

*Article***Returning Home Safely of Public Participation in Urban Sidewalk Additions in Taichung City**Jen-Chih Chao <sup>1,\*</sup>, Ji-Yuan Lin <sup>1,2</sup><sup>1</sup> Department of Landscape and Urban Design, Chaoyang University of Technology, Taichung 431310, Taiwan<sup>2</sup> Department of Construction Engineering, Chaoyang University of Technology, Taichung 431310, Taiwan

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**ABSTRACT**

Public participation is an important aspect of local planning and development because it can make an outstanding contribution to the human environment and sustainable development. Previous studies have examined various facets of such public participation, notably including its practical impacts on individual cases. Few if any, however, have looked at it from the viewpoints of those members of the public who participate. This study helps fill that gap by exploring public participation in the process of adding sidewalks to a community in Taiwan, utilizing in-depth interviews to capture public participants' motivations, perceptions, and attitudes connected to that process. We found that people's key motivations for participation were to protect their own rights and interests, to improve the quality of their living environment, and to create a safe walking environment. Public participation recognizes the necessity and demand for adding sidewalks and the importance of creating a safe walking environment, and hopes to solve the problem of insufficient parking spaces. Their attitudes toward participation, however, varied considerably depending on their subjective views, opinions, feelings, identities and roles. The results of this study have important implications for the pro-motion of public participation in urban-infrastructure enhancement and for human-centered development more generally.

**Open Access**

Received: 20 September 2023

Accepted: 20 June 2024

Published: 21 June 2024

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**KEYWORDS:** public participation; sidewalks; human-centered environment; environmental governance**INTRODUCTION**

A growing problem for cities is that increasing numbers of motor vehicles are making them less safe, more congested, and less aesthetically appealing, as well as decreasing the willingness of their residents to walk. Scholars have argued that the root cause of all this is a chronic lack of holistic transport policies [1]. Meanwhile, the accessibility of the built environment is becoming increasingly important, not only in response to aging populations and growing numbers of people with chronic illnesses,

but also for the general public [2]. Scholars reported that the important factors influencing the travel-related behaviors of older adults include their ages, socioeconomic statuses, aspirations and attitudes [3]; the extent of transportation infra-structure; and the quality of existing facilities [4–7].

Creating walkable urban environments is an increasingly important priority for urban planners, both as a means of reducing the pollution emitted by motor vehicles and of increasing the population's physical-activity levels; and achieving either of those goals has a variety of health benefits [8,9]. According to Taiwan's National Development Council, that we will in 2026 officially become "super-aged": i.e., have a population that is 20% elderly. A long history of car-centric urban-planning/development approaches has resulted in a high number of traffic injuries and fatalities in Taiwan, with the latter reaching 13.2 per 100,000 people in 2022, 7% above the previous 10 years' average of 2900 fatalities (Ministry of Communications Road Traffic Safety Steering [10]. This is in large part because of the discontinuity of Taiwan's pedestrian-space system, which is marked by a variety of fixed obstacles such as electrical boxes, security systems, and traffic signs; their proliferation is making sidewalks in most areas ever less suitable for walking [11]. That being said, pedestrians are 1.67 times more likely—and three times more likely per mile traveled—to be involved in a collision on a roadway without sidewalks than on one that has them [12].

Research on walking in psychogeography highlights its important role in promoting mental health, social interaction, spatial perception and sustainable development [13–16]. By optimizing urban design and planning, we can create more pedestrian-friendly environments, thereby improving the overall quality of life for residents and the vitality of the city.

Since 2006, Taiwan's Department of the Interior has been promoting the Existing Urban Roads Landscape and Pedestrian Environment Improvement Program. This initiative has been reexamining the road network as the basis for crafting a general plan for its improvement as well as detailed construction measures. As pro-pedestrian policies become more common and walking is promoted as a sustainable mode of transportation, researchers are increasingly interested in the role of sidewalks [17]. Some, for example, have reported that a neighborhood's sidewalk quality directly affects the satisfaction of people who walk in it [18,19], which in turn can affect their willingness to walk and specific walking-related behaviors [20,21]. In short, there is ample evidence that poor-quality sidewalks reduce people's likelihood of traveling on foot [22–24].

Sidewalks have always been venues for commercial, political, and social activities [25]. However, their quality nowadays tends to be low: with broken/uneven/missing tiles that go unrepaired for months or years; the above-mentioned variety of obstacles, plus street trees with roots that

break through the surface; and illegally parked mopeds, motorcycles and scooters. And many roads lack sidewalks completely, so that pedestrians can only walk—often through illegally parked vehicles—in busy traffic. As a result, the Taiwanese public has come to the conclusion that the promotion of sidewalks is very slow, and that a gulf now exists between the ambition to provide/improve sidewalks as part of a human-centered urban environment and their actual provision/improvement (citation(s) essential). As such, officials seeking to accelerate the promotion of sidewalks and people-friendly urban environments would do well to understand the motivations, relevant knowledge bases, and attitudes of those who engage with the promotion of sidewalks, as well as those who decline to engage with it.

In most developed countries, grassroots democracy has been established and consolidated over a lengthy period [26,27]. Under such conditions, people have the right to receive information about the planning and design of living space, as well as a responsibility or obligation to participate in the planning process by sharing their opinions, as a means of improving the quality of planning [28]. As Scholars pointed out, opportunities for people to participate in governmental planning processes represents an exercise of civil power in service of their own well-being [27]. In Taiwan, which is classed as an ‘emerging market’ rather than ‘developed’, the history of this type of public participation in urban planning and management dates to the 1970s [29].

Public participation in the design and implementation of architectural and urban-planning projects has been widely recognized as a key factor in creating spaces that meet the needs and desires of the resulting spaces’ users [26,27,30–32]. More specifically, public participation promotes the involvement of public interests in deciding specific issues of local importance and setting appropriate priorities within the context of previously identified goals and strategies [26]. Scholars also pointed out the heightened importance of such mechanisms when the development of sustainable communities is one’s goal [26].

Various public-administration scholars and practitioners have noted the diversity of citizen-participation roles and behaviors during urban-planning exercises [27,33–35]. Some researchers have examined the impact of motivation on citizen participation in governance [36,37], but few if any have captured the motivations of citizens who participate in urban planning alongside their perceptions of and attitudes toward such participation. Accordingly, guided by theories of citizen governance (citation needed) and communitarianism (citation needed), the present work is an attempt to do so using a combination of in-depth interviews, and documentary data collection. The interviewees were members of the general public and representatives of schools, a market, and community groups who lived, worked and/or regularly walked along the new sidewalks’ planned routes. The study setting was Taichung City, Taiwan.

## LITERATURE REVIEW

### Public Participation

Conceptual definitions of civic engagement can be categorized as narrow or broad. The former category focuses on political participation, emphasizing citizens' ability to influence politics through a variety of actions, particularly voting. The latter, in contrast, also includes social participation, and may include any activities whereby citizens attempt to influence public decision-making and public life [38,39]. Scholars viewed public participation as the power of those members of a community who do not hold official positions to make decisions relating to its affairs [40]. Scholars, on the other hand, saw civic engagement more from the perspective of governmental responsiveness, and therefore focused on citizens' more direct involvement in public service, especially in the implementation and management of programs [41].

Public participation is the direct expression of the will of the people to become involved in their government's handling of public affairs, and to share concretely in its decision-making (citation(s) needed). In a liberal democratic society, it has both political and social connotations and is not limited to traditional political participation (citation(s) needed).

According to scholars, motivation is a pre-decision stage derived from personal preferences, situational incentives and their interdependence [42]. As such, it influences the process of intention-construction and the behavior that results from it, but it is never the sole cause of either intention or behavior [43]. Understanding members of the public's motivation to participate in planning processes should therefore be the starting point for promoting such participation.

### Construction of Sidewalks

Under the definition used by Taiwan's Department of Transportation (DOT), side-walks include buildings, corridors, and at-grade paths designated for pedestrians, as well as footbridges and pedestrian underpasses. Among them, the most convenient for pedestrians and the most widely distributed, are the corridors, and at-grade roads designated for pedestrians to walk on; and marked sidewalks also belong to this category. As the acceptance of people-oriented transportation policy spreads, Taiwan's central road authority has been paying more attention to urban roads as pedestrian environments, to the point that the central issue in road construction and maintenance in the region is now the establishment of a dignified, safe, and comfortable barrier-free pedestrian environment [44].

### Theoretical Framework

Attitude theory scholars is potentially helpful when seeking to understand people's attitudes toward sidewalk additions [45]. Cognitive factors in attitude-formation are individuals' knowledge and beliefs about

an attitudinal goal, while affective ones relate to their feelings about the goal, and intentional factors relate to their behaviors and behavioral intentions involving it [46]. It seems reasonable to expect that people's perceptions of participation will affect their attitudes toward engagement with public-works planning processes, and that their attitudes will be influenced by their perceptions.

## METHODS

### Document Collection

Before the in-depth interviews that were this study's main method of investigation, the researcher conducted an extensive and detailed review of relevant documents, and the results of that review were the initial basis for the interview protocol. Then, the initial protocol was examined by 2 scholars and other experts for its appropriateness to the research purpose, and revised according to their recommendations.

### Interviews

The interviews were semi-structured and focused on the participants' awareness of, attitudes toward, and usage behaviors involving sidewalk additions. Each lasted between 30 and 60 minutes. The interviewee's visit location is the field where he or she is located. If the interviewee is a school employee, the visit location is the school. There is no rule about sample size in a qualitative study [47], but it was decided to keep interviewing until theoretical saturation was reached: i.e., no new insights emerged when new participants joined [48]. This approach led to 12 interviewees being recruited, four females and eight males. For additional details of the participants' backgrounds, please see Table 1.

**Table 1.** Participants' identification codes, roles, and genders.

Code	Contexts	Gender
A	Business-district representative	Female
B	School representative (junior high school)	Male
C	School representative (elementary school)	Male
D	Neighborhood representative	Female
E	Market representatives	Male
F	Neighborhood representative	Male
G	Resident	Female
H	Resident	Female
I	Neighborhood representative	Male
J	Resident	Male
K	Resident	Male
L	Resident	Male

All interviews were conducted in person to avoid data confounding caused by using a mixture of different interviewing approaches, e.g., video

calls, voice calls and face-to-face interviews. Before the interviews were conducted, the protocol was shown to the participants and their consent to audio-recording was sought. They were also informed that their data would be stored securely and anonymized. The purpose of our research is to explore the views of roadside residents, business districts, neighborhood leaders and schools in a specific community on sidewalk construction. Due to the small size of the community and the highly consistent views of members, we believe that 12 interviews are sufficient to achieve the research objectives.

### Interview Data Analysis

The interview data were analyzed using the content-analysis method, which was conducted in two stages [47]. First, two university faculty members independently screened transcripts of the recordings, with the aim of identifying meaningful themes, i.e., interviewees' revelations of their motivations, perceptions, and attitudes toward sidewalk addition. These were then coded into the main axes of subject. After both faculty members had completed this process, they discussed their codes until they reached 100% consensus about them. There were 7 codes in the finalized set. Then, in the second stage, the researchers divided the codes into the categories of motivation, cognition, and attitudes, and through presentation of primary data, and discussed them until both parties agreed that the categories correctly reflected this study's concepts, please see Table 2.

**Table 2.** List of dimensions and representative quotations.

Topic	Times	Representative quotes
Motivation	9	Construction should understand the needs of local residents.
	6	Residents hope to plan a themed pedestrian environment.
Perceptions	10	After planning, will there be any reduction in the number of parking spaces for automobiles and motorcycles?
	9	Whether sidewalk construction affects residential parking.
	8	Will the improvement improve the walking environment for businesses, schools and residents?
Attitudes	9	Sidewalk planning must not affect residents' parking.
	7	Sidewalk construction can improve the safety of school trails.

### Research Credibility

Scholars proposed four indicators of quality in qualitative research: credibility, transferability, reliability, and verifiability. Credibility requires that the researcher adequately and appropriately present the multiple perspectives of the research participants [49]. Transferability emphasizes the results' level of relevance beyond their immediate research locale, be it ethnolinguistic, geographic, or demographic. Reliability implies acceptance of the instability of the research instrument

(which is the researcher him- or herself), provided that there is an explanation of the cause of the instability or change; and verifiability emphasizes that the data as reported are indeed rooted in the data collected. This study adopted the qualitative-research quality-checking technique proposed by scholar [50], which utilizes triangulation, peer examination, and a dependability audit. Triangulation refers to the cross-checking of two or more types of data to increase their credibility [51]. This study used several methods of triangulation, including asking an expert scholar in human geography and another in urban planning to validate the interviews. Where those views conflicted with those of the researchers or each other's, such conflicts are discussed below.

## RESULTS AND DISCUSSION

**Motivation.** Based on the interview results, the participants' motivations for participating in the sidewalk-addition planning process were chiefly (1) to protect their own interests—notably, by enhancing the quality of their living environment and/or mitigating the potentially negative impacts of sidewalk additions on residential parking; (2) to create a safe walking environment; and (3) to promote local commercial activities and connectivity of sidewalks to the roadway network. Some interviewees, however, also provided ideas for improving the planning process itself. “A”, for example, told us “I hope that in the future, planning units will be able to create new ways of theming, create new storytelling, and that residents will expect to be able to plan thematically”. Participant “I”, meanwhile, took inspiration from developments abroad. “Pedestrian space is a very good thing, and as in foreign countries, Taiwan should also gradually implement human-oriented environments to enhance the use of the public-transportation system”. And “J” expressed a belief that “sidewalks will make streets great when they are added to connect major public facilities”.

The interview data also tend to support scholar's argument that, because sidewalk additions are closely integrated with the residential environment, public participation in their planning will not only lead to better ones, but should be enshrined as a right [52]. The same authors further subdivided this into a right to know what is going on in the places where they live and work and a right to participate in decision-making that strongly affects those places. As noted above, growing interest in improving the walking environment is being driven by a desire to encourage non-motorized modes of transportation, to improve human and environmental health by reducing pollution and increasing the amount of exercise people do, e.g., walking, running, and cycling [8,27,53,54]. At the sidewalk planning and design stage, and even to some extent after construction has started, the public can influence parking-space planning, node design, and road-network connectivity.

Because of the close integration with people's daily lives and residences, the public can understand the government's promotion of public

construction in a more substantial way from the interview process of public participation motivation on the one hand, and on the other hand [55,56], they hope to take the opportunity to express their opinions and views through participation, so that they can provide local residents with their opinions on the construction of the local area [57,58]. The general population is terrified of losing their rights if they do not participate in topics concerning their own rights. As a result, when discussing public construction, they will present their own points of view, focusing the conversation on their own interests and ignoring the reality that public construction is based on the public interest of the majority of the people [59,60].

**Perceptions.** The interviewees were aware of the need and demand for sidewalks and the importance of creating a safe walking environment. They also regarded it as important for sidewalks to be designed to address issues including their commercial role, motorcycle parking space, driveway width reductions, arcade occupancy, drainage, the proper role of benches, conflicts between walkers and bicyclists, and connectivity with other parts of the public pedestrian network. For example, “A” told us: “Sidewalks allow passersby to discover surrounding businesses and increase opportunities for commercial activity”. “C” said: “I’d like to see more sidewalks because it would improve the current pattern of student drop-offs and pick-ups blocking traffic and would allow students to get to and from school safely”. Interviewee “F”, meanwhile, linked the issues of commerce and parking together: “There is no parking space for the stores in Totem, so there is a lot of controversy about their parking problems. I hope that in future, the planning unit will think about this”.

Interviewees “D” and “E” were more concerned about amenity: i.e., sidewalk-building projects as an opportunity “to create a new atmosphere for the residents to enjoy where they live” (D), and “create some greenery [leading to] a different atmosphere” (E).

“F” expressed uncertainty about drainage; “G”, about motorcycle parking; and “H”, about road-width reductions.

These results were broadly in line with prior findings by scholars [8,9]. Planners and public-health officials have been pursuing policies to improve the quality of the pedestrian environment to accommodate *pedestrian* activity and ensure pedestrian safety because pedestrian travel provides a wide range of individual and societal benefits from both a transportation and public health perspective [8,53,54,61–63]. Therefore, it is essential to design a street with local characteristics so that people enjoy walking or relaxing [64]. Our representatives of the general public, schools, business districts, and neighborhoods all recognized and agreed that the addition of sidewalks brought improvements to their living environments and quality of life, and that the connectivity of the pedestrian network was crucial to the further development of the area.

The public is well aware of the importance of sidewalk addition to the safety of road users, the enhancement and change of the daily life

environment, as well as the impact of sidewalk addition on the reduction of lane width, drainage, and parking spaces, among other things, based on the public participation interview process [55,65,66]. However, when one has numerous roles to play, one wants to deal with and respond to other difficulties at the same time from the debate of this subject, in addition to the original discussion of installing sidewalks. When the public raises a number of other issues, it involves the powers and responsibilities of various units of the public sector, and it is even impossible to respond substantively to the issues raised by the public on the issues raised by other units, making it impossible to focus on and reach a consensus on the issue [67].

**Attitudes.** The interviewees' attitudes towards sidewalk enhancement were far less unanimous. School and business-district representatives expressed more positive attitudes, notably that sidewalk enhancement would make schoolchildren safer (e.g., "B") and enhance business opportunities. The general public, on the other hand, were more likely to express concerns that the sidewalks initiative would exacerbate other problems, especially parking, overcrowding, and drainage. One neighborhood representative—perhaps influenced by the conflicting attitudes of the same two groups of planning-process participants—appeared uncommitted to one attitude or the other, both acknowledging that sidewalks might cause a range of problems to worsen, and expressing optimism that the planning process itself could prevent that from happening: "The addition of sidewalks can address both drainage and parking issues" and "Sidewalks should be planned so as not to interfere with resident parking" (F).

Our interview results pertinent to attitude were also in line with those of scholars, who found that mistrust of local government and public-sector services more generally negatively impacted people's motivation to participate in planning processes [68]. Governments that face distrust and suspicion often find that their citizens ignore or even resist their appeals, and are skeptical of their statements and policies [69,70]. In our data, ordinary residents were quick to express a desire for sidewalks that create a friendly and humane environment, but when they thought about how actually building them might conflict with their personal rights and interests, their attitude turned more conservative. As such, officials responsible for sidewalk initiatives need to (1) understand and (2) publicly acknowledge residents doubts and concerns. However, our data reflect considerable variation not only in the participants' self-perceived rights and interests, but also in which issues might impact them. In addition, they varied in the strength of their skepticism: with some telling us they intended to fight to ensure that the scheme would create more parking space, better drainage, and so on. Yet, because such matters are not or not solely the responsibility of the DOT, these interviewees were in effect pledging to fight against various government departments at the same

time, and thus had the potential to shift focus away from the sidewalk enhancement per se.

According to the interviews on public participation attitudes, the public's attitude toward public construction is an important aspect in boosting implementation. When the public is supportive, the process from planning and design to construction will be smoother [71–73]; however, the public's attitude is also affected by the surrounding neighbors; when everyone has a positive view, the public will be affected by the group's overall opinion; and when the public's wind direction is changed, the majority of the public will change to be conservative [74–76]. As a result, how to explain and respond to public doubts will be a key issue in shaping public opinion. The public will be able to grasp the overall planning, design, and construction through more practical case studies, reducing their sense of insecurity and allowing them to build a positive attitude toward public projects.

The success of public engagement in urban-planning decision-making processes depends on a variety of factors, including the effectiveness of government communication [76], government information-disclosure strategies [77], and civil-society characteristics [29]. In addition, governance strategies should prioritize participatory decision-making that involves a range of local stakeholders as well as planning experts [29,78]. To create human-centric, appealing and sustainable spaces, urban planners and designers must consider the needs and interests of all stakeholders, but especially such spaces' end users [26]. When planning for the future, focus more on well-being, usage, appearance, and safety and security [79]. To create a safe and comfortable walking environment.

## CONCLUSION

Promoting the addition or enhancement of sidewalks can accelerate the process of creating a friendly and people-oriented urban environment. Through in-depth interviews and content analysis focused on ascertaining lay sidewalk-planning participants' motivations for, perceptions of, and attitudes toward their participation, we found that their motivations were to protect their own interests; to improve the quality of their living environments; to mitigate the negative impacts of new sidewalks on residential parking; to create a safe walking environment; to promote local commercial activities; and to connect sidewalks to the roadway network.

The participants' key perceptions included the need/demand for sidewalks; the importance of a safe walking environment; the requirement that sidewalks provide parking space for motorcycles; concerns that the widths of driveways might need to be reduced to accommodate sidewalks; and the impact of new sidewalks on building occupancy. These perceptions led them to offer various ideas for solving these anticipated problems, including those mentioned above, plus drainage, pedestrian/cyclist space conflicts, and the need to balance the

availability of street furniture for stopping and resting against the need for walking and cycling space.

Individuals' attitudes towards the sidewalk's initiative varied more widely than their motivations and perceptions did. Some patterns were nevertheless discernible. For example, as compared to ordinary residents, representatives of schools and business districts expressed less skepticism about and more support for the scheme.

Sidewalk additions are often met with protests from businesses and residents alike, and in many places in Taiwan, civil servants who are interested in adding sidewalk space have failed to bring such plans to fruition. As such, it is even more important than usual for the public and private sectors to work together to evaluate the advantages and disadvantages of installing additional sidewalks. In the public realm of an aging society where the elderly often walks and there are large numbers of wheelchair users and children in strollers, there is a need for both for more diversified and for more in-depth discussion of how sidewalks might best create a barrier-free urban environment for everyone.

Although this study has made both academic and practical contributions, it has some limitations. First, it focuses solely on sidewalk additions, and because other public-development projects have their own specific characteristics, the results of this study should not be generalized to them. Secondly, this study's interviews were all with people who lived or worked in the immediate vicinity of the roadway, and thus, its results may not reflect the views of those who lived farther away from it. Third, most of the interviewees in this study were local representatives. In the future, more opinions from local people should be added to increase the number of interviews. In the future, through quantitative surveys of local residents' participation, we can also understand residents' motivations, perceptions, attitudes, ideas and preferences in sidewalk construction. Given the importance of public participation in urban development, it is recommended that future studies expand their 'catchment areas' for interviewees to ensure that the wider public's views are reflected as accurately as possible.

#### **DATA AVAILABILITY**

All data generated from the study are available in the manuscript.

#### **AUTHOR CONTRIBUTIONS**

Supervision, JYL; Conceptualization, JCC; writing—original draft, writing—review and editing, JCC.

#### **CONFLICTS OF INTEREST**

The authors declare that there is no conflict of interest.

## ACKNOWLEDGMENTS

We would like to thank the anonymous reviewers for their helpful suggestions and feedback as well as the 12 public to help the interviews.

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How to cite this article:

Chao JC, Lin JY. Returning Home Safely of Public Participation in Urban Sidewalk Additions in Taichung City. *J Sustain Res.* 2024;6(2):e240032. <https://doi.org/10.20900/jsr20240032>