

How Does Homeownership Shape Public Service Coproduction? Evidence from a Public Complaint System in Beijing, China

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Abstract

Homeownership has been widely regarded as a critical determinant of public participation in social science research. However, the role of homeownership in public service coproduction has been under-researched. This study advances a theory of public service coproduction that accounts for the effect of homeownership and its underlying mechanisms by theorizing that homeownership increases coproduction participation by directly motivating individuals to protect their financial investments and indirectly improving their knowledge about government. Original data from a random telephone survey of 2,167 residents conducted in August 2022 in Beijing, China were used to test the hypotheses, and a series of analytical tools (e.g., weighted models, matching, and sensitivity analysis) were used to validate the theorized effects and mechanisms. Results consistently show that homeowners are more likely to report public service complaints to the government than nonowners. These findings have important implications for future theoretical research and practical efforts to promote public service coproduction.

Keywords

homeownership, coproduction, public complaints, Beijing

Introduction

Public service coproduction is the collaborative participation of individuals with professional service agents in service provision (Ostrom, 1996; Pestoff et al., 2006; Nabatchi et al., 2017). Public service coproduction is integral to everyday life and vital for the implementation of public policy and provision of local public goods. Public policy and urban scholars often highlight that extensive public participation is associated with the realization of core public values, such as responsiveness, legitimacy, and equity (Bobbio, 2019; Foroughi et al., 2023; Halvorsen, 2003; Jakobsen and Andersen, 2013). However, individual participation in public service coproduction varies across time and space and, therefore, significantly influences these public values (Nabatchi et al., 2017). Identifying the determinants of public service coproduction participation can provide practitioners and scholars valuable insights into improving policy design, service delivery, and citizen-state interactions.

While prior research has made valuable contributions to our understanding of the impact of individual traits such as skills, intrinsic values, marital status, family composition, and level of education on coproduction participation (Voorberg et al., 2015; Zhang et al., 2020), there remains a notable gap in the literature concerning the role of personal financial status in this context. For instance, residential

property represents the single largest asset for most individuals and is a critical financial component in many countries (Agnew, 2018; Cui et al., 2016; Piketty, 2013; Schwartz and Seabrooke, 2009). Numerous studies in the social sciences have demonstrated that homeownership has significant effects on various aspects of life, including subjective well-being (Rohe and Stegman, 1994; Zheng et al., 2020), socio-economic status (Galster et al., 2007; Zhang et al., 2021), demographic outcomes (Curtis, 2011; Eriksen, 2010; Mulder and Lauster, 2010), and political participation (Hall and Yoder, 2022; McCabe, 2013). Given this evidence, it is reasonable to hypothesize that homeownership may influence an individual's participation in public services.

This study contributes to the extant literature in multiple ways. In our theoretical framework, we postulated that homeownership could improve public service coproduction through two mechanisms. First, homeownership could motivate

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individuals to protect their financial investments by actively participating in public service delivery. Community characteristics and public service quality or quantity are often capitalized in housing prices (Fischel, 2001, 2005; Li et al. 2019; Marschall, 2004; Wen et al., 2017). Accordingly, homeowners tend to prioritize improving local public services. Second, owning a home often implies more residential stability and social networks, which could enhance homeowners' knowledge about government. Homeownership may decrease the transaction costs associated with initiating contacts or collaborating with local public officials.

From the empirical perspective, we used original data from a recent random telephone survey involving 2,167 respondents in Beijing, China to test our hypotheses. Beijing initiated an innovative public complaint system reform in 2019, and this reform has gained popularity among Chinese cities because of support from the central government. Thus, systematic and timely findings from this case could contribute to predicting citizen-state interaction trends in other Chinese cities. Moreover, given China's short history of housing privatization and relatively weak property rights protection, our empirical findings could provide a lower bound for guiding future analysis on the same topic in other countries with a longer history of privatized housing and stronger property rights. Empirical results consistently show that homeowners are more likely to report public service complaints to the government through a hotline phone call compared to nonowners. A series of analytical tools (for example, weighted models, matching, and sensitivity analysis) were used to validate the theorized mechanisms.

The organization of this article is as follows: First, we provide a brief review of the literature on public service coproduction, highlighting the limitations of existing research. Second, we theorize the relationship between homeownership and citizen coproduction, discussing the underlying mechanisms. Third, we provide contextual information on the public complaint system in Beijing, China. Fourth, we explain the research design and report the empirical findings based on a series of statistical models. Finally, we discuss the theoretical, empirical, and practical implications of the study, as well as potential directions for future research, to conclude the study.

A Review of Public Service Coproduction Research

In the late 1970s and early 1980s, scholars proposed the concept of "coproduction" to theorize individual participation in providing public services by collaborating with public employees, paving the way for subsequent systematic, theoretical, and empirical analyses (Brudney and England, 1983; Gittell, 1980; Ostrom and Ostrom, 1977; Sharp, 1980). Coproduction involves multiple forms, such as

coplanning (e.g., attending a neighborhood planning meeting), codelivery (e.g., participating in a community cleanup), and comonitoring (e.g., reporting suspicious activities to the authority); (Zhang et al., 2021). Coproduction tends to require individuals' inputs such as knowledge, time, efforts, money, or resources (Brewer and Grabosky, 2014; Brudney and England, 1983; Zhang et al., 2020).

Coproduction is different from other types of public participation. For instance, the difference between public service coproduction (e.g., individual participation in a local recycling program or residents' reporting of crimes to police officers) and political participation (e.g., electoral voting, protests, or campaigns) is that the former directly focuses on producing specific public goods, whereas the latter directly focuses on pursuing political power or voice. Moreover, although typical public service coproduction activities tend to be viewed as active, voluntary participation by residents (Brudney and England, 1983), they are still different from the so-called self-governance or voluntary collective provision of public goods because the latter does not necessarily require the involvement of government employees.

In recent years, an increasing number of coproduction studies have aimed to explain why some individuals are more willing to engage in public service coproduction than others (O'Brien et al., 2017; Uzochukwu and Thomas, 2018; Voorberg et al., 2015; Zhang et al., 2020). Previous research has shown that multiple factors on the sides of governments (e.g., organizational culture, resources, capacity, or incentive structure) and citizens (e.g., knowledge, social capital, psychological costs, or risk aversion) shape citizens' attitudes and behaviors related to participation in public service coproduction (Thomsen et al., 2020; Uzochukwu and Thomas, 2018; Voorberg et al., 2015).

However, past studies have often overlooked the role of personal financial status in public service coproduction. For instance, homeownership, a significant indicator of personal financial status, has typically been treated as a trivial dichotomous measure that needs to be controlled for, rather than as the main focus of analysis in previous coproduction studies (Marschall, 2004; Uzochukwu and Thomas, 2018; Young, 2022). As a result, the mechanisms underlying the effect of homeownership on public service participation have not been adequately explored and explained.

Nevertheless, as sociologists point out, homeownership tends to create engaged citizens by directly increasing the salience of the investment stakes or indirectly empowering through homeowners' associations (Zavisca and Gerber, 2016). Therefore, examining the effect of homeownership on public service coproduction is theoretically significant and practically relevant as it deepens our understanding of the individual-level origins of citizen-state interaction and serves as a foundation for guiding future discussions on housing policy and public participation. For instance, it allows us to explore the intricacies of how a significant

personal investment in the form of homeownership affects citizens' perceptions, motivations, and behaviors in relation to public services. This knowledge is vital for policymakers and researchers alike, offering valuable insights into how to design housing policies and public service strategies that promote a more engaged and participatory citizenry, ultimately contributing to the overall well-being and vitality of communities and societies.

Theory

Political thinkers or policymakers have widely argued that homeownership creates better citizens. For instance, in the *Federalist Papers* (no. 10), James Madison claimed, "those who hold and those who are without property have ever formed distinct interests in society." Numerous politicians in the United States, including William Clinton and George W. Bush (McCabe, 2013), have frequently proposed housing and economic policies based on the assumed civic benefits of homeownership. Similarly, in the east, Mencius (372 BC–289 BC), a Chinese Confucian philosopher, once wrote that "one shall have his peace of mind when he possesses a piece of land." This statement has also been frequently cited by Chinese politicians, such as the former Premier Li Keqiang.¹

Diverging from other indicators of personal socioeconomic status, such as income, education, or job position, residential properties are inherently immobile, often incurring relatively high mobility costs, and they foster a robust connection to a community. Consequently, homeownership exerts a unique and distinctive influence on individual attitudes and behaviors. In recent years, numerous empirical studies conducted by political scientists and sociologists have documented the correlation between homeownership and political attitudes and behaviors (Leighley and Nagler, 2014; Marble and Nall, 2021; McCabe, 2016). Drawing on

the Current Population Survey, McCabe (2013) identifies the role of locally dependent financial investments and residential stability in explaining the effect of homeownership on participation in local and national elections in the United States. Yoder (2020) shows that compared to renters, property owners in California and Texas are more likely to vote in local elections, participate in city council meetings, and donate to candidates. Similarly, Hall and Yoder (2022) show that buying a home leads to increased participation in local elections based on administrative data of more than 18 million individuals in Ohio and North Carolina. Furthermore, Li and Wang (2012) reveal that homeowners are more likely than nonowners to vote in neighborhood residents' committee elections and local legislative elections, drawing on the 2005 China General Social Survey. However, most studies on homeownership have only investigated the effects of homeownership on political activities without examining its potential effects on individual participation in public service delivery (Zavitsca and Gerber, 2016). Although several public administration studies have noted the potential effects of homeownership on citizen coproduction or citizen-initiated contacts, the underlying mechanisms have not been determined and further explored and explained (Marshall, 2004; Thomas and Streib, 2003; Uzochukwu and Thomas, 2018; Young, 2022).

This article builds on the existing studies to develop a straightforward theory of homeownership-facilitated coproduction. Figure 1 shows our theoretical framework, focusing on how homeownership influences individual coproduction by shaping people's motivations and resources. First, homeownership directly increases individuals' motivation to protect their financial investments. As Tiebout (1956) suggests, residents vote with their feet to choose the communities with favorable public services. Thus, local public services could influence the number of potential residents

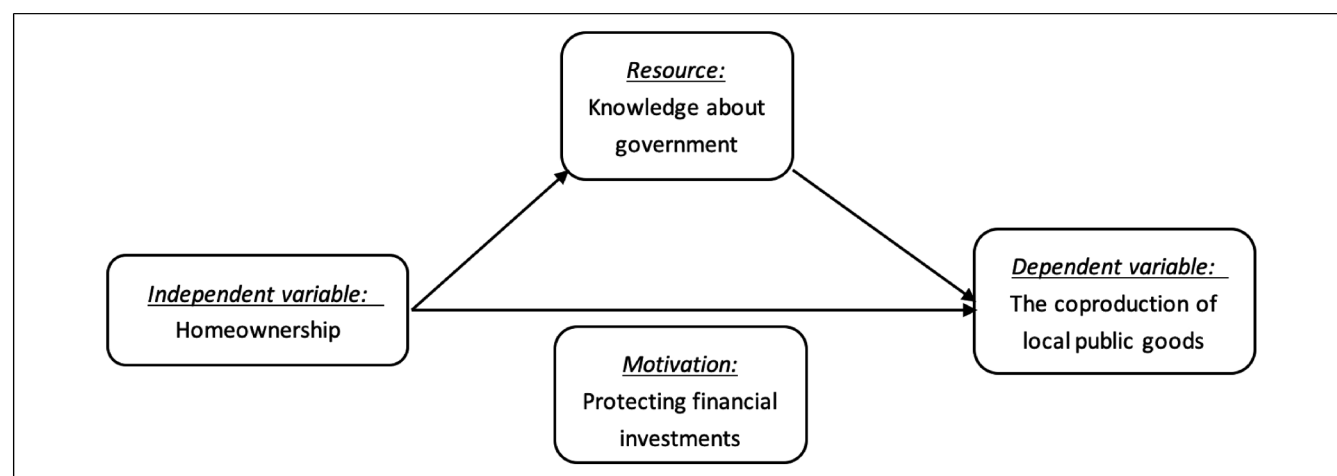


Figure 1. Theoretical framework for the effect of homeownership on public goods coproduction.

and demands or values of houses in local markets. Consistent with this logic, extensive studies have found that public service (e.g., local schools, public transit facilities, crime control, and environmental amenities) quality and quantity are often capitalized in housing prices (Fack and Grenet, 2010; Fischel, 2001; Li et al., 2019; Nguyen-Hoang and Yinger, 2011). Public service issues have a significant impact on the quality of life for both homeowners and non-owners within a community. Nonetheless, despite the potentially higher socioeconomic status of homeowners compared to nonowners, the immovable and costly nature of residential properties leads homeowners to exhibit a greater level of concern and involvement in enhancing local public services.

Furthermore, scholars and practitioners have widely regarded the relationship between government inputs and citizen inputs as interdependent during public service provision (Brudney et al., 2022; Ostrom, 1996; Parks et al., 1981). Citizen coproduction (e.g., protecting natural resources in public parks or reporting crimes to police officers) tends to be positively associated with public service quality and quantity (Gazley et al., 2020; Layne, 1989). In other words, the ongoing involvement of the public in service provision is essential to prevent a decline in local housing prices. Thus, we expect homeowners to have greater intentions to coproduce local public services to maintain or increase their property values.

Second, homeownership increases coproduction by indirectly improving individuals' knowledge about government. The behavioral intention of protecting financial investments does not always lead to an actual coproduction behavior because, as the theory of planned behavior (Ajzen, 1991) suggests, an individual's control over their behavior tends to be incomplete. Individuals are more likely to engage with coproduction when they feel they can participate successfully. More specifically, residents need to know how to contact their governments to report a problem or gather information (Marschall, 2004). Knowledge about government plays an essential role in reducing transaction costs involved in citizen-state interactions, and studies have suggested that they are positively associated with individuals' initiation of contact with government officials (Barabas et al., 2014; Marschall, 2004; Zhang et al., 2020).

Homeownership often implies greater residential stability and access to social networks (such as homeowners' associations), which typically affords homeowners a broader understanding of government and increased opportunities for participating in public service delivery compared to non-owners. For instance, DiPasquale and Glaeser (1999) have shown that homeowners are more likely to know their local school board representative. Wang et al. (2017) found that homeowners tend to develop democratic skills and have a heightened awareness of their property and political rights. Thomas and Streib (2003) reported that homeowners are more inclined to visit government websites than renters. This knowledge about government can decrease the

transaction costs associated with initiating contact or collaborating with local public officials during coproduction. For example, a substantial body of research indicates that increased political or policy knowledge is strongly associated with higher rates of voter participation and public service coproduction (Geboers et al., 2013; Maiello et al., 2003; Siegel-Stechler, 2019; Zhang et al., 2020). Moreover, government knowledge may also enhance individuals' expectations, confidence, and self-efficacy regarding their successful participation in coproduction to maintain or improve public service provision (Zavisca and Gerber, 2016).

Therefore, combining the direct motivation mechanism and indirect resource mechanism, we expect homeownership to be positively associated with individual participation in coproduction.

H1: Homeowners are more involved in coproduction than nonowners.

The possibility that homeownership drives coproduction participation because of the investment stake in local communities raises the possibility that the effect of homeownership varies according to the proportion of household wealth invested in a home. Specifically, low-income homeowners tend to hold a higher proportion of their wealth in their primary residence compared with high-income households. Moreover, low-income households also face higher mobility costs than high-income households (Dustmann et al., 2022); thus, they may be more motivated to protect the life quality in their neighborhoods actively. Thus, low-income households may experience more substantial effects of homeownership than high-income households. Moreover, the way of obtaining homeownership, a factor typically neglected by previous research, may also determine how homeownership motivates individuals' choices. For instance, the financial value of a home may be more salient if a person purchases it rather than inherits it. This analysis leads us to expect that buyers experience more substantial effects of homeownership than inheritors. Admittedly, higher-income homeowners and individuals inheriting homes often possess robust social networks and familiarity within their neighborhoods (DiPasquale and Glaeser, 1999; Hilber, 2010), which might enhance their capacity for coproducing public services. Accordingly, there could be two competing effects. Nevertheless, empirical evidence must be used to ascertain which of these two theorized effects predominates in the coproduction decision-making process. To guide this investigation, we propose two hypotheses:

H2-a: Higher-income homeowners and individuals who inherit homes have a lower propensity for coproduction;

H2-b: Higher-income homeowners and individuals who inherit homes have a higher propensity for coproduction.

Similarly, we could further verify the resource mechanism based on the premise that homeownership indirectly improves coproduction participation by increasing individuals' knowledge about government. Specifically, we expect a positive relationship between homeownership and knowledge about government owing to more social networks (Hoff and Sen, 2005; Rohe et al., 2002). Moreover, we expect a positive relationship between knowledge about government and coproduction participation due to a decrease in transaction costs (Zhang et al., 2020). Consequently, homeownership is posited to have an indirect positive influence on participation in coproduction. Therefore, we propose the following hypotheses to examine the mediating role of knowledge about government.

- H3-a:** Homeowners tend to have more knowledge about government than nonowners;
- H3-b:** Individuals with more knowledge about government are more involved in coproduction.
- H3-c:** Homeownership indirectly contributes to greater participation in coproduction by enhancing individuals' knowledge about government.

Empirical Context: the Public Complaint System in Beijing, China

We tested these hypotheses by examining citizen participation in a public complaint system in Beijing, China. The Chinese case is vital for both scholarly and practical reasons. Most of the existing studies on homeownership or coproduction have focused on Western industrialized democracies (Palumbo and Manesh, 2021; Zavisca and Gerber, 2016). Hence, investigating contexts other than the Western industrialized democracies is critical for identifying scope conditions for coproduction theories. As a former planned economy, China only initiated its housing privatization reform in the 1990s. Thus, the protection of property rights (e.g., to use, exclude others from using, and exchange) tend to be weaker and homeowners' associations are less developed in China compared to the United States or Western Europe (Read, 2008). Therefore, homeownership is expected to have a weaker effect in China than in Western countries. Identifying an empirically significant effect of homeownership on coproduction in China would lead to the expectation of more substantial effects of homeownership in other contexts characterized by stronger property rights protection or a longer history of privatized housing. Considering practice, examining how homeownership affects coproduction can assist public officials in making informed decisions regarding housing policies and public service delivery, which would significantly impact numerous individuals' interests.

China's nonemergency public complaint system 12345 hotline is similar to the 311 system in the United States

and provides the public with a central hub of contact for questions, complaints, or requests (Peng et al., 2022; Wang and Liu, 2020; Wei et al., 2022; Zhang et al., 2023). From September 25, 2021 to August 31, 2022, the Citizen Service Center (CSC) in Beijing received more than 37 million calls through the 12345 hotline². Given Beijing's population size (22 million), each resident on average made 1.7 calls through the 12345 hotline in a year. According to the *2022 Beijing 12345 Citizen Service Hotline Annual Data Analysis Report*, released by the website of Beijing government³, these calls cover various types of public service issues, including property management, public security, social insurance, labor disputes, finance, taxation, sanitation, heating, water supply and drainage, medical services, and urban environment, etc. These public service issues are directly relevant to the life quality of residents (13.7 million) and floating population (8.3 million).⁴ Our field interviews with multiple directors of community committee also suggest that both homeowners and renters frequently called 12345 to report complaints regarding parking, heating, water leaks, or noise nuisance, etc.

Therefore, examining the public use of the 12345 hotline has crucial practical implications for reformers, enabling them to enhance public service delivery for tens of millions of people. Importantly, individual participation in a public complaint system represents a typical form of coproduction, as public complaint system users co-monitor various public services and contribute to maintaining the commons (O'Brien et al., 2017; Young, 2022). In this process, citizens voluntarily contribute their time, effort, resources, or aspects of personal liberty (e.g., privacy) to provide vital information about community needs. With this input, public employees can then adjust their attention, strategies, and resources to improve their services and better meet the public's needs in their community.

We focused on the case of Beijing because it initiated the most innovative and comprehensive managerial reform in China to improve the effectiveness of the 12345 hotline in 2019 (Guo et al., 2022). Specifically, Beijing's reform, called *Jie Su Ji Ban* ("processing public complaints without delay"), includes three parts. First, Beijing created a CSC with more than 1,400 employees responsible for sorting complaints and sending the cases to grassroots governments. Second, the CSC measured and ranked the responsiveness of all grassroots governments monthly to incentivize them to improve their performance (Wei et al., 2022). Third, the Standing Committee of Beijing Municipal People's Congress promulgated a law in 2021 to solidify the managerial reforms and constantly monitor government performance in citizen-state interactions. President Xi Jinping has publicly praised these reforms in Beijing, and these reforms have become increasingly popular in China⁵. Given the leading role of the Beijing government in reforming the 12345 hotline system, the empirical findings from the Beijing case could potentially

provide insights into predicting patterns of citizen-state interaction in other Chinese regions.

It is challenging to accurately gauge the extent to which the observed relationship in Beijing may be applicable to other Chinese cities. To the best of our knowledge, there is no theoretically compelling city-level variable that obscures the established association between homeownership and public participation in Beijing, even considering its unique political and socioeconomic status and a relatively higher proportion of nonowners.⁶ Nonetheless, we encourage future research, ideally with expanded resources, to further validate this assertion across a broader spectrum of Chinese cities.

Methods

Causal identification of the impact of homeownership is challenging because it is costly and probably unethical to assign housing conditions randomly (Zavitsca and Gerber, 2016). Instead, to test our hypotheses, we designed a survey consisting of questions regarding residents' use of the 12345 hotline and demographic characteristics. Data Bee (www.databeehub.cn), a phone survey crowdsourcing platform located in Beijing, administrated the survey in August 2022. The survey sample was randomly drawn from a panel of all (i.e., nearly 40 million) phone numbers registered in Beijing. Subsequently, 578 trained interviewers made 44,677 calls from August 2 to August 15, 2022. In total, 2,167 respondents completed the survey with informed consent, and the response rate was 4.85%. All respondents reported being residents of Beijing. The participants' median time of completing the survey was 12 min. The cost of one completed survey was 40 yuan (i.e., 5.6 US dollars), and the total expense of the survey program was 86,680 yuan (i.e., 12,159.8 US dollars, paid to the professional team of Data Bee). Moreover, the 2020 Beijing Census was a basis for creating the post-stratification weights. Thus, the weighted survey sample represented the Beijing population in terms of gender, age, education, urban-rural difference, and hukou (i.e., the Chinese household registration system).

In the coproduction literature, scholars often measure individuals' coproduction willingness with a continuous measure (Riccucci et al., 2016) and their coproduction choice or behavior with a discrete measure (Zhang et al., 2020). In our research context, to measure the dependent variable (DV), coproduction participation, we designed and embedded the following questions in the survey: "Have you ever called the 12345 citizen service hotline to report a public service problem?" "How many times have you called?" The number of calls was measured on a five-point scale, specifically, 0 = never, 1 = 1 to 2 times, 2 = 3 to 5 times, 3 = 6–10 times, and 4 = 10 times or more. In our sample, 49.14% of respondents never made a call; 31.25% of respondents called 1 to 2 times; 11.79% of respondents called 3 to 5 times;

3.65% of respondents called 6–10 times; and 4.16% of respondents called 10 times or more. Given the small proportion of respondents who made more than 2 calls, we first created a dummy variable equal to 1 if a respondent had called the 12345 hotline, and 0 otherwise. We also created an ordered DV to verify the robustness of the empirical findings.

The key explanatory variable for citizen coproduction is homeownership. In line with previous research (McCabe, 2013), we measured homeownership with a dummy equal to 1 if a respondent owns a home in Beijing, and 0 otherwise. We created two dummies to identify the potentially different effects of inherited versus bought homes. Our sample included 1,067 (49.24%) homeowners, consisting of 110 respondents who inherited their homes and 957 respondents who bought their homes.

Respondents were questioned about their after-tax household income, for which we applied the natural logarithm to adjust for income's diminishing marginal utility. We added 1 to each value prior to log-transforming because 29 respondents reported zero income. It is important to note that a significant portion of the responses (40%) for this variable were missing due to respondents' reluctance to disclose this information. The issue of missing income data is not unique to our survey but is a recurrent challenge in public surveys conducted in China (Chen and Fu, 2015; Zhang and Zhu, 2022). This pattern of nonresponse may stem from privacy concerns or respondents' uncertainty about their precise household income figures.

To measure individuals' knowledge about government, we used respondents' answers to the following three questions: (1) "Do you know who the current mayor of Beijing is?" (2) "Do you know who the current secretary of the Beijing Committee of the Chinese Communist Party (CCP) is?" and (3) "Do you know which district the Beijing Municipal Government is located in?" The answers to these questions reflected residents' basic knowledge of the Beijing government. In total, 12.28% of respondents correctly answered the name of the current mayor, 27.13% correctly answered the name of the current secretary of the party committee, and 55.65% correctly answered the city government's location. In line with previous research on political knowledge (Barabas et al., 2014; Clifford and Jerit, 2016; Dassonneville and McAllister, 2018; Huang, 2015), respondents' correct answers to these questions were used to measure their knowledge about government. Thus, this variable ranged from 0 to 3.

We also constructed several control variables to account for the potential confounding effects of other factors. Given that housing prices are higher in the core urban districts than in the suburban districts, we created a dummy that equals 1 if a respondent lived in a core urban district of Beijing City (i.e., Dongcheng, Xicheng, Chaoyang, Haidian, Fengtai, and Shijingshan), and 0 otherwise. To control for the respondents' local social attachment, we

also created a dummy that equals 1 if a respondent was born in Beijing, and 0 otherwise. A set of other commonly used individual-level controls was also included in the regression models, namely, age (actual age in 2022), gender (female = 1, male = 0), ethnic identity (minority = 1, Han = 0), marital status (married = 1, unmarried = 0), family size (the total number of family members living together), education (bachelor or above = 1, otherwise = 0), profession (working in government or government-controlled enterprises = 1, otherwise = 0), and CCP membership (CCP member = 1, otherwise = 0). Table 1 reports the summary statistics of all variables.

Results

Baseline Results

Figure 2 shows the results of two regression models used to examine the effect of homeownership on coproduction participation. We used the logit regression model because of the binary nature of the main DV. Figure 2 also reports the percent changes in odds ratio for one unit increase in each independent variable, two-tailed p values (+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$), and 95% confidence intervals. We employed robust standard errors to account for the potential heteroscedasticity. We weighted all regression models based on the post-stratification weight of each observation in the sample. We reported the transformed coefficient plots instead of the traditional regression tables to illustrate and compare the effects of the independent and control variables on the outcome variables (Jann, 2014). Given the numerous missing values of the household income variable, a trade-off exists between controlling for it and losing observations in the regression sample. Therefore, we only included the control variables with at least 21,00 observations in Model 1, whereas household income was added to Model 2.

As Figure 2 shows, homeownership is significantly positively correlated with individual coproduction. Substantively, Model 1 shows that after controlling for other individual-level characteristics, compared to nonowners, homeowners were 46% more likely to call the 12345 hotline to report public service complaints. Despite a smaller sample size ($n = 1,253$), Model 2 shows that homeowners were 66% more likely to call the 12345 hotline after further controlling for household income. In addition, Figure 3 reports two models by replacing the binary DV with an ordered DV. The regression results based on ordered logit models are consistent with Figure 2.

Additionally, the regression results reveal noteworthy estimated effects of the control variables on Beijing residents' coproduction. According to Figure 2, compared to individuals living in the suburban districts, individuals living in Beijing's core urban districts were at least 29% more likely to call the 12345 hotline. Despite the small percentage (7%) of ethnic minorities in our sample, they were at least 53% more likely to call the 12345 hotline than the Han

Chinese majority. Furthermore, compared to single individuals, married individuals were 51% more likely to call the 12345 hotline. Nevertheless, we did not find statistically significant evidence to support the contention that being born in Beijing, age, gender, family size, education, profession, and CCP membership impact respondents' coproduction behaviors.

Given that unobserved confounders may have caused endogeneity in the above regression models based on a cross-sectional dataset, we employed nonparametric matching and sensitivity analysis to examine this potential empirical threat. We used the MatchingFrontier method developed by King et al. (2017) to jointly optimize the imbalance between the treated and control groups and the number of observations removed from the analysis to achieve balance. We used the binary DV as the outcome variable and homeownership as the treatment variable. The covariates included all control variables in Model 1. The matching results are shown in Figure 4. Panel (a) plots the reduction in imbalance for observations pruned continuing through the entire range. Panel (b) shows the estimated effect of the treatment (homeownership) on the outcome variable (coproduction). Figure 4 confirms that homeownership consistently positively correlated with coproduction.

Figure 5 shows the sensitivity analysis results using the tools developed by Cinelli and Hazlett (2020) and indicates that the direction and magnitude of the estimated effect are robust to confounding once, twice, or even three times as strongly as marital status. We used marital status as the benchmark variable because it is comparable to homeownership in Model 1 regarding the statistical significance and the point estimate. Taken together, these results are consistent with our main findings in Model 1, providing solid empirical support for our first hypothesis (H1).

Evidence of Underlying Mechanisms

We conducted a series of analyses to validate the theoretical mechanisms. First, we examined whether low-income homeowners are more involved in coproduction than high-income homeowners by adding an interaction term between homeownership and household income to Model 2. Figure 6 reports the results of the interaction effect analysis. The figure suggests that when household income increased from the minimum value (0) to the maximum value (16), the average marginal effect of homeownership on coproduction significantly decreased from 0.44 to -0.04 . As the point estimates are statistically distinct from each other with a 95% confidence interval, this finding provides strong support for H2-a.

Second, we further examined whether an individual with a bought home was more involved in coproduction than an individual with an inherited home by replacing homeownership with two dummies indicating inherited or bought homes in Model 1. As Figure 7 shows, compared to nonowners, individuals who inherited a home were 48% more likely to

Table 1. Variable Summary Statistics.

Variable	Count	Percentage	Mean	Std. Dev.	Min	Max
Hotline call (binary)	2,163		0.509	0.500	0	1
0	1,063	49.14%				
1	1,100	50.86%				
Hotline call (ordered)	2,163		0.824	1.049	0	4
never	1,063	49.14%				
1 to 2 times	676	31.25%				
3 to 5 times	255	11.79%				
6–10 times	79	3.65%				
10 times or more	90	4.16%				
Homeownership	2,167		0.492	0.500	0	1
0	1,100	50.76%				
1	1,067	49.24%				
Inherited home	2,167		0.051	0.220	0	1
0	2,057	94.92%				
1	110	5.08%				
Bought home	2,167		0.442	0.497	0	1
0	1,210	55.84%				
1	957	44.16%				
Household income (ln)	1,294		11.433	2.170	0	16
Knowledge about government (ordered)	2,167		0.951	0.942	0	3
0	824	38.02%				
1	820	37.84%				
2	329	15.18%				
3	194	8.95%				
Core district	2,167		0.578	0.494	0	1
0	914	42.18%				
1	1,253	57.82%				
Born in Beijing	2,167		0.424	0.494	0	1
0	1,248	57.59%				
1	919	42.41%				
Age	2,114		38.809	13.366	11	90
Female	2,167		0.475	0.499	0	1
0	1,138	52.51%				
1	1,029	47.49%				
Ethnic minority	2,167		0.070	0.255	0	1
0	2,015	92.99%				
1	152	7.01%				
Married	2,161		0.629	0.483	0	1
0	801	37.07%				
1	1,360	62.93%				
Family size	2,152		3.166	1.469	1	12
Bachelor's degree	2,164		0.565	0.496	0	1
0	942	43.53%				
1	1,222	56.47%				
Public sector	2,167		0.272	0.445	0	1
0	1,578	72.82%				
1	589	27.18%				
CCP membership	2,167		0.236	0.425	0	1
0	1,656	76.42%				
1	511	23.58%				

call the 12345 hotline to report public service complaints. However, this point estimate was not statistically significant, which can be attributed to insufficient statistical power due to a small number of home inheritors in our survey sample. In

contrast, compared to nonowners, individuals who bought a home were 46% more likely to call the 12345 hotline, and this effect was statistically significant. Figure 7 does not provide sufficient empirical support for H2-a because the

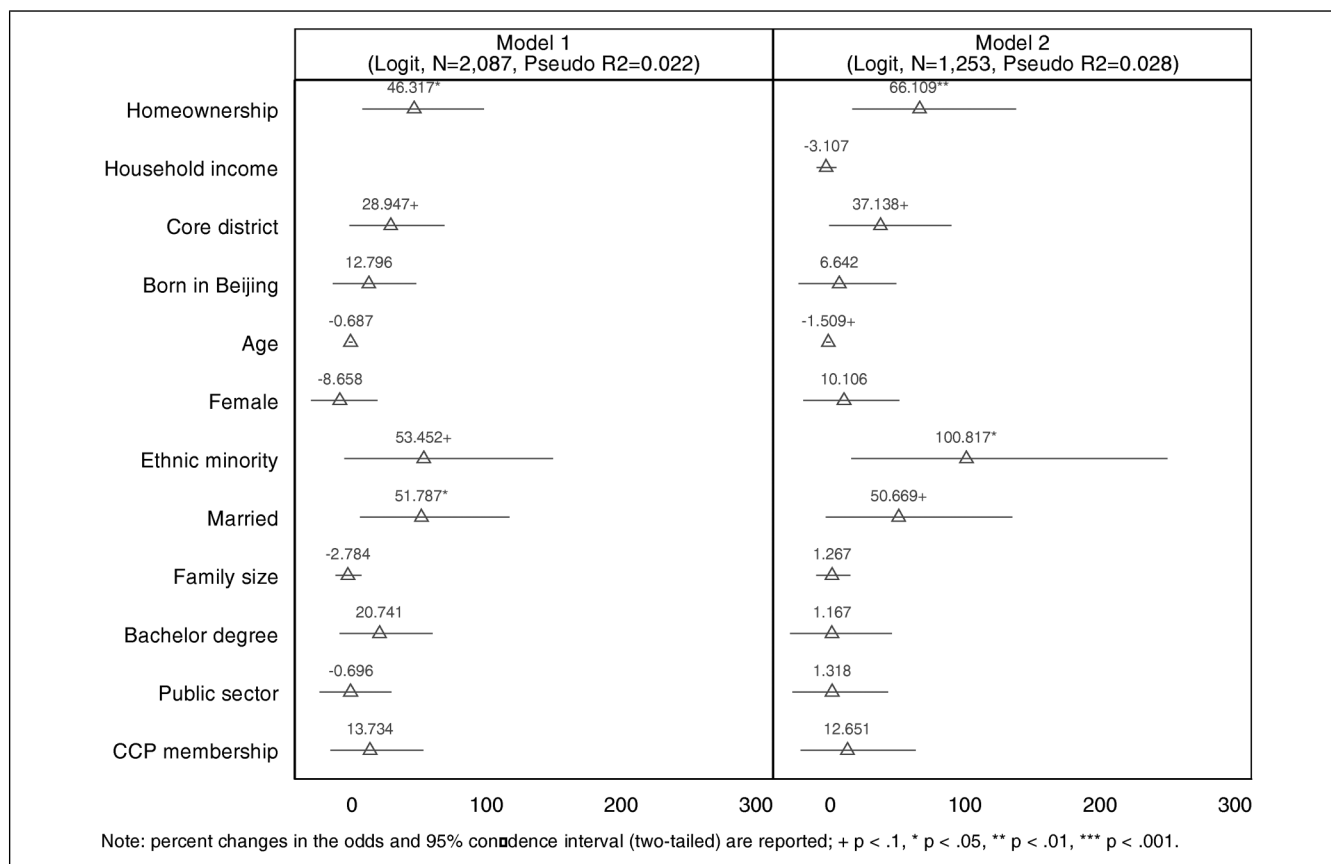


Figure 2. Baseline regression results with a binary dependent variable.

two key variables' 95% confidence intervals overlap. This null finding is likely because home inheritors and home buyers may have the same motivation to coproduce public services to protect their financial investments. Furthermore, our survey sample possibly did not provide sufficient information to statistically distinguish the effects of the means of obtaining homeownership on coproduction. Hence, future research should collect a larger sample to estimate these effects more accurately.

Third, we examined whether homeownership indirectly improves coproduction participation by increasing individuals' knowledge about government. Building on the findings from Figure 2, which presented the total effect of homeownership on initiating a hotline call, Figure 8, following the methodology of Kenny et al. (2003), depicts two supplementary models. Model 6 (ordered logit) used knowledge about government as the DV, whereas Model 7 (logit) used the binary measure of calling the 12345 hotline as the DV and knowledge about government as an ordered explanatory variable. As Model 6 shows, compared to nonowners, homeowners were 62% more likely to have more knowledge about government after controlling for other factors. This finding provides statistically significant support for H3-a.

Model 7 further shows a distinctive pattern that after controlling for other factors, knowledge about the government was positively associated with individual participation in calling the 12345 hotline. This finding provides statistically significant support for H3-b. It is noteworthy that in Model 7, the estimated effect of homeownership is reduced compared to that in Model 1. In other words, knowledge about government may play a significant mediating role in the relationship between homeownership and coproduction participation (H3-c). Additionally, our estimates utilizing a generalized structural equation model approach further indicate that the mediation effect ($b = 0.095$, $p = 0.003$) is statistically significant.

Discussion and Conclusion

Existing explanations for individual participation in coproducing public services have generally focused on individual and government characteristics. However, homeownership's influence has been largely understudied. Based on theoretical insights from homeownership studies in political science and sociology, this study developed a novel framework to theorize the possible theoretical mechanisms through which

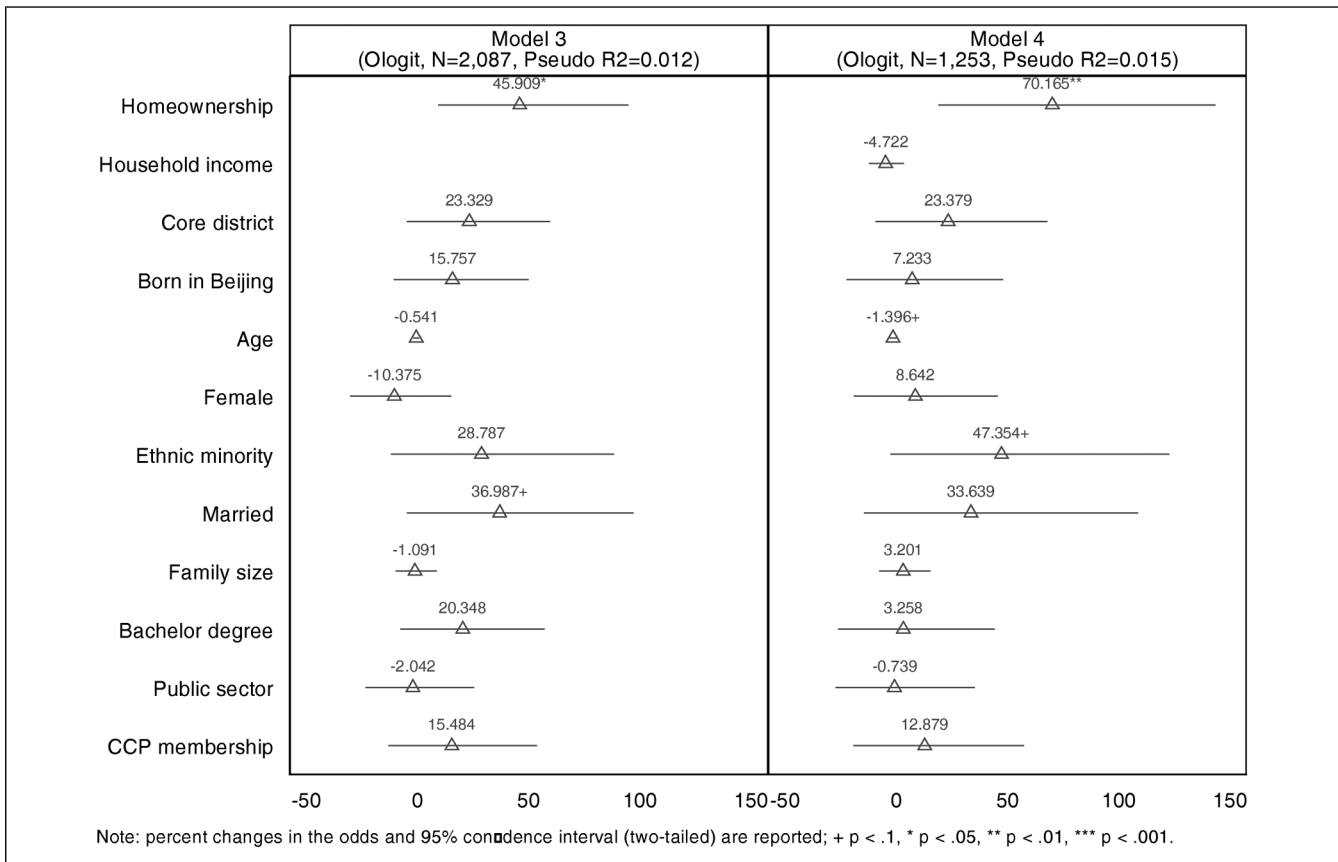


Figure 3. Baseline regression results with an ordered dependent variable.

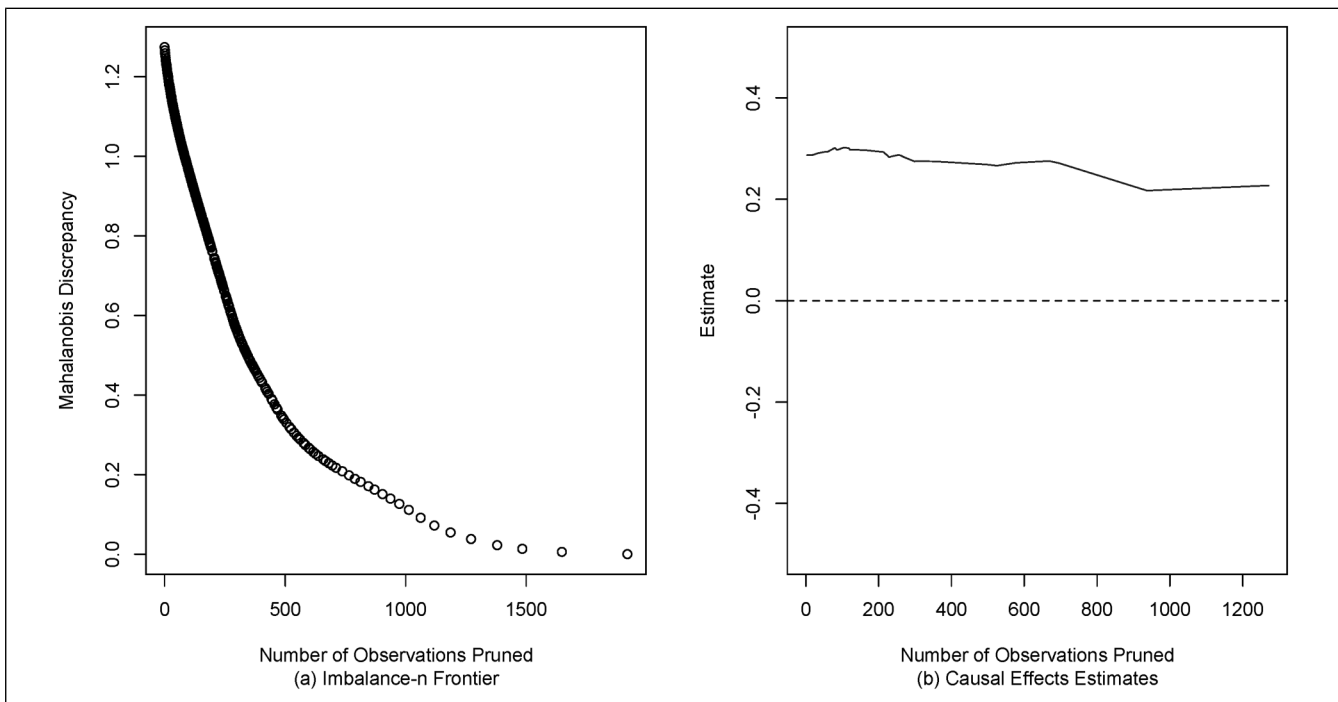


Figure 4. Matching results based on Model 1 using Matchingfrontier.

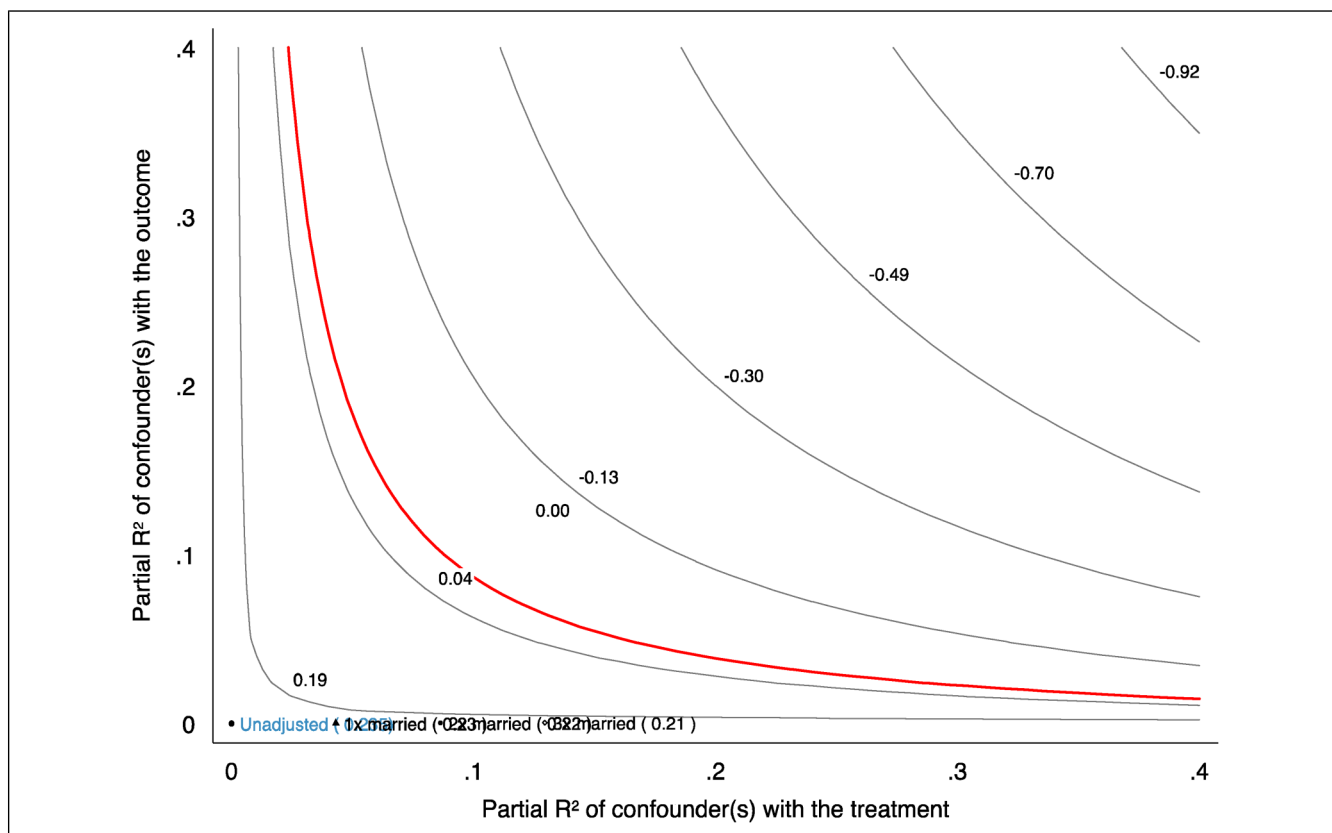


Figure 5. Sensitivity analysis based on Model 1.

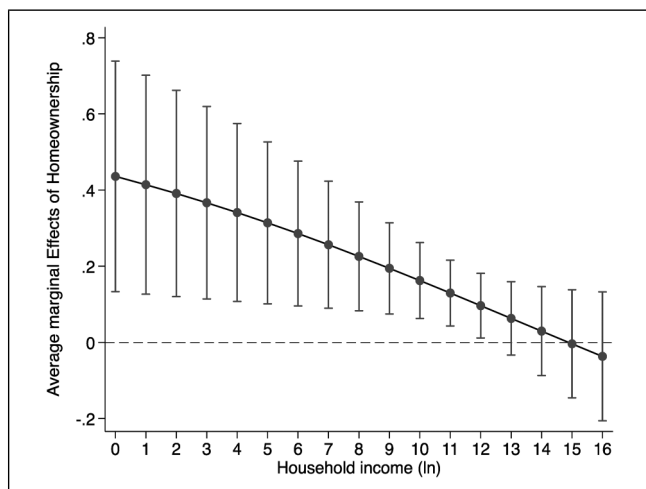


Figure 6. Average marginal effects of homeownership on coproduction as household income increases (after adding an interaction term to Model 2).

homeownership increases coproduction participation. This framework posits that homeownership can improve coproduction participation by directly increasing individuals'

motivation of protecting financial investments and indirectly increasing individuals' knowledge about government.

We empirically tested this theoretical framework using data from an original random survey of 2,167 residents in Beijing. The regression models showed strong evidence in support of our theoretical framework. The homeownership's positive effect on coproduction participation was consistently verified by logit models, ordered logit models, matching, and sensitivity analysis. Moreover, the average marginal effect of homeownership on coproduction decreased as household income increased. Furthermore, homeownership was a strong predictor of knowledge about government, which also strongly predicts coproduction participation. However, we found insufficient evidence to demonstrate that the means of obtaining homeownership (e.g., inheriting versus buying) affects coproduction participation.

This study makes at least three important contributions to the literature. First, it presents a generalizable framework to theorize the links and mechanisms through which homeownership affects individual coproduction participation. Scholars have increasingly explored individual- or community-level variations in coproduction in public administration literature in recent years (Nabatchi et al., 2017; Palumbo and Manesh, 2021; Voorberg et al., 2015). To yield a deeper

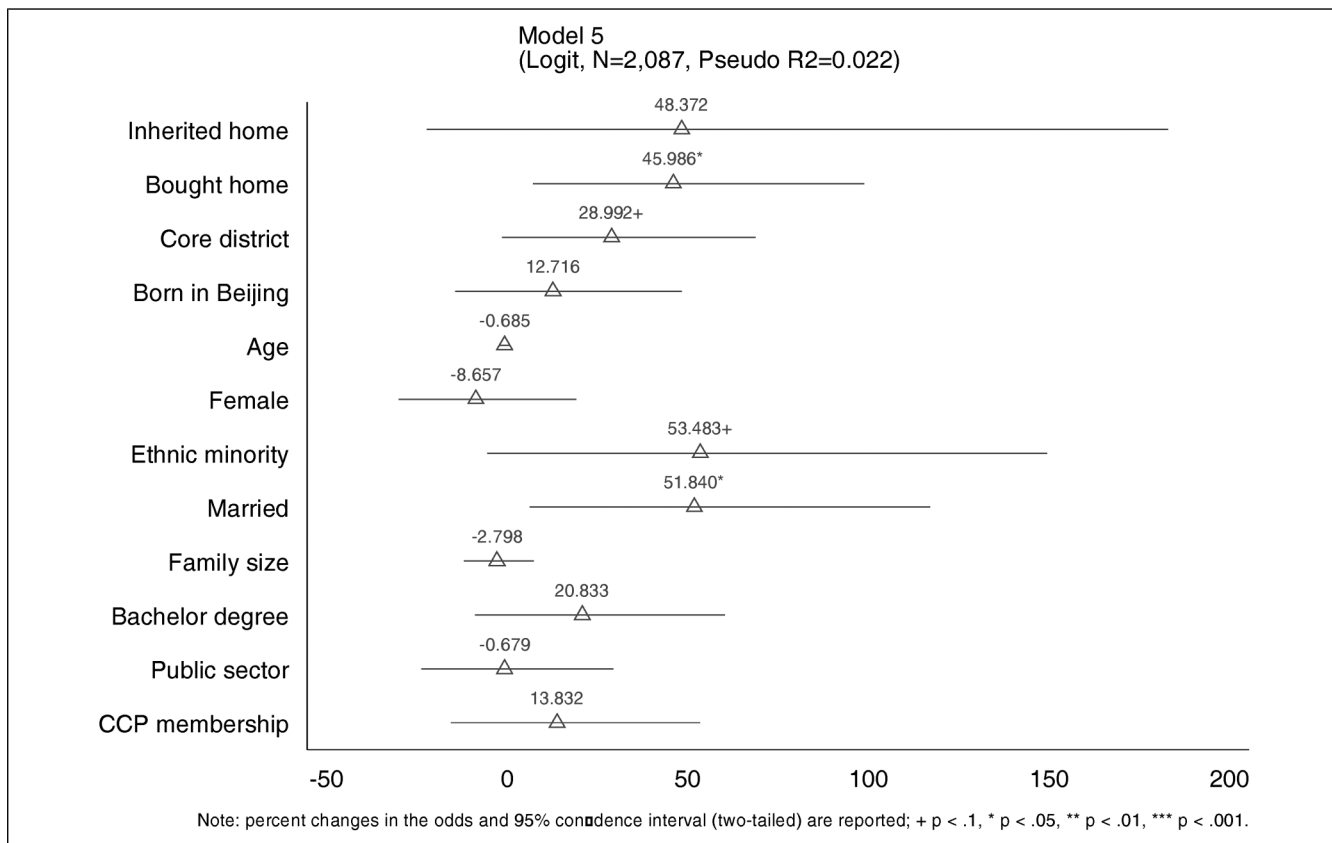


Figure 7. Replication of Model I by replacing homeownership with inherited and bought home.

understanding of the determinants of coproduction participation, this article highlights the importance of exploring and verifying the mechanisms behind those individual- or organizational-level determinants. A growing number of empirical studies have provided evidence that homeownership stimulates an increase in political participation because it serves as a material asset and socio-cultural foundation for stability and belonging (Hall and Yoder, 2022; Yoder, 2020; Zavisca and Gerber, 2016). Because owning a home is often regarded as the biggest financial investment in most people’s lives (Agnew, 2018), its potential effects on individuals’ attitudes, decisions, and behaviors regarding public services deserve more attention in future research focusing on citizen-state interaction.

Second, this research expands the empirical scope of existing coproduction research by testing micro-level theoretical arguments using original coproduction behavior information collected directly from residents of Beijing, China. Previous literature on this topic has mainly focused on empirical cases in the United States and European countries and individuals’ willingness and attitudes rather than their actual behaviors (Zhang et al., 2020; Riccucci et al., 2016), limiting existing findings’ external validity. Moreover, in recent years, social scientists have encouraged more studies

on the political and policy implications of homeownership in non-Western countries from a comparative perspective (Zavisca and Gerber, 2016). This study’s findings from China, a country with weaker property rights protection than its Western counterparts, indicate that our theoretical framework could be applied to the United States and other industrialized democracies with strong property rights protection. Thus, future research should test or develop this theoretical framework using systematic individual-level coproduction information in other countries.

Third, our study provides critical practical insights for public managers. Understanding why some individuals within the general public are more likely to coproduce public services is an essential step toward effectively designing and implementing public policies. Because coproduction participation is costly and does not always improve public services, we assume that individuals’ decisions are often negatively influenced by potential personal costs (e.g., time, money, inconvenience, or civil rights; Zhang et al., 2020) or administrative burden (e.g., learning, psychological, or compliance costs; Herd and Moynihan, 2019) involved in coproduction. As our study shows, this tension can be reduced, and individuals are more supportive of coproducing local public services if they own a home. One

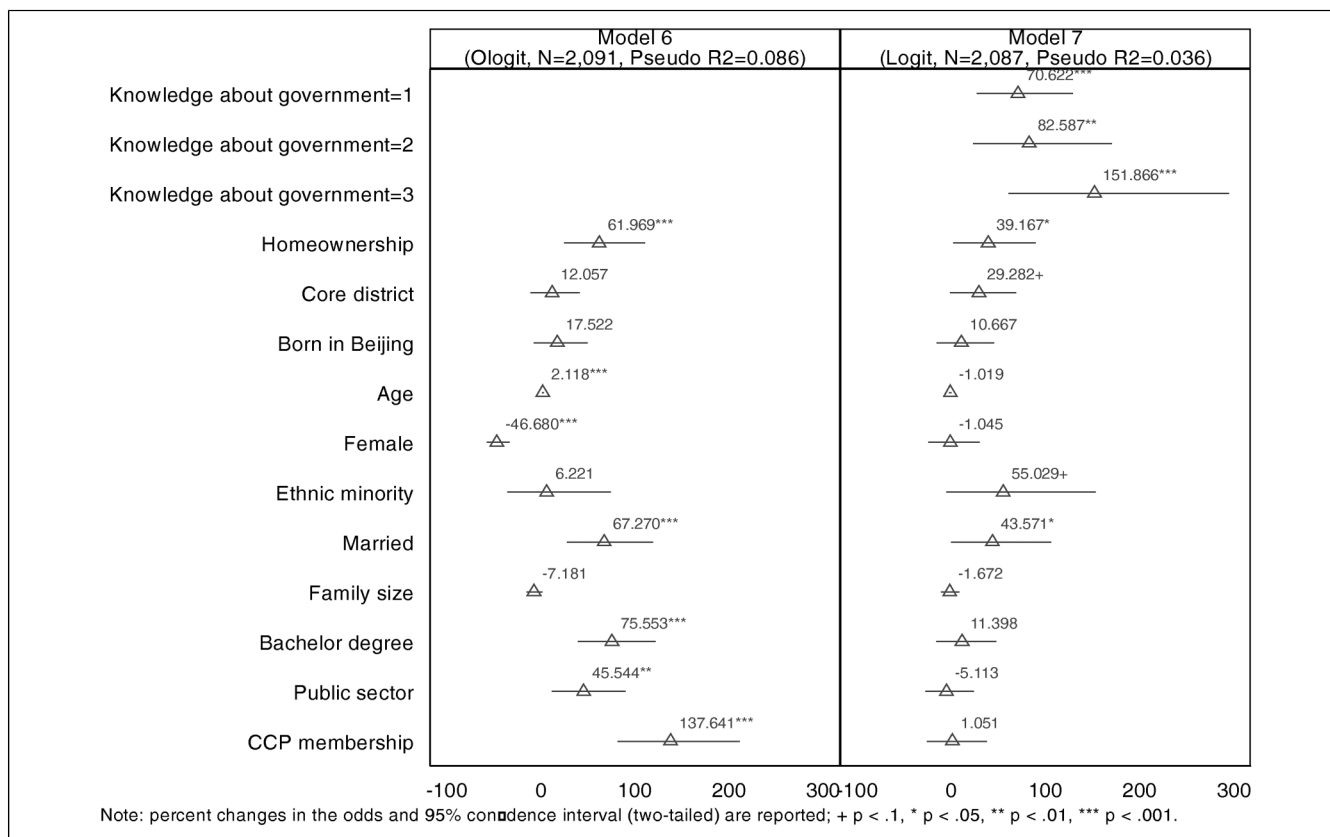


Figure 8. Testing the relationship between homeownership, political knowledge, and coproduction.

important policy implication is that politicians should continue proposing housing policies that facilitate the general public to own a home. Additionally, local officials need to pay particular attention to effectively communicating public service information to nonowners because they face more knowledge or resource obstacles regarding coproducing public services.

Because of resource constraints, this study is limited in its sample size, questionnaire length, and location. The characteristics of the housing sector in a city may moderate the effects of homeownership on individual participation in public service coproduction. For instance, as a city with a population of over 20 million, the housing sector in Beijing may be more complex compared to medium or small-sized cities. However, the same methods (such as random telephone survey, weighted logit models, matching, or sensitivity analysis) can be replicated in other contexts in future research to explore individuals' attitudes or behaviors regarding reporting complaints to the government. In future research, the effects of homeownership on public service coproduction can be further compared across cities. Future research, with more detailed information, could also investigate whether homeowners and nonowners tend to prioritize different public service issues.

Moreover, homeownership is frequently advocated as a vehicle to enhance civic involvement; however, it may inadvertently promote segregation and social exclusion, as noted by McCabe (2016). This implies that while homeownership might elevate engagement among property owners, it could simultaneously diminish participation among nonowners, leading to a polarizing effect. Consequently, the net influence of homeownership at a societal level might not be unequivocally beneficial. It is essential, therefore, to delve into the less understood 'dark side' of homeownership and its consequent effects on public service coproduction, signaling a need for more comprehensive research in this domain.

Furthermore, despite the multiple statistical methods used in this study, it is difficult to infer causality from a cross-sectional analysis; thus, we suggest that future scholars employ time-series-cross-sectional data to further verify and refine our hypotheses and the underlying causal mechanisms. Moreover, to avoid reverse causality or omitted variable bias, scholars should aim to identify convincing exogenous shocks to homeownership (e.g., housing policy reform) and employ the instrumental variable or regression discontinuity design to empirically establish the causal relationships theorized in this article.


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Notes

1. China News TV: <https://www.chinanews.com.cn/m/gn/shipin/cns/2018/03-20/news761318.shtml>.
2. The Standing Committee of Beijing Municipal People's Congress: http://www.bjrd.gov.cn/zyfb/bg/202209/t20220927_2824447.html.
3. Beijing Government: <https://www.beijing.gov.cn/hudong/jpzt/2022ndsrbg/202303/P020230817630254950796.pdf>.
4. Beijing Government: https://www.beijing.gov.cn/renwen/bjgk/rk/202303/t20230322_2941847.html.
5. Ministry of Civil Affairs of the People's Republic of China: <https://www.mca.gov.cn/article/xw/mtbd/202111/20211100037568.shtml>.
6. This assertion finds additional support in the sensitivity analysis presented in Figure 5.

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