

# Study on the Factors Influencing Residents' Participation in Community Volunteer Service for anti-COVID-19 in Mega cities -- Investigation and Analysis Based on 431 Questionnaires in Beijing

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**Abstract.** The epidemic poses a major challenge to public security governance in urban communities. Residents' participation in volunteer services can effectively alleviate the shortage of manpower in communities in mega cities. Based on the questionnaire data of 431 permanent residents in Beijing, a binary logistic regression model was established to explore the influencing factors of residents' participation in community volunteer services for anti-COVID-19 in mega cities. The results show that the overall participation rate of residents is relatively high, but there is still room for improvement. There are differences in the participation of residents in terms of gender, education level, pre-training, and past community volunteer experience. The participation of residents with female, higher education level, pre-training, and previous community volunteer experience is higher. Communities can enhance the participation of residents in community epidemic prevention volunteer service by strengthening the publicity of the concept of volunteer service, continuously holding various volunteer service activities, establishing a volunteer management database, and paying attention to the training of volunteer service skills before work.

**Keywords:** Citizen participation; Voluntary service; Community volunteers; Epidemic prevention and control; Influencing factor.

## 1. Introduction

Residents are the important supply of human resources in community emergency management. According to the statistics of scholars, volunteers have the special advantages of low cost and strong flexibility. During the epidemic, there are only 6 community workers in each community in China on average, which undoubtedly requires extensive mobilization of social organizations and all kinds of volunteers to participate in precise prevention and control. Current emergency volunteer service in China is in the specification of the drive mode from the traditional to the subject, the process of model, overall, urban community as the last line of the epidemic prevention and control "fence" more perfect the function of the mature, the urban community residents keen in disease resistance practice, help grassroots community public security risk management. However, there are also frequent typical cases in mega cities where the participation of residents is not enough to meet the actual needs of the community to fight the epidemic, mainly manifested as insufficient quantity and poor quality, which need to be paid attention to and improved by relevant departments. Especially will be virus mutated, epidemic prevention and control of the gravity of the situation, complexity, and explore the influence urban community residents to participate in the new crown epidemic prevention and control factors of voluntary service, efficient way of mining rapidly promote residents to participate, to strengthen epidemic prevention and control in terms of normalized deployment at the grass-roots level, has important theoretical significance and practical significance.

## 2. Literature Review

### 2.1 The definition of community volunteer services for anti-COVID-19

Volunteer services for community COVID-19 mainly include guarding checkpoints, guarding volunteer service posts, controlling vehicles and people entering and leaving, measuring body temperature and registering one by one, distributing leaflets and protective materials, and participating in community epidemic prevention and control based on their own expertise (Wang Yong, 2021). In response to the epidemic, community prevention and control tasks are arduous and complicated, including concept guidance, mentality adjustment, material allocation and behavior persuasion. Volunteers' participation and intervention can effectively relieve the pressure of community prevention and control and give full play to the advantages of neighborhood mutual assistance. In this paper, community volunteer service for anti-COVID-19 refers to the non-profit, voluntary and organizational activities in which community members volunteer their time and energy to participate in community epidemic prevention and control work under the guidance of professionals without any material reward. Community volunteer service for anti-COVID-19 is different from other volunteer activities in the community. It belongs to the emergency volunteer service under the state of emergency and is generally organized by the community in all aspects of the emergency.

### 2.2 Research status and comments on residents' participation in community volunteer services for anti-COVID-19

In the critical period of urban epidemic prevention, closed community management is required. Volunteer service is the key to respond to community emergency management tasks and maintain the basic livelihood of communities in public crisis events. Based on the theory of social practice, Some found that the school field is the cradle of the cultivation and development of College Students' "voluntary habits", and the spirit of Party members and patriotic practice are conducive to the college students to enhance their "voluntary habits" (Shen Ji et al., 2021). Volunteers are mostly female, middle class, highly educated and of working age. Residents' social network resources, social connections, understanding of the community and social trust are the key factors affecting residents' participation. Some explores the cultural mobilization mechanism of college students' participation in community volunteer service for anti-COVID-19, and explores the important role of "family and country isometric" and "reciprocity" in mobilizing young people to participate (Chen Hongyan, 2021). Gender, age, economic status, health status, political status, and urban-rural differences were significant factors influencing residents' participation in community emergency volunteer services in response to the epidemic (Tang Siyu et al., 2021). The residents of social relation network can affect its voluntary community participation willingness. Non-public power groups represented by community workers, teachers and medical personnel and public power groups represented by Party and government cadres and deputies to the National People's Congress have opposite effects on Residents' participation (Li Xiaoyuan, 2021) [10]. Residents' main obstacles is "infection risk" and "lack of time", "single volunteer security form" "insufficient volunteer training" and "insufficient incentive mechanism" is the main confusion after residents to participate (Mao Zhenhua et al., 2021) [11]. Problems in residents' participation in community voluntary services for anti-virus include the inability of the community mobilization system to respond to the actual needs, the unclear mobilization direction, the unclear arrangement of human resources for community emergency management, and the insufficient ability of volunteers to use technology (Xu Ming et al., 2020) [12].

In summary, the author believes that urban residents' participation in community epidemic prevention and control volunteer services is influenced by a variety of factors. The population concentration and floating population in mega cities are complex, so how to rapidly improve the precision prevention and control ability of communities in mega cities is worthy of academic attention. However, through reviewing the existing literature, it can be seen that the research on the construction of community emergency volunteer service personnel team in China's mega cities needs to be filled.

First, qualitative research methods are mostly used in existing literature, while quantitative research methods are rarely used to explore the influencing factors of residents' participation in community volunteer services for anti-COVID-19. Secondly, the lack of regional investigation on this topic. Based on this, the research question of this paper is: how do residents in mega cities participate in community volunteer services for anti-COVID-19? What are the factors that affect residents' participation? What can be improved about the current engagement?

### 3. Research design and data sources

#### 3.1 Research ideas and methods

Studies have pointed out that female, elderly and less-educated residents have higher willingness to participate in community volunteer service (Li Xiaoyuan, 2021) [13]. Some studies have also pointed out that during the epidemic period, residents with higher emergency knowledge and more volunteer service experience are more willing to participate in emergency volunteer service (Tang Siyu et al., 2021) [14]. Therefore, the model of mega city residents' participation in community volunteer service activities for anti-COVID-19 (Figure 1) is constructed. It is assumed that whether mega city residents participate in volunteer service is affected by a variety of factors, including demographic factors, capital factors and skill training, etc. The basic hypothesis of the study is that there are differences in population and social characteristics in whether residents participate in community volunteer service activities for anti-COVID-19, and the following assumptions are made:

H1: Compared with male residents, female residents are more likely to participate in community volunteer services for anti-COVID-19.

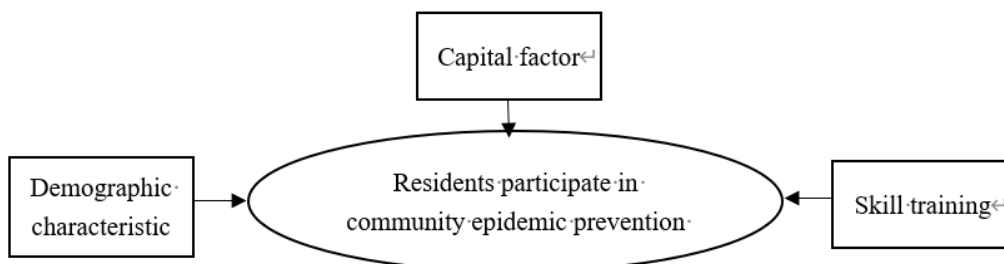
H2: The older residents are, the more likely they are to participate in community volunteer work for anti-COVID-19.

H3: Residents with higher education level are more likely to participate in community volunteer services for anti-COVID-19.

H4: Compared with residents with political status of the general public (including members of the Communist Youth League), residents with political status of party members (including probationary members, candidates for development and active party membership) are more likely to participate in community volunteer services for anti-COVID-19.

H5: Compared with residents who have not received initial volunteer training for emergency response, residents who have participated in skills training for community volunteers in public health emergencies before the outbreak of COVID-19 are more likely to participate in community volunteer services for anti-COVID-19.

H6: Compared with residents who have no experience of community volunteer service, residents who participated in community volunteer service before the COVID-19 outbreak are more likely to participate in community volunteer service for anti-COVID-19.



**Figure 1.** Residents' participation model of community voluntary services for anti- COVID-19

In terms of research methods, column linkage analysis was used to describe residents' participation in community epidemic prevention volunteers. As the dependent variable was a dichotomous variable (participation or non-participation), a binary logistic regression model was adopted.

$$\text{logit}(p) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_p$$

$p$  represents the probability of urban residents participating in community volunteer service activities for anti-COVID-19,  $\beta_0$  is a constant term, and  $\beta_P$  is the partial regression coefficient of the  $P$ th variable  $X_p$ .

### 3.2 Description of data sources and basic variables

Based on the questionnaire prepared by Mao Zhenhua et al. [15] & Li Xiaoyuan [16] and combined with the previous interview, the questionnaire of this study was developed. The stratified random sampling method is adopted. Firstly, all districts in Beijing are randomly selected, and then communities are randomly selected in Haidian and Daxing districts. Finally, 10 communities including ZHYY Community, CNU Community, BLLX Community in Haidian District, XLY Community, XSY community and KSY Community in Daxing District received questionnaires from May 2021 to December 2021. A total of 453 questionnaires were received, of which 431 were valid, with an effective rate of 95.1%. This paper mainly studies residents' participation in voluntary services for community prevention and control of COVID-19. 431 people are eligible, and their basic information is shown in Table 1:

**Table 1.** Descriptive statistics of variables

Categorical Variable	Features	Frequency	Proportion
Sex	Male	209	48.5%
	Female	222	51.5%
Age	10-19	56	13.0%
	20-29	75	17.4%
	30-39	79	18.3%
	40-49	72	16.7%
	50-59	78	18.1%
	60-90	101	23.4%
Level of Education	Junior high school and below	58	13.5%
	High school / technical secondary school	81	18.8%
	Junior college	108	25.1%
	Bachelor degree or above	184	42.7%
Politics Status	Party members (including probationary party members, etc.)	176	40.8%
	Masses (including members of the Communist Youth League)	255	59.2%
	Previous Skills Training Experience of Community Public Health Emergency Services	Received	104
	None	327	75.9%
Previous Community Volunteer Experiences	Engaged	144	33.4%
	None	287	66.6%

#### 3.2.1 Analysis of the overall situation of residents' participation in community volunteer services for anti-COVID-19

Overall, the participation rate of community volunteers in anti-COVID-19 is relatively high at 67.2%, but there is room for further improvement at this stage. The higher resident participation rate may be related to residents' community attachment and family condition. As we all know, the nationwide epidemic sniper war has made our citizens accept a baptism of patriotism, but also make citizens have a new understanding of the relationship between individuals and the state.

Specifically, there are significant differences in gender, age, education level, whether residents have participated in volunteer training for community public health emergencies before the outbreak of COVID-19, and whether they have participated in community volunteer service before the outbreak of COVID-19.

First, the survey found that the proportion of male residents participating in community volunteer services for anti-COVID-19 was significantly lower than that of female residents, 13.1 percentage points lower. This finding is consistent with the findings of previous studies. Marriott once found that the proportion of female volunteers was higher than that of male volunteers (Marriott, 1991) [17]. Second, residents aged 60-90 were the most volunteers, up to 28.62%, followed by residents aged 30-39, 40-49, 20-29, 50-59 and 10-19. Some retired people have more leisure time, and one of the reasons for them to participate in community volunteer service is to give full play to their spare energy, contact with society, and reduce the loneliness after retirement (Duan Shijiang, Wang Fengxiang, 2010) [18]. Third, there is a direct correlation between the improvement of educational level and residents' participation in community volunteer services for anti-COVID-19. The higher the educational level, the higher the proportion of residents' participation. Generally speaking, residents who have received a higher level of education are more likely to be invited to volunteer in the community because of their higher personal willingness and ability to participate. Fourth, in the context of China, the political status of residents is related to their participation in volunteer activities. Party members tend to be more aware and proactive than the general public. In the context of the normalization of the epidemic, Party members will play a leading role and actively participate in community volunteer services for anti-COVID-19. However, this survey found that whether a party member is a party member or not has little influence on residents' participation in community volunteer service for anti-COVID-19, and there is no significant difference between residents with different political status in participating in community volunteer service for anti-COVID-19. In the community response to COVID-19, people and Party members participate in community volunteer services for anti-COVID-19, regardless of their political affiliation, and do their best to help the communities in which they live. Fifth, whether residents have participated in volunteer training for community public health emergencies before the outbreak of COVID-19 has a significant impact on their participation in volunteer services for community anti-COVID-19. Through volunteer training, residents have gained certain skills to deal with the epidemic and mastered scientific methods to participate in volunteer service for epidemic prevention, which is of great help to improve residents' willingness to participate. Sixth, whether residents participated in community volunteer service before the outbreak of COVID-19 also has a significant impact on residents' participation in community volunteer service for anti-COVID-19. Previous studies have pointed out that, from the perspective of social capital, extensive social network resources and past volunteer service experience can significantly improve residents' willingness to participate in volunteer activities (Jackson et al., 1995) [19]. Volunteers who participated in community volunteer service before the outbreak of COVID-19 can enhance residents' sense of community participation and arouse residents' sense of ownership. Spiritual encouragement and publicity of outstanding deeds of volunteers from the community can often make volunteers take the lead in responding to the epidemic and actively participate in community volunteer service for anti-COVID-19.

### **3.2.2 Regression analysis of residents' participation in community volunteer services for anti-COVID-19**

This paper refers to the research of Liu Xin (2016), a Domestic scholar, and sets the standards of reliability and validity as 0.9 and 0.85 [20]. The internal consistency reliability was used to test the reliability of the scale, and the Cronbach's Alpha reliability coefficient of the scale was 0.92, which met the requirements of "reliability coefficient greater than 0.90 indicates that the scale has good reliability and good reliability". At the same time, KMO sampling appropriateness experience and Bartlett sphericity test were carried out on the data, and the KMO value of the scale used in this study was 0.886, indicating that the scale had high construction validity.

According to the above analysis, it can be found that there is a close relationship between residents' participation in community volunteer service for anti-COVID-19 and various factors. In order to further explore the net impact of different factors on participation, the author constructed three models to understand the role of population factor, capital factor and skill training in sequence.

In the population model, only gender has a significant impact, and some ages have no significant impact on whether residents participate in community volunteer services for anti-COVID-19. Compared with women, male residents were only 60.9 percent more likely than women to volunteer for community anti-COVID-19. Compared with adolescents aged 10-19, those aged 60 and above were 1.53 times more likely to participate in community volunteer work for anti-COVID-19. Therefore, H1 is validated and H2 is not. The inclusion of capital factors improved the explanatory ability of model 2 to some extent. Political status did not have a significant impact on whether residents participated in community volunteer services for anti-COVID-19, which was consistent with the contingency table. For some Party members, they may not be volunteers, but community Party committees, community workers and other positions in community epidemic prevention and control, but they have also made significant contributions to community epidemic prevention and control. Compared with residents with only a junior high school education or less, residents with high school/technical secondary school education, junior college education, bachelor's degree or above are 6%, 44% and 46% more likely to participate in community volunteer work for anti-COVID-19. The possible reason is that residents with higher education level are more likely to have a sense of social care and responsibility, and are less likely to do nothing about community epidemic prevention and control work related to the interests of themselves and the community. So H3 is verified, H4 is not verified. With the addition of skill training factor, the explanatory ability of Model 3 was significantly improved. Participation in volunteer training for community public health emergencies before the outbreak of COVID-19 has a significant impact on residents' participation in volunteer service for community prevention and control of COVID-19, and residents who have received volunteer training are 16% more likely to participate in volunteer service than those who have not received training. Participation in community volunteer service before the outbreak of COVID-19 has a significant impact on residents' participation in community volunteer service for anti-COVID-19. Residents with previous community volunteer service experience are 5% more likely to participate in volunteer service activities than those without experience. Therefore, H5 and H6 are validated.

#### **4. Conclusion and discussion**

Participation of residents in community volunteer services for anti-COVID-19 in mega cities is not only a means for residents to leverage their advantages to improve grassroots governance, but also an important way to help residents integrate into society and strengthen their sense of community belonging and ownership. Through the questionnaire survey, it was found that the participation rate of residents was relatively high, but the majority of people who participated were middle-aged and elderly, women, and some residents did not actively participate in community volunteer services for anti-COVID-19. The reasons for not participating may be caused by personal concepts, personal conditions, or constraints from the surrounding environment, such as the fear that the complexity of contact with people will affect their own safety and lack of professional guidance. It is true that community volunteer service for anti-COVID-19 is different from other routine volunteer activities in the community. It belongs to emergency volunteer service, and there are certain security risks for volunteers.

Although the influence of some factors, such as political status, is not as verified by the usual research hypothesis, we can find that there are multiple factors influencing residents' participation in community volunteer services for anti-COVID-19, which deserve our continuous attention. In the context of the normalization of the epidemic, we need to expand the community volunteer team in megacities, ensure the stability of the community volunteer team, and give full play to the expertise of residents in different communities in fighting the epidemic. We need to carry out more explorations based on local conditions and the actual situation of the community.

**Table 2.** Logit regression analysis of residents' participation

	Model 1 (based on age 10-19)	Model 2 (Based on junior secondary education and below)	Model 3
Sex(Male)	0.609*** (0.223)	0.745*** (0.241)	0.701*** (0.258)
2.Age(20-29)	0.674* (0.364)	-0.467 (0.489)	-0.596 (0.518)
3.Age(30-39)	0.556 (0.371)	-0.485 (0.480)	-0.631 (0.518)
4.Age(40-49)	0.703* (0.378)	-0.380 (0.484)	-0.364 (0.512)
5.Age(50-59)	0.759* (0.412)	-0.218 (0.498)	-0.323 (0.533)
6.Age(60-90)	1.592*** (0.377)	0.663 (0.461)	0.638 (0.493)
Politics Status(Party members)		-0.246 (0.253)	-0.389 (0.275)
2.Level of Education(High school / technical secondary school)		1.061** (0.420)	1.355*** (0.454)
3.Level of Education(Junior college)		1.438*** (0.446)	1.793*** (0.482)
4.Level of Education(Bachelor degree or above)		1.462*** (0.426)	1.765*** (0.462)
Previous Skills Training Experience of Community Public Health Emergency Services(Received)			-1.162*** (0.422)
Previous Community Volunteer Experiences (Engaged)			-0.952*** (0.345)
Constant	-0.938** (0.397)	-1.020* (0.583)	2.825*** (0.910)
Sig.	.000	.000	.000
Observations	431	431	431

Based on the above analysis, the author believes that to give full play to and protect residents' subjective initiative and motivate residents to participate in community volunteer service for anti-COVID-19, it is necessary to vigorously publicize the concept of volunteer service and cultivate residents' motivation for public service. Under the guidance of community Party building and the promotion of league building, the party will promote the spirit of "altruism" and continue to play the vanguard and exemplary role of Party members, so that residents who actively participate in community volunteer services for anti-COVID-19 will be given priority to join the Party. At the same time, communities should continue to hold various volunteer service activities, excavate volunteer service positions, provide opportunities for residents to participate in, help residents enhance their sense of belonging to the community, identify with the value of volunteer service, and expand their social network. A volunteer management database can be established to record residents' strengths, specialties and preferences by using big data and other technologies, and volunteers can be matched to appropriate posts in community volunteer services for anti-COVID-19, so as to improve the satisfaction of community volunteers' participation and retain and cultivate more volunteers. We will focus on skills training for volunteers in advance, and provide material support and technical support for residents participating in voluntary epidemic prevention services. As retired people have more leisure time and high willingness to participate in volunteer activities, communities can actively organize science and technology activities to help the elderly, so that enthusiastic retired residents can use their smartphones when participating in community volunteer services for anti-COVID-19.

Admittedly, there are some shortcomings in this study, for example, other important factors that may affect residents' participation in community volunteer service for anti-COVID-19 are not considered, such as economic conditions, physical and mental health status, time conditions, organizational factors, risk awareness and dedication awareness. The influencing mechanism and degree of these factors on whether residents participate in community volunteer services for anti-COVID-19 are worthy of further exploration in the future. At the same time, this study takes residents of some streets and communities in Beijing as the research object, which has certain regional characteristics. Whether it can effectively represent the participation of residents in other places in China remains to be verified. In the future, more interview data and questionnaires will be collected for more comprehensive and detailed analysis.

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