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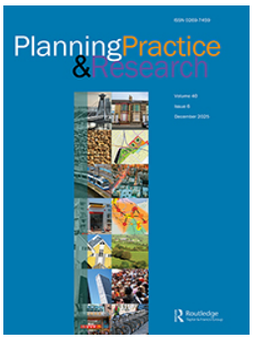
DOI
10.1080/02697459.2025.2589895

Publication date
2025

Document Version
Final published version

Published in
Planning Practice and Research



Planning Practice & Research

ISSN: 0269-7459 (Print) 1360-0583 (Online) Journal homepage: www.tandfonline.com/journals/cppr20

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To cite this article: Hongmei Lu, Yanliu Lin, Zheng Liu & Reinout Kleinhans (30 Nov 2025): To participate online or onsite? Public preferences for participating in neighborhood regeneration planning in China, Planning Practice & Research, DOI: 10.1080/02697459.2025.2589895

To link to this article: https://doi.org/10.1080/02697459.2025.2589895

PLANNING PRACTICE & RESEARCH
https://doi.org/10.1080/02697459.2025.2589895

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To participate online or onsite? Public preferences for participating in neighborhood regeneration planning in China

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ABSTRACT

Digital technologies offer new opportunities for citizen participation. Although scholarly interest in citizen participation in the digital era has been growing, citizens' preferences for online versus onsite planning participation remain unclear. Drawing on survey data, this study examines public participation preferences and the factors influencing them across three phases of the planning process in China. Findings show a general preference for onsite participation, linked to more active, outcome-oriented engagement, whereas online participation is driven by convenience and expressive freedom. We propose a hybrid participation system that combines the strengths of both modes to promote more inclusive and effective collaborative planning.

ARTICLE HISTORY
Received 28 May 2025
Accepted 10 November 2025

KEYWORDS
Participatory planning; online participation; onsite participation; neighbourhood regeneration

Introduction

Neighbourhood regeneration often encounters problems like financial challenges, social conflicts, and diverse interests. Although top-down planning approaches may give opportunities for citizen participation, the levels of participation could be low, limiting their ability to solve these problems effectively (Zhou *et al.*, 2025). The importance of public participation for sustainable cities and communities is emphasized in the UN Sustainable Development Goal SDG 11. This SDG aims to enhance inclusive and sustainable urbanization and capacity for participatory, integrated, and sustainable human settlement planning. Participatory planning that consciously engages local communities and addresses their concerns has emerged as a promising approach to advance procedural justice, encourage equitable planning and design, reduce conflicts, and help prevent displacement of long-time residents (van de Wetering & Groenleer, 2024). Scholars have identified various factors that influence levels of engagement in participatory planning. For example, Halvorsen (2001) highlights the importance of convenience and comfort in participation, participants' satisfaction, and government responsiveness and accountability. Rowe *et al.* (2004) assessed the effectiveness of participation using

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nine criteria: task definition, representativeness, early involvement, independence, cost-effectiveness, transparency, structured decision-making, resource accessibility, and influence. Beierle and Konisky (2000) focus on three social goals of participation: incorporating public values into decision-making, resolving conflicts among competing interests, and restoring trust in public agencies.

Nevertheless, effective participation must be carefully fostered and designed (Bobbio, 2019); otherwise, it risks becoming an empty ritual without real efficacy (Arnstein, 1969). Various challenges can undermine the effectiveness of participation. For example, traditional onsite participation approaches require physical presence at a specific time and place. This inflexibility and the higher cost of participation can limit the number of participants, raising concerns about representativeness. Low participation may also weaken the effectiveness of deliberation, leading to unsatisfactory outcomes for both residents and governments.

Digital technology development has created increasing opportunities for online participation (Donders *et al.*, 2014). Online participation refers to the use of information and communication technologies to enable, engage, and empower citizens, facilitating information exchange and decision-making (Wirtz *et al.*, 2018). With the proliferation of new technologies, interactions on online decision-making platforms have become increasingly popular over the past two decades, leading to the creation of new online arenas for citizen participation (Lin, 2022). However, online participation also presents potential challenges, as it may exclude computer-illiterate populations and make them vulnerable to cyber manipulation (Casemajor *et al.*, 2015; King *et al.*, 2017; Lutz & Hoffmann, 2017). Additionally, in social-media-based discussions, people focus more on learning about public affairs and expressing opinions rather than interacting with decision-makers and advocating for policy change (Dennis, 2018). These shortcomings can compromise the efficacy of online planning.

Although there has been growing scholarly interest in citizen participation, their preferences for different participatory modes remain understudied. This particularly applies to urban regeneration programs in China, which involve large shares of deprived, older, and low-educated residents and lower access to digital means. While Western countries have significant experience with participatory platforms for urban development and regeneration, such practices are less developed in the context of urban regeneration in China. Notably, Chinese urban regeneration policies have rapidly moved from strongly top-down approaches to more participatory models, offering residents various ways to contribute online or onsite to policies and their implementation (Zhou *et al.*, 2025). In this context, it is not yet clear how residents respond to the various options for participation. This research will answer the following questions:

- To what extent do citizens prefer to participate online or onsite?
- What factors influence preferences for onsite or online participation in the context of effective participation in neighbourhood regeneration?

We designed a questionnaire survey to collect data from 15 neighbourhoods that have undergone urban regeneration in Guangzhou, China. This research contributes to the literature by: (1) studying public participation preferences through a comparative lens of

online versus onsite modes; (2) examining the drivers of such preferences across three phases of planning processes; (3) informing planning practice toward effective public participation design.

This paper is structured as follows. The next section is a literature review on public participation and its influencing factors, followed by a detailed methodology on briefing the study site, data collection, and analysis process. The results section compares factors influencing the public's preference for online or onsite participation with a specific examination of online participation. The final section links research findings to planning practice and informs effective participatory planning.

Public participation, online participation, and influencing factors

Effective participation in planning processes is often considered an integral part of community development, enhancing growth in a democratic manner and revitalizing neighbourhoods (Ryu *et al.*, 2018). However, effective public participation cannot be taken for granted; it must be actively cultivated and designed. Understanding the driving factors can facilitate better design of effective participation. The literature discussed various factors influencing participative processes, which are often unfolded in different phases, such as problem identification and assessment, organisation, education, negotiation, and implementation (Innes & Booher, 2018). However, this process-oriented focus has been criticized for overlooking planning outcomes as well as contextual conditions. In planning support science, some scholars distinguish additional phases, including early initiation, initiation, formulation of alternatives, decision-making, implementation, evaluation, and maintenance (Kahila-Tani, 2015). This more detailed division of phases is useful for examining how residents' knowledge, collected by planning support tools, contributes to different moments in the planning process. In the Chinese context, participatory practices are strongly shaped by contexts and preconditions, which influence both planning processes and planning outcomes (Lin, 2023). This study categorizes a participatory process into three main phases: the starting conditions, the participation process, and the expected outcomes (Figure 1). These three phases include diverse factors that influence both online and onsite participation across these three phases (Set A). Additionally, we add specific factors that affect online participation (Set B).

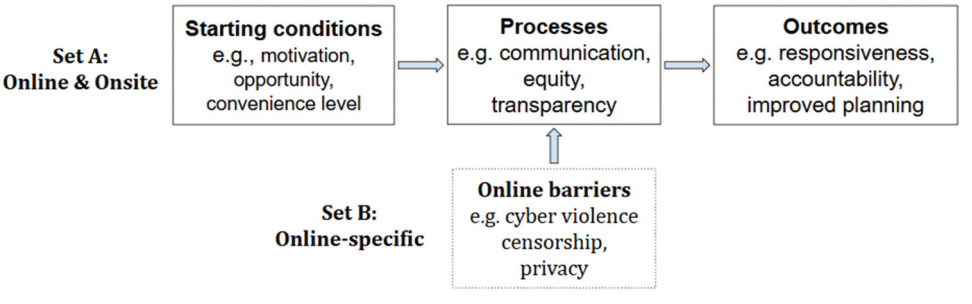

Figure 1. Influencing factors of public participation at different phases.

Factors related to starting conditions

Factors such as participants' motivation, opportunities, and convenience for participation can significantly influence participation (Halvorsen, 2001). Motivational factors may include a sense of civic duty, a desire to influence decision-making by expressing opinions and interests, or a need for improved services. Reasons or motivations for non-participation can range from lack of awareness to disinterest, abstention, and exclusion (Lutz & Hoffmann, 2017). Varying interests of stakeholders may also affect motivation. For example, Özdemir and Tasan-Kok (2019) describe a case where residents focused on improving living conditions by minimizing traffic, while non-residents prioritized the area's economic vitality, which might necessitate increased traffic.

The opportunity to participate is also crucial, which refers to the extent to which individuals have accessible, inclusive, and usable channels, both online and offline, that enable them to engage in public decision-making processes. Accessible public participation events and tools are more likely to attract individuals with diverse viewpoints. Some people only attend onsite events when personally invited, which is less common for online participation. The availability of various online platforms increases participation opportunities (Afzalan *et al.*, 2017). From the perspective of online platform accessibility and usability, factors such as user-friendly interfaces, mobile accessibility, and language support impact how accessible platforms are to a diverse population. Enhancing digital skills among the population is also essential to ensure inclusive online participation (Casemajor *et al.*, 2015).

Convenience is another critical driver of participation. Carefully organising participation events, including diverse formats with flexible times and locations, enhances convenience. Meetings that are well-scheduled, held at comfortable venues, and use time efficiently for discussions tend to attract more participants. For example, Halvorsen (2001) describes a dinner-focused conversation meeting on public land management, where participants found the setting, timing, and familiar attendees to be convenient and comfortable. By contrast, traditional methods, such as town hall meetings and fixed-location public hearings, often lack flexibility because they require participants to be present at a specific place and time, which can exclude those with work, caregiving, or mobility constraints (Kleinhans *et al.*, 2022). While these methods can be adapted to be more inclusive, they are generally less accessible compared to online social networking sites, which overcome geographical barriers and enable a more diverse range of citizens to engage in real-time from any location (Lin, 2022).

Factors related to the participation process

An effective participation process is the key to successful participatory planning; this process may be influenced by communication, transparency, and equity in participation. Effective communication is deliberative, capable of diffusing conflict and addressing public concerns (Forrester, 2000). It involves open, respectful, and thorough discussions where participants consider actions that serve the public good. Deliberative discussions can increase participants' awareness of and tolerance for different viewpoints; a rational discussion process is more likely to resolve conflicts (Halvorsen, 2001). For many participants, interactive communication is generally more effective than one-way methods, such as submitting written comments

(Kleinhans *et al.*, 2015). However, achieving these values requires the proper design of the participation process and the adoption and regulation of related administrative processes. Online platforms facilitate real-time and immediate communication among citizens; their agility and efficiency are particularly valuable for addressing time-sensitive issues.

Public participation processes should strive for information transparency to enhance effective communication and reduce unclarity in planning. The public needs access to relevant information for meaningful deliberation (De Stefano *et al.*, 2012); a well-informed public is better equipped to actively contribute to the planning process. Open data initiatives and digital governance reforms have greatly improved public access to information in many countries over the past decade. Despite the growing presence of government open data platforms, data availability is often fragmented or limited to non-sensitive domains, restricting the extent to which citizens can meaningfully use such information for planning engagement. Governments may also be concerned about the potential negative impacts of increased transparency. For example, Du and Zhu (2023) find that regulatory transparency can lead to public opposition to government decisions, especially concerning potentially risky projects, which may discourage governments from releasing information. Fortunately, online participation can enhance transparency by giving the public direct access to information. Social media provide open platforms that empower citizens to access, share, and disseminate information, including sensitive, previously undisclosed, and bottom-up information, and to engage critically with planning issues, thereby contributing to more transparent decision-making processes (Lin, 2022).

Participation equity is a key concept in online participation theoretical models. Many onsite participation studies show that certain demographic groups, such as women, racial minorities, younger individuals, and those with lower education or socioeconomic status, may be less likely to deliberate or have less influence (Michels, 2019). Additionally, if expert knowledge dominates and limits citizen input, the public may become reluctant to participate. However, Donders *et al.* (2014) argue that online participation often scores high on perceptions of equity. Showers *et al.* (2015) find that online discussions improve participation equity in gender compared to face-to-face communication. While online platforms can empower citizens, they may also install new power inequalities, in which elites or experts exert greater influence than deprived citizens.

Factors related to participation outcomes

Participatory planning fosters democratic outcomes such as responsiveness, accountability, and improved planning by incorporating the diverse values of various stakeholders (Swapan, 2016). Authorities' responsiveness to citizens and effective feedback mechanisms are critical for encouraging meaningful public participation. Participants' satisfaction with government responsiveness, or their perceived influence, is positively associated with their level of participation. Halvorsen (2001) suggests that citizens view a government agency as responsive after participating in discussions where officials solicit and listen to public concerns. Quality participation can also alter citizens' perceptions of government responsiveness (Halvorsen, 2001), making them more likely to see agency decisions as reasonable responses to complex situations and more willing to give agencies the benefit of the doubt when decisions fail to address their concerns.

The challenges of effective online participation

While the above discussion highlights shared factors influencing effective online and offline public participation, online participation can face additional challenges due to the negative aspects of digital platforms, such as cyber manipulation (Lutz & Hoffmann, 2017) and cyber violence (Casemajor *et al.*, 2015; King *et al.*, 2017). Political and social biases associated with social media and other digital technologies can also affect the quality of online participation. Local governments themselves often face obstacles in managing digital engagement effectively, including issues of trust, capacity, and platform management (Falco & Kleinhans, 2018a). Addressing these challenges is therefore a constant concern (Lutz & Hoffmann, 2017).

Cyber manipulation can manifest in various forms, including censorship and misinformation. Online participation may expose users to censorship and prosecution, whether in democratic or autocratic regimes (Lutz & Hoffmann, 2017). Habermas (2022) contends that online public spheres are expected to be 'freely accessible media spaces' free from 'censorship.' However, in non-democratic societies, censorship is often employed to suppress unwanted online content. Sensitive topics that could lead to collective actions or threaten regime stability are more likely to be censored (King *et al.*, 2017). Censorship can create an echo chamber effect, i.e. when most information comes from internal sources, it occurs, where individuals encounter only information or opinions that reinforce their views, with different voices rarely heard (Lee *et al.*, 2018). This effect undermines the quality of online participation.

Misinformation is another form of online manipulation. The spread of misinformation and fake news through social media poses a significant threat to democracy and society. For example, Allcott and Gentzkow (2017) found that many US adults were exposed to false stories before the 2016 election and believed them to be true. Allcott *et al.* (2019) found that interactions with misinformation remain high, with platforms like Facebook playing a key role in its dissemination. Online misinformation is linked to decreased trust in mainstream media (Maftei *et al.*, 2022), which can inhibit public online participation.

Cyber violence is also prevalent online, discouraging effective communication and deterring participants. Individuals who express even neutral opinions may be targeted, leading to mobbing or defamation. In such environments, online participants may become more cautious about their statements. Those wishing to contribute to or take a stance in discussions may hesitate due to fear of repercussions or context collapse (Lutz & Hoffmann, 2017). Online discussions may also involve confrontations, bullying, or persecution, which government actors often struggle to moderate effectively in two-way communication settings (Lutz & Hoffmann, 2017; Falco & Kleinhans, 2018b). To avoid cyber violence, individuals may resort to self-censorship, limiting online freedom of expression and resulting in one-sided online public spheres.

Online participation represents a dynamic and evolving field at the intersection of socio-technology, governance, and civic engagement. While it offers many advantages, such as increased accessibility and transparency, it also presents challenges related to digital divides, bias, security, opinion polarization, and the potential for manipulation (Lin, 2022). The complexity of online participation underscores the need for further research and investigation, particularly in approaches that combine online and onsite participation, and how this affects citizens' choices between various options.

Methodology

Study site

Over the past two decades, Chinese cities have undergone extensive neighbourhood regeneration, often requiring substantial resident participation. Guangzhou, a metropolis at the heart of the Guangdong-Hong Kong-Macau Greater Bay Area, has been at the forefront of this urban transformation. In 2016, the city launched a program to regenerate underserved old neighbourhoods, which often face challenges such as complex landownership or property rights, a diverse mix of homeowners and tenants, and inadequate public facilities. The diverse resident population can complicate regeneration because long-term homeowners and short-term tenants often have differing priorities, levels of investment, and rights. For example, homeowners may emphasize stability and property values, whereas tenants may lack incentives or eligibility to participate.

The regeneration program engages a wide range of stakeholders, including government agencies, community planners, residents, and other social groups. The city has promoted both online and onsite approaches under the framework of 'Internet + Co-construction/Co-governance/Co-use' to facilitate participation (Guangzhou Municipal Government Office, 2021). In addition to traditional forms of engagement, such as submitting petition letters to planning authorities, attending public hearings, and visiting onsite planning exhibitions, more online modes of participation have emerged, including the '12345' government telephone complaint hotlines and state-sponsored e-governance platforms for public input. These mechanisms make Guangzhou a compelling case for in-depth analysis.

We selected 15 old neighbourhoods for in-depth study, based on three criteria: (1) neighbourhoods that have undergone or are undergoing regeneration, (2) neighbourhoods with public participation during the regeneration process, and (3) neighbourhoods close to the city center (Figure 2).

Methods

Because we intended to collect data from as many residents as possible, we designed and distributed a survey. The initial pilot questionnaire included demographic questions and two sets of Likert-scale items: Set A addressed shared factors influencing residents' preferences for online or onsite participation, factors likely relevant to all respondents regardless of their specific preference, while Set B focused on factors specifically affecting online participation, such as censorship and cyber violence. Regarding socioeconomic characteristics (age, income, and education level), we asked participants to choose from predefined ranges rather than report exact values, due to sensitivity reasons.

However, some pilot-test respondents noted that the questionnaire was lengthy. Additionally, too many Likert-scale questions risked introducing a 'response set' bias, the tendency for respondents to provide the same answer across multiple items (Rennie, 1982). Accordingly, we revised the survey. First, we replaced the Likert-scale questions in Set A with open-ended questions, allowing respondents to give their own answer. This change still enables us to conduct a comparative analysis of online versus onsite participation, though in a more qualitative manner. Second, we retained the online-specific

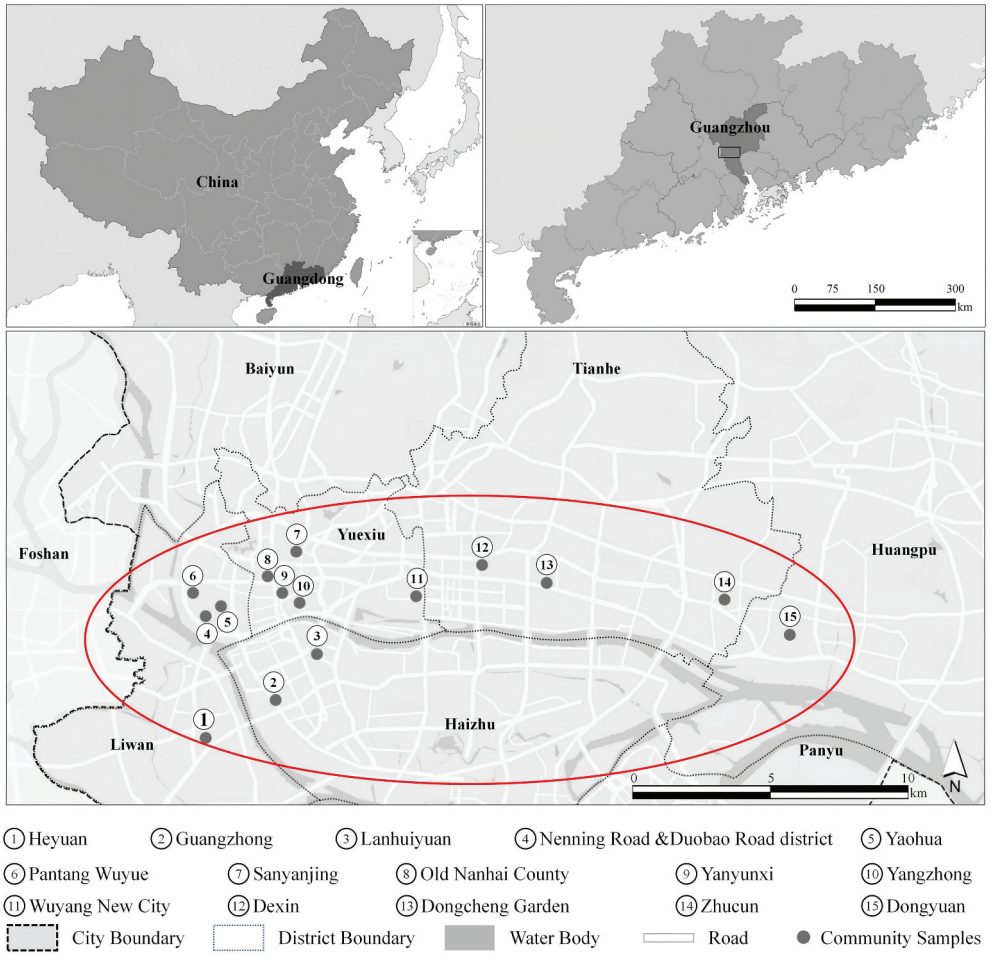

Figure 2. The locations of old neighbourhoods sampled.

Likert-scale questions from Set B (e.g. those concerning censorship and cyber violence) and selected key questions from the original Set A, those related to motivation, convenience, governance responsiveness, etc., to form a new Set B. This revised set of Likert-scale questions allows for a more systematic exploration of key factors influencing online participation through regression analysis.

Initially, we used the 'knocking-on-the-door' approach to invite residents to complete the survey. However, most residents in old neighbourhoods are seniors, and many were reluctant to take the survey, even though we provided small gifts for their contribution. The handful of samples collected were incomplete, and we did not include them in our overall sample. Then, in April 2023, we used a street-intercept survey method, approaching people randomly on the street and in parks around the selected neighbourhoods and inviting them to complete a survey. We distributed 564 questionnaires and collected 468 valid responses, resulting in a completion rate of 83%.

Our target population includes people living or working in one of the 15 neighbourhoods, such as local residents and shopkeepers. We used a screening question to exclude tourists. This ensures that respondents have contextual knowledge about the neighbourhood regeneration projects. We use the question 'Do you prefer to participate in neighbourhood regeneration planning onsite/online?' to identify respondents' preferences and analyze each group's data separately. For practical purposes, we refer to those who preferred onsite participation as 'onsite respondents/participants' and those who preferred online participation as 'online respondents/participants'.

Data analysis

Data analysis included a qualitative and a quantitative part. The qualitative part targeted the responses to the open-ended questions, which helped us to better understand the drivers of residents' participation preferences. Those comments were transcribed and analyzed using NVivo. For both online/onsite groups, we first conducted an initial round of open coding to identify emerging ideas related to issues like 'convenient to participate', 'improved living conditions', 'not invited', 'don't understand dialect', 'prefer face-to-face discussion', and 'response from the government'. As coding progressed, we reorganised these initial codes into broader themes, such as 'benefits', 'convenience to participate', or 'better communication', while constantly looking back to the data to test and adjust the thematic structure. This iterative approach ensured that the coding process remained grounded in residents' lived experiences while supporting the development of evidence-based themes that unveil residents' thoughts on neighbourhood regeneration participation. We visualized the online-onsite comparison in a stacked bar chart in Figure 3, which helped us to have a general picture of how the shared factors influence online/onsite participation differently.

In the quantitative part of the analysis, the Likert-scale questions related to online participation were the basis. We used three nested Ordinary Least Squares (OLS) regression models to understand how the addition of both positive and negative characteristics related to online participation process (Model 2), and participation outcome

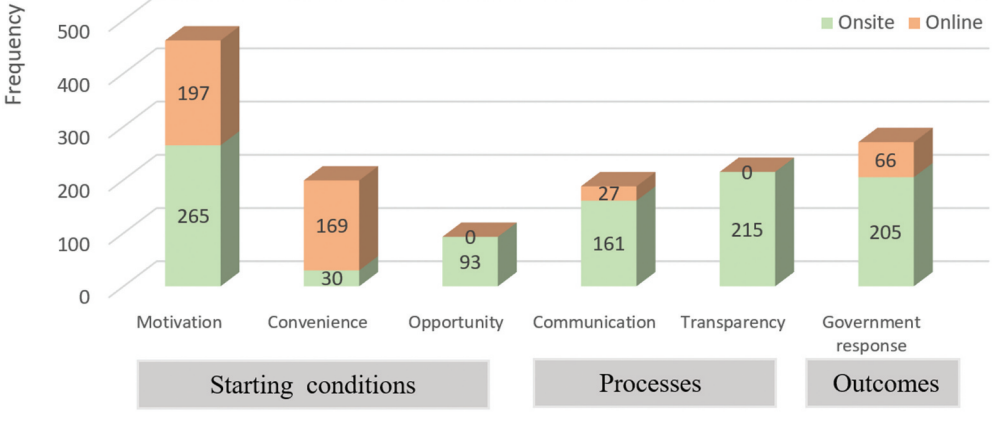

Figure 3. Frequency of respondents' self-reported factors that influence effective participation.

(government response) (Model 3) improved our ability to explain public preference over the baseline model (Model 1) that included only the key demographic and starting condition related factors. The dependent variable is respondents' online participation preference, ranging from 1 (very unwilling to participate) to 5 (very willing to participate).

Nested OLS linear regression enables us to statistically evaluate how different demographic, motivational, process-, and outcome-related factors influence citizens' willingness to participate online. This approach allows us to quantify the unique contribution of each factor set while controlling for others, and to assess whether additional sets of variables significantly improve explanatory power. The results thus provide both theoretical insights into the drivers of online participation and practical guidance for designing more effective participatory processes.

Results

Demographics

Most respondents are young to middle-aged, 79% between 18 and 49 years old, and only 8% are over 6. Of all respondents, 56% are female. The majority are residents living in the area (72%), with 43% being homeowners. On average, residents have lived there for 14 years, while those who work in the area (28%) have been there for an average of 3 years. Notably, 60% of respondents hold a bachelor's degree or higher (Table 1). While we

Table 1. Demographics of respondents.

Characteristics	Percentage		
Gender: Female	56% (51% in the 2022 Guangzhou Statistical Yearbook)		
Age Group			
1: 18–29	32%		
2: 30–39	32%		
3: 40–49	16%		
4: 50–59	12%		
5: 60–69	7%	19% in the 2022 Guangzhou Statistical Yearbook	
6: 70–79	2%		
Education Group			
1: Primary school or lower			
2: Middle school			
3: High school			
4: Bachelor's degree	60% (27% in the 2020 7th National Census)		
5: Graduates			
Monthly income Group			
1: <¥3000	13%		
2: ¥3000–5999	33%		
3: ¥6000–9999	32%	Disposable Personal Income: ¥6404/month in the 2022 Guangzhou Statistical Yearbook	
4: ¥10000–19999	11%		
5: >¥20000	2%		
6: Prefer not to answer	9%		
Relationship with the place	(For analytical purposes, we asked respondents to choose the identity they most identified with.)		
Resident, homeowner	43%		
Resident, tenant	30%		
Work, employer	2%		
Work, employee	26%		
	Mean	SD	Range
Years lived here	14	14	1–74
Years worked here	3	4	1–20

randomly approached people during the street-intercept survey, many older individuals were reluctant to take the survey, resulting in a response skewed towards younger and more educated individuals. Other than that, the response remains largely consistent with Census data regarding other demographic characteristics, such as gender and income.

Preferences for online or onsite participation

We find that online or onsite participation preference is not mutually exclusive; individuals have a preference for onsite, online, or both. Our results indicate that respondents generally prefer to participate onsite over online. As shown in Figure 4, approximately 39% of respondents prefer onsite-only participation, 28% prefer online-only, and 33% prefer both approaches (which means they answered 'yes' to both questions regarding the online and onsite participation mode).

Factors influencing effective participation

We qualitatively analyzed the factors that respondents believe influence participation, either online or onsite. Based on the self-reported comments, we thematically identified six key factors. We assessed the perceived importance of each thematic factor by counting how frequently each theme appeared in responses. For instance, as shown in Figure 3, themes related to motivation (i.e. better living conditions, improved environment, historical heritage preservation, civic duty, etc.) appeared 265 times among onsite participants and 197 times among online participants. Other than motivation, there are significant differences between the online and onsite modes for each specific factor.

Starting conditions

First, motivation is the primary driver of effective participation in the starting conditions. Respondents mentioned two main motivations: the perceived benefits regarding neighbourhood regeneration and civic duty to participate. We found that onsite participants (265) have stronger motivations than online participants (197) (Figure 3). Respondents mentioned many specific expectations, such as 'to reduce mosquitoes by cleaning the environment', 'to solve the long-term sewage problem', and 'to make sure the city's

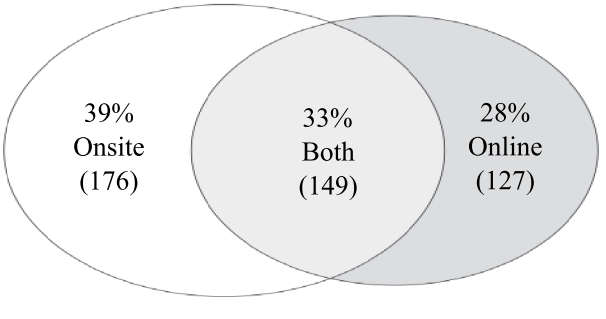

Figure 4. Preference to participate (n = 452; prefer not to participate = 16).

history is preserved during the regeneration process'. In one multiple-choice question, we listed *potential* benefits at the neighbourhood level and the individual level, such as living conditions and economic benefits, and asked them if these benefits influence their participation. Table 2 reveals that both levels' benefits drive respondents' participation to different degrees.

Different stakeholders benefit from these improvements to varying degrees. For instance, relocation or related compensations are only for homeowners. A two-sample *t*-test comparing homeowners and non-owners (Table 3) shows a significant difference in participation between these two groups ($t = 6.874$, $p < .001$). This indicates that benefits-based motivations are the main driver of active participation, as is confirmed by other scholars (Özdemir & Tasan-Kok, 2019). Only a handful of respondents mentioned that they participate because of their civic duty.

Second, online respondents favour convenient ways to participate. Overall, 169 stated convenience drives their online participation. Common remarks included, 'Online participation offers more flexible timing and location.' 'After a day's work, I feel tired, and online is convenient for me to engage in relaxation.' 'We young people prefer not to go onsite.' In contrast, only 30 onsite participants mentioned the convenience issue. The city of Guangzhou, to attract more participants, typically holds onsite planning events such as exhibitions, design workshops, or public hearings in or around the neighbourhood, which substantially improves the participation convenience (Falco & Kleinhans, 2018a).

Third, we found that the opportunity to participate is crucial for onsite participants but less so for online participants. Online platforms are open to the public, so no respondents expressed concerns about the opportunity to participate. In contrast, onsite channels are not as accessible as the internet. For example, the Co-creation Committee (Figure 5), a community-based deliberation organisation, uses a membership system and 'membership may be revoked after three times of absence', leading many residents to believe that participation is limited to members and discouraging non-members from attending. This echoes earlier findings that institutional design

Table 2. The expected benefits of neighbourhood regeneration.

Level	Perceived Benefits	Percentage of respondents	Stakeholders
Neighbourhood-level benefits	Neighbourhood environment	75.4%	Homeowners& tenants
	Transportation	41.9%	
	Public facilities	41.2%	
Individual-level benefits	Household living conditions	57.7%	
	Income	3.2%	
	Relocating or related compensations	15.4%	Homeowners

Table 3. The relationship between ownership and participation.

		T-test	
Type	Participation rate	*t* value	*p* value
Owners	75%	6.874	<.001
Non-owners	45%		

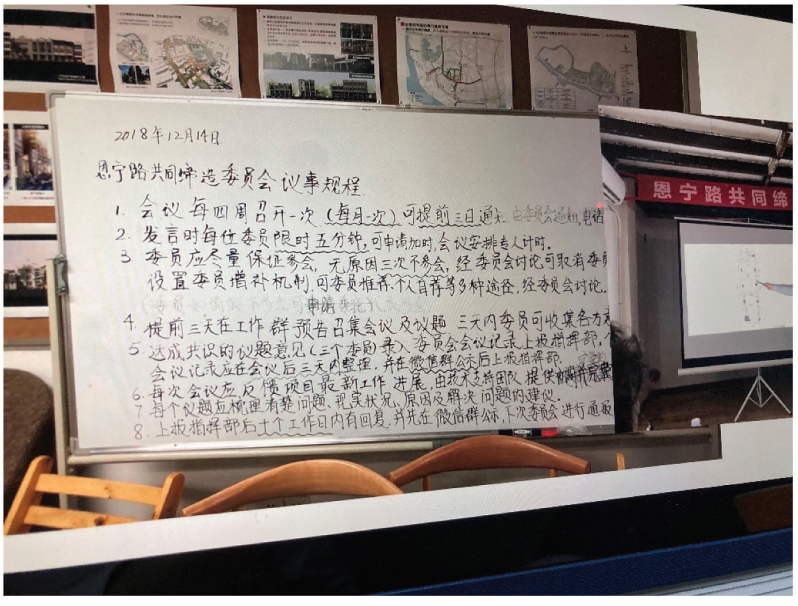

Figure 5. The Co-creation Committee with strict participation rules (Source: Xiaomeng Zhou).

and invitation-based structures can inadvertently restrict inclusiveness in participatory processes (Michels & De Graaf, 2010). Thus, 93 respondents believe that being invited or given the opportunity is essential for their onsite participation, with three emphasizing they would not participate without an invitation.

The participation process

Regarding the participation process, effective communication is a key factor for onsite participation. In total, 161 respondents noted that they favour face-to-face communication for two reasons. First, it involves direct communication with neighbors on the most important issues of the neighbourhood. Second, it provides the opportunity to meet with planners, i.e. decision-makers, which allows participants to obtain firsthand information about the project and have participants' input directly influence decision-makers (Figure 6). This aligns with previous findings that face-to-face forums strengthen deliberation and establish more immediate links between citizens and policymakers (Michels & De Graaf, 2010). Of course, on-site communication may also imply compromise. The Co-creation Committee has written rules regarding speech length in planning meetings, i.e. 'limited to 5 minutes per member'. *In contrast*, only 27 online participants noted effective communication, from different angles, i.e. online discussions allow more time to think thoroughly about topics; written statements can be more accurate and logical, making discussions more meaningful. Others pointed out that online forums feature diverse opinions, which can enhance deliberation. These perceptions resonate with earlier studies showing that online participation enables more thoughtful contributions and broadens the scope of perspectives, although in less direct ways (Falco & Kleinhans, 2018a).

Transparency is important for onsite participation (215), though less significant for online participation (0). According to their comments, onsite participants valued being

Figure 6. Onsite participation with a planner explaining the garden plan (Source: Fanwuqi).

able to learn about the neighbourhood regeneration plans and engage personally in design processes, which helps them understand the project better. One respondent noted, 'I didn't know that our neighbourhood would be regenerated until the work vehicle drove in and I got the confirmation from the onsite engineer'. This finding echoes earlier research emphasizing that transparency and access to information are crucial for meaningful citizen engagement in face-to-face processes (Michels & De Graaf, 2010). In contrast, online participants are good at finding information online through government websites or social media posts, making transparency less of a concern for them. This implies that digital platforms can lower information barriers and provide citizens with more immediate access to relevant content (Falco & Kleinhans, 2018b).

Factors related to participation outcomes

Potential participation outcomes or influence are a key criterion for evaluating participation. However, there is a sharp contrast between onsite and online participants regarding their expectations of engagement. In total, 205 onsite and 66 online participants highlighted the importance of government feedback and the outcomes of their participation. Specifically, onsite participants stated two outcome-related reasons for their preference: (1) Projects often require multi-department coordination; onsite participation allows for better interaction with multiple decision-makers and experts. Participants want their opinions incorporated into revised project plans or designs. (2) Disappointment with online or phone participation outcomes. For instance, one respondent preferred onsite participation after receiving no response from the government hotline. Figure 7 shows a snapshot of a WeChat discussion regarding a neighbourhood regeneration project, covering topics like lift installation, parking lot plans, and green space development. In total, 4573 people read the government announcement, with 112 commenting. However, there was no governmental

Figure 7. A snapshot of WeChat public account discussion on neighbourhood regeneration.

response, confirming earlier observations that digital participation can falter when feedback loops are absent (Falco & Kleinhans, 2018a).

The above self-reported statements reflect the overall trend of participants' responses to factors impacting their participation preference. However, online channels have unique characteristics, such as censorship and misinformation (King *et al.*, 2017), that are not captured in onsite participation. Considering the increasing importance of digital technologies in participatory planning, the following section explores how the digital nature may influence effective participation.

Factors affecting online participation

Online participation

Given that a large portion of respondents are young to middle-aged, we find that 92.5% are computer literate. Among those who expressed a preference for online participation, their participation frequencies are low: 85% said they will participate occasionally or only on topics of personal relevance, and 5% merely browse information. Only 7% said they participate frequently (Figure 8). This signifies a more casual nature of online participation.

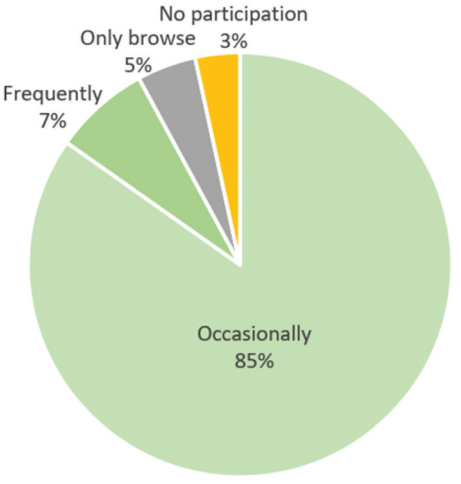

Figure 8. Online participation frequency.

Factors influencing online participation

We conducted three nested OLS linear regression models to examine the factors influencing respondents' online participation. Model 1 includes key demographic characteristics and starting condition variables; Model 2 incorporates additional participation process variables; and Model 3 adds participation outcome (government response) variables to Model 2. The results across all three models are relatively consistent (Table 4).

Starting conditions. Among the five demographic variables, education has a significant positive impact: individuals with higher education are more likely to participate online. This finding broadly aligns with the literature on online participation (Brown & Chin, 2013; Showers *et al.*, 2015). Age, gender, and income do not show significant effects. In

Table 4. OLS nested regression models of online participation (n = 276).

	Model 1 Starting conditions			Model 2 Processes			Model 3 Outcome		
Adjusted R^2	.103			.204			.205		
	b	*β*	*p*-value	*b*	*β*	*p*-value	*b*	*β*	*p*-value
(Constant)	2.906		<.000	4.221		<.000	4.118		<.000
Age	.033	.049	.490	.016	.024	.726	.020	.030	.661
Gender (*M* = 0; F = 1)	.016	.011	.852	−.034	−.024	.681	−.018	−.013	.830
Education	.217***	.203	.004	.167**	.156	.019	.170**	.159	.017
Income	−.018	−.025	.701	−.031	−.044	.478	−.021	−.030	.636
Property ownership	.375***	.258	<.000	.290***	.200	.002	.281***	.195	.003
Convenience	.115	.093	.114	.080	.065	.340	.078	.064	.351
Equity				.426***	.316	<.000	.418***	.310	<.000
Freedom of communication				.119*	.118	.071	.121*	.120	.067
Transparency				−.036	−.029	.647	−.047	−.039	.548
Censorship				−.048	−.062	.378	−.036	−.046	.523
Online fake news				−.100	−.102	.121	−.107	−.108	.100
Cyber irrational discussion				−.068	−.066	.272	−.061	−.059	.329
Cyber violence				−.071	−.087	.219	−.077	−.094	.185
Government response							.060	.068	.282

Significance level: *.10, **.05, ***.01.

Model 1, we include property *ownership* (a key aspect of motivation) and *convenience* of participation as starting condition variables. Property ownership positively correlates with online participation preference ($p = <.000$). Property owners have a greater stake in neighbourhood regeneration projects and thus a stronger motivation to participate ($\beta = .258$). The analysis of the qualitative survey responses reveals that *convenience* is a significant driver of online participation, but not in the regression results. This is likely because, once the ownership variable is included, the influence of convenience becomes less evident.

Processes of participation. In Model 2, we incorporated seven variables related to the online participation processes. Among the three variables associated with the positive aspects of new media, *equity* ($b = -.316$, $p < .000$) and *freedom of communication* ($b = -.118$, $p = .071$) significantly enhance online participation. Digital platforms are very accessible to the public, which is very important for a traditionally top-down planning system, where the government and experts make decisions. First, online participants also feel more comfortable expressing dissenting views with anonymity. Second, online communication in Mandarin, which provides minority groups a chance to be heard. Many local senior residents tend to speak Cantonese in onsite meetings, which are not understood by migrant tenants. Third, online participants can discuss issues without pre-set speaking time constraints and content length limitations. However, the influence of *transparency* ($p = .647$) is insignificant, which is consistent with the self-reported data.

Scholars have highlighted the negative aspects of online participation (Lutz & Hoffmann, 2017). In this study, the negative aspects of online participation, including online *censorship and misinformation, online irrationality*, and *cyber violence*, do not appear to significantly influence participation.

Outcomes of participation. Model 3 includes only one variable related to online participation *outcomes*. We use the proxy of 'government response' to measure online participation outcomes, and find it does not significantly influence online participation ($p = .282$). The explained variance (R^2) in Model 3 did not change much compared to Model 2, suggesting that the participation outcome accounts for little of the variation in individuals' online activity. Online participation appears driven more by expressive motives, such as information sharing, identity signaling, or social support, than by expected policy impact. This finding aligns with respondents' self-reported statements. Unlike onsite participants, who are keenly interested in government responses, online participants seem to be less concerned with the outcomes of their participation, a phenomenon Dennis (2018) refers to as slacktivism.

Discussion and conclusions

While citizen participation has been advocated for decades (Arnstein, 1969), the preferences of citizens on different participatory modes in the digital era and their influential factors remain understudied. This research is an attempt to better understand the public preferences for online or onsite participation and the driving factors behind them in Guangzhou, China. Digital technologies provide citizens with new opportunities to engage in public affairs. However, in our study, more residents prefer traditional, onsite

channels for effective participation. On-site participation features more active, outcome-oriented participation, whereas online participation is more process-oriented, equitable, and conducive to open communication. Our findings show that online approaches usefully complement traditional onsite approaches, and a dual mode will support a more inclusive and effective participatory planning.

Participation preferences and representativeness

Many planning programs, like neighbourhood regeneration, are complex; they need to address not only physical or environmental problems, but also social and economic concerns (Lu & Zhou, 2024). Citizen participation is a key approach to addressing this complexity. However, participation preferences vary among individuals. Scholars have high expectations for online participation, given that digital technologies bring events closer and enable the public to actively follow and contribute to discussions (Wirtz *et al.*, 2018). In this study, 39% of respondents prefer onsite-only, and slightly more than a quarter prefer online-only. That means that either mode may cause concern about participation representativeness. In line with the literature (e.g. Lutz & Hoffmann, 2017), we found that formal and strict participation rules and non-official language use in meetings kept some potential participants away. Likewise, while digital platforms are open to the public, some residents, such as seniors, may not use them. Also, when governments do not respond actively to online public discussion, those eager to have influences of their participation are less likely to use online platforms (Parrado *et al.*, 2013). Accordingly, neither sole online nor onsite approaches are likely to maximize participation potential.

Active vs. passive participation

Participation can vary significantly in effectiveness, ranging from slacktivism (low-cost, passive online engagement) to active forms such as petitions or protests (Dennis, 2018). In this study, onsite participants are more actively engaged than online participants, echoing arguments of Schumann and Klein (2015). On-site participants are highly motivated, physically present to meet with planners, interact with stakeholders, and advance the planning process. They value information transparency and effective communication. Due to their significant investment of time and energy, they have high expectations for their participation outcomes, including government responses. Active participation fosters a partnership-based relationship with the government, where citizens are deeply involved in shaping decision-making processes (Schumann & Klein, 2015).

In contrast, we found that online participation tends to be more passive, characterized by lower input and lower output. Most online participants engage only occasionally or browse information, with only 7% participating frequently. Online participants often focus more on expressing opinions than on their participation outcomes. From a *process* perspective, online participation lacks the personal and emotional elements of face-to-face interactions. The absence of non-verbal cues and direct human connection can diminish the depth of discussion. From an *outcome* perspective, the government may not take online discussions as seriously. Numerous unstructured online discussions lead to a potential increase in workload for planning

professionals who must manage new information flows (Kleinhans *et al.*, 2015), which can result in the government neglecting or providing limited responses to e-participants. Casemajor *et al.* (2015) have warned that 'the digital sphere is increasingly characterized by an unwilling state of passive participation' (p. 851).

Informing planning practice

Transforming participation practice into meaningful outcomes requires careful organisation and design. When a single mode cannot satisfy this goal, we propose integrating the online and onsite modes to enhance participation representativeness and convert passive participation into more active engagement. Our research shows that factors related to the starting conditions, process, and outcomes impact participation to different degrees. Planning agencies need to design appropriate participatory approaches based on community characteristics, contextual norms and rules, and the tools' capacities (Afzalan *et al.*, 2017; Kleinhans *et al.*, 2022).

For onsite participation, creating opportunities, maintaining transparency, and providing responses are crucial. *Firstly*, creating participation *opportunities* is to legitimize public participation. Opportunities, such as open calls through press releases, news broadcasts, or direct invitations, are important for encouraging marginalized groups' participation. Meanwhile, designs to allow participation to be less formal or more playful, arrange meetings beyond work hours, can attract younger working groups to participate. For instance, in the Dutch context, to address the issue of 'always the same kind of people' attending meetings and the relative ineffectiveness of formal institutional mechanisms, planners created informal methods, such as simulation games, to engage people in consensus-building (Özdemir & Tasan-Kok, 2019, p. 742).

Secondly, *transparency* and access to information are crucial, especially for older and less-educated groups, who need clear and understandable project information for effective communication and deliberation (De Stefano *et al.*, 2012; Scott, 2019). Per respondents' comments, onsite planning exhibitions with the presence of planners and a planning blueprint is an effective approach to improve transparency and facilitate thick engagement (Scott, 2019).

Finally, timely and responsible government *responses* are critical for the public's continuous participation. Onsite participants, who are often directly affected residents, expect their time and efforts to be rewarded and their opinions to be considered directly. Some respondents attended the onsite planning events because they did not receive a response from online participation. Onsite participation often comes bundled with expectations about positive changes in how citizens interact with governments.

In contrast, online participation has different concerns. *First*, *equity* in deliberation is highly valued by online participants. An equal and comfortable process is more likely to resolve conflicts and achieve consensus than a hierarchical and power-imbalanced setting. In this study, tenants and seniors participate significantly less in planning, but they are the actual residents of old neighbourhoods. Measures like avoiding the use of dialect and developing senior-oriented digital training programs can better engage real service users. The same functionalities that expand opportunities for digital input may also exclude those who are not digitally literate (Kleinhans *et al.*, 2022). This underscores the importance of

designing user-friendly interfaces (e.g. simple layouts, voice-input options, larger fonts) to reduce technological barriers and enhance minority's participation online.

Second, an ideal public sphere for engaging the public includes freedom of information flow, free expression, and open debate. These may be more challenging in top-down contexts, where strong censorship and internet control are prevalent (Lin, 2022). The government must avoid strict censorship to fully elicit public opinions and allow conflicting viewpoints. While our study indicates that the negative aspects of the internet do not significantly impact public participation, governments should still ensure a free-speech environment by minimizing online manipulation and cyber violence (Lutz & Hoffmann, 2017).

This research has several limitations. *First*, due to potential survey fatigue, we used open-ended questions to understand the drivers of online and onsite participation preferences. Some respondents provided brief, intuitive responses rather than detailed, thoughtful answers to open-ended questions. This disadvantage is related to the *second* limitation, namely given the reality of generally lower participation in urban planning in China, we surveyed respondents' participation preference, instead of their actual participation. This may explain why some respondents did not provide thoughtful comments. This could affect the depth of our findings. *Third*, our sample is skewed towards a younger and more educated population, introducing demographic bias. Different research topics may engage specific demographic groups more actively. For instance, Lu and Carter (2024) found that their survey on local food systems attracted a majority of senior and female participants. In our study, including a larger population of older individuals might lead to slightly different conclusions, such as an even higher percentage of onsite participation.

These concerns suggest several directions for future research. One is, if budget permits, it would be valuable to sample individuals who have already participated in planning processes, rather than surveying the public regardless of their participation experience. Responses from those with firsthand experience are likely to offer more grounded and reflective insights into the factors that influence effective participation. Additionally, stratifying the sample by intentionally including more older and less-educated individuals would provide a more comprehensive understanding of effective participation across different demographic groups. A second direction is to survey individuals who participate both online and onsite to investigate how an integrated online-onsite approach may enhance participation effectiveness compared to using online or onsite modes alone. Finally, it would also be promising to explore how the preferences for online and onsite participation modes might vary or be most effective at different stages of the planning process.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This research has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme [grant agreement No 947879]. The work of Zheng LIU is supported by National Natural Science Foundation

[52008171; 52211530429], and State Key Laboratory of Subtropical Building and Urban Science [2023ZB19] for data collection of this research.

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Ethical approval

The survey research in this paper had obtained ethics approvals from Utrecht University, and researchers had followed ERC data collection and management requirements.

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