Available Online at www.e-iph.co.uk
Indexed in Clarivate Analytics WoS, and ScienceOPEN

E-B Environment - Behaviour Proceedings Journal

AcE-Bs2024Langkawi

https://www.amerabra.org

e-IPH e-International Publishing House Ltd., United Kingdom

12th ASIAN Conference on Environment-Behaviour Studies,
Holiday Villa Beach Resort & Spa, Langkawi Island, Malaysia, 01-03 Mar 2024

Age-Inclusive Transit Environments: An exploration of public transportation systems for elderly

Aina Mardia Zakaria[1], Noor Azreena Kamaluddin[1]*, Wardati Hashim[1], Carmelo D'Agostino[2]
**Corresponding Author*

[1] School of Civil Engineering, College of Engineering, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia.
[2] Traffic and Roads, Department of Technology and Society, Lund University, P.O. Box 118, John Ericssons Väg 1, 22100 Lund, Sweden

ainazakaria08@gmail.com; azreena@uitm.edu.my; wardati@uitm.edu.my; carmelo.dagostino@tft.lth.se
Tel: +60176378538

Abstract
The rising elderly population and rapid urban development have given rise to many interconnected challenges demanding transformative changes in the living environments to facilitate improved mobility and accessibility for the elderly. These issues encompass insufficient accessibility and infrastructure that do not cater to the needs of the elderly. This research explores the public transportation facilities in urban areas, encompassing infrastructure, services, and amenities that are accessible to the public and designed to facilitate community mobility and to identify the current facilities in public transportation and assess how effective and accessible they are for the elderly population.

Keywords: Elderly; Public Transport; Accessibility; Urban

DOI: https://doi.org/10.21834/e-bpj.v9i28.5906

1.0 Introduction

The ageing population, defined as those aged 65 and above, constituting at least 15% of the total population, presents imminent challenges. Based on forecasts, Malaysia is expected to surpass 15% by 2030, which raises questions regarding the society's preparedness. This includes inadequate public infrastructure, especially elder-friendly transport systems, crucial for their active engagement. Having a positive impression of the elderly is essential for encouraging the use of the public transportation system.

Consequently, Subang Jaya was chosen as the study location for exploring the elderly-friendly public transportation systems. Subang Jaya is recognized as one of the rapidly growing cities in Malaysia and is overseen by the Subang Jaya City Council (MBSJ). In the year 2020, Subang Jaya holds the sixth position in terms of population among Malaysian cities, boasting 968,930 population and significant development observed in Subang Jaya between 2015 and 2023 (Local Strategies of Subang Jaya, 2022). The MBSJ region strategically prioritizes the development of transportation infrastructure to establish a comprehensive network that meets the demands of the expanding population. Subang Jaya encompasses twenty-two areas identified as public facilities (Local Strategies of Subang Jaya, 2022). These facilities include amenities, services, or infrastructure provided and maintained by government and public authorities for the benefit of the community. They aim to enhance the quality of life, promote community well-being, and address common societal needs. The public transport system in MBSJ has been growing and improving through the years (i.e., Light Rapid Transit (LRT), Keretapi Tanah Melayu (KTM), Bus Rapid Transit (BRT), Rapid KL buses, and Smart Selangor buses). These facilities are designed to provide

eISSN: 2398-4287 © 2024. The Authors. Published for AMER & cE-Bs by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/). Peer–review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), and cE-Bs (Centre for Environment-Behaviour Studies), College of Built Environment, Universiti Teknologi MARA, Malaysia.
DOI: https://doi.org/10.21834/e-bpj.v9i28.5906

convenient, efficient, and safe options for individuals to travel using a public transportation mode for Subang Jaya residents. Furthermore, improving public transportation facilities also enhances the mobility of the community thus, it can also reduce challenges, such as traffic congestion, that can lead to environmental problems for society.

The escalating population in Subang Jaya is causing a range of issues, particularly environmental and social problems. Environmental challenges pertain to matters concerning the natural and constructed surroundings that can hinder the mobility of the elderly, such as inadequate accessibility and unsuitable infrastructure for the elderly, whose mobility is crucial for independence, accessing essential services, and participating in social activities (Jahangir et al., 2022). When opting for public transportation, the elderly must ensure that the facilities meet their needs.

In this modern era, access to satisfactory public transport facilities is essential. However, transport amenities, some of which are not elderly-friendly, lead to a gradual decline in the mobility of the elderly (Rajandran et al., 2020). While some older people in Malaysia prefer public transportation, others opt for private modes, influenced significantly by health, distance, public transport availability, road traffic, and safety (Dragičević et al., 2022; Mohd et al., 2019). The importance of understanding how public transportation facilities affect the mobility of the elderly is unintentionally overlooked by several researchers. Therefore, this research aims to explore the public transportation facilities in Subang Jaya, encompassing infrastructure, services, and amenities that are accessible to the public and designed to facilitate community mobility. The objectives are to identify the current public transportation facilities and assess their effectiveness and accessibility for the elderly.

2.0 Literature Review

2.1 Aging Population

The aging population can be described as the gradual increase in the proportion of older individuals within a society, a natural consequence of people living longer lives and lower birth rates (Freiberger et al., 2020). This phenomenon is now widespread and enduring in many countries. The world's aging population is mostly caused by concurrent declines in fertility and mortality rates, which have led to a robust and consistent increase in the population over 60 years of age, outpacing the growth rate of all other age groups. Malaysia is not an exception to this trend (Chan & Lin, 2022).

2.2 Public Transportation Facilities

In many developing nations, public transportation plays a pivotal role in facilitating travel, particularly for social engagements. Effective public transportation systems are essential for urban settings, providing mobility, accessibility, and options unable to afford private vehicles. Furthermore, these systems efficiently accommodate a significant volume of passengers, simplifying their journeys, and the satisfaction and perceived importance of public transportation facilities and services are influenced by user experiences. According to Hashim and Mohamad Zan (2019), enhancing service areas such as waiting facilities, adding amenities to terminals, and improving vehicle quality can contribute to greater user satisfaction and perceived safety. Service quality emerges as a critical factor directly linked to customer contentment in Malaysia, especially in public transportation improving service standards within public transit could elevate rider satisfaction significantly. Addressing issues like cramped seating, unclean vehicles, and unprofessional conduct among drivers may help enhance the quality of public transportation service (Chee Hoo et al., 2023). Similarly, Name et al. (2023) reported that inadequate maintenance of public transportation facilities with unhygienic surroundings, and insufficient shading at stops expose users to direct sunlight, prompting them to opt for private transportation for a more comfortable journey.

2.3 Accessibility

The degree of accessibility to transportation services plays a crucial role in planning public transport facilities. "Transit accessibility" refers to users' ability to reach transit facilities such as bus stops or stations. Several factors, including pedestrian paths, bicycle lanes, bus-stop conditions, and ease of access for people, influence transit accessibility (Borhan et al., 2019). Having easily reachable public transportation is essential in neighborhoods designed for older adults (Bhuyan et al., 2020). Improved accessibility is attained by minimizing the distance to public transport amenities (Cho et al., 2021). Furthermore, improving accessible public transportation and promoting independent mobility can help alleviate social exclusion among the elderly, representing a notable aspect of age-friendly neighborhoods (Al-Rashid et al., 2023). Pedestrian sidewalks with inadequate design and implementation negatively impact user mobility (Panahi et al., 2022). Moreover, the elderly are more likely to use public transportation if it's easily accessible, regardless of whether they own a private vehicle. This observation is supported by research conducted by Villena-Sanchez et al. (2022), which indicates that accessible public transport increases the willingness of older individuals to use it, irrespective of private vehicle ownership. Thus, with accessible public transportation people are more likely to use it for mobility.

2.4 Safety and Reliability

Safety is a major concern among public transportation users, necessitating improvements in enhancing customer satisfaction with public bus services adverse incidents like delayed service or incorrect information on bus/train routes and schedules can tarnish public transport's reputation (Bakar et al., 2022). Ensuring the provision of safe and comfortable bus stops and pedestrian walkways is crucial for users, additionally, factors such as bus cleanliness, safety, punctuality, and other amenities play a vital role in the overall service quality (Md Diah et al., 2022). Moreover, improvements in the quality of public services, coupled with ongoing efforts to encourage their use, result in passengers feeling unthreatened but comfortable and confident in continuing to utilize the services provided. This positive

shift is expected to lead to an increase in the number of passengers and a subsequent reduction in the number of cars on the road. Consequently, the reliability of public transportation will reduce traffic congestion where this concern affects elderly mobility as stated by (Jahangir et al., 2022).

3.0 Methodology

This research employed a qualitative approach, commencing with a preliminary assessment in the early stages of the site investigation. The initial evaluation utilized a desk study that involved Google Maps to explore existing public transportation facilities, such as bus stations, bus stops, pedestrian pathways, bicycle routes, and other amenities. This phase included collecting and evaluating pre-existing data to gain insights into potential environmental aspects and identify the presence of public amenities.

Subang Jaya, Selangor, was selected as the study location due to its excellent transportation accessibility, including LRT, KTM, BRT, Rapid KL buses, and Smart Selangor buses, catering to its sizable population. Two urban locations (SS15 and USJ7) and two suburban areas (Kampong Bukit Lanchong and Taman Pinggiran) were chosen as study areas in the Subang Jaya. The study areas were in proximity to clinics, hospitals, and essential shops, recognizing the potential frequent need for necessities and medical services, particularly among the elderly who may have limited mobility.

The desk study was conducted to obtain information and explore all current public transportation options in Subang Jaya from diverse sources such as Google Maps, the web app viewer (EIS MBSJ website) (Fig.1), the SITS application, the PULSE application (Fig.2), and interviews with local authority personnel. Field observations were conducted in Subang Jaya to validate the data collected from the desk study and to align information obtained through the EIS Web app viewer provided by MBSJ, the SITS application, and the PULSE application.

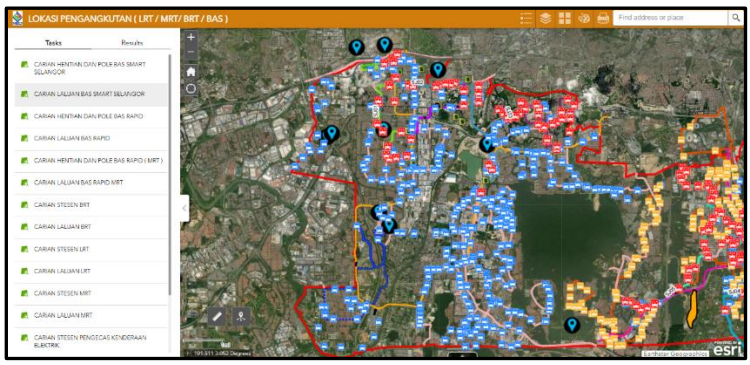


Fig. 1: EIS MBSJ Website for Existing Public Transportation
(Source: https://eis.mbsj.gov.my/portal/apps/webappviewer/index.html?id=4410624a7d014f16a47a5aafa84a399e)

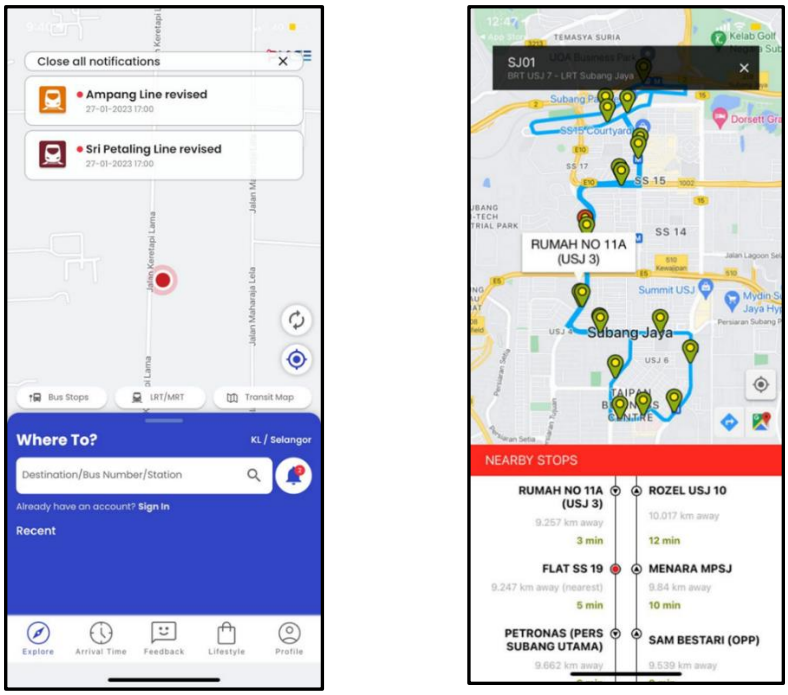


Fig. 2. (a) Application for Rapid KL; (b) Application for Smart Selangor Bus.
(Source: Pulse Application, Sits application)

4.0 Findings

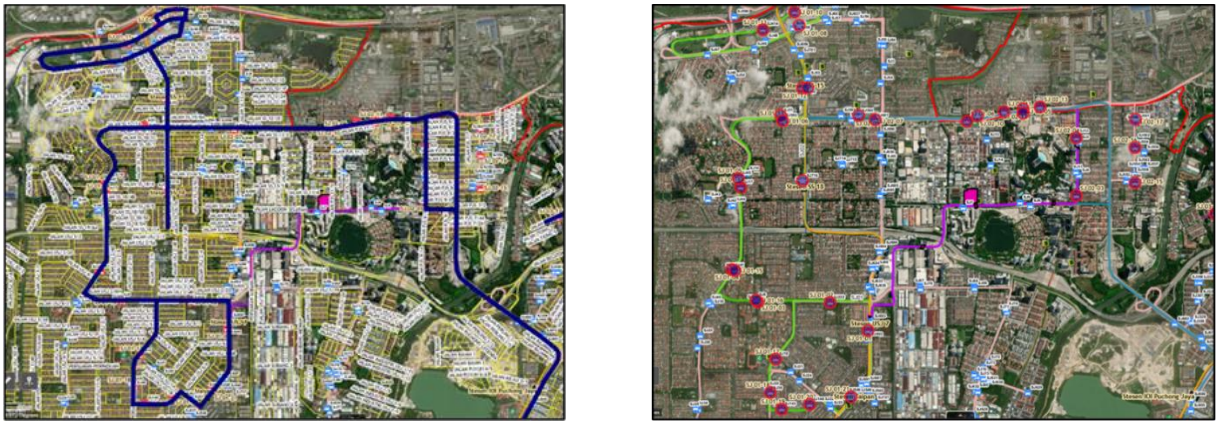
4.1 Site Observation

MBSJ highlights that public transportation options, including Smart Selangor buses, Rapid KL Transit buses, BRT, LRT, and KTMB are available in Subang Jaya for residents (Table 1). Therefore, it is essential to carefully assess and ensure the suitability of these public transportation facilities for the elderly based on the provided information (Fig.3 and Fig.4).

Table 1. Public Transportation Information

Item	Map
1	Smart Selangor Buses Route
2	Rapid KL Transit Buses Route
3	Bas Rapid Transit-Sunway Route
4	Light Rapid Transit Route
5	Keretapi Tanah Melayu Berhad Route

(Source: https://eis.mbsj.gov.my/portal/apps/webappviewer/index.html?id=4410624a7d014f16a47a5aafa84a399e)

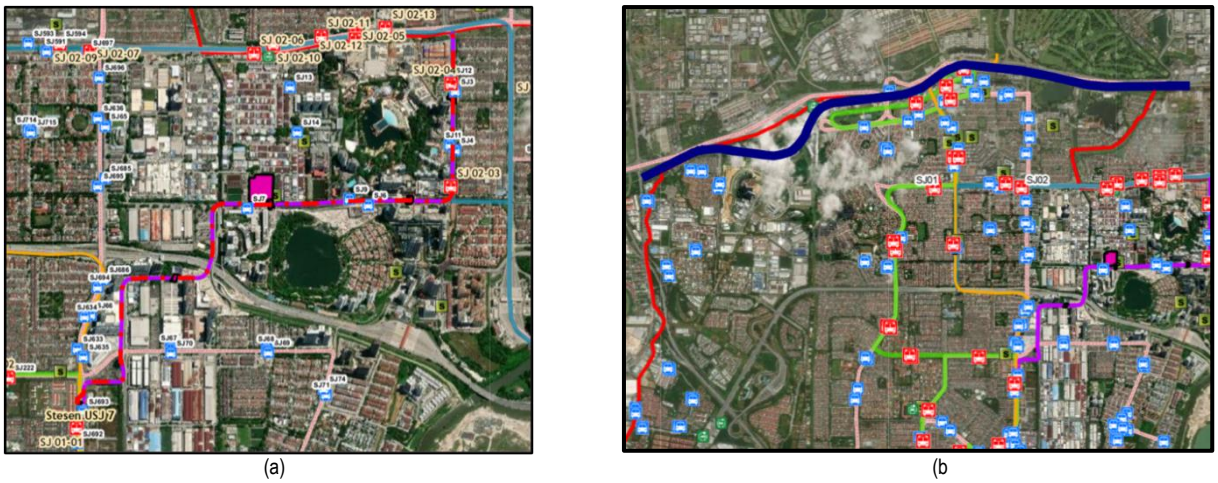


(a) (b

Fig. 3:(a) Map of Smart Selangor Bus Route (b) Map of Smart Selangor Bus Pole and Bus Stop

(Source: https://eis.mbsj.gov.my/portal/apps/webappviewer/index.html?id=4410624a7d014f16a47a5aafa84a399e)

It was observed that Smart Selangor buses have five routes, explicitly focusing on examining SJ01 and SJ02. Similarly, among the 24 Bus Rapid KL routes, only T752, T778, T776, T771, T641, T708, and T783 were considered. The LRT also offers two routes near the area, but the observation concentrated solely on the Kelana Jaya route and lastly, the KTM station at Subang Jaya was observed due to its study location.



(a) (b

Fig. 4:(a) Map of BRT Route and Station; (b) Map of KTM Route and Station

(Source: https://eis.mbsj.gov.my/portal/apps/webappviewer/index.html?id=4410624a7d014f16a47a5aafa84a399e)

Table 2. Light Rapid Transit Route

Line Designation	Destination	Route
LRT Laluan Kelana Jaya	Putra Height	Subang Jaya – SS 15 – SS 18 – USJ 7 – Taipan – Wawasan – USJ 21 – Alam Megah – Subang Alam – Putra Height

(Source: myrapid.com.my)

The investigation into bus routes revealed a pattern: certain bus stations were adequately maintained, while others were not (Masjid Al-Husna, Inti/Pos Malaysia SS15, Petronas SS17). Additionally, as bus stops, poles pose challenges for elderly individuals, making it less conducive for them to wait for buses and mobility. It was noted that bus stops and poles are strategically positioned near residential areas, public transportation hubs, grocery stores, and hospitals/clinics, which significantly cater to the needs of the elderly population (Fig.5).

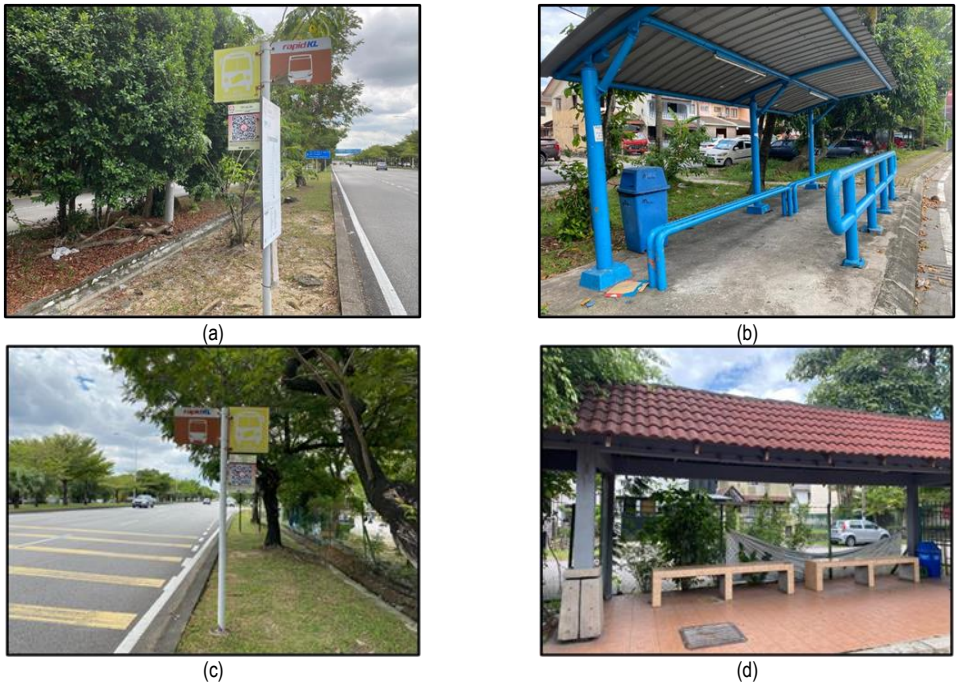


Fig. 5:(a) Rapid KL Bus Pole; (b) Rapid KL Bus Stop; (c) Smart Selangor Bus Pole; (d) Smart Selangor Bus stop

The Bus Rapid Transit (BRT) in Subang Jaya has seven stations: Sunway, Setia Jaya, Mentari, Sunway Lagoon, SunMed, SunU – Monash, and South Quay - USJ 1 - USJ 7. The BRT system in Sunway stands out as an environmentally friendly transportation option. Upon observation, the facilities provided at these stations—including elevators, escalators, ticket services, and waiting areas are meticulously maintained and cater to the needs of the elderly and general users (Fig.6).

Fig. 6:(a) BRT Station (b) BRT Facilities

Table 3. Facilities Observation

Facilities	Item
Sitting area	Benches or sitting area
Signage	Clear and visible signage
Shelter	Roof
Security feature	CCTV
Accessibility Features	Elevator, escalator, stair, pedestrian walk path, non-slip flooring
Real-Time Information Displays	Schedule
Ticket Vending Machines	Self-service kiosk
Bicycle Racks	Bicycles park
Parking Facilities	Private vehicles park

Furthermore, ten LRT stations underwent examinations to evaluate public transportation amenities, as depicted in Table 2. The facilities offered remain consistent across all stations. Generally, amenities at the LRT stations are well-kept and operational, mirroring the observations obtained from KTM Subang Jaya Station. The examination aimed to assess seating areas, signage, shelters, security features, accessibility features, real-time information displays, ticket vending machines, bicycle racks, and parking facilities (Table 3) at public transportation. All observed amenities must adhere to the efficiency criteria, ensuring they are elderly-friendly, functional, and devoid of damages, as in Table 4.

Table 4. Data Observation of Public Transportation Facilities

Observation	Efficiency parameter	Stations													%
	Elderly friendly	SJ01	SJ02	T752	T778	T776	T771	T641	T708	T783	BRT	LRT	KTM	Total	
Sitting area	Excellent	17	20	18	22	28	30	22	18	28	24	40	12	279	80.4
	Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Poor	6	6	11	1	13	11	15	1	4	0	0	0	68	19.6
Signage	Excellent	19	19	21	8	29	30	26	9	18	49	80	8	316	100
	Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Poor	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shelter	Excellent	13	13	12	5	16	18	16	5	10	14	20	2	144	67
	Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Poor	6	6	9	3	13	12	10	4	8	0	0	0	71	33
Security feature	Excellent	0	0	0	0	0	0	0	0	0	14	20	4	38	17.5
	Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Poor	19	19	21	8	29	30	26	9	18	0	0	0	179	82.5
Accessibility Features	Excellent	4	6	3	3	6	8	5	5	8	35	60	7	150	53.4
	Moderate	6	1	6	5	10	11	6	4	6	0	0	0	55	19.6
	Poor	9	12	11	1	13	11	15	0	4	0	0	0	76	27.0
Real-Time Information Displays	Excellent	19	19	21	8	29	30	26	9	18	14	20	1	214	99
	Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Poor	0	0	0	0	0	0	0	0	0	0	0	2	2	1
Ticket Vending Machines	Excellent	0	0	0	0	0	0	0	0	0	10	28	1	39	92.8
	Moderate	0	0	0	0	0	0	0	0	0	3	0	0	0	0
	Poor	0	0	0	0	0	0	0	0	0	1	2	1	3	6.12
Bicycle Racks	Excellent	4	3	2	1	2	1	3	1	1	7	10	1	36	100
	Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Poor	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking Facilities	Excellent	6	3	2	1	2	1	3	1	1	7	10	1	38	18.7
	Moderate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Poor	13	22	19	7	27	29	23	8	17	0	0	0	165	81.3

4.2 Data Analysis

Table 4 illustrates the findings from observing public transportation facilities in Subang Jaya. The efficiency parameters were categorized as excellent, moderate, and poor. Excellent category signifies optimal functionality without any compromise to the service or facilities catering to the elderly. Facilities are in excellent condition, ensuring top-notch functionality and no compromise in providing services to the elderly. Moderate indicates average functionality. Facilities exhibit average functionality, meeting basic requirements but with room for improvement to better accommodate the needs of elderly-friendly services. Poor efficiency denotes insufficient convenience in accommodating the needs of elderly-friendly services or facilities. Facilities show signs of wear or inadequacy, lacking convenience and falling short in adequately catering to the needs of elderly individuals. Thus, from the observation of sitting areas, 80.4% demonstrated excellent functionality, indicating that most sitting areas are suitable for the elderly. Conversely, 19.6% exhibited poor functionality due to the absence of seating, especially at certain bus stops where only poles are available. Moreover, signage at public transportation facilities displayed excellent functionality at 100%, emphasizing the importance of clear and visible signage.

The observation of shelter functionality revealed that 67% provided excellent shelter when equipped with roofs. At the same time, 33% showed poor functionality, leaving users inadequately sheltered from rain or sun, notably at stops with poles. Regarding security systems, BRT, LRT, and KTM boasted excellent systems at 17.5%, while bus stops in Subang Jaya lacked security features, resulting in 82.5% poor functionality. Accessibility features like elevators, escalators, stairs, pedestrian walkways, and non-slip flooring were also considered. The observation indicated 53.4% excellent functionality, 19.6% moderate, and 27% poor functionality. Real-time information displays of transportation schedules are essential, with 99% showing excellent functionality, albeit 1% exhibiting poor functionality due to damaged display screens. Although time vending machines are absent at bus stops and stations, BRT, LRT, and KTM offer this convenience, scoring 92.8% excellent and 6.12% poor functionality. While bicycle racks are not universally available, BRT, LRT, and

KTM provide them, achieving 100% excellent functionality. Lastly, parking facilities scored 18.7% excellent and 81.3% poor functionality, with limited space for parking near bus routes.

5.0 Discussion

5.1 Comparison of Facilities in Urban area and Sub-urban area

The urban zones under examination, including SS15 and USJ7, have demonstrated that these areas boast abundant public transportation options, facilitating easy mobility for the elderly. The availability of buses, BRT, LRT, and KTM services enhances accessibility for residents. In contrast, the EIS MBPJ website indicates fewer public transportation options in suburban regions. Residents in these areas primarily rely on Kampong Bukit Lanchong and Taman Pinggiran bus services to fulfill their daily mobility requirements (Fig.7). Certainly, in countries such as China, public transportation tends to be more prevalent in urban areas, while suburban regions often have limited options to fulfill the daily transportation requirements of residents (Guo et al., 2023). This pattern underscores the impact of urban population growth on expanding public transportation amenities within urban areas.

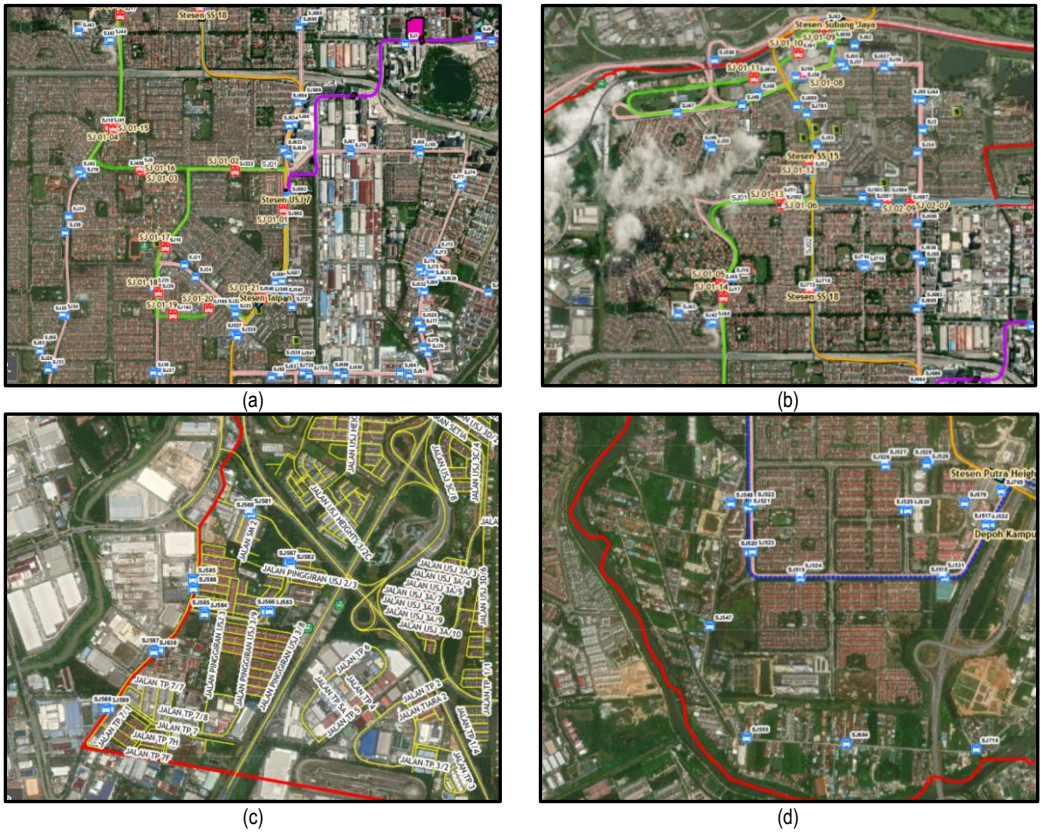


Fig. 7. (a) Map of USJ 7; (b) Map of SS18; (c) Map of Taman Pinggiran; (d) Map of Kampung Bukit Lanchong

5.2 Elderly Friendly

Public transportation facilities such as BRT, LRT, and KTM have shown notable advancements in catering to elderly passengers. Many of the amenities provided in these areas are designed to be elderly-friendly, prioritizing safety, comfort, and reliability services tailored to the needs of elderly individuals. At BRT, LRT, and KTM stations, safety measures like non-slip flooring, CCTV, and comfortable sitting areas have been installed to cater to older adults with varying physical needs and enhance safety and comfort for users. According to Dano and Alqahtany (2019), providing proper facilities enhances public transportation usage. Furthermore, as Dabelko-Schoeny et al., (2021) highlighted, creating a safe environment can encourage more people to utilize public transportation for their travel needs. Apart from that, observation shows bus transportation in some of the facilities is not well provided; in some cases, such bus stop poles (Inti/Pos Malaysia SS15, Masjid Al-Husna, Petronas SS17) are not considered elderly-friendly due to no sitting area, no security feature, no sunroof that can shelter from sun and rain while waiting for a bus. In addition, it is evident that some bus poles were not located as reported on the EIS MBSJ Website and were improperly placed. Only regular passengers familiar with the route know where to wait for buses, and certain bus systems have moderate accommodation for elderly passengers (Fig.8). The inadequate conditions and services make it uncomfortable for people to wait for a bus at a bus stop, pushing them towards using private vehicles as the only viable alternative for travel (Aziz & Mohammad, 2020; de Oña et al., 2021).

Fig. 8. (a) Missing Bus Pole; (b) Obstructed Bus Pole; (c) Clear Signage; (d) No Sitting Area; (e) Non-Slip Flooring; (f) Accessible Facilities of Public Transportation

Fig. 9. Damage Facilities at KTM Station

It is noted that only a few areas exhibit damaged facilities. These include instances where bus poles are missing at bus stops, and the stair facilities for wheelchair users at KTM at Subang Jaya station are damaged (Fig.9). However, aside from these issues, most facilities are in good condition, reliable, and offer comfort for elderly individuals' mobility. Therefore, enhancements in infrastructure, service quality, and the reliability of public transportation have resulted in a rise in its utilization (Name et al., 2023)

5.0 Conclusion and Recommendation

The exploration of public transportation facilities at Subang Jaya gives an insight into existing facilities provided for the residents, especially the elderly. The results suggest that specific public transportation services like LRT, BRT, and KTMB exhibit effectiveness and ease of access for elderly individuals. Conversely, RapidKL bus and Smart Selangor bus stops were discovered to be moderately maintained, with certain bus poles not positioned as indicated on the EIS MBSJ website. This affects the general of bus stops and diminishes their elderly-friendly features. The MBSJ should develop enhanced pole designs for bus stops to improve safety, comfort, and quality of life for older people. This information may provide more inclusive and age-friendly urban planning strategies for future insight. Addressing these issues is crucial in ensuring that elderly populations have equitable access to efficient, well-connected, and user-friendly public transportation systems that cater to their specific mobility needs within urban areas in Malaysia. Further research should be conducted investigating public transportation services in other states to enhance mobility for older people. Nevertheless, several significant limitations need to be considered such as the selected studied areas and types of amenities. It should be noted that the findings regarding public transportation in this research cannot be generalized to other areas, and they may not accurately represent the entire population, especially the elderly in Malaysia.

Acknowledgment

The authors thank the College of Engineering, Universiti Teknologi MARA (UiTM) for the support. The authors appreciate the financial support from the Universiti Teknologi MARA (UiTM). Thanks to the anonymous reviewer(s) who gave valuable comments. The authors would also like to thank everyone who was directly or indirectly involved in the success of the research.

Paper Contribution to Related Field of Study

This paper contributes to the field of public transportation and urban planning that caters to the comfort and needs of elderly individuals.

References

Aziz, A., & Mohamad, J. (2020). Public Transport Planning: Local Bus Service Integration and Improvements in Penang, Malaysia. In Journal of the Malaysian Institute of Planners (Vol. 18).

Al-Rashid, M. A., Shamsul Harumain, Y. A., Goh, H. C., Ali, Z., Nadeem, M., & Campisi, T. (2023). Perceived norms of public transport use as the determinants of older adults' social exclusion: Evidence from Pakistan. Cities, 137. https://doi.org/10.1016/j.cities.2023.104264.

ArcGIS web application. (n.d.). EIS MBSJ. https://eis.mbsj.gov.my/portal/apps/webappviewer/index.html?id=4410624a7

Bakar, M. F. A., Norhisham, S., Abudeyab, N. H. Z. I. A., Saad, N. M., Azlan, N. N. I. M., Shkuri, N. S. M., & Mohamad, A. M. (2022). Evaluating the Quality of Service of Bus Performance in Johor Bahru. IOP Conference Series: Earth and Environmental Science, 971(1). https://doi.org/10.1088/1755-1315/971/1/012016

Bhuyan, M. R., Lane, A. P., Moogoor, A., Močnik, Š., & Yuen, B. (2020). Meaning of age-friendly neighbourhood: An exploratory study with older adults and key informants in Singapore. Cities, 107. https://doi.org/10.1016/j.cities.2020.102940

Borhan, M. N., Hakimi Ibrahim, A. N., Syamsunur, D., & Rahmat, R. A. (2019). Why public bus is a less attractive mode of transport: A case study of Putrajaya, Malaysia. Periodica Polytechnica Transportation Engineering, 47(1), 82–90. https://doi.org/10.3311/PPtr.9228

Chan, E., & Lin, T. (2022). A Study on Preferred Transportation Mode Among Elderly In Klang Valley Bachelor Of Building And Property Management (Honours) Universiti Tunku Abdul Rahman Faculty Of Accountancy And Management Department Of Building And Property management

Cho, H., Choi, J., No, W., Oh, M., & Kim, Y. (2021). Accessibility of welfare facilities for elderly people in Daejeon, South Korea considering public transportation accessibility. *Transportation Research Interdisciplinary Perspectives*, *12*. https://doi.org/10.1016/j.trip.2021.100514

Chee Hoo, W., Waheeda, A., & Reesha, A. (2023). Factors Influencing the Passenger Satisfaction at Public Transport in Kuala Lumpur, Malaysia. In Journal of Project Management Practice (JPMP) (Vol. 3).

Dabelko-Schoeny, H., Maleku, A., Cao, Q., White, K., & Ozbilen, B. (2021). "We want to go, but there are no options": Exploring barriers and facilitators of transportation among diverse older adults. Journal of Transport and Health, 20. https://doi.org/10.1016/j.jth.2020.100994

Dano, L. U., & Alqahtany, A. M. (2019). providing proper facilities enhances public transportation usage. *Journal of Sustainability Science and Management*, *Volume 14*(Number 2), 157–171.

de Oña, J., Estévez, E., & de Oña, R. (2021). How does private vehicle users perceive the public transport service quality in large metropolitan areas? A European comparison. *Transport Policy*, *112*, 173–188. https://doi.org/10.1016/j.tranpol.2021.08.005

Dragičević, V., Kopić, M., Matić, D. G., & Grujičić, A. (2022). Urban Planning Impact on Mobility and Residential Satisfaction of Older People in Novi Sad. Sustainability (Switzerland), 14(5). https://doi.org/10.3390/su14052689

Freiberger, E., Sieber, C. C., & Kob, R. (2020). Mobility in Older Community-Dwelling Persons: A Narrative Review. In Frontiers in Physiology (Vol. 11). Frontiers Media S.A. https://doi.org/10.3389/fphys.2020.00881

Guo, C., Jiang, Y., Qiao, R., Zhao, J., Weng, J., & Chen, Y. (2023). The nonlinear relationship between the active travel behavior of older adults and built environments: A comparison between an inner-city area and a suburban area. Sustainable Cities and Society, 99. https://doi.org/10.1016/j.scs.2023.104961

Iman Hashim, N., & Munirah Syuhada Mohamad Zan, U. (2019). An Overview of Public Transportation Services as an Attraction of Tourism Industry in Malaysia. https://www.researchgate.net/publication/340077522

Jahangir, S., Bailey, A., Hasan, M. U., Hossain, S., Helbich, M., & Hyde, M. (2022). "When I Need to Travel, I Feel Feverish": Everyday Experiences of Transport Inequalities Among Older Adults in Dhaka, Bangladesh. Gerontologist, 62(4), 493–503. https://doi.org/10.1093/geront/gnab103

Local Strategies of Subang Jaya (2022). Laman Utama, Majlis Bandaraya Subang Jaya. https://www.mbsj.gov.my/ms/rancangan-tempatan-subang-jaya-2035-penggantian

Md Diah, J., Akhirruddin, N., Rahman, R. A., & Alam, S. (2022). An Evaluation of Smart Selangor Bus Service Efficacy. In Journal of Sustainable Civil Engineering and Technology (Vol. 1, Issue 1).

Mohd, S., Abdul Latiff, A. R., & Senadjki, A. (2019). Travel behavior of elderly in george town and Malacca, Malaysia. Sustainability (Switzerland), 11(19). https://doi.org/10.3390/su11195251

Name, I. A. J., Al-Jameel, H. A., AL-Maliki, L. A., & Al-Mamoori, S. K. (2023). Assessment of Public Transportation Facilities: Al-Kut City as a Case Study. AIP Conference Proceedings, 2806(1). https://doi.org/10.1063/5.0162886

Panahi, N., Pourjafar, M., Ranjbar, E., & Soltani, A. (2022). Examining older adults' attitudes towards different mobility modes in Iran. *Journal of Transport and Health*, *26*. https://doi.org/10.1016/j.jth.2022.101413

Prasarana Malaysia Berhad. (2024). MyRapid. https://myrapid.com.my/

Rajandran, K., Md Zoqratt, M. Z. H., Shee, D. Z. R., Lukic, G. W., Tan, K., Teh, P. L., Alex, D., Kalavally, V., Lee, S. W. H., Schaefer, A. R., Jairaman, J., Wong, C. L., & Ayub, Q. (2020). Aging and urban mobility in Bandar Sunway: A holistic approach.

Villena-Sanchez, J., Boschmann, E. E., & Avila-Forcada, S. (2022). Daily travel behaviors and transport mode choice of older adults in Mexico City. Journal of Transport Geography, 104. https://doi.org/10.1016/j.jtrangeo.2022.103445