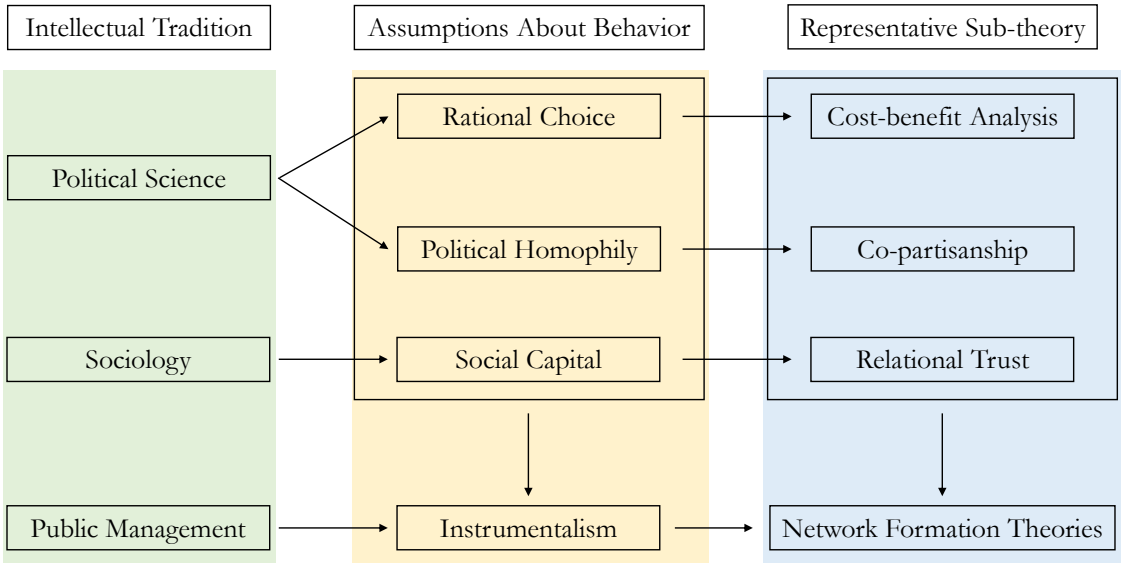

Figure 1: The Network Traditions and Theories

Answering these questions help us to discern the critical role of leadership in government decision-making. The following parts in this section introduce each fundamental assumption about behavior and its representative sub-theory (summary in Figure 1). There are numerous theories within each assumption, but it is impossible for one study to compare them all. Therefore, this study includes only one theory from each, and I encourage future studies to extend the theoretical comparisons between other network theories. Specifically, this

study investigates rational choice with cost-benefit analysis, political homophily with co-partisanship effect, and social capital with relational trust.

Rational Choice Assumption and Cost-benefit Analysis

The rational choice school in political science assumes that human behaviors are generally rational (Ostrom 1990). Therefore, network members' self-interested utility maximization should predict their decisions, and rational factors should explain the major variations in network activities. Collaborative behaviors are functions of costs and benefits between network actors, and hence, network actors' decisions should depend upon their expectations of economic gains in the actions in which they are 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's work (Olson 1965). Through effective communication and coordination, each network actor learns from another, and eventually reduces costs and maximizes benefits under ideal conditions. The rational choice theory has immense influence in the context of polycentric governance. For example, Lubell et al. (2002) investigated American watershed management and argued that partnerships are more likely to emerge when organizations need to offset costs associated with severe environmental problems. Similarly, other authors have found that organizations join partnerships to access knowledge for policy solutions (Berardo and Lubell 2016; Hileman and Bodin 2019).

The existing literature of intergovernmental collaboration examines rational choice at the levels of organizations or networks, but this theory is grounded from individual behaviors (Ostrom 1990). When examining rational choice in the level of individuals, we may need to take social psychological functions into account. (Ostrom 1998) suggested that the cost-benefit calculus should be conditional on the fairness of cost allocation between the collaborating parties, and sharing the costs between parties unequally can reduce the levels of cooperation. Abbink et al. (2001, 5) referred to this argument as the "punishment hy-

pothesis", 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, as actors may reject the collaboration proposal otherwise, regardless of how much utility they can derive from it. For example, Shrestha (2012) found that conflicts about fair sharing affect the success of collaborative public programs critically. Nonetheless, cost fairness has not been examined popularly in the network literature to date. Therefore, I integrate both the pure rational model and the cost fairness model into the following hypotheses.

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.

Political Homophily Assumption and Co-partisanship Effect

Political psychology offers a different view about human behaviors 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 is applied to political life, people process information according to their partisan goals rather than accuracy, such that they no longer make decisions based upon actual evidence they observe, but upon prior political beliefs they defend (Taber and Lodge 2006).

Compared to citizens, some authors have suggested that the effect of political motivation is even stronger among public officials (Baekgaard et al. 2019, 2021; Christensen and Moynihan 2020). Christensen and Moynihan (2020) provided an exploratory analysis of this phenomenon: Unlike general citizens, elected officials are trained to remain consistent

with their political identities, as voters and other political stakeholders would punish them otherwise. Therefore, public officials' professional role may lead them to prioritize political considerations in intergovernmental actions, which will eventually affect network outcomes.

The Advocacy Coalition Framework (ACF) introduced the effect of prior political beliefs on collaborative decisions in the network literature, and argued that network actors with similar beliefs comprise coalitions and acquire policy knowledge within them (Jenkins-Smith et al. 2018). Unlike rational choice, the ACF assumes that network activities are bounded rationally, because network actors have limited relevant knowledge and ability to access information and allocate time before they make decisions (Simon 1957). Therefore, a cost-benefit analysis cannot predict public officials' collaboration choices fully. In contrast, "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 using 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 to achieve 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 to investigate the way deep core beliefs (e.g., party affiliation, ideology, and culture) motivate collaborative decisions.

Following this research line, Leach and Sabatier (2005) found that when considering network actors' political deep core beliefs and policy beliefs, rational choice variables are no longer able to predict partnerships. Further, the deep core beliefs (measured by the respondent's conservatism) contribute the strongest effects. The effect of political homophily is prominent, as 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) identified the political homophily effect among Korean municipal council members in interlocal col-

laborations. Gerber et al. (2013) found that interlocal collaborations in regional planning are more likely to occur when local governments' constituents are politically similar. Such examples serve to highlight that municipal officials select collaborators who share 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 according to structural social contexts (Burt 1997). Granovetter (1985, 481) argued that "... behavior and institutions are affected by social relations." He criticized both the over- and under-socialized concepts in understanding economic actions: The under-socialized account is too narrow to explain behaviors according to utilitarian self-interest, while the over-socialized account over-internalizes behaviors. In these two accounts, ongoing social relationships are omitted in the analysis. Under this argument, the rational choice assumption is an under-socialized account, because it analyzes network formation with the economic self-interest tools (such as cost-benefit analysis), which ignore network activities' social and institutional contexts. On the other hand, the political homophily assumption is an over-socialized account, because actors are operating in political systems that guide their behaviors, which overlooks individual differences in the systems (Granovetter 1985). Therefore, network analysis should emphasize on the relational trust created during people's interactions (Burt 1997).

The theory of social capital assumes that prior interactions between network actors are likely to build relational trust, which will lead network actors to extend collaborations (Granovetter 1985; Krackhardt et al. 2003). For example, Metz et al. (2019) studied interconnectedness in environmental policy networks and found that prior interactions create trust and social capital, which build joint policy preferences further. In addition, Bunger (2013) found that interorganizational trust enhances nonprofit organizations' administrative

coordination. Scott and Thomas (2015) also observed the social capital effect in environmental collaboration. Their results indicated that the probability of tie formation increases if two organizations both participate in the same collaborative group.

Although social capital's effect on collaboration has been tested repeatedly, some limitations remain. Siciliano et al. (2021) pointed 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 prevents scholars from confirming the internal mechanisms between these two variables. Some authors, such as Metz et al. (2019), have argued that prior interactions increase relational trust, but others, such as Scott and Thomas (2015) and Bunger (2013) have suggested that relational trust results in collaboration. Including longitudinal analysis in network research to study the coevolution of trust and collaboration can remedy this problem, but data availability issues hinder more authors from using this method (Berardo et al. 2020; Isett and Provan 2005).

Therefore, I propose an experimental method to solve the theoretical direction problem. By 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 or no experience) reflect relational trust between network actors and increase the likelihood of future collaborations further. This expectation is consistent with Huang's (2014) correlational results, which indicated that intense interaction increases the likelihood of sharing information, but this effect is conditional only on actors' perceived trustworthiness of each other. Although my experimental design cannot observe the coevolution of trust and collaboration, which requires longitudinal data, this study still moves a small step forward to identify causality in network analysis.

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

The Role of Appointed Manager: Political or Professional

I test all hypotheses to the overall sample of municipal officials and to the subgroups of elected officials and appointed city managers. Regarding different roles in municipal government, elected officials and appointed managers may have different tradeoffs between cost-benefit analysis, co-partisanship, and relational trust, when forming collaborative ties. Elected officials have motivations to be policy responsiveness because of reelection pressure. When making collaboration decisions, they may focus more on policy outcomes and political alignment with their constituents (Tausanovitch and Warshaw 2014). As contrast, appointed managers may make collaboration decisions by their professional experiences, city's budgetary resources, and policy goals (Demir and Reddick 2012).

City managers are sharing more responsibility with city councils in policy making and implementation (Demir and Reddick 2012; Nelson and Svara 2015). For example, Nelson and Svara (2015, 54) found that 90% of city managers in the International City/County Management Association (ICMA) survey indicated that they should "... initiate, set, shape policy." The local institution literature has two competing approaches to explain city managers' policy behaviors. On the one hand, they share policy leadership with city council and align with elected officials' political goals to achieve greater policy influence (Zhang and Feiock 2010). On the other hand, city managers are less motivated by their political preferences than by their loyalty to the larger professional community (Connolly 2018; Teodoro 2011). Through comparing how different network formation theories weight in city managers' collaboration decisions, I attempt to solve this paradox.

Moreover, the existing literature has limited empirical evidence to test whether above network formation theories have heterogenous effects on elected officials and appointed managers, because aggregated data at the levels of organizations or networks do not allow scholars to discern role differences between these two groups of public officials in collaboration decisions. Therefore, I view the elected-appointed differences in collaboration decisions as an

open empirical question in the research design.

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, dyadic interactions often arise that depend upon other surrounding connections in the network (Scott and Ulibarri 2019). Therefore, it is challenging to exclude confounding factors in examining drivers of public organizations' collaborative decisions.

Conjoint Experimental Design and Identification Strategy

To overcome the methodological difficulties and test the hypotheses above 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). Using a sustainable development program vignette, I assigned the theories above into four program attributes: Program costs (own cost and partnership city's cost); job creation benefits; collaborators' party affiliation (Democrats or Republicans), and previous experiences collaborating with the city. These four attributes, respectively, corresponded to the three theories in which we are interested: cost-benefit analysis; co-partisanship, and relational trust. Table 1 displays detailed information about 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 insignificance in preferences between the "500:500" and "250:750" costs options, which indicates that achieving input balance for both cities ($500,000 for both) is the same attractive as achieving the lowest self-input ($250,000).

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

Table 1: 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: Co-partisanship (H3)	(1) Democrats (2) Republicans
Previous working experiences with this city Theory: Relational trust (H4)	(1) Good (2) Bad (3) No experience

As aforementioned, every proposal was assigned a component from each attribute randomly, and thus, these components were independent treatments in the between- and within-subject design (Hainmueller et al. 2014). There were $54 = 3 \times 3 \times 2 \times 3$ possible combinations of the attribute components in the program proposals (see Table 1). Moreover, the conjoint experiment not only randomized the attribute components, but also the order of attributes across respondents. This design reduced order effects, which provided more robust results[1] (Hainmueller et al. 2014).

Based upon full randomization, the proposal attributes were independent and random variables distributed identically. I regressed them in one linear probability model that used

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

the proposals as units of analysis (Hainmueller et al. 2014). Standard errors were clustered at the individual level to control the non-independence of the within-subject proposal comparison. Moreover, I adopted the same strategy as Butler et al. (2017) to measure *political homophily* (the co-partisanship effect). Based upon *H3*, if respondents' own partisanship identities match their partisanship attribute components, for example a Democrat respondent sees a Democrat's proposed program proposal, the probability that s/he chooses this proposal increases. Accordingly, I coded the *co-partisanship* variable as 1if 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:

$$Collaboration = \beta_1 Cost + \beta_2 Benefit + \beta_3 Copartisanship + \beta_4 Trust + \mu \qquad (1)$$

Since Hainmueller and his colleagues developed conjoint experiment (Hainmueller and Hopkins 2015; Hainmueller et al. 2014), this method has been used widely in political science and public administration (e.g., Auerbach and Thachil 2020; Hollibaugh Jr et al. 2020; Jankowski et al. 2020; Jilke and Tummers 2018). The method's advantages are threefold. First, it tests multiple theories simultaneously in one model, so the 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 forced choice outcome measurement, which enhances realism relative to traditional factorial experiments (Hainmueller et al. 2015). Finally, the multiple information environment of the conjoint experiment reduces the concerns about social desirability, and thereby, the experimental purpose is difficult for the respondents to detect (Bansak et al. 2021). Further, this feature is important when the design includes sensitive variables such as partisanship identity. Combining these advantages, a conjoint experiment is an ideal identification technique to compare multiple network theories and test hypotheses on individual officials.

Data Collection and Sample Representativeness

This study targeted 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 serve often as policymakers and government representatives in managing networks, so their leadership affects organizational collaborative actions.

To build the sample pool of municipal officials, I collected their names, gender, and email addresses from municipalities' official websites. The sample pool included large- and medium-sized American municipalities with populations over 30,000 (1352 municipalities in total). Approximately half of the United States' population lives in these areas. Municipalities without the public officials' email addresses were removed from the study. I used Qualtrics to create the survey and sent it to municipal officials via email. To increase the response rate, I sent one initial invitation with two friendly reminders in two months (from April to early June, 2021). Appendix C reports the email invitation.

Finally, 9928 email responses were obtained successfully from this sample pool of municipal officials[2]. The final sample included 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 their party affiliation and ideology information[3]. The effective response rate was approximately 8%, which is comparable to that in other surveys in recent studies that used similar samples (e.g., Lee and Stecula 2021; Malhotra et al. 2019; Shaffer et al. 2020).

The final sample was broadly representative of the entire sample pool. It covered 49 states and the District of Columbia, and 533 (39%) municipalities had at least one official

[2]10288 emails were sent. Among them, 16 failed to arrive, and 344 bounced back.

[3]Overall, 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.

who responded to the survey effectively[4]. Appendix D provides the full description of the sample characteristics. To test the sample's 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 on ethnicity distribution (Black and White population). Further, I calculated municipalities' female official ratio in the contact information collection process. With this information, I compared these variables in municipalities that had at least one respondent and municipalities without a respondent with two-sample t-tests. Although the municipalities that responded have a slightly higher female official ratio and White population, there were few statistical differences in other aspects between the municipalities that did and did not respond. Figure 2 shows the results graphically, and Appendix D reports more information on the sample representativeness of these variables.

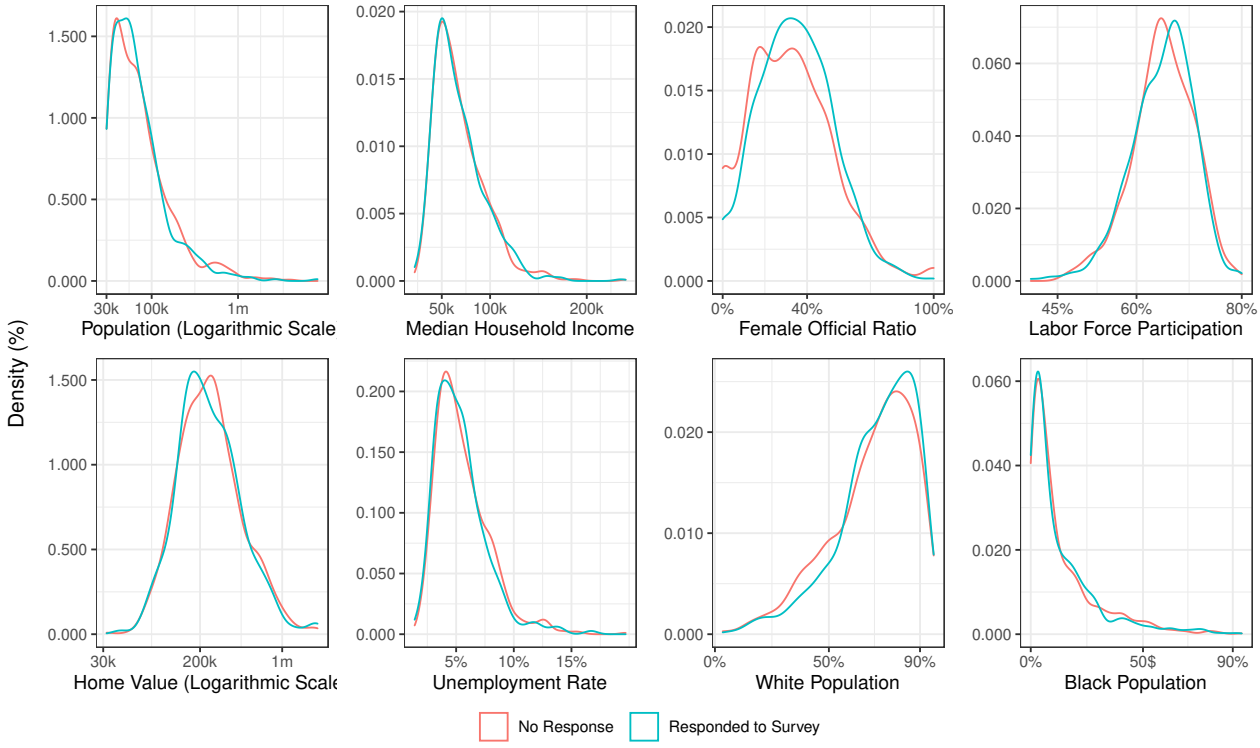

Figure 2: Representativeness of Municipal Officials Who Responded

[4]Delaware was the only state without any effective response.

Results

Main Findings

The 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", while holding all other possible attribute components at average levels.

Table 2: Probability of Intergovernmental Collaboration

	(1) Full Sample	(2) Elected Officials	(3) City Managers
H1a & H1b: Self vs Partner's Cost (Ref: 250:750)			
750:250	-0.229 $(0.017)^{***}$	-0.225 $(0.019)^{***}$	-0.241 $(0.046)^{***}$
500:500	-0.069 $(0.017)^{***}$	-0.056 $(0.018)^{**}$	-0.154 $(0.047)^{***}$
H2: Benefit (Ref: 200 Jobs)			
800 Jobs	0.343 $(0.016)^{***}$	0.351 $(0.017)^{***}$	0.281 $(0.051)^{***}$
500 Jobs	0.199 $(0.016)^{***}$	0.201 $(0.017)^{***}$	0.191 $(0.047)^{***}$
H3: Political Homophily			
Co-partisanship	0.093 $(0.013)^{***}$	0.097 $(0.014)^{***}$	0.065 (0.038)
H4: Collaborative Experience (Ref: Bad Exp)			
Good Exp	0.360 $(0.017)^{***}$	0.355 $(0.018)^{***}$	0.399 $(0.045)^{***}$
No Exp	0.238 $(0.016)^{***}$	0.237 $(0.018)^{***}$	0.245 $(0.039)^{***}$
Constant	0.186 $(0.018)^{***}$	0.177 $(0.020)^{***}$	0.243 $(0.047)^{***}$
R^2	0.213	0.215	0.211
Observation	4534	3956	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). $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table 2 shows the main findings of this study. Model (1) estimated the effects of the four attributes overall, and I used it to test hypotheses *H1a*, *H1b*, *H2*, *H3*, and *H4*. I also conducted a subgroup analysis for elected officials in Model (2) and city managers in Model (3). In general, these models supported *H1a*, *H2*, *H3*, and *H4*, but *H1b* was rejected.

H1a assumes that municipal officials prefer lower cost when comparing collaborative partners. The results in Model (1) supported this hypothesis. Respondents were 23% (p = 0.00) less likely to collaborate with cities that cost them $750,000, compared to those that cost them $250,000. Similarly, respondents were 7% (p = 0.00) less likely to collaborate with cities that cost them $500,000 compared to those that cost them $250,000. To support *H1b*, the component "500:500" should have 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 did not detect an effect of fair sharing of costs, because respondents' willingness to collaborate was a linear, negative function of program cost. Therefore, *H1b* was rejected.

H2 assumes that municipal officials prefer high benefit when comparing collaborative partners. The results in Model (1) supported this hypothesis. The respondents were 34% (p = 0.00) more likely to prefer the collaborative programs that offered to create 800 jobs, when compared to those that offered to create 200 jobs. Similarly, respondents were 20% (p = 0.00) more likely to prefer the programs that offered to create 500 jobs compared to those that offered to create 200 jobs. Hence, the respondents' willingness to collaborate became stronger when the benefits increased.

H3 assumes that municipal officials prefer partners that are in the same party as theirs. The results in Model (1) supported this hypothesis. The respondents were 9% (p = 0.00) more likely to collaborate when the same party in the partner city proposed the program. Models (2) and (3) showed that the co-partisanship effect is determined primarily by elected officials, which are 10% (p = 0.00) more likely to collaborate with co-partisan cities. However, the effect was not distinguishable among city managers in Model (3).

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

In Models (1) – (3), we see clearly that municipal officials' intergovernmental collaboration choices were explained jointly by rational choice, political homophily, and relational trust theories. However, political homophily had less explanatory power (the coefficient was lower than 10%) than the other two theories. Elected officials are more likely to prioritize job creation benefits and previous collaboration experiences when making future collaboration choices. Both the sizable job creation benefits and good prior interaction increased the probability of intergovernmental collaboration decisions more than 30%. Relational trust is more important when city managers make collaboration decisions than costs-benefits calculation and co-partisan status. Good previous interactions with a city lead to an approximately 40% increase in the probability of intergovernmental collaboration decisions among city managers. The other theories' explanatory powers are all less than 30% in this sample.

Although Table 2 shows encouraging results of the hypotheses tests, some mechanisms need to be explained further. First, the coding strategy of political homophily allows us to see only the co-partisanship 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 revealed that political homophily has relatively less explanatory power than the other two theories, but we do not know whether municipal officials' costs-benefits calculation and relational trust are conditional on the co-partisanship effect and whether this conditional effect is the same for Democrats and Republicans. Therefore, I interacted the co-partisanship 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 3 shows the AMCE results for Democrat respondents, Republican respondents, and other respondents (including those who were independent or from other parties). The right panel of Figure 3 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 the respondents' party affiliation and each attribute in the linear probability models by party affiliation subgroups.

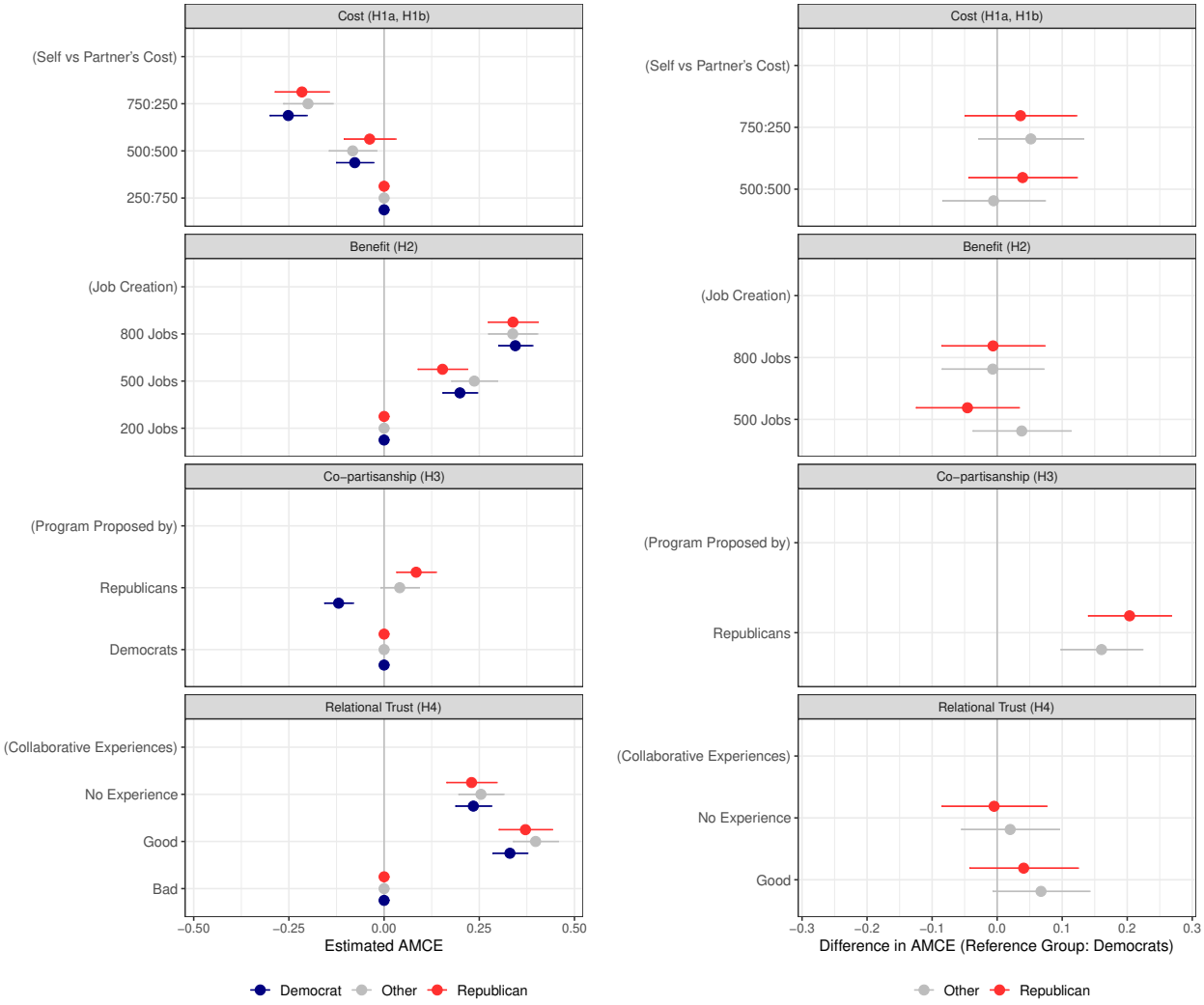

Figure 3: Subgroup Analysis by Party Affiliation
Note: Bars are 95% confidence intervals.

In the left panel, both Republican and Democrat respondents expressed stronger prefer-

ences for their politically matched collaborators, and the effects were similar: 12% (p = 0.00) among Democrats and 8% (p = 0.00) among Republicans. In contrast, other respondents had no preference for either party. These results confirmed the political homophily hypothesis (*H3*) further. The right panel indicates that respondents with different party affiliations had similar preferences for each attribute component, except for political homophily. Although political homophily was prominent in the result, it had relatively smaller effects than other attributes. In each party affiliation subgroup, lower costs, higher benefits, and good prior interactions increased the municipal officials' probability of collaborating consistently by more than 25%.

It is worth noting that respondents with 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 a different preference for "500:500" and "250:750" (effect = 4%; p = 0.27). Although the statistical difference in cost fairness between Democrats and Republicans was insignificant with the Difference-in-AMCE measurement, this variable warrants further investigation. 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.

Exploratory Analysis: The Conditional Effect of Political Homophily[5]

Figure 4 combines the interaction results in each party affiliation subgroup. In general, the respondents in each subgroup have similar collaboration preferences regardless of the collaborators' party affiliation. Political homophily had no conditional effect on the calculation of benefits or relational trust. In costs calculation, Democrats and others show stronger preferences for lower self-costs and are concerned less with collaborators' costs, regardless of the collaborators' party affiliation. The fair, but more expensive, cost option (500:500)

[5]The analysis in this section was not pre-registered, because it was an exploratory and post-hoc analysis based upon the findings above.

was indistinguishable from 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 cost them $500,000 compared to Democrat cities that cost them $250,000 (Figure 4, rightmost panel). These results indicate that Republican respondents use pure rational cost calculation to evaluate potential collaborations when the collaborators are Democrats, but consider cost fairness more when the collaborators are Republicans.

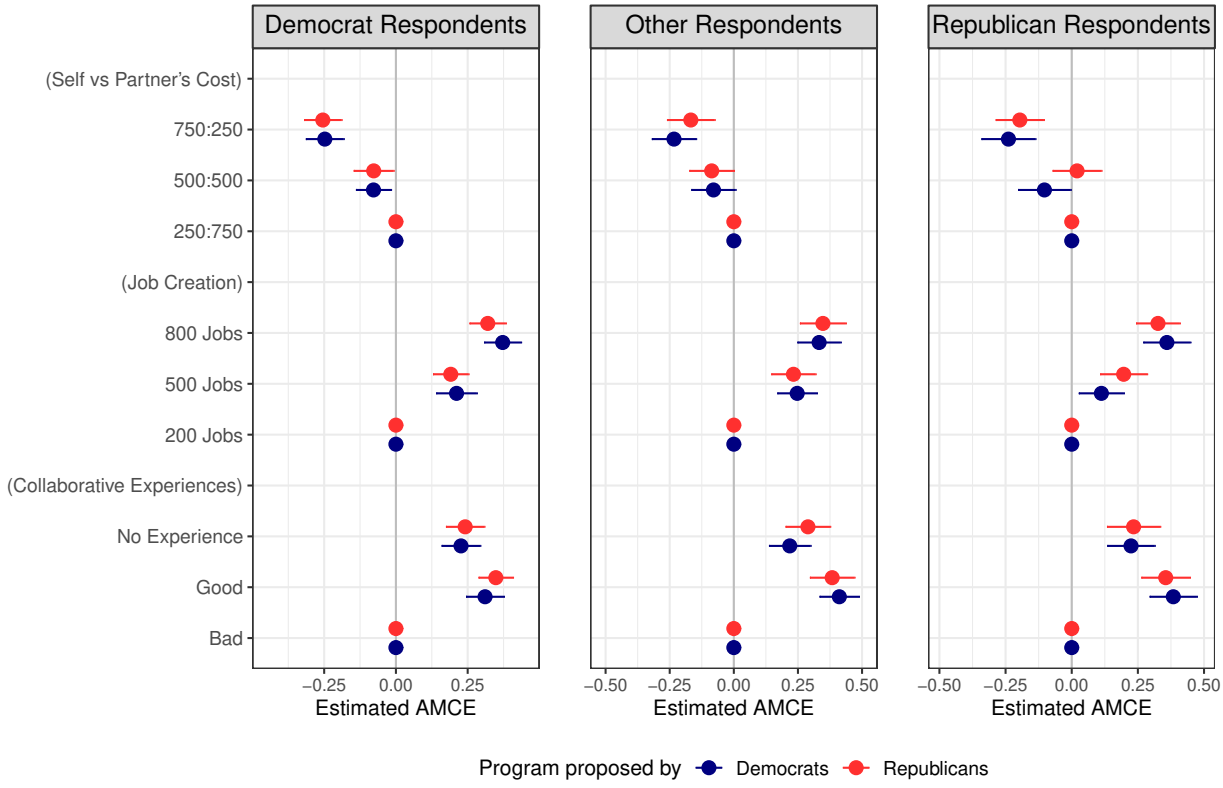

Figure 4: Attribute Interaction: AMCEs Conditional on Political Homophily
Note: Bars are 95% confidence intervals.

In summary, co-partisanship's conditional effect was found only in Republican respondents' cost calculation. The political homophily literature in public policy and management has a limited explanation of this heterogenous phenomenon. Most studies have tested only the homophily effect overall with the binary co-partisanship measurement without conducting a subgroup analysis of 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 the potential for future studies to conduct in-depth investigations of the associations between political homophily and cost fairness in intergovernmental collaboration. In this study, I offer one possible explanation from the social psychology literature.

Social psychology research shows that republicans favor in-group loyalty more than Democrats (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 motivates them to sacrifice self-interests to achieve group goals. In this study, municipal officials' ideology overlaps with their partisanship, in which most Democrats are liberals and most Republicans are 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 contrast, Democrats' decisions are less contingent on ingroup loyalty, so their cost calculations incline to the pure rational choice model.

Robustness Checks

In addition to the analyses above, I performed multiple robustness checks. First, I examined ideology's conditional effect on political homophily. My main findings in Table 2 and Figure 3 indicate that co-partisanship has relatively less power to explain intergovernmental collaboration, but Butler et al. (2017) suggested that the co-partisanship effect is stronger on people who have extreme ideological identities and weaker on those who have moderate ideological identities. Therefore, interaction analysis is needed. The variable: ideological extremism was measured by taking both "very liberal" and "very conservative" as 2, both "liberal" and "conservative" as 1, "moderate" as 0. Table 3 reports the interaction between co-partisanship and ideological extremism. Model (4)-(6) turn out insignificant results for both elected officials and city managers. Therefore, the main finding on political homophily was robust, and this finding was consistent across the ideology spectrum.

Table 3: Probability of Intergovernmental Collaboration by Ideological Extremism

	(4) Full Sample	(5) Elected Officials	(6) City Managers
H1a & H1b: Self vs Partner's Cost (Ref: 250:750)			
750:250	-0.228 $(0.017)^{***}$	-0.225 $(0.019)^{***}$	-0.238 $(0.047)^{***}$
500:500	-0.069 $(0.017)^{***}$	-0.056 $(0.018)^{**}$	-0.153 $(0.047)^{**}$
H2: Benefit (Ref: 200 Jobs)			
800 Jobs	0.343 $(0.016)^{***}$	0.352 $(0.017)^{***}$	0.283 $(0.051)^{***}$
500 Jobs	0.199 $(0.016)^{***}$	0.201 $(0.017)^{***}$	0.193 $(0.047)^{***}$
H3: Political Homophily			
Co-partisanship	0.076 $(0.019)^{***}$	0.080 $(0.020)^{***}$	0.066 (0.063)
H4: Collaborative Experience (Ref: Bad Exp)			
Good Exp	0.360 $(0.017)^{***}$	0.355 $(0.018)^{***}$	0.399 $(0.045)^{***}$
No Exp	0.238 $(0.016)^{***}$	0.237 $(0.018)^{***}$	0.247 $(0.040)^{***}$
Ideological Extremism	-0.009 (0.008)	-0.005 (0.009)	-0.033 (0.029)
Ideological Extremism ×Co-partisanship	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	0.213	0.215	0.212
Observation	4534	3956	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 had a higher response rate from female officials and White-dominated cities. To test whether there is a systematic difference between female and male respondents, as well as White and nonwhite respondents, I compared the results between these subgroups. The results showed no heterogeneity in making intergovernmental collaboration decisions by gender or race, which confirmed the

external validity of the findings in this study.

Summary of Findings

To advance network scholarship, I provide new causal evidence of three fundamental network formation theories derived from micro-level data that explain municipal officials' collaboration decisions in the early stage of network formation. The experimental evidence indicated that a rational choice, political homophily, and social capital are jointly important in explaining public officials' collaboration decisions. 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 the theories I tested in this study are well established in network literature, previous studies do not explore their heterogenous effects on elected officials and city managers. Given the increasing responsibilities of city mangers in policy process (Nelson and Svara 2015), elected-appointed subgroup differences of collaborative decisions should attract more interests. Although elected officials and city managers have similar collaboration preferences, the former focus more on job creation benefits and collaborative experiences, while city managers rely largely on collaborative experiences to make collaborative decisions. These results reveal the professionalism of city managers, who are less political than elected officials. 88% of city managers in my sample have graduate school degrees and they stay longer time on their positions than elected officials in my sample (see Appendix D). These statistics are similar as findings from Nelson and Svara (2015) that city managers are professional and well trained to manage policy implementation. The professionalism may explain why city managers rely on collaborative experiences to make collaborative decisions.

In addition, the interaction results between co-partisanship and other attributes in each party affiliation subgroup revealed the heterogenous effect of cost fairness between Democrats and Republicans. Democrats have a 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. This finding may be explained by Republicans' higher level of ingroup loyalty (Clifford 2014; Graham et al. 2009), but I invite scholars to investigate the complex interaction between political homophily and fairness in collaboration behaviors further.

Discussion and Conclusion

Overall, this study's findings complement and extend earlier scholarship on intergovernmental network formation. Although abundant studies on this subject rely on aggregating survey data of government employees to estimate collaboration preferences at the organizational and network levels (e.g., Berardo and Lubell 2016; Ingold and Leifeld 2016; Scott and Thomas 2017), no studies have tested intergovernmental collaboration at the level of government leaders explicitly. This is a surprising omission given the importance of leadership in organizational decision-making (McGuire and Silvia 2009; O'Toole Jr 2015). The way to predict decision-making in earlier stages of collaboration is another theoretical challenge for network scholars. Data collected for network analysis are often from established or complete networks. Some simulation studies have attempted to overcome this "hindsight paradigm" in network research (e.g., Choi and Robertson 2019; Scott et al. 2019), but the motivations for government leaders' initial collaborative decisions remain unknown. As O'Toole Jr (2015) suggested, future network analysis should move the unit of analysis from organizations to individual officials, because those with whom public officials interact externally and the way they interact, can affect organizational collaboration outcomes ultimately. Therefore, bridging individual decision-makers' collaboration motivations before actual networks have formed and organizational collaboration outcomes after networks have complete could be an interesting process for more network scholars to investigate. In this study, I move a small step forward by examining and comparing classical network theories in municipal officials in the intergovernmental world. By extending experimental methods to other network theories at the level of public officials, we may gain new insights on collaborative leadership further.

Moving beyond the traditional network theories, this study also challenges the explanatory power of political homophily and the co-partisanship effect on government actions. My results highlight that political homophily's effect is not as strong in predicting intergovernmental collaboration decisions as are rational choice and social capital. A subgroup analysis by party affiliation showed similar magnitudes of political homophily in Democrats and Republicans, and this finding was robust across the ideology spectrum. Although political motivation is strong when researchers use party information as the single factor manipulated in experiments (e.g., Baekgaard et al. 2019; James and Van Ryzin 2017), its effect can be mitigated when more policy information is available to individuals (Butler et al. 2017). The conjoint design in this study provided a multi-dimensional policy information environment, which is more similar to actual decision-making situations (Hainmueller et al. 2015). Compared to previous studies, I obtained a more optimistic finding: The political co-partisanship effect still exists, but it does not surpass other network formation theories in predicting interlocal collaborations.

Causal identification is the other contribution of this study. Interdependency is always a technical obstacle in network research, and it brings complexity and mechanism confusion when we estimate determinants of network formation. Although the challenges of making causal claims are not unique to network research, the nature of interdependency hinders network scholars' efforts to compare theoretical mechanisms in one consistent model (Siciliano et al. 2021). A conjoint experiment is a remedy for this problem, as its multi-dimensional randomization technique allows us to exclude confounders and simultaneously compare causal effects of multiple theories. On these grounds, this study provides a template for the network research community to investigate other network theories at the level of government leaders further.

While this study offers new research opportunities for intergovernmental network research, more work should be done to address its limitations. First, policy contexts may affect collaboration process. Although I demonstrate the program's benefits neutrally, which

include economic and community development, and environmental protection, sustainability is still a lean Democrats policy area. Future experimental vignettes could include more policy areas that either party favors and compare political homophily effects under different policy scenarios. Second, the conjoint design can determine only one actor's willingness to collaborate with 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 were cross-sectional, which cannot identify longitudinal causal patterns of network activities. Future research could conduct the experiment with multi-wave surveys or embrace field experiments to explore network evolution and tie dissolution further.

In a broader sense, using the conjoint experimental method, this study integrated 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 advanced public administration theory from a new perspective.

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Supplemental Information

Contents

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:

City A | City B

→

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

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

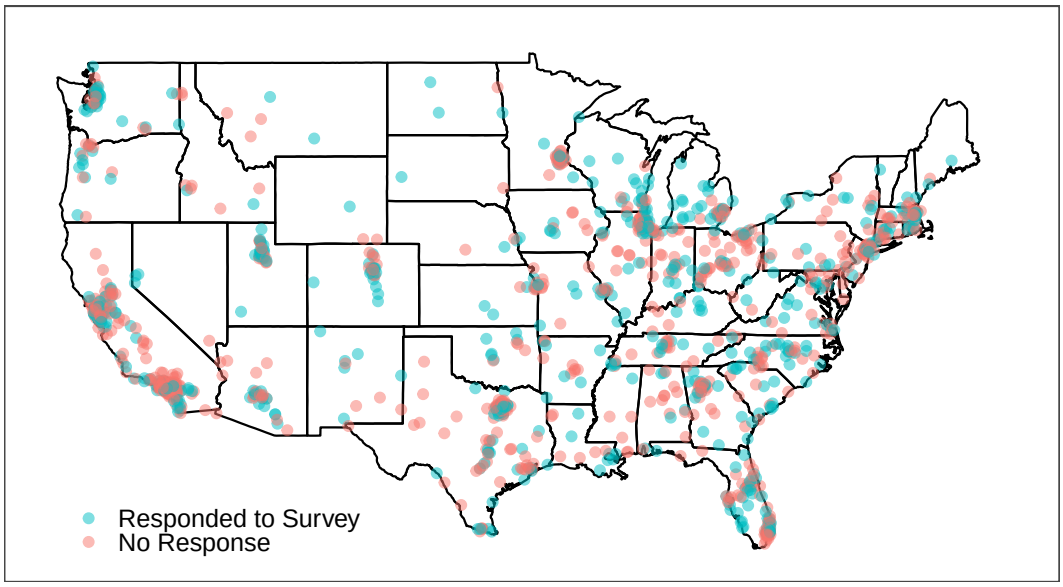

Figure D.1: Geographic Location of Survey Respondents

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

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

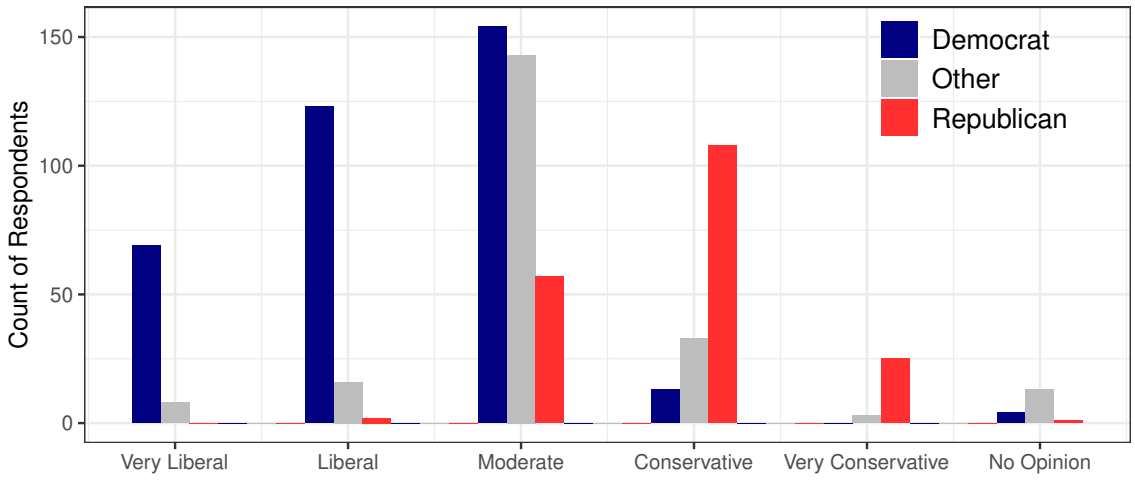

Figure E.1: Party Affiliation and Ideology of Municipal Officials Who Responded

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 (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 Homophily				
Co-partisanship	0.115^{***}	0.080^{***}	0.095^{***}	0.089^{***}
	(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). $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$