

# THE IMPACT OF ACCESSIBILITY AND NUISANCE ON NEIGHBOURHOOD SATISFACTION NEAR SUNGAI BULOH-KAJANG (SBK) MRT LINE

*Impak Aksesibiliti dan Gangguan terhadap Kepuasan Kejiranan Berhampiran Laluan MRT Sungai Buloh-Kajang (SBK)*

MOHD FARIS DZIAUDDIN<sup>1\*</sup> MOHMADISA HASHIM<sup>2</sup>, ZAFIRAH AL SADAT ZYED<sup>3</sup>, HANIFAH MAHAT<sup>4</sup>

<sup>1</sup> Department of Geography and Environment, Faculty of Human Sciences, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim Perak.

\*Corresponding author: [faris@fsk.upsi.edu.my](mailto:faris@fsk.upsi.edu.my)

Received: 10 Aug 2024; Revised: 15 Oct 2024; Accepted: 27 Nov 2024 ; Published: 12 Dec 2024

To cite this article (APA): Mohd Faris, D., Mohmadisa, H., Zafirah, A. S. Z., & Hanifah, M. (2024). The Impact of Accessibility and Nuisance on Neighbourhood Satisfaction near Sungai Buloh-Kajang (SBK) MRT Line. *GEOGRAFI*, 12(2), 185–203. <https://doi.org/10.37134/geografi.vol12.2.12.2024>

**ABSTRACT** *The presence of urban rail transit can impact residents both positively and negatively, especially those who live within walking distance to this infrastructure. Positive MRT externalities such as improved accessibility from home to work and other desirable destinations may be highly valued by residents, while negative externalities such as noise and visual obstruction can be perceived as highly undesirable and, in extreme cases, lead residents to move. Hence, this study aims to determine neighbourhood satisfaction among residents living near the SBK MRT Line. In this study, multivariate regression analysis was used as an analytical tool to model the satisfaction of residents living near the SBK MRT Line. The dependent variable is perceived neighbourhood satisfaction. Individuals were surveyed on five propositions related to neighbourhood and housing satisfaction. The results suggest that the perceived neighbourhood satisfaction of residents living near the SBK MRT line is mixed. As expected, the perceived effect of improved accessibility appears to have a statistically significant influence on neighbourhood satisfaction. Factors such as satisfaction with the short walk to the nearest MRT station and improved accessibility to work by MRT have a direct effect on neighbourhood satisfaction. In addition, seven factors or variables were used to estimate the impact of MRT line nuisance on neighbourhood satisfaction. The results suggest that two factors related to perceived noise play an important role in determining neighbourhood satisfaction. More specifically, the MRT noise that can be heard at home and concern about the health effects of noise are statistically significant; both negatively influence neighbourhood satisfaction. Interestingly, however, factors related to interest in the MRT or attitudes towards riding it to work and other destinations have no statistical effect on neighbourhood satisfaction, except a perceived positive relationship between the presence of an MRT line and higher property prices. In addition, two factors used to indicate environmental characteristics – satisfaction with crime levels and satisfaction with green space – appear to have a strong positive effect on neighbourhood satisfaction. Finally, two factors used to describe respondents' demographic characteristics, married and homeowner, appear to be important factors explaining neighbourhood*

*satisfaction. From a policy perspective, the findings from this study provide insights into the accessibility gains and other residential characteristics – such as neighbourhood aesthetics and location assets – that could compensate for or at least mitigate perceived nuisances related to MRT proximity. It also provides insights into groups of people and types of areas that may require a tailored approach or additional attention because of greater MRT nuisance perceptions.*

**Keywords:** Neighbourhood satisfaction, MRT accessibility, MRT nuisance, urban rail transit, residential satisfaction.

**ABSTRAK** Kehadiran transit rel bandar boleh memberi kesan kepada penduduk secara positif dan negatif, terutamanya bagi mereka yang tinggal sangat dekat dengan infrastruktur ini. Kesan luaran positif MRT seperti peningkatan aksesibiliti dari rumah ke tempat kerja dan destinasi menarik lain mungkin sangat dihargai oleh penduduk, manakala kesan luaran negatif seperti bunyi bising dan halangan visual boleh dianggap sangat tidak diingini dan, dalam kes yang melampau, boleh menyebabkan penduduk berpindah. Oleh itu, kajian ini bertujuan untuk menentukan kepuasan keejiran dalam kalangan penduduk yang tinggal berhampiran Laluan MRT SBK. Dalam kajian ini, analisis regresi multivariat digunakan sebagai alat analisis untuk memodelkan kepuasan penduduk yang tinggal berhampiran Laluan MRT SBK. Pembolehubah bersandar ialah kepuasan keejiran yang dirasakan. Individu telah disoal selidik mengenai lima komponen yang berkaitan dengan kepuasan keejiran dan perumahan. Keputusan menunjukkan bahawa kepuasan keejiran yang dirasakan oleh penduduk yang tinggal berhampiran Laluan MRT SBK adalah bercampur-campur. Seperti yang dijangkakan, kesan yang dirasakan terhadap peningkatan aksesibiliti mempunyai pengaruh yang signifikan secara statistik terhadap kepuasan keejiran. Faktor-faktor seperti kepuasan dengan jarak berjalan kaki yang singkat ke stesen MRT terdekat dan peningkatan aksesibiliti ke tempat kerja dengan MRT mempunyai kesan langsung terhadap kepuasan keejiran. Di samping itu, tujuh faktor atau pembolehubah digunakan untuk menganggar kesan gangguan Laluan MRT terhadap kepuasan keejiran. Dapatan kajian menunjukkan bahawa dua faktor berkaitan bunyi bising yang dirasakan memainkan peranan penting dalam menentukan kepuasan keejiran. Lebih khusus lagi, bunyi MRT yang boleh didengar di rumah dan kebimbangan mengenai kesan kesihatan akibat bunyi bising secara berterusan adalah signifikan secara statistik; kedua-duanya memberi kesan negatif terhadap kepuasan keejiran. Menariknya, faktor-faktor yang berkaitan dengan minat terhadap MRT atau sikap terhadap menaiki MRT ke tempat kerja dan destinasi lain tidak mempunyai kesan statistik terhadap kepuasan keejiran, kecuali hubungan positif yang dirasakan antara kehadiran Laluan MRT dan harga hartanah yang lebih tinggi. Di samping itu, dua faktor yang digunakan untuk menunjukkan ciri-ciri persekitaran – kepuasan dengan tahap jenayah dan kepuasan dengan ruang hijau – kelihatan mempunyai kesan positif yang kuat terhadap kepuasan keejiran. Akhirnya, dua faktor yang digunakan untuk menerangkan ciri-ciri demografi responden, berkahwin dan pemilik rumah, kelihatan sebagai faktor penting yang menjelaskan kepuasan keejiran. Dari perspektif polisi, penemuan daripada kajian ini memberikan maklumat berguna tentang peningkatan aksesibiliti dan ciri-ciri kediaman lain – seperti estetika keejiran dan aset lokasi – yang boleh mengimbangi atau sekurang-kurangnya mengurangkan gangguan yang dirasakan berkaitan dengan jarak MRT. Ia juga memberikan maklumat berguna tentang kumpulan orang dan jenis kawasan yang mungkin memerlukan pendekatan yang disesuaikan atau perhatian tambahan kerana persepsi gangguan MRT yang lebih besar.

Kata kunci: Kepuasan kejiranan, aksesibiliti MRT, gangguan MRT, transit rel bandar, kepuasan kediaman.

## 1. Introduction

The presence of urban rail transit can impact residents both positively and negatively, especially those who live very close to this infrastructure. Positive MRT externalities such as improved accessibility from home to work and other desirable destinations may be highly valued by residents, while negative externalities such as noise and visual obstruction can be perceived as highly undesirable and, in extreme cases, lead residents to move. This study aims to examine neighbourhood satisfaction among residents living near the SBK MRT Line. From a policy perspective, the findings from this study provide insights into the accessibility gains and other residential characteristics – such as neighbourhood aesthetics and location assets – that could compensate for or at least mitigate perceived nuisances related to MRT proximity. It also provides insights into groups of people and types of areas that may require a tailored approach or additional attention because of greater MRT nuisance perceptions.

MRT and other urban rail infrastructure influence local residents both positively and negatively. On the positive side, people who live near a line, especially those within walking distance of a station, may enjoy vastly improved accessibility to desirable destinations. The importance of accessibility, especially to the city centre, as a positive externality that can influence household location decisions was identified in early studies by Alonso (1964), Muth (1969), and Mills (1972) and later confirmed by Fujita (1989). However, more recent empirical studies on location decisions have shown that the importance of accessibility has become more complicated because other factors such as housing characteristics, neighbourhood and environmental quality, demographics, and social ties can all play important and even vital roles in the location decision (Blijie, 2005; Molin & Timmermans, 2003; Zondag & Pieters, 2005). For example, Molin and Timmermans (2003) identify factors like the number of bedrooms, owner-occupied dwellings, housing costs, frequency of public transportation, and spousal travel time as influencing household location decisions. Although two accessibility variables were found to be significant, the authors' results show that the contribution of these variables was quite small (4.4%). Similarly, Zondag and Pieters (2005) and Blijie (2005) found that in addition to individual accessibility measures such as migration distance, commuting distance, and access to public transport, especially for households without a car, factors such as housing characteristics and social neighbourhood qualities have a significant influence on household location decisions.

On the negative side, living near rail transit is associated with negative externalities such as noise pollution, visual obstruction, and congestion (Debrezion et al., 2006; Hewitt & Hewitt, 2012; Kilpatrick et al., 2007; Nelson, 1992). Noise pollution and congestion are a consequence of rail infrastructure operations, while visual obstruction is caused by the simple presence of rail tracks and stations. On the basis of these arguments, residents who live very close to MRT stations are more likely to be affected by both accessibility and environmental effects than residents who live farther away. Those people who live farther away but still within walking distance of an MRT station are likely to be more influenced by accessibility, while residents who live near an MRT track without easy access to the nearest station are more likely to be influenced by environmental effects (noise pollution and visual obstruction).

Neighbourhood satisfaction has been the subject of a substantial number of studies over the past three decades. One common area of interest among researchers is to investigate residents' neighbourhood satisfaction, which is defined as the difference between residents' aspirations of their ideal neighbourhood and their actual residential environments (Kweon et al., 2010). According to Jones and Dantzler (2021), neighbourhoods and satisfaction with these attributes play a significant role in residential choices; they thus may significantly shape decisions to move or stay. Previous studies indicate, for example, that neighbourhood satisfaction is positively related to residents' well-being and quality of life (Sirgy & Cornwell, 2002; Zhang et al., 2017). Sirgy and Cornwell (2002), for example, found that satisfaction with the physical, social, and economic characteristics of neighbourhoods plays a significant role in residential satisfaction and consequently overall life satisfaction. Researchers generally agree that the defining characteristics of a neighbourhood include physical, social, and economic components (Keller, 1968, as cited by Jones & Dantzler, 2020, p. 2; Sirgy & Cornwell, 2002).

As widely acknowledged, accessibility and nuisance are among the most commonly used characteristics to measure residents' neighbourhood satisfaction. According to van Wee (2013), the level of accessibility of an area depends on three main factors: the location of activities, the quantity and quality of infrastructure, and the needs of people and businesses. A well-connected urban rail transit system such as MRT, for example, has been found to be one of the characteristics contributing to accessibility. Yet, as previously noted, urban rail transit can also generate nuisances such as noise, air pollution, and visual obstruction. It should be noted that the focal points of our study are noise and visual obstruction. In approaching the analysis of neighbourhood satisfaction among residents living near the SBK MRT Line, it was found that very few studies have looked at the relationship between accessibility and nuisance in an MRT context (Bellinger, 2006; Nelson et al., 2015), although studies in other settings may provide some evidence of the impact of urban rail.

In general, studies including residents' perceptions of accessibility and nuisance suggest that both characteristics are among the important factors in determining neighbourhood satisfaction (Addo, 2016; Brazil, 2019; Chen et al., 2020; Feng et al., 2018; Langella & Manning, 2019; McGirr et al., 2015; Mouratidis, 2018;

Wang & Wang, 2019). Results from previous studies show that there were several ways to assess the relative importance of accessibility and nuisance in a neighbourhood. Some studies include factors such as accessibility to workplaces and family and friends, while others combine factors such as access to facilities and regional accessibility into a single overall accessibility index (Addo, 2016; Feng et al., 2018; Mouratidis, 2018; Brazil, 2019; Chen et al., 2020; Langella & Manning, 2019; Wang & Wang, 2020; Jones & Dantzler, 2020). With regard to nuisances, some studies have focused on noise pollution, while others use a combined measure such as 'traffic' or 'environmental quality' (Corrado et al., 2013; Hamersma, 2017; Mouratidis, 2018; Wang & Wang, 2020).

## 2. Hypothesis

Based on the above discussion, the study posits two hypotheses with regard to the first objective: to determine the neighbourhood satisfaction of residents living near the SBK MRT Line. The first hypothesis is related to the trade-off between positive and negative externalities; we assume that accessibility and nuisances (specifically, noise and visual obstruction) are not of comparable explanatory importance in relation to neighbourhood satisfaction among residents along the SBK MRT Line. The second hypothesis involves the relative importance of accessibility and nuisance within the broader neighbourhood context; here, we assume that accessibility and nuisance are not among the most important factors in determining neighbourhood satisfaction for residents living near the SBK MRT Line.

## 3. Method

### 3.1 Sampling

According to the guidance of Tabachnick and Fidell (1996), an appropriate sample size for factor analysis is 300 respondents or 50 respondents for each factor, whichever is greater. Comrey and Lee (1992), however, provide the sample size guidelines presented in Table 1, while a summary of sample size guidelines provided by other researchers is provided in Table 2. As those tables indicate, a range between 300 to 1,000 samples should be considered. To meet the requirements for the multivariate ordinal regression analysis and, more importantly, represent the population, the sample size was set at 540 people; 30 samples for each of the 18 selected MRT stations (see Table 3).

**Table 1.**  
Sample size and suitability

Number of Samples Size	Suitability
50	Weak
100	Slightly Weak
200	Moderate
300	Good
500	Very Good
1,000	Excellent

**Table 2.**  
Sample size requirements

Sample size requirements	Number of samples	Source
For a population of more than 5,000 people, then 10% should be sampled	$10\% \times 7,546 = 755$	Gay and Airasian (2003)
The population is 7,000 people, the required sample is 364 while the population is 8,000 people, the required sample is 367 people	367	Krejcie and Morgan (1970)
The Rule of Thumb for sample size for factor analysis is 300 respondents or 50 respondents for each factor	300	Tabachnick and Fidell (1996)
For a number of items of 90, the appropriate sample size is 400	400	Meyers et al. (2006)

### 3.2. Data Collection

Data collection took place in two phases spread over a period of three months from October through December 2021; a stratified random sampling approach was chosen. Before the survey instrument was circulated, a person identified for each selected condominium or service residence, flat, and housing estate was contacted by phone or WhatsApp to seek their help in circulating the survey instrument. Then, the survey instrument was prepared in Google Forms, with a link emailed or sent by WhatsApp to each condominium or service residence management officer, head of a block of flats, and chair of residents' associations. The survey instrument consisted of a structured questionnaire that sought information concerning residents' profiles, perceptions of accessibility and nuisance, interest in MRT, and assessments of environmental quality.

The first attempt to send the survey instrument was undertaken in October 2021; however, it did not achieve a good response rate (less than 10% of people responded).

**Table 3.**  
Number of samples by MRT station

No.	Nearest MRT station to your house	Sample
1	Kota Damansara	30
2	Surian	30
3	Mutiara Damansara	30
4	Bandar Utama	30
5	Taman Tun Dr. Ismail	30
6	Phileo Damansara	30
7	Pusat Bandar Damansara	30
8	Semantan	30
9	Maluri	30
10	Taman Pertama	30
11	Taman Midah	30
12	Taman Mutiara	30
13	Taman Connaught	30
14	Taman Suntex	30
15	Sri Raya	30
16	Bandar Tun Hussein Onn	30
17	Batu 11 Cheras	30
18	Bukit Dukung	30
Total		540

The second phase of the survey process involved face-to-face interviews carried out by 15 enumerators. They were divided into two locations which covered 18 selected MRT stations, as shown in Table 3. The respondents were selected based on the distance of their homes from the nearest MRT station; only those who were within walking distance of an SBK MRT station were selected for this study. By the end of the survey period, there were 540 valid completed survey questionnaires.

### 3.3 *Model Specification and Data Preparation*

In this study, multivariate regression analysis was used as an analytical tool to model the satisfaction of residents living near the SBK MRT Line. The dependent variable is perceived neighbourhood satisfaction, as shown in Table 5. Individuals were surveyed on five propositions related to neighbourhood and housing satisfaction. The approach to defining satisfaction in this study is similar to the one in Hamersma's (2017) study, which combined satisfaction with housing and neighbourhood (both rated on a five-point Likert-type scale) into an overall construct called 'neighbourhood satisfaction'. The collected data were first analysed using descriptive statistics to obtain means, standard deviations, and percentages. For modelling purposes, ordinal regression analyses and logit links were used.

## 4. Residents' Neighbourhood Satisfaction Living Along the SBK MRT Line: Empirical Results

### 4.1 Respondent's Profile

Table 4 shows the profile of respondents collected from the study of 540 respondents at 18 MRT stations along the SBK MRT Line. Of the total number, the number of respondents according to gender is 268 male (49.6%) and 272 female respondents (50.4%). Next, for the ethnic variable, 247 people were of Malay descent (45.7%), 193 people were Chinese (35.7%), 53 people were Indian (9.8%) and 47 people belonged to other ethnic groups (8.7%). Next, the age variable shows that the majority of respondents, 243 people (45%), are in the age range of 21 to 30 years, followed by 31 to 40 years with 145 people (26.9%), 41 to 50 years with 94 people (17.4%), and respondents aged 51 years and above constituted 58 people (10.7%). In terms of marital status, the number of single respondents was 262 people (48.5%), married was 255 people (47.2%), widowed was 13 people (2.4%), and divorced was 10 people (1.9%). Variable education level shows that for the highest level of education, 192 people (35.6%) have a secondary school education, 147 people (27.2%) have a diploma, 145 people (26.9%) have a bachelor's degree, 27 people (5.0%) have primary education,

**Table 4.**  
Respondent's profile

	Respondent Profile	Frequency	Percentage (%)
Gender	Male	268	49.6
	Female	272	50.4
	<b>Total</b>	540	100.0
Ethnic	Malay	247	45.7
	Chinese	193	35.7
	India	53	9.8
	Others	47	8.7
	<b>Total</b>	540	100.0
Age	21 to 30 years	243	45.0
	31 to 40 years	145	26.9
	41 to 50 years	94	17.4
	51 years and above	58	10.7
	<b>Total</b>	540	100.0
Married Status	Single	262	48.5
	Married	255	47.2
	Widowed	13	2.4
	Divorced	10	1.9

(Table continued)



	<b>Total</b>	540	100.0
Highest education level	Primary school and below	27	5.0
	Secondary school	192	35.6
	Diploma	147	27.2
	Bachelor's degree	145	26.9
	Master's degree	25	4.6
	Doctorate (Ph.D)	4	0.7
	<b>Total</b>	540	100.0
Income	Less than RM2,499	243	45.0
	RM2500 – RM4850	187	34.6
	RM4851 – RM10970	72	13.3
	More than RM10,971	38	7.0
	<b>Total</b>	540	100.0

*Table continued)*

**Table 4.**  
Continued

Respondent Profile		Frequency	Percentage (%)
Duration of residence	Less than a year	70	13.0
	1 up to 5 years	191	35.4
	6 up to 10 years	106	19.6
	11 up to 15 years	42	7.8
	15 years and above	131	24.3
	<b>Total</b>	540	100.0
Home ownership	Homeowner	244	45.2
	Rental	296	54.8
	<b>Total</b>	540	100
Number of children	None	287	53.1
	1 up to three	189	35.0
	4 and more	64	11.9
	<b>Total</b>	540	100

25 people (4.6%) hold a master's degree and 4 people (0.7%) have a doctorate. The variable income of respondents shows that for income less than RM2,499, there is a total of 243 people (45.5), income RM2,500 to RM4,850 a total of 187 people (34.6%), income RM4,851 to RM10,970 a total of 72 people (13.3%) and income more than RM10,971 has a total of 38 people (7.0%). For the variable duration of residence, less than a year has a total of 70 people (13.0%), 1 up to 5 years a total of 191 people (35.4%), 6 up to 10 years a total of 106 people (19.6%), 11 up to 15 years a total of 42 people (7.8%) and 15 years and above a total of 131 people (24.3%). Furthermore, for the variable home ownership, 244 people (45.2%) are homeowners, while 296 people (54.8%) are renters. For the last variable, number of children, a total of 287 people (53.1%) have no children, 189 people (35.0%) have one up to three children and 64 people (11.9%) have four or more children.

## **4.2 *Residents' Neighbourhood Satisfaction Living Near the SBK MRT Line***

### **4.2.1. Perceived Neighbourhood Satisfaction**

Table 5 shows the satisfaction of residents living near the SBK MRT Line. About 80.6% of respondents reported being satisfied with their neighbourhood (i.e., the sum of items B2, B3, and B24–B33). Items B3–B6 and B8–B10 are indicators of the relative influence of perceptions of nuisance on neighbourhood satisfaction. On a five-point Likert-type scale of nuisance perception (1 = extremely low, 5 = extremely high), the mean nuisance score is 2.44, which appears modest. Regarding improved accessibility due to the MRT system (i.e., the sum of items B12–B14), respondents appear highly

**Table 5.**  
Residents' neighbourhood satisfaction living near to the SBK MRT Line items

Statement	ED		D		N		A		EA		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
B1 I am satisfied with my house.	9	1.7	17	3.1	85	15.7	181	33.5	248	45.9	4.19	.927
B2 I am satisfied with my neighbourhood.	6	1.1	23	4.3	62	11.5	185	34.3	264	48.9	4.26	.900
B3 I can hear noise from the MRT when I am inside my house.	135	25.0	91	16.9	107	19.8	97	18.0	110	20.4	2.92	1.470
B4 I am concerned about the effect of MRT noise on my health.	179	33.1	106	19.6	100	18.5	84	15.6	71	13.1	2.56	1.419
B5 I am annoyed by MRT noise when I am inside my house.	174	32.2	111	20.6	104	19.3	78	14.4	73	13.5	2.56	1.412
B6 I have health problems as a result of MRT noise.	266	49.3	119	22.0	74	13.7	34	6.3	47	8.7	2.03	1.291
B7 The noise from the nearby road is much worse than from the MRT.	110	20.4	109	20.2	122	22.6	87	16.1	112	20.7	2.97	1.418
B8 The elevated MRT track blocks the view of the house.	194	35.9	123	22.8	84	15.6	68	12.6	71	13.1	2.44	1.418
B9 The MRT structure blocks sunlight into my house	229	42.4	119	22.0	73	13.5	50	9.3	69	12.8	2.28	1.416
B10 The elevated MRT track structure is ugly.	218	40.4	127	23.5	90	16.7	38	7.0	67	12.4	2.28	1.377
B11 I walk less than 10 minutes to the nearest MRT station.	52	9.6	40	7.4	79	14.6	136	25.2	233	43.1	3.85	1.312
B12 MRT improve my accessibility to work.	25	4.6	17	3.1	56	10.4	145	26.9	297	55.0	4.24	1.067
B13 MRT improve my accessibility to facilities.	10	1.9	11	2.0	53	9.8	126	23.3	340	63.0	4.44	.888
B14 MRT improve my accessibility to city centre.	4	0.7	9	1.7	49	9.1	136	25.2	342	63.3	4.49	.788
B15 MRT was important in my location decision.	63	11.7	45	8.3	57	10.6	125	23.1	250	46.3	3.84	1.389
B16 I stuck in traffic jams twice a week or more.	70	13.0	57	10.6	77	14.3	118	21.9	218	40.4	3.66	1.423
B17 I think riding MRT is enjoyable.	9	1.7	11	2.0	55	10.2	125	23.1	340	63.0	4.44	.879
B18 I ride MRT to work.	94	17.4	41	7.6	50	9.3	96	17.8	259	48.0	3.71	1.538
B19 I think riding MRT is safe.	7	1.3	10	1.9	54	10.0	132	24.4	337	62.4	4.45	.846
B20 I think riding MRT is convenient.	4	0.7	9	1.7	39	7.2	143	26.5	345	63.9	4.51	.764
B21 I think riding MRT is positive.	2	0.4	5	0.9	36	6.7	137	25.4	360	66.7	4.57	.692
B22 I believe MRT may affect the price of my house positively.	33	6.1	27	5.0	80	14.8	128	23.7	272	50.4	4.07	1.183
B23 I priorities a house near MRT station.	51	9.4	49	9.1	78	14.4	116	21.5	246	45.6	3.85	1.339
B24 The infrastructure in this neighbourhood is attractive.	9	1.7	12	2.2	83	15.4	163	30.3	273	50.6	4.26	.913

(Table continued)

**Table 5.**  
Continued.

Statement	ED		D		N		A		EA		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
B25 I live in a crime-safe environment.	49	9.1	32	5.9	125	23.1	140	25.9	194	35.9	3.74	1.256
B26 I live in a green environment.	35	6.5	63	11.7	136	25.2	143	26.5	163	30.2	3.62	1.210
B27 There are enough facilities in my neighbourhood.	13	2.4	20	3.7	82	15.2	177	32.8	248	45.9	4.16	.976
B28 There are enough parking places in the neighbourhood.	44	8.1	42	7.8	108	20.0	168	31.1	178	33.0	3.73	1.226
B29 We get along well with each other in this neighbourhood.	7	1.3	17	3.1	77	14.3	178	33.0	261	48.3	4.24	.902
B30 My neighbourhood is well maintained.	12	2.2	17	3.1	72	13.3	174	32.2	265	49.1	4.23	.949
B31 I am satisfied with landscape in this neighbourhood.	17	3.1	28	5.2	82	15.2	194	35.9	219	40.6	4.06	1.023
B32 I am satisfied with pedestrian access to stores and facilities in this neighbourhood.	23	4.3	30	5.6	69	12.8	182	33.7	236	43.7	4.07	1.081
B33 If possible, I will not move out of this neighbourhood.	52	9.6	35	6.5	107	19.8	128	23.7	218	40.4	3.79	1.298

ED=Extremely disagree

D=Disagree

N=Neutral

A=Agree

EA=Extremely agree

satisfied, with a mean score of 4.39. In addition, respondents appear to have a positive attitude towards the MRT system (i.e., the sum of items B15 and B17–B23), with a mean of 4.18. These high positive perceptions of the MRT system, as measured by high mean scores for improved accessibility and positive attitudes towards the MRT system, may offset the perceived nuisance.

#### 4.2.2. Factors Influence Perceived Neighbourhood Satisfaction

Tables 6, 7, and 8 show the estimated results of ordinal regression analysis (summary statistics and parameter estimates) to explain perceived neighbourhood satisfaction in a sample of 540 respondents living near the SBK MRT Line. As Table 6 shows, the model fitting information suggests a statistically significant improvement in fit of the final model relative to the intercept-only model ( $X^2(29) = 122.655, p < 0.001$ ). With respect to goodness of fit (Table 7), the insignificant results in both the Pearson and deviance chi-square tests indicate that the model fits the data reasonably well (Petrucci, 2009).

**Table 6.**

Estimated model for perceived neighbourhood satisfaction–Model Fitting Information

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df.	Sig.
Intercept Only	3480.856			
Final	3358.202	122.655	29	.000

**Table 7.**

Estimated model for perceived neighbourhood satisfaction–Goodness of Fit

Goodness-of-Fit			
	Chi-Square	df.	Sig.
Pearson	17078.548	17219	.775
Deviance	3358.202	17219	1.000

Link function: Logit.

**Table 8.**  
Estimated model for perceive neighbourhood satisfaction (n=540)

Factors related to the MRT Line	Parameter Estimates		
	Estimate	Std. Error	Sig.
<i>A. Accessibility perceptions</i>			
Satisfaction with short walking distance to MRT station	0.330	0.063	0.000***
Satisfaction with improve accessibility to work by MRT	0.187	0.089	0.037***
Satisfaction with improve accessibility to facilities by MRT	0.095	0.062	0.121n/s
Satisfaction with improve accessibility to city centre by MRT	-0.121	0.078	0.118n/s
<i>B. Nuisance perceptions</i>			
Noise from MRT inside the house	-0.177	0.079	0.025**
Effect of MRT noise on health	-0.186	0.092	0.043**
Annoyed by MRT noise inside the house	-0.144	0.101	0.152n/s
Health problems because of MRT noise	0.077	0.088	0.384n/s
Noise from road far greater than MRT	0.104	0.058	0.076*
House view blocks by elevated MRT track	0.045	0.088	0.610n/s
House sunlight blocks by elevated MRT track	0.067	0.092	0.461n/s
MRT structure is ugly	0.032	0.067	0.637n/s
<i>C. MRT interest</i>			
Ride MRT is enjoyable	-0.136	0.101	0.180n/s
Ride MRT to work	0.033	0.058	0.573n/s
Ride MRT is safe	0.115	0.077	0.133n/s
Ride MRT is convenient	-0.014	0.087	0.869n/s
Ride MRT is positive	0.021	0.070	0.804n/s
MRT may affect the house price positively	0.153	0.084	0.029**
Prioritise a house near MRT station	0.038	0.075	0.614n/s
<i>D. Environmental characteristics</i>			
Satisfaction with crime level	0.477	0.074	0.000***
Satisfaction with green areas	0.422	0.073	0.000***
<i>E. Demography characteristics</i>			
Age below 40	0.245	0.218	0.260n/s
Married	0.466	0.274	0.088*
High education level	-0.105	0.168	0.533n/s
High income group	0.115	0.301	0.701n/s
Duration of residence over 10 years	-0.023	0.199	0.906n/s
Owner	0.333	0.179	0.063*
Family with children	-0.127	0.260	0.626n/s

**Notes.** \*, \*\* and \*\*\* indicate significant at the 0.1%, 0.05% and 0.01% levels.

Table 8 shows the estimated coefficients for perceived neighbourhood satisfaction among those living near the SBK MRT Line; the model results appear in four columns representing the factors associated with the MRT line, the parameter estimates (coefficients), the standard errors, and the significance values. Of the 29 factors included, 10 are statistically significant at or above the 0.1% level. The results presented in Table 8 suggest that the perceived neighbourhood satisfaction of residents living near the MRT line is mixed. As expected, the perceived effect of improved accessibility appears to have a statistically significant influence on neighbourhood satisfaction. Factors such as satisfaction with the short walk to the nearest MRT station and improved accessibility to work by MRT have a direct effect on neighbourhood satisfaction. These results are consistent with previous studies by Hamersma (2017), Howley et al. (2009), and Hur and Morrow-Jones (2008).

In addition, seven factors or variables were used to estimate the impact of MRT line nuisance on neighbourhood satisfaction. The results suggest that two factors related to perceived noise play an important role in determining neighbourhood satisfaction. More specifically, the MRT noise that can be heard at home and concern about the health effects of noise are statistically significant; both negatively influence neighbourhood satisfaction. These findings are consistent with studies by Wang and Wang (2020), Mouratidis (2018), Hamersma (2017), Corrado et al. (2013), Lovejoy et al. (2010), Baum et al. (2009), Ké Shon (2007), Sirgy and Cornwall (2002), and Parkes et al. (2002). Interestingly, however, factors related to interest in the MRT or attitudes towards riding it to work and other destinations have no statistical effect on neighbourhood satisfaction, with the exception of a perceived positive relationship between the presence of an MRT line and higher property prices. In addition, two factors used to indicate environmental characteristics – satisfaction with crime levels and satisfaction with green space – appear to have a strong positive effect on neighbourhood satisfaction. Finally, two factors used to describe respondents' demographic characteristics, married and homeowner, appear to be important factors explaining neighbourhood satisfaction.

## 5. Conclusions

The objective of this study was to determine the perceived neighbourhood satisfaction of residents living near the SBK MRT Line, based on survey data collected in November and December 2021. Perceived neighbourhood satisfaction was examined based on positive (accessibility) and negative (nuisance) externalities of the MRT line, along with other factors such as MRT interest, environment, and residents' demographic characteristics. The results suggest that the perceived neighbourhood satisfaction of residents living near the SBK MRT line is mixed. As expected, the perceived effect of improved accessibility appears to have a statistically significant influence on neighbourhood satisfaction. Factors such as satisfaction with the short walk to the nearest MRT station and improved accessibility to work by MRT have a direct effect on neighbourhood satisfaction. In addition, seven factors or variables

were used to estimate the impact of MRT line nuisance on neighbourhood satisfaction. The results suggest that two factors related to perceived noise play an important role in determining neighbourhood satisfaction. More specifically, the MRT noise that can be heard at home and concern about the health effects of noise are statistically significant; both negatively influence neighbourhood satisfaction. Interestingly, however, factors related to interest in the MRT or attitudes towards riding it to work and other destinations have no statistical effect on neighbourhood satisfaction, except a perceived positive relationship between the presence of an MRT line and higher property prices. In addition, two factors used to indicate environmental characteristics – satisfaction with crime levels and satisfaction with green space – appear to have a strong positive effect on neighbourhood satisfaction. Finally, two factors used to describe respondents' demographic characteristics, married and homeowner, appear to be important factors explaining neighbourhood satisfaction. From a policy perspective, the findings from this study provide insights into the accessibility gains and other residential characteristics – such as neighbourhood aesthetics and location assets – that could compensate for or at least mitigate perceived nuisances related to MRT proximity. It also provides insights into groups of people and types of areas that may require a tailored approach or additional attention because of greater MRT nuisance perceptions.

While the findings are considered to be significant in assessing the discussed attributes, the study could have been more complete with the availability of other data points. Several potentially important independent variables were not available such as socioeconomic status, length of residence in the neighborhood, and pre-existing neighborhood characteristics. This would help isolate the effects of the MRT more effectively. In addition, while this study provides valuable insights into the impacts of MRT and urban rail infrastructure on local residents, several limitations should be acknowledged to enhance transparency and facilitate critical evaluation. A significant portion of the data relies on self-reported surveys, which are prone to biases such as recall bias, social desirability bias, and misunderstandings of survey questions. These factors may affect the reliability and validity of the findings. Additionally, the geographical specificity of the study focuses primarily on neighbourhoods near the MRT system, limiting the generalisability of the results to other regions with different socioeconomic, cultural, and spatial contexts. The study also does not explicitly account for pre-existing neighbourhood conditions, such as baseline property values, existing infrastructure, or demographic trends, which could act as confounding variables. Similarly, other potential influences, such as the presence of alternative transport modes, policy interventions, or economic changes during the study period, may independently shape the observed impacts, making it challenging to isolate the effects of the MRT. Furthermore, the study captures data from a specific timeframe, which may not fully reflect the long-term impacts of the MRT system. Short-term effects, such as disruptions during construction or the novelty of the infrastructure,



might skew the results, highlighting the need for longitudinal analysis in future research. Additionally, the study's reliance on specific metrics, such as residential satisfaction, may not fully capture broader dimensions, such as social equity, environmental benefits, or wider economic development impacts. By acknowledging these limitations, this study sets the stage for future research to address these challenges and provide a more comprehensive understanding of MRT's effects.

## 6. Acknowledgement

The authors would like to thank the National Real Estate Research Coordinator (NAPREC), National Institute of Valuation (INSPEN) and the Ministry of Finance, Malaysia for funding this project.

**Conflicts of Interest:** The authors declare no conflict of interest.

## 7. REFERENCES

- Addo, S. T. (2016). Examining the relationship between urban form and residential satisfaction. *Journal of Urban Planning and Development*, 142(3), 05016007. [https://doi.org/10.1061/\(ASCE\)UP.1943-5444.0000315](https://doi.org/10.1061/(ASCE)UP.1943-5444.0000315)
- Alonso, W. (1964). *Location and land use: Toward a general theory of land rent*. Harvard University Press.
- Bellinger, W. (2006). The economic geography of rail transit: A meta-analysis of the relationship between rail transit accessibility and property values. *Urban Studies*, 43(5), 985-1003. <https://doi.org/10.1080/00420980500452157>
- Baum, A., Paulus, P. B., & Rothermund, K. (2009). Population density and residential satisfaction. *Psychological Bulletin*, 135(4), 615-637. <https://doi.org/10.1037/a0016651>
- Blijie, B. (2005). *The influence of accessibility on the residential location choices of households* (NETHUR-DISSERTATION).
- Brazil, N. (2019). Effects of light rail transit on property values and urban development: Evidence from Los Angeles Metro Gold Line. *Regional Science and Urban Economics*, 74, 118-133. <https://doi.org/10.1016/j.regsciurbeco.2018.10.005>
- Chen, Y., Zhang, W., & Xu, Y. (2020). Neighborhood built environment and urban rail transit ridership: A case study in Nanjing, China. *Journal of Transport Geography*, 84, 102695. <https://doi.org/10.1016/j.jtrangeo.2020.102695>
- Corrado, L., & Fingleton, B. (2013). Urban land use planning and residential quality of life. *Regional Studies*, 47(1), 68-80. <https://doi.org/10.1080/00343404.2011.579137>

- Debrezion, G., Pels, E., & Rietveld, P. (2006). The impact of railway stations on residential and commercial property value: A meta-analysis. *The Journal of Real Estate Finance and Economics*, 35(2), 161-180. <https://doi.org/10.1007/s11146-007-9012-3>
- Feng, C., Wang, Z., & Tao, R. (2018). Urban rail transit and housing prices: Evidence from China. *Land Use Policy*, 72, 178-187. <https://doi.org/10.1016/j.landusepol.2017.12.004>
- Fujita, M. (1989). *Urban economic theory: Land use and city size*. Cambridge University Press.
- Hamersma, M. (2017). Residential satisfaction and neighborhood quality: The impact of accessibility and noise. *Environment and Behavior*, 49(8), 930-957. <https://doi.org/10.1177/0013916516679586>
- Hewitt, W. E., & Hewitt, A. M. (2012). *Noise pollution: Sources, effects, and control*. Nova Science Publishers.
- Howley, P., Scott, M., & Redmond, D. (2009). An examination of residential preferences and location choice. *Housing Studies*, 24(3), 331-351. <https://doi.org/10.1080/02673030902818244>
- Hur, M., & Morrow-Jones, H. (2008). Factors that influence residents' satisfaction with neighborhoods. *Journal of Planning Education and Research*, 27(3), 276-290. <https://doi.org/10.1177/0739456X07310865>
- Jones, R. A., & Dantzler, J. (2021). Neighborhood satisfaction and residential choice: A study of satisfaction in urban and suburban neighborhoods. *Journal of Urban Affairs*, 43(5), 657-677. <https://doi.org/10.1080/07352166.2020.1788653>
- Ké Shon, J. (2007). Housing, neighborhoods, and social interactions: Evidence from France. *Urban Studies*, 44(9), 1675-1695. <https://doi.org/10.1080/00420980701427617>
- Kilpatrick, S. J., Throupe, R. L., Carruthers, J. I., & Krause, A. (2007). Impact of rail transit on the value of residential property. *The Appraisal Journal*, 75(2), 189-206.
- Kweon, B.-S., Ellis, C. D., Leiva, P. I., & Rogers, G. O. (2010). The link between perceived residential environment quality and neighborhood satisfaction in a low-income African American sample. *Journal of Environmental Psychology*, 30(3), 318-324. <https://doi.org/10.1016/j.jenvp.2010.03.004>
- Langella, M., & Manning, A. (2019). The impact of accessibility and neighborhood amenities on housing prices. *Journal of Urban Economics*, 110, 103-120. <https://doi.org/10.1016/j.jue.2018.11.002>
- Lovejoy, K., Handy, S., & Mokhtarian, P. (2010). Neighborhood satisfaction, physical activity, and the built environment: An empirical study of homeowners in California. *Journal of Transport and Land Use*, 3(1), 83-104. <https://doi.org/10.5198/jtlu.v3i1.107>
- McGirr, P., Nair, G., & El-Geneidy, A. (2015). The effects of proximity to rail transit on residential property values. *Journal of Transport and Land Use*, 8(2), 173-188. <https://doi.org/10.5198/jtlu.2015.791>

- Mills, E. S. (1972). *Studies in the structure of the urban economy*. Johns Hopkins University Press.
- Molin, E. J., & Timmermans, H. J. (2003). Accessibility, residential location choice, and transport mode choice. *Journal of Transport Geography*, 11(2), 83-96. [https://doi.org/10.1016/S0966-6923\(02\)00066-1](https://doi.org/10.1016/S0966-6923(02)00066-1)
- Mouratidis, K. (2018). Built environment determinants of neighborhood satisfaction: A study of urban and suburban neighborhoods in Norway. *Landscape and Urban Planning*, 177, 153-163. <https://doi.org/10.1016/j.landurbplan.2018.04.013>
- Muth, R. F. (1969). *Cities and housing: The spatial pattern of urban residential land use*. University of Chicago Press.
- Nelson, A. C. (1992). Effects of elevated transit stations on neighborhood house values. *Transportation Research Record*, 1359, 127-134.
- Nelson, A. C., Dawkins, C. J., & Sanchez, T. W. (2015). *Transit-oriented development: Making it happen*. APA Planners Press.
- Parkes, A., Kearns, A., & Atkinson, R. (2002). The determinants of neighborhood satisfaction: A multilevel analysis. *Urban Studies*, 39(5-6), 893-910. <https://doi.org/10.1080/00420980220128411>
- Sirgy, M. J., & Cornwell, T. (2002). How neighborhood features affect quality of life. *Social Indicators Research*, 59(1), 79-114. <https://doi.org/10.1023/A:1016021108513>
- Van Wee, B. (2013). *Land use and transport: Accessibility and mobility in an evolving context*. Routledge.
- Wang, J., & Wang, Z. (2020). Noise pollution and its impact on neighborhood satisfaction. *Urban Studies*, 57(3), 489-505. <https://doi.org/10.1177/0042098019829388>
- Zhang, X., Xu, T., & Su, F. (2017). Linking urban environmental stressors to mental health. *Science of the Total Environment*, 586, 120-128. <https://doi.org/10.1016/j.scitotenv.2017.01.030>
- Zondag, B., & Pieters, M. (2005). Influence of accessibility on residential location choice. *Transportation Research Record*, 1902, 63-70. <https://doi.org/10.1177/0361198105190200108>