

# Investigating the Design of Streetscape Features to Enhance Pedestrian Activity

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**Abstract** Cities encounter urban heat problems that can be felt by residents. The green city concept can be applied through green planning and design. Streetscapes should be designed to provide comfort for pedestrians and consider the good visuals of the city. Good streetscape features can attract pedestrians. Streetscapes serve as places for public mobility and social interaction. Streetscape features designed according to user standards and needs can increase pedestrian activity. This study aims to investigate and analyze the streetscape features on the sidewalk that can improve pedestrian activity. This study uses mixed methods. The qualitative method involved data collection through observation to analyze streetscape features at the research location. The quantitative method involved a questionnaire survey. The research area is divided into two segments based on building characteristics and street views. The research variables are activities and streetscape features consisting of hardscape, softscape, and street furniture. The analysis was conducted descriptively by considering design standards, previous studies, and a questionnaire survey. The research results showed that the sidewalks were damaged, greenery was only arranged on part of the road, and street furniture was incomplete. Activities in the study area, such as street vendors who use part of the sidewalk, need to be rearranged so as not to disturb pedestrians. Streetscape features should be designed according to user needs and comfort. The arrangement of streetscape features must consider pedestrian comfort to enhance pedestrian activity and

support the realization of a green city.

**Keywords** Green City, Pedestrian Activity, Streetscape Features, Streetscape Design, Urban Design

## 1. Introduction

Cities encounter the problems of climate change and urban heat, where the impacts are felt directly by residents and affect their activities [1]. One of the attributes of a green city is green planning and design [2]. In city planning, designs that can reduce the impact of urban heat, such as green buildings and planting trees on the streets, can be applied. Human movement needs to be supported by the design of an interconnected road network and good tree planting and landscaping [3]. Streets are public spaces that play a role in improving urban livability through good design and supporting streetscape features such as greenery, shade, and adequate pedestrian facilities. Streetscapes should be planned to provide visual and spatial comfort for pedestrians [4]. Improper planning of streetscape features leads to pedestrian inconvenience and contributes to increased urban temperatures.

Trees on the sidewalk can provide shade, reduce heat, and provide comfort for pedestrians [5]. Materials on the sidewalk that can reflect heat and the provision of water bodies can reduce outdoor heat. Streetscape features play a

role in beautifying the city and providing comfort for pedestrians [6]. Hardscape, softscape, street furniture and influencers on the road are provided to offer convenience and comfort for users [7]. Urban greening can be developed as an effective carbon reduction strategy and support sustainable cities [8]. Greening along the road that is part of the streetscape feature can help improve air quality, trigger social interaction, and support a green city [9].

This study aims to identify, evaluate, and analyze streetscape features and pedestrian activities that can enhance pedestrian activity and support the realization of a green city. In the research area, there are many pedestrians and economic activities. This highlights the importance of sidewalks as active urban spaces. Therefore, it is necessary to examine the available streetscape features and their relationship to pedestrian activity.

The hypothesis of this study is that the availability of streetscape features can increase pedestrian activity. This study uses mixed methods by collecting data through field observation techniques, including: Visual survey of streetscape elements (vegetation, shade, width, materials, street furniture) to identify existing conditions. A questionnaire survey uses a random sampling of pedestrians to gather perceptions of streetscape features and pedestrian activities to quantitatively measure user experience.

## 2. Literature Review

Some streetscape features include urban greenery, sidewalks and openness [6]. Access to socio-economic opportunities influences opportunities to expand social connections. The quality of the built environment influences people to walk and interact with each other. Street lights, landscape vegetation or street trees, lampposts, power lines, signs, traffic lights, buildings or property walls, and many street furniture features are features of urban streets [10].

According to Ozbil, A. et al. [11], connectivity correlates with pedestrian movement, which is influenced by the choice of accessible roads and the distance between intersections. Continuous road patterns can reduce travel distance with more route choices. Ease of access can increase the number of pedestrians. Roads that have storefronts, such as cafes, shops, and others can attract pedestrians to walk. Road attributes at the micro and macro scales, such as aesthetics, comfort from vegetation, social features, and safety, can increase pedestrians. Road width, various activities and environmental attributes of the road cause pedestrians to enjoy their journey. A design of streets and open spaces shall consider environmental conditions and time. Merging the two will bring about urban spaces that visually present an experience of place, comfort, and adaptability.

Roads must be well-designed to improve urban quality

and provide positive perceptions for users [12]. Well-designed streets can provide a sense of safety, comfort, and visual appeal to users. The positive perceptions created encourage people to use them more frequently. The walkability index is related to design, accessibility considerations to activities and streetscape appeal. Streetscape elements are divided into hardscape and softscape [7] [13]. Hardscape consists of sidewalks, pedestrian crossings, street lighting, signage, benches and bicycle lanes, while softscape includes plants and landscape. Some elements in the streetscape that are attractive to pedestrians include water elements, beautiful statues, street performances and people and events. Furniture consisting of seating, trash bins, fence screening, walls, utilities and lighting, and external influencers in the form of space for activities.

Street greening is important in street design and innovative solutions [14]. According to Al Odat & Al Kurdi [15], streetscape elements are adjusted according to their number and impact on users. Some streetscape elements include easy-to-pass and accessible sidewalks, seating, shelter, lighting, signage systems, and green cover. Well-designed streetscape features can attract people to walk and do activities, making the street more lively. The visual beauty of the city is also influenced by the attractive streetscape arrangement.

### 2.1. Hardscape

Sidewalks should have connectivity between lanes and physical conditions to facilitate pedestrian movement [15]. Sidewalks are an important aspect in providing space for pedestrians that must be supported by appropriate connectivity and materials. According to the Ministry of Public Works and Public Housing [16] and the Global Designing Cities Initiative [17], one of the pedestrian facilities can be in the form of sidewalks, which have an important role in city life. The provision of green lanes and the use of environmentally friendly materials in pedestrian facilities can increase ecological values, such as healthy environmental conditions.

Based on Government Regulation Number 16 [18], pedestrian paths must pay attention to the aspect of convenience for all users to be able to reach all places in an environment, including providing easy circulation for pedestrians. Sidewalk must also be able to accommodate people with disabilities to be able to carry out activities independently. The width of the path in front of the building must be at least 0.75 m away from the side of the building. The front of the building must be free of obstacles or obstructions and must be detectable by the disabled or blind. The characteristics of a friendly pedestrian path include being accessible and porous; safe; comfortable with plants and shade; providing a good view; and well-maintained [19]. The pavement on the sidewalk should use porous materials so that rainwater can flow and have a

bright color to reflect more heat [20].

The green and complete streets are design concepts that pay special attention to the needs of pedestrians. Green street emphasizes the importance of sustainability and green environments in urban areas [21]. By adding elements such as trees, parks, and permeable areas, this concept not only improves the aesthetics of the street but also creates a healthier and more comfortable space for pedestrians. Meanwhile, Complete Street focuses more on inclusivity and accessibility for all road users, including pedestrians, cyclists, and public transportation users [22].

## 2.2. Softscape

Softscape elements contribute to creating thermal comfort for pedestrians. The shape and color of plants can create visual aesthetics in a city and enhance the experiences of pedestrians [23]. It also works as a passive cooling strategy supporting the creation of pedestrian-friendly and climate-responsive urban corridors. Softscapes such as trees with wide canopies, shrubs, and vertical greenery can provide thermal comfort for pedestrians, environmental resilience, and urban landscape sustainability [13].

Vegetation as green cover provides a positive feeling for its users. Vegetation can reduce noise, provide a sense of comfort, reduce the urban heat island effect and reduce air pollution [15]. Trees, through their shading or shade effects, can reduce heat and are considered the most strategic in increasing outdoor thermal comfort [5]. Vegetation in urban areas can reduce radiation and thermal and increase natural humidity.

## 2.3. Street Furniture

Street furniture consists of seats, street lights, trash bins,

drinking water containers and others. The provision of seats needs to consider suitability, comfort and aesthetic value so as to provide a good experience for its users. Climate and weather are considerations in determining the seating material. In addition, the placement of benches, protection and views from the seats need to be considered so that users use them longer which is supported by low weather, noise and pollution [15]. Signage affects the visual streetscape so good planning is needed for signage, both commercial and road signs. Unorganized signage can cause visual pollution. Shelters need to be provided as protection, shade and a sense of comfort. Shelters can be placed on sidewalks and bus stops [15]. Shelters can protect pedestrians in various weather conditions. Drainage and utilities are essential components of street furniture. Drainage can manage rainwater runoff to prevent flooding. Good drainage, supported by street furniture and vegetation, is an important part of a green street [21].

## 2.4. Activity

On the sidewalk, there are various activities, including walking, and interaction between people and hawkers. Sidewalks can be used for socializing by pedestrians. The provision of street furniture, such as benches, can facilitate people to interact [15] [24]. Activities on sidewalks generally include movement, sitting, meetings, informal economic activities, street performances, cultural activities, and recreation [23]. Activities related to social and economic aspects of the sustainable concept. Sidewalk dimensions, interconnected road networks, street furniture, vegetation, and lighting can accommodate sidewalk activities [25]. Theoretical framework is shown in Figure 1 and the diagram of the relationship between streetscape features and sustainability can be seen in Figure 2.

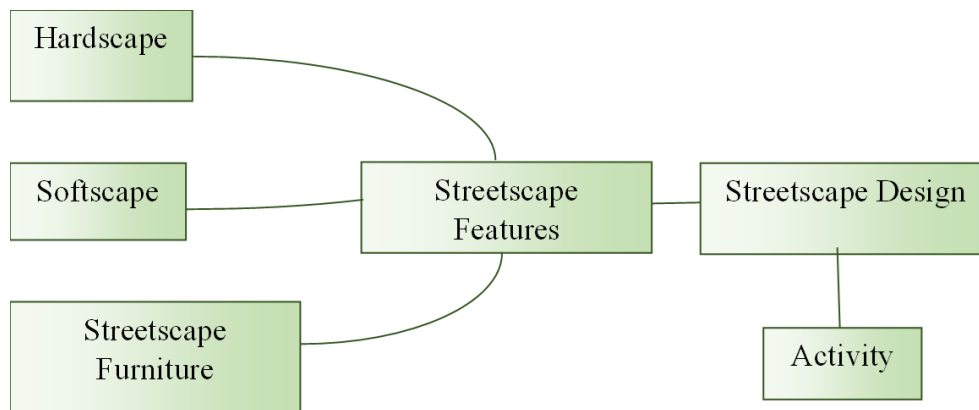
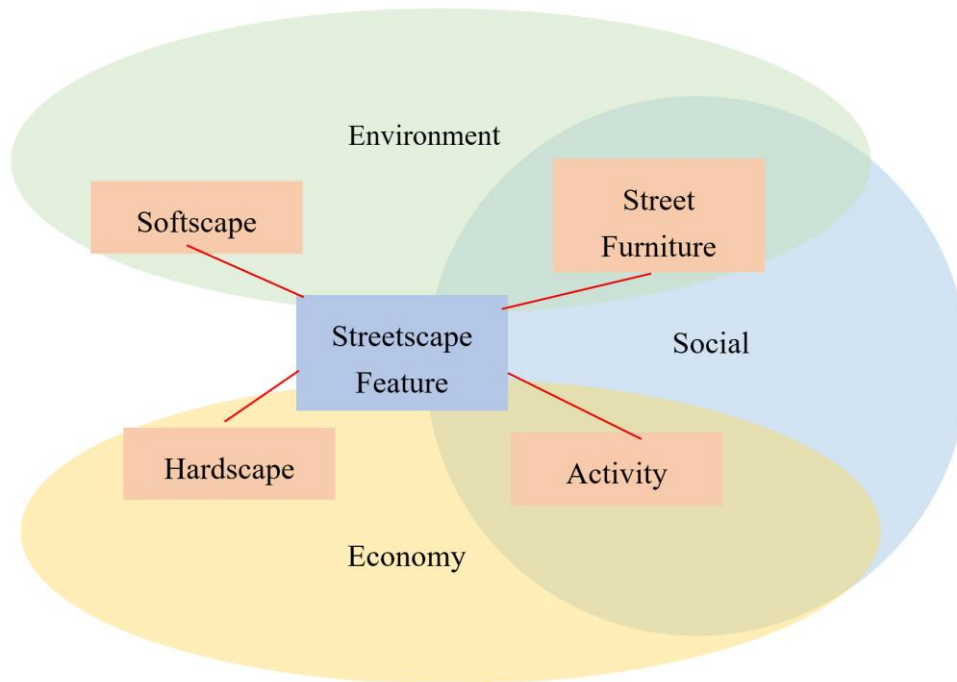


Figure 1. Theoretical Framework. Source: Authors



**Figure 2.** Streetscape Features and Sustainable. *Source: Authors*

### 3. Research Methodology

This research uses a mixed method, qualitative method to identify streetscape features and quantitative method to analyse activities in the research area (Figure 3). Qualitative data about the streetscape in the study area is collected by observation to obtain data directly in the research location and analysis according to the reality in the field. Observations were conducted over seven days to obtain data on streetscape features and particularly variations in pedestrian. Quantitative data is collected by using a questionnaire survey of pedestrian in the research location about their activity. The questions on the questionnaire form consist of perceptions of street features and activities they do on the sidewalk. The questionnaire was distributed for two weeks at the research location. All pedestrians in the research area have an equal opportunity to become respondents. A total of 370 respondents were selected randomly. The questionnaire form uses a likert scale 1-5 (strongly disagree – strongly agree).

Research location is on Dr. Mansyur street, Medan City, which is characterized as a commercial and educational area. The research area is divided into two segments based on building characteristics and street appearance. In segment 1, there is the Universitas Sumatera Utara, the

hospital owned by the Universitas Sumatera Utara, and commercial buildings. Segment one starts from the intersection between Jamin Ginting street and Dr. Mansyur street and extends to the end of the Universitas Sumatera Utara. Segment 2 starts from the end of segment 1 and extends to the intersection of Dr. Mansyur street and Setiabudi street (Figure 4). The study location is in a tropical climate. According to data from the Medan City Meteorology, Climatology, and Geophysics Agency, the average temperature at the study location is between 24°C and 34°C, with humidity ranging from 59% to 89%. Currently, several streetscape features exist in the study area. There are differences in sidewalk conditions, vegetation, and activities in both segments. The study area is busy with drivers and pedestrians. The availability of good streetscape features can provide a comfortable space for pedestrians to carry out their activities. There are four indicators that are the focus of the study, namely hardscape, softscape, street furniture and activity (Table 1). Identification of streetscape features is conducted by recording all features in the study area, taking documentation, and recording the dimensions and functions of each part of the feature. The analysis was conducted descriptively and the results of the study were compared with those of previous studies.

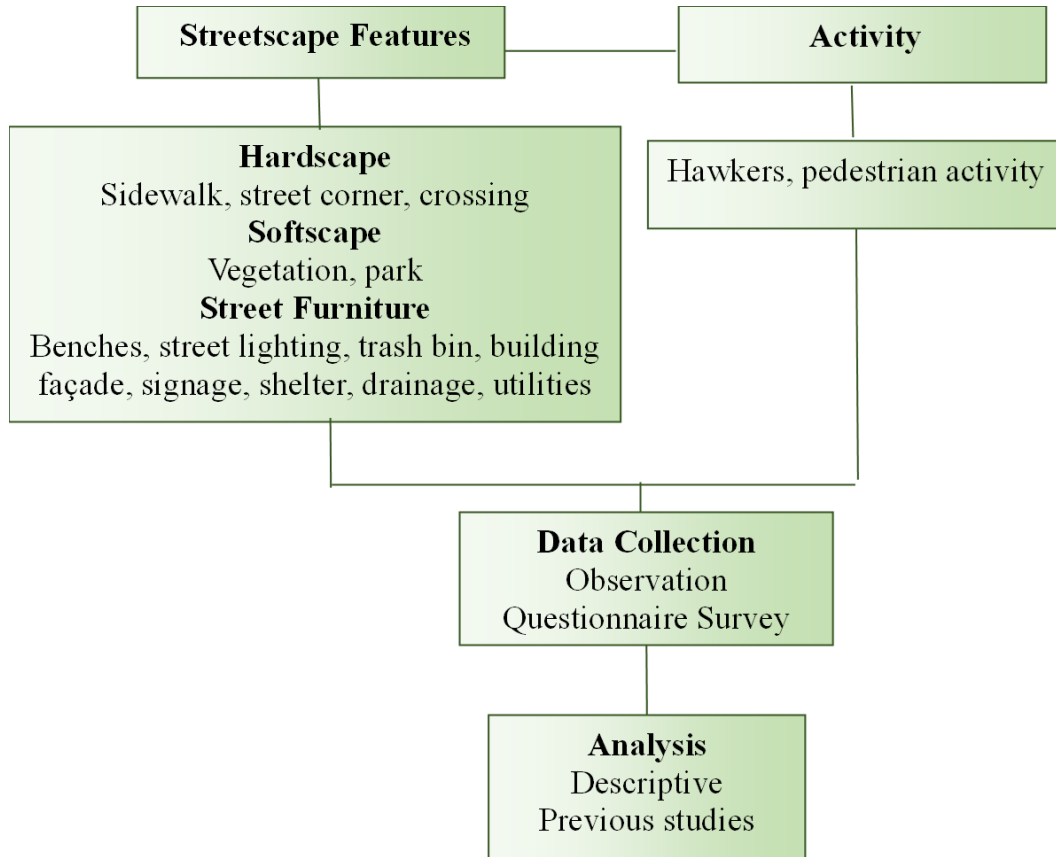


Figure 3. Research Method. Source: Authors



Figure 4. Map of Study Area. Source: modified from <https://www.rmolsumut.id/perluasan-wilayah-kota-medan> (2025) [26]; <https://earth.google.com/web/> (2025) [27]






**Table 1.** Streetscape Features in Research Location

Indicator	Segment 1	Segment 2
<b>Hardscape</b>		
Sidewalk	<p>Sidewalk dimension is 5 m with water-absorbing materials, plants and paths for the disabled.</p> 	<p>Sidewalk dimension is 2 meters and some of it is used for parking.</p> 
Crossing	<p>There is no crossing (zebra crossing) area.</p>	<p>There is one crossing (zebra crossing) area.</p> 
Street Corner	<p>Two street corners.</p> 	<p>One street corner.</p> 
<b>Softscape</b>		
Vegetation	<p>Trees along the sidewalk and in the middle of the road as a divider.</p> 	<p>Trees along the sidewalk.</p> 
Park	<p>Park inside the University of Sumatera Utara which can be seen from Dr. Mansyur street.</p> 	<p>Park inside the commercial building.</p> 
<b>Street Furniture</b>		
Benches	<p>There are no benches.</p>	<p>There are no benches.</p>
Street lighting	<p>In the median section of the road.</p> 	<p>In the median section of the road.</p> 

Table 1 continued

<p>Trash can</p>	<p>There is no trash can.</p>	<p>Trash can on the sidewalk.</p> 
<p>Building Facade</p>	<p>3-5 storey building.</p> 	<p>3-12 storey building.</p> 
<p>Signage</p>	<p>Identification signs, traffic signs, directional signs.</p> 	<p>Identification signs, traffic signs, directional signs.</p> 
<p>Shelter</p>	<p>There are two shelters in segment 1.</p> 	<p>There is no shelter.</p> 
<p>Drainage</p>	<ul style="list-style-type: none"> <li>Covered drainage.</li> <li>Retention Pond inside University of Sumatera Utara.</li> </ul> 	<p>Uncovered drainage.</p> 

Table 1 continued

Utilities	Electric, water and telephone. 	Electric, water and telephone. 
<b>Activity</b>		
Hawker	Hawker.  	Hawker. 

Source: Personal Documentation

## 4. Result and Discussion

Streetscape features in this study are divided into hardscape, softscape, and street furniture. Streetscape features and activities found in the study area can be seen in Table 1 and pedestrian perception about streetscape features is shown in Table 2.

### 4.1. Hardscape

Hardscape in the study area shows differences between segments 1 and 2. In segment 1, the sidewalk is wider than in segment 2. In segment 1, the sidewalk width is 5 meters, with a height of 15-20 cm from the road surface. According to pedestrians, the condition of the sidewalk is quite good, clean and has adequate width. Sidewalks are equipped with plants and lanes for the disabled. In segment 2, sidewalks are extremely rare, making it challenging for pedestrians to navigate the area comfortably. The situation is further complicated by store banners blocking pedestrian access, as shown in the image, which disrupts movement and diminishes the overall walking experience. Besides, the road surface is frequently used for unauthorized parking, narrowing the road and raising the risk of accidents. The combination of inadequate sidewalks and improper use of road space negatively affects safety, comfort, and the overall functionality of the area. Sidewalks are part of the hardscape in the streetscape [13]. Poor sidewalk conditions make it less comfortable for pedestrians to walk. Planning sidewalks as part of urban design elements must comply with regulations, both in terms of dimensions and materials used. Planning for vehicle parking areas should be separate from sidewalks.

In segment 1, no crossing (zebra crossing) was found. The absence of zebra crossings in this segment is a

significant issue impacting pedestrian safety. Zebra crossings, as designated crossing points, play a crucial role in facilitating safe and orderly pedestrian crossings. Without zebra crossings, pedestrians may struggle to find a safe place to cross, which can increase the risk of traffic accidents. Most pedestrians reported that the pedestrian crossings are not clearly visible. However, there are several points that are often used for crossing areas. Zebra crossings can make it easier for pedestrians to reach other sidewalks and reach their destinations. Most pedestrians also noted that the sidewalks are not connected to the pedestrian crossings. In segment 1, there are two street corners, both of which connect two streets. Meanwhile in segment 2, there is only one street corner in this area, located at the end of the segment, at the traffic light intersection between Dr. Mansyur street and Setia Budi street.

### 4.2. Softscape

The softscape is composed of vegetation and park or open space. In segment 1, the softscape is in the form of a garden inside the Universitas Sumatera Utara, trees on the road divider and trees on the sidewalk at right and left of the road. Vegetation is quite abundant and positively contributes to the urban environment by enhancing air quality and the area's aesthetics [5]. While in segment 2, the softscape is in the form of small plants and trees on the sidewalk. The park can be found inside several commercial buildings. Providing vegetation on sidewalks and roads can reduce heat and pollution and support the concept of a green city [21]. Vegetation on the side of the road, as one of the streetscape features, provides shade so that pedestrians and vehicle users feel comfortable.

### 4.3. Street Furniture

Street furniture on Dr. Mansyur street, as explained in Table 1, there are no benches and trash bins are found only in segment 2. In segments 1 and 2 there are street lighting, signage, and drainage. The street lighting in both segments meets the user needs, providing adequate illumination to enhance visibility and safety at night. Most respondents agree that there are street lights on the sidewalk and are functioning properly. The strategic placement of the lights ensures that the entire road area is well-lit, reducing the risk of accidents, ensuring comfortable walking at night, and increasing the sense of security for both pedestrians and drivers. The proper spacing and adequate height of the lighting posts provide the entire pedestrian corridor with even lighting, with no glares or dark spots. Functional streetlights enhance safety not only for pedestrians but also add to the general aesthetic and functional excellence that is possible in the design of a streetscape. It can also support the evening activities and encourage social interaction in public spaces.

Shelters are only found in segment 1. The absence of

shelters can be problematic, especially during extreme weather conditions such as heavy rain or intense sunlight, reducing comfort and protection for the community. Additionally, the lack of these facilities also impacts the quality of public transportation services and the comfort of pedestrians in the area. Signage at the research location is clearly visible to road users, and respondents agree that the signage is informative and helpful. The drainage in segment 1 has a cover, while in segment 2, some of the drainage is open, which can pose a risk to pedestrians and reduce the effectiveness of the drainage system in managing water flow efficiently. One of the principles of green cities, namely green planning and design, should consider aspects that can protect the environment [21]. Drainage can be designed to drain rainwater quickly so that there is no pooling or flooding. Buildings in segment 2 are 3-12 storey buildings and function as residential and commercial buildings such as cafes, restaurants, shops and hotels. The majority of respondents did not agree that the buildings at the research location had an attractive design. The provision of street furniture can provide a sense of comfort for pedestrians [15].

**Table 2.** Pedestrian Perception of Streetscape Features

Streetscape Features	Percentage (%)				
	1	2	3	4	5
Sidewalk is in good condition	11.6	32.6	34	17	1
Sidewalk has adequate width	7	24.8	42.6	19.4	6.2
Sidewalk is comfortable and clean	14	32.6	37.2	13.2	3.1
Pedestrian crossing in good condition	16.3	34.1	24	20.2	5.4
The sidewalk is connected to the pedestrian crossing	14.7	36.4	23.3	18.6	7
The pedestrian crossing is clearly visible	19.4	37.2	24.8	16.3	2.3
<b>Street lights are available along the road</b>	<b>1.6</b>	<b>10.9</b>	<b>27.1</b>	<b>44.2</b>	<b>16.3</b>
The street lights are functioning properly	3.1	12.4	38	37.2	9.3
Street signs can be seen clearly	3.1	17.1	39.5	30.2	10.1
Street signs are informative	4.7	16.3	52.7	20.2	6.2
There are benches/chairs on the sidewalk	26.4	34.9	28.7	5.4	4.7
The Benches are comfortable	31.8	35.7	25.6	3.1	3.9
There are trash bins on the sidewalk	20.2	34.1	24.8	14.7	6.2
There are bus stops on the sidewalk	12.4	13.2	35.7	29.5	9.3
There is streets art	25.6	34.1	25.6	7.8	7
The buildings along the street have attractive designs	13.2	33.3	41.1	7	5.4
<b>Hawkers on the sidewalk should be arranged well</b>	<b>6.2</b>	<b>3.9</b>	<b>11.6</b>	<b>34.9</b>	<b>43.4</b>

Source: Analysis

**Table 3.** Pedestrian activity on the street

Pedestrian Activity	Mean	Median	Mode
I use the sidewalk to walk to my destination	4.13	4.00	5.00
I use the sidewalk to wait for online transportation/public transportation	3.91	4.00	5.00
I use the sidewalk to see the activities around me	3.91	4.00	5.00
I use the sidewalk to make a phone call	3.22	3.00	3.00
I use the sidewalk to interact with other people	3.53	4.00	4.00
I use the sidewalk to sit on a bench/chair/sidewalk	3.19	3.00	4.00
I use the sidewalk to rest	2.89	3.00	3.00

Source: Analysis

Based on Table 3, some streetscape features in the study area were present, while others were not. Park benches were not available throughout the study area. Respondents stated that the study area had sidewalks, zebra crossings, functioning streetlights, informative and clearly visible signs, bus stops, attractive buildings, and street vendors. This was proven when 18% of the respondents agreed that the sidewalks were in good condition and 25.5% agreed that the sidewalks were connected to pedestrian crossings. This means that the condition of the sidewalks does not meet standards at present. Then, this is followed by agreement and strong agreement that street lights are available along the road (60.5%), and street lights functioning properly are 46.5%. Meanwhile, the respondents' agreement is: signage at study locations can be seen clearly (40.3%) and is informative (26.4%). Street furniture like benches and litter bins is not yet available at the study location. Buildings around the study area are also considered not attractive. Respondents agreed that hawkers on the sidewalk should be arranged well (78.1%) since the current condition of hawkers is not yet organized. The provision of streetscape features can attract pedestrians to use the sidewalks, walk, and socialize [7].

#### 4.4. Activity

Activities in segment 1 are mostly related to the commercial sector, including hawkers, while in segment 2 it is the same as the previous segment but has the addition of restaurants, hotels, and worship. On the sidewalk, there are street vendors whose arrangement is not well organized. Some vendors occupy almost the entire sidewalk and place chairs and tables on the sidewalk. At the research location, pedestrians can interact with each other and carry out other activities on the sidewalk. This is in accordance with the statement from [23]. Based on Table 3, the activities carried out by pedestrians on the sidewalks at the research location consisted of various activities, including walking to pedestrian areas (4.13), waiting for public or online

transportation (3.91), and simply observing the activities around them (3.91). In addition, pedestrians were on the sidewalks to make phone calls (3.22) and interact with other pedestrians (3.53). Only a small number of respondents sat on the sidewalks (3.19) and rested (2.89). This was due to the lack of adequate benches at the research location. These findings align with research by [15].

Streets can be more livable if there is both social and economic activity. However, a better arrangement of street vendors is needed so that the economic activities that occur do not interfere with pedestrians. The government plays a role in providing regulations regarding the arrangement of streetscape features that can be referred to by urban designers in designing areas or cities.

Based on observations and perceptions from pedestrians, a streetscape design is needed that meets government-set standards and provides comfort for pedestrians while they carry out their activities. Well-designed sidewalks can attract people to come, walk, and engage in activities. In terms of hardscape, sidewalks for pedestrians should be equipped with designated lanes for people with disabilities, separate bicycle lanes, and greenery for shade (Figure 5).



**Figure 5.** Sidewalk Design. Source: Authors

In softscape features, road should be equipped with vegetation to provide shade and comfort for pedestrians and road users (Figure 6). Planted areas can serve as water catchment areas to minimize rainwater pooling.



Figure 6. Softscape on Sidewalk. Source: Authors

Street furniture such as benches, lighting, signage, bus station facilities, drainage, and utilities should be provided to support pedestrians. Benches are often used by pedestrians to rest and interact with each other. Bus stops can be designed to incorporate vegetation for added shade (Figure 7). Street furniture is provided, integrated with shade to provide comfort for its users. Sidewalk activities, such as street vendors, should be arranged in order not to disturb pedestrian activities such as walking, resting, or waiting for public transportation (Figure 8).



Figure 7. Street Furniture. Source: Authors



Figure 8. Pedestrian Activity. Source: Authors

## 5. Finding

This research discovered that streetscape features are to be designed in response to guidelines and user needs for functionality, safety, and comfort. Field observations and a

questionnaire survey showed that some elements, like shade vegetation, street lighting, and signage, generally met user expectations and were supportive of a positive pedestrian experience. On the other hand, the same findings pointed out that there was a lack of amenities that are very important for enhancing comfort, such as benches and trash cans, and maintaining cleanliness. Moreover, it was noticed that a number of the existent features were either poorly designed or poorly maintained, such as pedestrian crossings and bus stops, limiting accessibility and usability.

In view of the area's high pedestrian and economic activity, these findings reinforce the need for more structured and well-integrated streetscape design that accommodates diverse user activities, such as arranging hawker stalls in a way so as not to disrupt activities on the sidewalk. Improvements like this could help enhance pedestrians' comfort and safety while supporting efforts to create a dynamic and sustainable urban environment in line with the principles of a modern green and inclusive city.

## 6. Conclusions

Streetscape features in the study area consist of hardscape, softscape and street furniture. There are differences in streetscape features in segments 1 and 2, namely the dimensions of the sidewalk, vegetation on the sidewalk and the middle part of the road divider, provision of shelters and building forms. In segment 1, the sidewalk is wider and equipped with disabled lanes, shelters and vegetation. The function of the building is a campus, hospital, office and commercial. Street vendors use part of the sidewalk to place their tables and chairs. In segment 2, the condition of the sidewalk is not good and uncomfortable to use because its dimensions are smaller and some are used for parking and street vendors. There is little vegetation on the sidewalk, so it is less comfortable for pedestrians. The function of the building is dominated by commercial use such as cafes, hotels and restaurants. The characteristics of streetscape features in segments 1 and 2 have differences influenced by the functions and activities that exist. The differences in streetscape features in segments 1 and 2 cause pedestrians to be less comfortable because some features are available in segment 1 but not in segment 2 and vice versa. In the study area, comfortable sidewalks should be provided, equipped with vegetation and street furniture to attract people to come, do their activities and increase pedestrian comfort. Hawkers should be rearranged so as not to disturb pedestrians. A good streetscape feature arrangement can support green city planning and design.

The designed streetscape features in the research location partially meet the needs of pedestrians and further need improvement to offer safety and comfort to its users. Streetscape planning should be integrated into community-driven design principles that emphasize user needs, activity

diversity, and environmental sustainability to improve pedestrian activity. This will lead to increased pedestrian comfort and mobility, ultimately enhancing the identity and quality of life in an urban area through organized and inclusive streetscape elements.

This research contributes to the design of streetscapes that consider the environment to support green cities. The research findings may be used in designing city streets. User behavior and needs are also significant in providing public facilities in towns and cities. Academics and researchers help in the development of streetscape design concepts from theory, applicable standards, regulations, and community needs. Further research can be done in a wider area with more diverse activities. Sustainable streetscape design should be supported by stakeholders actively and involve the community as users so that the resulting design meets the needs and aims of achieving a green city.

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