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EXAMINING THE TRANSIT ACCESSIBILITY PREMIUM OF BUS RAPID TRANSIT ON HOUSING PRICE

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Abstract

Public transportation system is crucial in supporting the urban mobility of a country including Malaysia. This system is built to alleviate the urban congestion in the cities. Good connectivity between locations can be achieved through a combination of bus and rail transit. Among these transit systems, Bus Rapid Transit (BRT) holds both characteristics of bus and rail transit. BRT not only operates on a specific express lane but also offers benefits such as ease of deployment and lower investment costs compared to rail transit systems. However, the impacts of BRT on residential prices has yet to be explored for Malaysian context. Understanding the response of residential market to BRT could provide valuable insights for stakeholders in formulating appropriate strategies and policies. This study applies the difference-in-differences (DiD) method and hedonic pricing model for assessing the Transit Accessibility Premiums (TAP) of BRT stations. The results reveal that residential prices increased by 6.06% after the government announced a new BRT in Bandar Sunway. The variation in premium is highly associated with the proximity to BRT stations. These insights serve as crucial information for policymakers and urban planners in fostering urban development that maximises the benefits of transit-oriented enhancements.

Keywords: Bus Rapid Transit (BRT), Difference-in-Differences Method (DiD), Hedonic Pricing Model, Transit Accessibility Premium (TAP), Walkability

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INTRODUCTION

The Malaysian government has invested billions of ringgit in modern public rail projects such as LRT, MRT, KL Monorail, and KTM Komuter. Nonetheless, overall ridership has not shown significant improvement. As an effort to enhance the ridership, Transit-Oriented Development (TOD) has been suggested. TOD is a concept that integrates property development with public transportation infrastructure. It has gained popularity as an efficient planning in addressing urban mobility issues by reducing private vehicle usage as well as promoting sustainable travel behaviour (Yap et al., 2021). Cervero and Dai (2014) argued that adopting a bus-centric TOD approach, along with carefully planned infrastructure for pedestrians and cyclists, could guide many global cities toward sustainable development. In Malaysian context, Bandar Sunway stands out as the sole town equipped with a Bus Rapid Transit (BRT) system. The Sunway BRT was officially announced by Malaysian government on 9th June 2012, and commenced its operation on 1st June 2015. By examining both the pre- and post-construction stages, this study complements existing literature on transit-induced premiums, which has largely concentrated on post-construction effects.

LITERATURE REVIEW

Alonso-Muth-Mills model illustrates that households tend to favor living closer to city center to reduce commuting costs, leading to increased land prices around the Central Business District. As population and vehicle numbers are rising, high-density urban areas become unavoidable. Yet, traffic congestion hampers travel times and productivity, emphasising the need for congestion alleviation and transportation efficiency improvements. According to Nguyen-Phuoc et al. (2020), public transport is essential in easing traffic congestion. Fageda (2021) found that cities with new rail systems have an average 7% less congestion, 1% shorter travel times, and 3% less pollution compared.

Arum and Fukuda (2020) studied the impact of railway lines on property prices in Tokyo, Japan, using hedonic price modeling, found a 16% increase in property prices near railway lines. Similarly, Berawi et al. (2020) employed Geographically Weighted Regression to examine the effects of LRT stations, revealing property price increases ranging from 3.2% to 52.4% for properties near LRT stations. In the context of BRT, an average property price increase of 1.9% was found in Buenos Aires, Argentina (D'Elia et al., 2020) while a 13.2% to 13.9% increment in property price were found in Beijing, China (Deng et al., 2016). In Malaysia, Dziauddin (2019) and Dziauddin and Ridzuan (2022) found a 30% rise in property prices near LRT stations and a 9.5% increase near MRT stations. Nevertheless, the impacts associated with BRT is yet to be uncovered.

According to Rosen (1974), property prices are determined by various factors, including land area, built-up area, location, quality of the neighborhood, and accessibility. The BRT system is viewed as a public transport option that can enhance accessibility. It is expected to have a positive impact on property prices.

However, Malaysia has paid less attention to the Transit Accessibility Premium (TAP) generated by the introduction of new BRT systems. Understanding the market's response to the new BRT system can enable both sellers and buyers to make more informed decisions when transacting properties. Thus, considering TAP is crucial for investors when assessing the risk and return trade-off in TOD. Moreover, it confirms the value of the BRT system within the community.

RESEARCH METHODOLOGY

This study uses manageable randomized sample to generalize the findings to larger populations. The range of data collected is 13 years starting from 2010 – 2022 which sited in Sunway area of Malaysia. The number of samples is 649 set of transaction data to reflect the price volatility of terrace houses.

The BRT system has seven stations, but only five of them—namely Sunway-Setiajaya, Mentari, Sunway-Lagoon, SunMed, and SunU-Monash—are included in this study. Proximity to the BRT stations is used as the measurement criteria. This study examines two sample periods: before (2012-2015) and after (2015-2022) the completion of the BRT system. The change in property prices relative to the distance from BRT stations is analysed during these periods to confirm the existence of a "BRT premium" in the community.

This study employs both the OLS hedonic model (global estimation) and the Geographically Weighted Regression (GWR) hedonic model to validate the study's hypothesis. The global estimation method assumes that the relationship between dependent and independent variables is consistent across all locations, whereas the GWR model posits that these relationships vary spatially. Additionally, this study uses the K-Nearest Neighbor (KNN) method to determine sub-segments of properties, taking into account various factors that can influence property prices. In addition to exploring the relationship between property prices and proximity to BRT stations, this study hypothesises that the residential market will react positively to any news about improvements in accessibility. Consequently, the Difference-in-Differences (DiD) method is used to examine the impact of new announcements regarding the BRT system on residential property prices.

Hedonic Regression Model

The TAP will be estimated with hedonic model via OLS regressions. This method has been frequently used to estimate static versions of the model, in which property values are the dependent variable and the independent variables are a

collection of qualities or traits expected to affect property prices (Garay et al., 2022). The hedonic technique was used to investigate the housing premium generated by the Sunway BRT. The hedonic model can be used to calculate the marginal impact of each variable on property prices.

A. Before the completion of BRT system:

$$\ln \text{Price}_{it} = \beta_0 + \delta_1 \text{Distance_BRT}_{it} + \beta_k Z_{it} + \theta_k 2012Q1 - 2015Q1_{it} + \varphi_1 \text{Segment}_{it} + \varepsilon_{it} \quad (1)$$

B. After the completion of BRT system:

$$\ln \text{Price}_{it} = \beta_0 + \delta_1 \text{Distance_BRT}_{it} + \beta_k Z_{it} + \theta_k 2015Q2 - 2022Q2_{it} + \varphi_1 \text{Segment}_{it} + \varepsilon_{it} \quad (2)$$

TAP can be identified from transacted properties before and after the completion of BRT system. Both equations have incorporated the distance to BRT stations as one of the variables (Distance_BRT_{it}), to examine the premium. This study hypothesises that the residential prices have an inverse relationship with the distance towards BRT stations. Z_{it} consists of the property attributes of each transacted properties. The transaction data will be assigned to two different periods which is before (2013 - 2015Q1) and after (2015Q2 – 2022) completion of BRT system. This study expects the impact of BRT stations proximity to be more significant after the completion of BRT system.

Geographical Weighted Regression (GWR) Model

GWR is a local type of spatial analysis that is based on statistical methodologies for curve-fitting and smoothing applications. The method works by estimating local models using subsets of observations centred on a focal point, which is a simple yet effective idea (Páez & Wheeler, 2009). GWR was originally developed in geography and other disciplines to analyse spatial point datasets and interpolate unsampled attribute values by assuming that contextual factors can change the strength and direction of the relationship between a dependent attribute and the independent attributes. GWR considers nonstationary qualities and models the local interactions between these independent attributes and the dependent variable of interest in this context (Wu et al., 2022).

$$\ln \text{Price}_{it} = \beta_0(u_i, v_i) + \sum_{k=1}^p \beta_k(u_i, v_i) x_k + \varepsilon_{it} \quad (3)$$

The GWR model is an extension of the classical linear regression model obtained by taking into account spatial relationships in the form of assigning weights to individual observations depending of the location. v_i and u_i represent the x and y coordinates of each transacted properties which accompanied with the

property attributes x_k . This study will perform GWR analysis to evaluate the significance of transit accessibility premium at the local level. The estimation of the GWR model parameters is performed in a similar manner as in the classic models, but location-dependent weights of observations are taken into account:

$$\hat{\beta}(u_i, v_i) = (X^T W(u_i, v_i) X)^{-1} X^T W(u_i, v_i) y \quad (4)$$

K-Neighbours for Market Segmentation

The objective of K-means algorithm is to minimize the within-cluster variance where it is achieved by minimizing the sum of squared distances from each point to its assigned cluster centroid (Calka 2019). The algorithm aims to find the optimal values for the centroids. Mathematically, it can be expressed as:

$$\text{Minimise } \sum_{i=1}^k \sum_{x \in S_i} \|x - \mu_i\|^2 \quad (5)$$

Where K = the number of clusters; S = the set of clusters; $S_i = i^{th}$ cluster; x = represents a data point; μ_i = is the centroid of cluster S_i

Difference-in-Differences (DiD) Method for Hedonic Approach

The announcement of new BRT system in Bandar Sunway was made on 2012Q2. Property shared similar characteristics with other investment assets where the prices will react to the news released from the market. In term of assessing the TAP prior to the completion of BRT system, it is crucial to eliminate the macroeconomic factors that can influence the residential prices, such as inflation. Therefore, the DiD model has been referred to examine the causal effects for an event or scenario. This method requires one control group and one treatment group for pre and post event. This study identifies residential properties close to the BRT stations as the treatment group, while those located far away will serve as control group. Additionally, 2012Q2 act as the cut-off point to differentiate between pre and post announcement of new BRT system in Bandar Sunway. The property attributes such as land area, built-up area, and etc have been considered in the hedonic model for evaluating transit accessibility premium.

$$\ln \text{Price}_{it} = \beta_0 + \delta_1 \text{Post}_{it} + \delta_2 \text{Treat}_{it} + \delta_3 \text{Post} \alpha \text{Treat}_{it} + \beta_k Z_{it} + \theta_k \text{Yearly}_{it} + \varphi_1 \text{Segment}_{it} + \varepsilon_{it} \quad (6)$$

The dependent variable $\ln \text{Price}_{it}$ represents transacted housing sale price in logarithm form. Z_{it} and β_k represent housing characteristics and its coefficient respectively. Post_{it} referred as a dummy variable for the transaction happened between 2012Q2 until 2015Q2. Treat_{it} referred as a dummy variable for the properties situated close to the BRT stations. $\text{Post} \alpha \text{Treat}_{it}$ represents the dummy variable for transacted properties located in the vicinity of BRT stations starting 2012Q2 until 2015Q2. Z_{it} consists of the property attributes of each

transacted properties such as land area, built-up area and non-bumi lot. $Yearly_{it}$ referred as the dummy variable for the transaction period of properties happened between 2010 – 2015Q2. $Segment_{it}$ represents the housing segments in addressing the spatial autocorrelation among the transacted properties.

Descriptive Statistics

The descriptive statistics of variables are reported in Table 1 to provide understanding on the characteristics of the sample before they can be incorporated in the model development.

Table 1: Descriptive Statistics of Residential Property Attributes in Bandar Sunway

No.	Attribute	COUNT	MEAN	STD	MIN	MAX
1.	Transacted Price (RM)	649	637,176	243,788	140,000	1,600,000
2.	Land Area (sq. m)	649	145.91	56.34	72.00	576.00
3.	Built-up Area (sq.m)	649	119.93	39.18	53.05	350.08
4.	Restriction of transfer	649	0.91	0.28	0.00	1.00
5.	Latitude	649	3.07	0.00	3.06	3.08
6.	Longitude	649	101.61	0.01	101.60	101.62
7.	Property type	649	0.13	0.34	0.00	1.00
8.	Number of storey	649	1.9	0.39	0	2.5
9.	Shortest distance to BRT station (km)	649	0.61	0.31	0.05	1.37
10.	Year 2010	649	0.03	0.16	0.00	1.00
11.	Year 2011	649	0.00	0.00	0.00	0.00
12.	Year 2012	649	0.13	0.33	0.00	1.00
13.	Year 2013	649	0.08	0.28	0.00	1.00
14.	Year 2014	649	0.08	0.28	0.00	1.00
15.	Year 2015	649	0.09	0.28	0.00	1.00
16.	Year 2016	649	0.07	0.25	0.00	1.00
17.	Year 2017	649	0.07	0.26	0.00	1.00
18.	Year 2018	649	0.08	0.28	0.00	1.00
19.	Year 2019	649	0.06	0.24	0.00	1.00
20.	Year 2020	649	0.07	0.25	0.00	1.00
21.	Year 2021	649	0.07	0.25	0.00	1.00
22.	Year 2022	649	0.03	0.16	0.00	1.00
23.	Submarket A***	649	0.00	0.00	0.00	0.00
24.	Submarket B***	649	0.18	0.38	0.00	1.00
25.	Submarket C***	649	0.30	0.46	0.00	1.00

***submarket of property is determined by the K-means cluster of the residuals and the submarket A of properties serves as the comparative variable to submarket B and submarket C of properties.

DATA ANALYSIS

The "BRT premium" was uncovered via three perspectives. First, it examines the change in residential prices in Bandar Sunway before and after the announcement of the new BRT system using DiD method. Second, the relationship between property prices and their proximity to BRT stations is analyzed using OLS hedonic models. Lastly, findings are validated using the GWR method.

Clustering Housing Market

Clustering techniques can enhance the effectiveness of hedonic price models by grouping similar properties based on various attributes such as location, size, and amenities. Clustering allows for the identification of distinct market segments with unique preferences. This segmentation enables hedonic price models to capture heterogeneity more effectively, leading to more accurate estimations of property prices. Moreover, clustering analysis facilitates the identification of relevant variables and interaction effects that may influence property values within specific market segments, thereby improving the model's explanatory power and predictive accuracy. The analysis is illustrated in Figure 3.

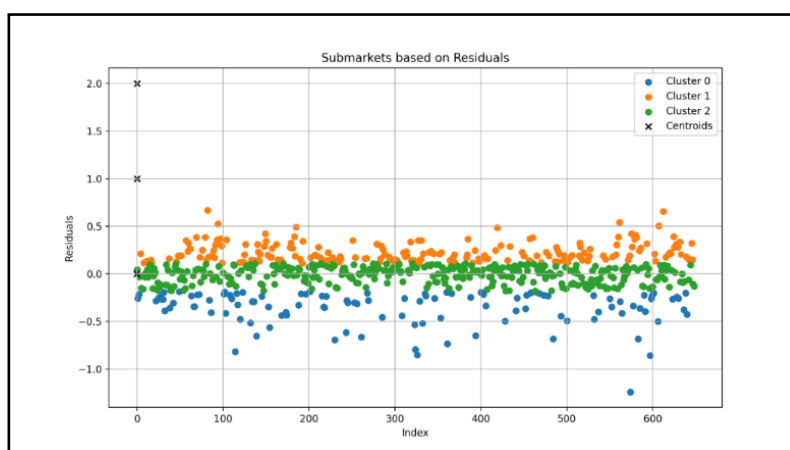


Figure 1: Submarkets based on Residuals

Figure 1 illustrates how housing prices are grouped into clusters based on their residual patterns. By examining cluster centers, spread, and size, it will identify common residual patterns and assess the overall performance of the regression model in predicting housing prices. This analysis aids in understanding areas where the model performs well and areas for potential improvement. Each cluster is separated from the others, indicating that the K-means algorithm effectively grouped the data points into relatively distinct clusters based on their residuals. The clusters 0, 1, and 2 are named submarkets as A, B, and C, respectively.

Examination on Control Variables of Hedonic Model for Bandar Sunway

As shown in Table 2, 6 control variables are found to be correlated with the price change of residential properties in Bandar Sunway – land area, built-up area, shortest distance to BRT station, submarket, and non-bumi lot. The coefficient signs are consistent with the expected sign.

Table 2: Reliability of Control Variables

Property Attributes	Coefficient (+)	Coefficient (-)	P<0.05	P>0.05	Reliability
Land Area	46	0	46	0	√
Built-up Area	46	0	43	3	√
Shortest distance to BRT station	0	46	46	0	√
Submarket B	0	46	46	0	√
Submarket C	45	0	45	0	√
Non-Bumi Lot	46	0	37	9	√
Property type	16	30	2	44	×
Number of storey	40	6	6	40	×

Impact of New BRT Announcement on Residential Property Prices

A hedonic model based on DiD method is constructed to validate the existence of TAP, following the announcement of the Sunway BRT stations in 2012Q2.

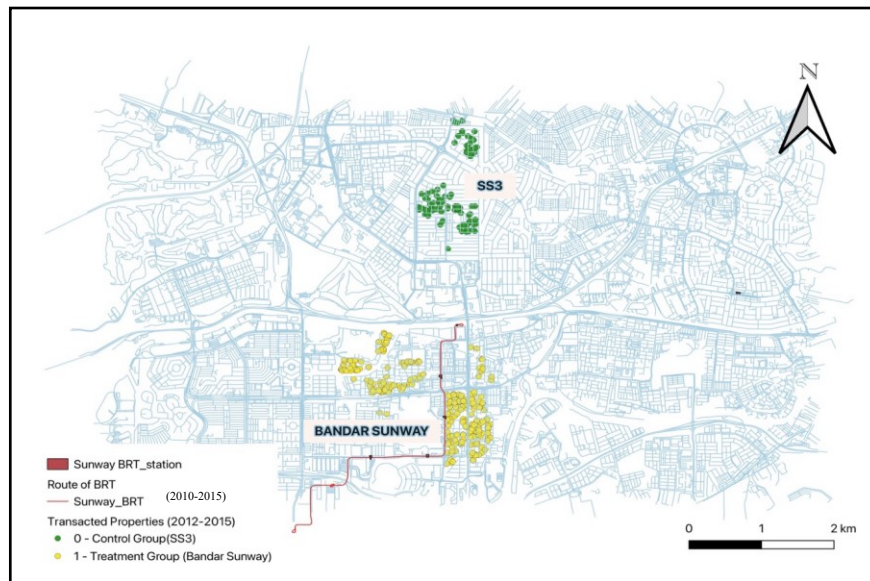


Figure 2: Location of Control Group and Treatment Group

This model necessitates the inclusion of a control group and a treatment group in the regression analysis. For this study, properties transacted in SS3 have been identified as the control group because they are located approximately 3 km from Sunway BRT station and are not close to any other forms of rail transit.

Figure 2 illustrates the locations of transacted properties. From 2010 to 2015, there were 147 property transactions in SS3 served as the control group. The remaining 310 transactions in Bandar Sunway, designated as treatment

group. The period from 2012Q2 to 2015Q2 is identified as treated period, coinciding with the launch of the Sunway BRT stations. The regression analysis will assess the significance of the BRT effect on the TAP by comparing the treatment group (Bandar Sunway) to the control group (SS3). Results are presented in Table 3.

Table 3: Regression Output of Difference-In-Differences (DiD) Method

Dep. Variable: lnPrice			
Adjusted R-squared: 0.934			
N: 457			
Attribute	Coef	t-value	p-value
Const	11.6379	378.047	0.00
Land Area	0.0024	23.086	0.00
Built-up Area	0.0042	28.428	0.00
Non-Bumi Lot	0.3400	18.366	0.00
2011**	0.1425	7.448	0.00
2012**	0.1579	5.448	0.00
2013**	0.2912	8.763	0.00
2014**	0.3730	11.210	0.00
2015Q2**	0.4086	9.271	0.00
Treat	-0.0308	-1.824	0.069
Post	0.0986	3.227	0.001
Treat_Post	0.0589	2.625	0.009
Submarket_B***	0.2496	22.386	0.000
Submarket_C***	-0.3627	-23.526	0.000

**year 2010 is the base period and it compares with the respective period for calculating the coefficients for time effects.

***submarket of property is determined by the K-means cluster of the residuals and the submarket A of properties serves as the comparative variable to submarket B and submarket C of properties.

Table 3 presents the regression results based on DiD method. The control variables adequately explain the price change of residential in Bandar Sunway, highlighting the importance of assessing the BRT effect through three specific variables listed in the table, namely "Treat," "Post," and "Treat_Post." The "Treat" variable has a negative coefficient, suggesting that the prices in the treatment group are slightly lower than the control group, although this effect is insignificant. Conversely, the "Post" variable shows a positive coefficient, suggesting a 10.36% increase in property prices following the launch of the Sunway BRT stations. Specifically, the significant positive effect of the Sunway BRT stations on the residential properties of the treatment group is demonstrated by an average price increase of 6.06% compared to the control group after launching Sunway BRT system.

Relationship Between Property Prices and Proximity to BRT Stations

There are two hedonic models constructed to justify the existence of BRT Premium. The study period for equation 1 is ranged from 2012Q1-2015Q1

whereas the equation 2 is ranged from 2015Q2-2022Q2. The Ordinary Least Square (OLS) regression method was conducted to examine the relationship for the distance between residential properties and Sunway BRT stations.

Table 4: Regression Output Before the Completion of BRT system

Dep. Variable: lnPrice			
Adjusted R-squared: 0.943			
N: 191			
Attribute	Coef	t-value	p-value
Const	12.0464	302.361	0.000
Land Area	0.0027	13.466	0.000
Built-up Area	0.0046	19.073	0.000
Non-Bumi Lot	0.2492	8.575	0.000
2013	0.1606	8.908	0.000
2014	0.2515	13.593	0.000
Distance_BRT	-0.1641	-6.494	0.000
Submarket_B***	-0.3673	-17.839	0.000
Submarket_C***	0.1911	11.138	0.000

**year 2012 is the base period and it compares with the respective period for calculating the coefficients for time effects.

***submarket of property is determined by the K-means cluster of the residuals and the submarket A of properties serves as the comparative variable to submarket B and submarket C of properties.

Table 4 presents the regression results for Equation 1. The control variables adequately explain the price changes of residential properties in Bandar Sunway. Further examination of the BRT premium based on distance reveals that residential prices decrease by 15.13% for every kilometer further away from the BRT stations. The locally weighted BRT effects can be also illustrated based on Geographical Weighted Regression and it is presented in Figure 5.

Figure 3 shows the locally weighted BRT effects through GWR. The BRT effects appear to be more significant in the residential properties located further from the BRT stations which presented in the red box. The property prices are estimated to reduce from 4.00% - 5.30% for every kilometer away from the BRT stations. In contrast to the properties indicated in Blue Box, its effect is slightly weaker. The property prices are estimated to reduce from 1.46% - 4.01% for every kilometer away from the BRT stations.

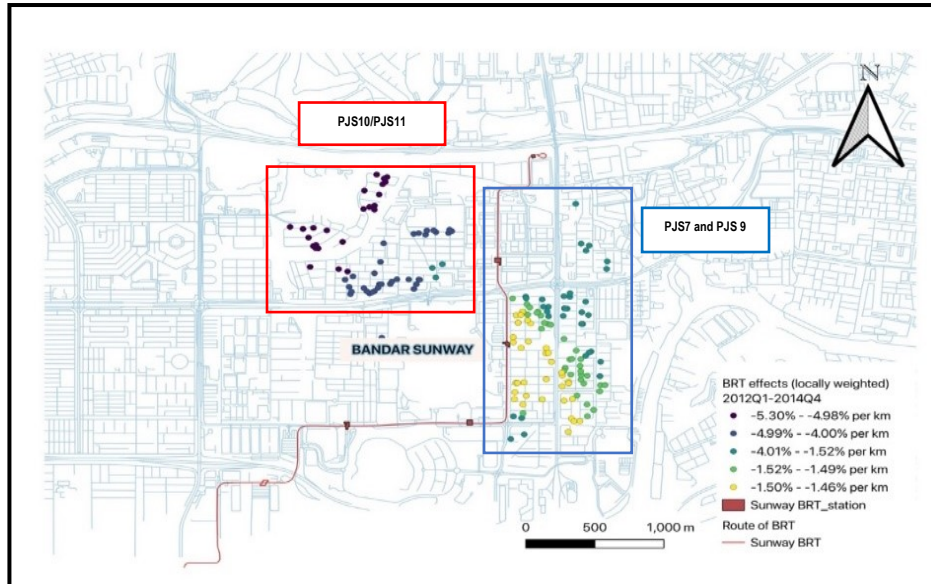


Figure 3: Locally Weighted BRT Effects Prior To The Operation of BRT Stations

Table 5: Regression Output After the Completion of BRT system

Dep. Variable: lnPrice
Adjusted R-squared: 0.898
N: 351

Attribute	Coef	t-value	p-value
Const	12.5325	302.361	0.000
Land Area	0.0026	22.017	0.000
Built-up Area	0.0035	20.247	0.000
Non-Bumi Lot	0.2006	9.234	0.000
2015	-0.0759	-2.307	0.022
2016	-0.0074	-0.259	0.796
2017	0.0104	0.376	0.707
2018	0.0167	0.598	0.551
2019	-0.0132	-0.458	0.647
2020	-0.0119	-0.416	0.677
2021	0.0282	0.970	0.333
2022	0.0002	0.005	0.996
Distance_BRT	-0.1826	-8.710	0.000
Submarket_B***	-0.3791	-20.072	0.000
Submarket_C***	0.2411	15.488	0.000

**Year 2014 is the base period and it compares with the respective period for calculating the coefficients for time effects.

***submarket of property is determined by the K-means cluster of the residuals and the submarket A of properties serves as the comparative variable to submarket B and submarket C of properties.

Table 5 depicts the regression results for equation 2. Generally, the control variables are reasonably explained the price change of residential in

Bandar iuSunway. Subsequently, the BRT premium is examined further based on the distance when the Sunway BRT station in operation since 2015. The empirical study shows that the residential prices decreased at 20.03% for every kilometer farther from the BRT stations.

The locally weighted BRT effects can be also illustrated based on Geographical Weighted Regression and it is presented in Figure 4.

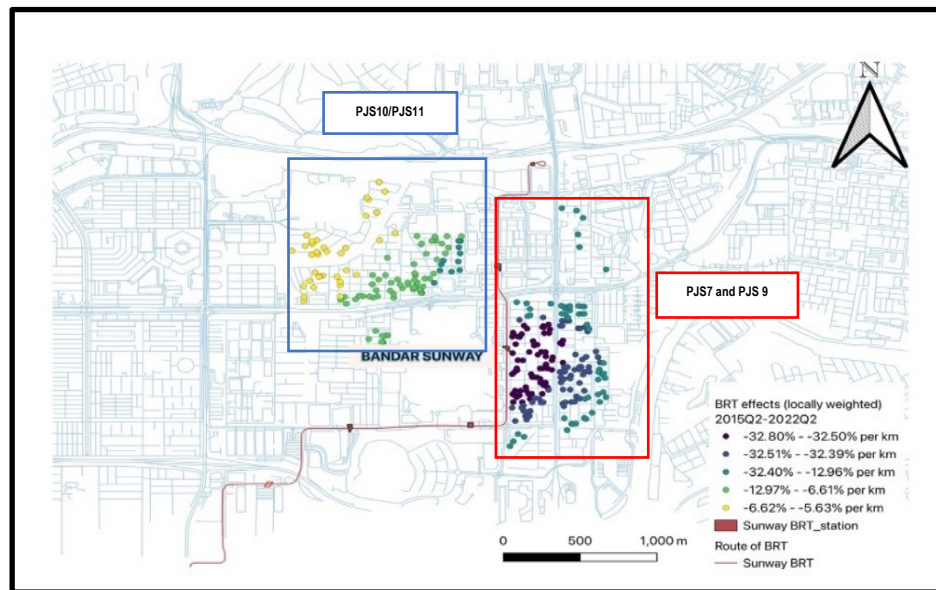


Figure 4: Locally Weighted BRT Effects After the Operation of BRT Stations

Figure 4 had shown the locally weighted BRT effects through Geographical Weighted Regression (GWR). The BRT effects appear to be more significant in the residential properties located close the BRT stations which presented in the red box. The property prices are estimated to reduce from 32.8% - 12.96% for every kilometer away from the BRT stations. In contrast to the properties indicated in blue box, its effect is much weaker. The property prices are estimated to reduce from 12.97% - 5.63% for every kilometer away from the BRT stations. In conclusion, the buyers are more optimistic to pay a higher price to purchase the property located near to the BRT stations. This effect is appeared to be more significant if these properties located closer to the BRT stations.

DISCUSSION AND POLICY IMPLICATION

This section highlights the policy implications for public transport in urban development. This study reveals the impact of BRT system on TAP from three aspects. First, it examines the response of residential prices to the announcement of new BRT system in Bandar Sunway. After the announcement of the new BRT

system, average property prices in PJS7 and PJS9 were found to be 6.06% higher than in SS3. This could be due to anticipated improvements in accessibility and connectivity, making these areas more attractive to potential buyers and investors. Empirical studies that quantify the benefits of TAP provide valuable evidence for policymakers to develop and implement value capture policies aimed at funding BRT projects in the future. Land value capture can be achieved through various instruments such as land value tax, tax increment financing, special assessments, joint development, and transit-focused real estate fees (Mulley et al., 2016). By harnessing the potential of value capture mechanisms, cities can accelerate the implementation of sustainable transportation solutions and improve the overall liveability and accessibility of urban areas.

Second, findings show that a 'BRT premium' exists before and after the establishment of BRT stations. Residential prices decrease by 15.13% and 20.03% for every kilometer further from the BRT stations before and after the completion of BRT stations, respectively. This indicates that proximity to BRT stations is associated with higher residential property prices, and this effect had strengthened after the operational of BRT stations. BRT system benefits homeowners with an increase in house prices. It creates affordability for people who want to seek a place with better connectivity. Policymakers could implement inclusionary zoning policies to ensure a diverse range of housing options remains available near BRT stations, meanwhile, supporting the expansion of the BRT network as part of sustainability initiatives.

Thirdly, the significance of BRT effects is examined at the local level via GWR model. Prior to the completion of the BRT system, properties in PJS7 and PJS9, with an average proximity of 423 meters to BRT stations, exhibit a 'BRT premium' with property prices decreasing in the range of 1.46% - 4.01% for every kilometer away from the BRT stations. Similarly, residential properties of PJS10/PJS11 with an average proximity to BRT stations of 824 meters, are estimated to decrease in price in the range of 4.98% - 5.30% for every kilometer away from the BRT stations. PJS7 and PJS9 shows a lower 'BRT premium' compared to PJS10/PJS11, most likely due to nuisance associated with the construction of BRT stations between 2012-2014. However, these effects were reversed in 2015-2022, with property prices in Bandar Sunway decreasing in the range of 12.96% - 32.8% for every kilometer away from the BRT stations. In terms of the properties in PJS10/PJS11, it experienced reduction in prices in the range of 5.63% - 12.97% for every kilometer away from the BRT stations. It shows that PJS7/PJS9 has a stronger demand for the BRT system compared to PJS10/PJS11 because of their closer proximity to BRT stations. This finding corroborates with Zhang and Yen (2020), which reported that land and property within 50 meters of a BRT station have notably higher value. Specifically, having a BRT station nearby yields a price premium of 13.0% compared to locations 1,200 meters away. Munoz-Raskin (2010) found that the people were actually

willing to pay more to be in the immediate walking proximity in exchange for travel time savings and public space improvement. Hence, policymakers should allocate funds towards enhancing pedestrian infrastructure.

CONCLUSION

The findings highlight that homeowners and investors place a significant value on enhanced accessibility and connectivity. The results also indicate that residential property prices respond positively to announcements enhancing accessibility which is particularly notable in high-density areas. However, this study focuses solely on the impact of the Bandar Sunway BRT system on landed houses. To obtain a more comprehensive understanding of the 'BRT premium', future studies could be extended to include high-rise residential and commercial properties.

DISCLOSURE STATEMENT

This research was supported by the Ministry of Higher Education under Fundamental Research Grant Scheme. (FRGS/1/2024/SS06/TARUMT/02/1). All transaction data were obtained from the Valuation and Property Services Department and were anonymized prior to analysis. This study utilized only secondary data and did not involve human participants.

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