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■ Article

Understanding Factors Affecting The Behavior of Commuters Living in Suburban Areas (Case Study: Bodetabek, Indonesia)

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Abstract: Infrastructure is playing an increasingly important role in a world experiencing rapid suburbanization. This study aims to understand the factors influencing commuter preferences in choosing transportation modes for daily travel-to-work. The method used in this research is a quantitative-positivistic paradigm within binominal logistic regression. A sampling of respondents was selected based on the age range ratio in five suburban locations (non-probability sampling). Using data from the household travel survey in the Bodetabek area, it was found that younger age ($X_{1.2}$), higher education level ($X_{1.4}$), higher monthly income ($X_{2.1}$), comfortability aspects, and no need to transfer/switch to other modes ($X_{3.1}$) and longer commuting distance ($X_{3.3}$) affect commuters' tendency to choose public transport. In this study, comfortability and no need to switch to other modes are considered commuter attributes that can support shifting to mass transportation for suburban communities. The Independent T-Test results, especially in the Cities of Bekasi and Depok, showed a significant effect between the distance from home location to the nearest station on commuters' mode choice preferences. Furthermore, the urban design policy can also be considering conditions that benefit both the Government and suburbs commuters themselves.

Keywords: Commuting Behavior, Suburban Area, Mode Choice Preferences

I. Introduction

Population density increases every year affects cross-border mobility from the city center to suburban areas. According to Jakarta in Figure (2021, p.8), Jakarta, as the capital city of Indonesia, has become the densest province in this country. After independence, Jakarta grew beyond the city's boundaries and formed a metropolitan region with several administrative districts and municipalities (i.e., Jabodetabek). Jabodetabek's current development shows signs of the early stages of post-suburbanization, in which the traditional core remains prominent, but the peripheral areas have become more independent satellite cities with strong economic bases and diversified activities (Rukmana *et al.,* 2019). The initial post-suburbanization phase affects transportation integration from the suburbs to the metropolitan areas. In other conditions, the flows of local migration from Jakarta to Bodetabek have not been followed by sufficient workplace shifting, which caused traffic congestion for commuter routes.

The commuter issue is a metropolitan problem that occurs across regional boundaries. In this study, administrative border-crossing trips are prerequisites for someone to be considered commuting (Bodetabek to Jakarta and *vice versa*). In Jabodetabek's cases, commuting activities to the metropolitan area are influenced by various reasons. Commuting from villages to the metropolitan area makes commuters dependent on transportation

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modes and affects demands on suburban infrastructure. Initially, busways and trains are projected to become daily main modes but have not yet become the primary choice for commuters (Setyodhono, 2017). Instead, research conducted in 2019 shows that ride-hailing services have become people's basic travel modes in Jabodetabek even though ride-hailing services are not integrated into Jakarta's transportation plan (Matsuyuki *et al.,* 2018). These conditions indirectly support the dependence on private vehicles and increase the burden on roads with motorized modes.

This research begins with the phenomenon of commuters living in the satellite city of JMA and their dependence on private vehicles for daily travel to work. According to The Economic and Social Commission for Asia and the Pacific (2017), private vehicles in Jakarta Metropolitan Area have increased significantly, while public transport shares have declined from year to year. Moreover, commuters do not want to use mass transit because of long commuting times, inefficient service, and difficulty reaching public transportation from their homes (Commuting Statistic in Jabodetabek, 2019, p. 41). Previous studies have shown that private vehicles are dominant in Jakarta and are now a trend in the Bodetabek area. This study aims to observe the behavior of commuters living in suburban areas and provide policy recommendations that encourage a shift in mass transportation for workers.

II. Previous Studies

Based on research conducted in Budapest, Hungary, by Al-Salih and Esztergár-Kiss (2021), trip distance, travel time, and activity purposes are the most decisive factors influencing the mode choice of an individual commuter. According to Henning *et al.* (2020), the choice of active mode of transportation is affected by travel time, type of university, income, and material status. In terms of workers' health, modal choice, gender, and commuting time significantly affect commuter stress (Rosida *et al.,* 2019). From a Southeast Asian country (SEA) perspective, Puan *et al.* (2019) showed that age, income, vehicle ownership, car comfortability, reliability of bus services, affective motives, and instrumental motives correlated to the mode choice in Johor Bahru City, Malaysia. Moreover, a previous study on Bangkok, Thailand, has shown that several indicators such as age, income, trip time of mass transport, car ownership, and distance range have an inverse relationship with the tendency of commuters to use mass transportation (Witchayaphong *et al.,* 2020). Previous studies in Bangkok and Johor Baru, with almost similar characteristics to JMA's spatial patterns, demonstrated that personal and travel attributes influence choice preferences.

II.1 Jabodetabek Perspective in Mode Choice Preferences

As an effort to strengthen the capacity and quality of infrastructure in Jabodetabek Indonesia, sustainable urban mobility is one of the seven strategic issues in The Regional Regulation concerning the Mid-Term Development Plan for the Jakarta Province in 2017-2022. Previous studies from Jabodetabek's perspective show that modal choices are influenced by socio-demographic aspects such as gender, vehicle ownership, monthly income, and commuter attributes influence transportation mode (Bastarianto *et al.,* 2019; Indriany *et al.,* 2019). The growth of motorcycle ownership in Jabodetabek is very high because it is easy for people to get credit payments to buy motorcycles, and the proportion of motorcycle trips tends to be in line with the increase in households owning at least one motorcycle (Susantono *et al.,* 2011). Moreover, Irjayanti *et al.* (2021) stated that along with increasing

age, length, and distance of travel, commuter workers in JMA tend not to use private vehicles.

Key performance indicators address transportation systems and spatial integration. Several previous studies in the Jabodetabek area have shown that vehicle ownership is essential because this indicator always influences commuters' decisions to depend on private vehicles. The increasing numbers of motorized ownership in one household contributes to commuters' tendency not to use mass transportation. The transportation master plan scheme in Jabodetabek was formulated under Presidential Decree No. 55 Regarding Transportation Masterplan in Jabodetabek (2018) to solve commuting problems. However, to observe how intermodal integration and spatial planning are formed, commuting behavior in this study will be a discourse in determining urban design policies.

II.2 **Relevance between Commuting Behavior and Urban Design**

The growing twenty-first-century discipline of sustainable urbanism highlights the ecological notion of sustainability and the associated human values (Adhya *et al.,* 2010). Moreover, Ogryzek *et al.* (2020) have argued that sustainable transportation is key to changing thinking about spatial appeals to commuters. Also, transport modeling is used to evaluate the effects of behavior changes and determine the impacts of infrastructure upgrades (Al-Salih and Esztergár-Kiss, 2021). Transport policies are usually designed to encourage people to adopt non-car transport to reduce pressure on scarce road space and improve the urban environment's quality (Clark *et al.,* 2016). According to Kim *et al.* (2020), weather, safety, and slope determine mode choice for short trips (up to 5 kilometers) in Korea.

The terms of new urbanism and related planning paradigms that include higher density, mixed land use, and pedestrian-friendly design could shorten the commuting time from one place to various other places and improve travel satisfaction (Ye and Titheridge, 2017). Also, transportation infrastructure development is required to nurture a service economy and enable efficient distribution in urban areas, even at the feeder level (Iimi, 2005). The relationship between urban sprawl, high dependency on private vehicles, and corresponding vehicle type choice (and usage) increasingly attracts planners' attention (Chen *et al.,* 2020). Moreover, node connectivity integrates topological landscapes that constitute power and process development geometry while enabling multilocality life (Addie, 2016). Integrated multidisciplinary research will produce urban designs that benefit the Government and the commuters, and policymakers can consider several indicators of commuting behavior as they determine sustainable policies in urban design.

III. Methods and Materials

III.1 **Locus of Research**

To illustrate how recent population density patterns have formed, Figure 1 shows the locus of research, train station location, and population density by Central Bureau of Statistics data in 2020:

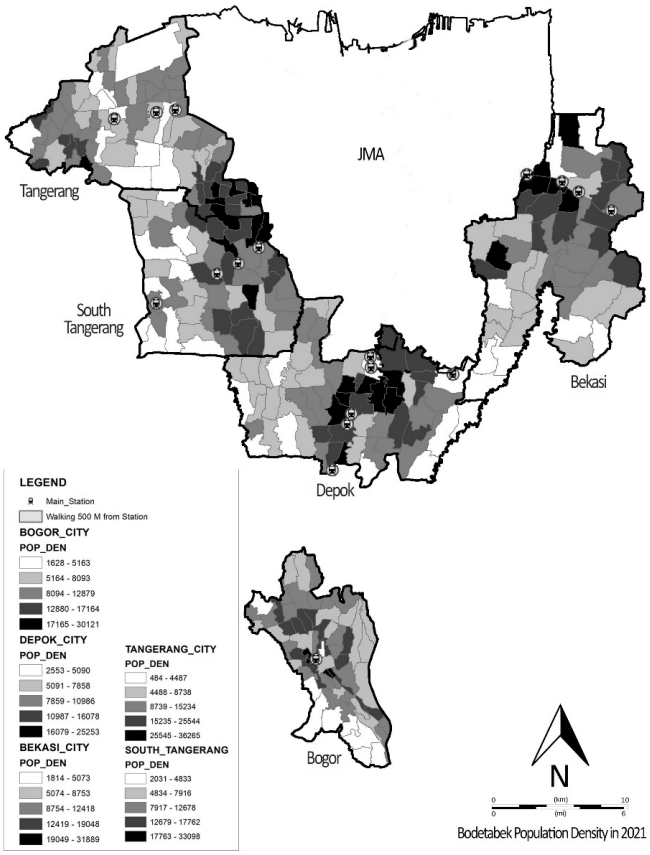

Figure 1. **Population Density in the locus of research (Author, 2021)**

For the city as a whole, high population density implies shorter average distances between residential areas, workplaces and service facilities than in a city with a scattered development pattern (Næss, 2012). This can be seen in the Cities of Bekasi, Bogor and Depok (see Figure 1), where the railway infrastructure is concentrated in areas with high population density and leads to the formation of a centralized city pattern. A different phenomenon occurs in South Tangerang City, where the population density tends to the northeast, while in Tangerang City the highest population density tends to the southeast, where the railway infrastructure is not concentrated in that area.

III.2 **Sampling Characteristics**

The sampling of respondents used non-probability sampling with different ratios of population distribution in the five suburbs region. Respondents were classified in the ranges of productive age, and the ratio is based on the populations in the five selected cities in 2020 (Jabodetabek Statistic, 2020, p. 6). Thus, the decision to eliminate respondents under 25 years of age was based on the research focus, which is worker mobility (see Table 1):

Table 1. Respondents by age groupings

Area	Total Population	25 - 34	35 – 44	45 – 55	> 55	Total
Bekasi City	268,327	37	25	28	10	100
Depok City	254,852	30	34	28	8	100
Bogor City	53,208	32	31	29	8	100
Tangerang City	170,514	34	30	28	8	100
South Tangerang City	146,568	29	29	29	13	100
TOTAL	893,469	162	149	142	47	500

Source: Author, 2021

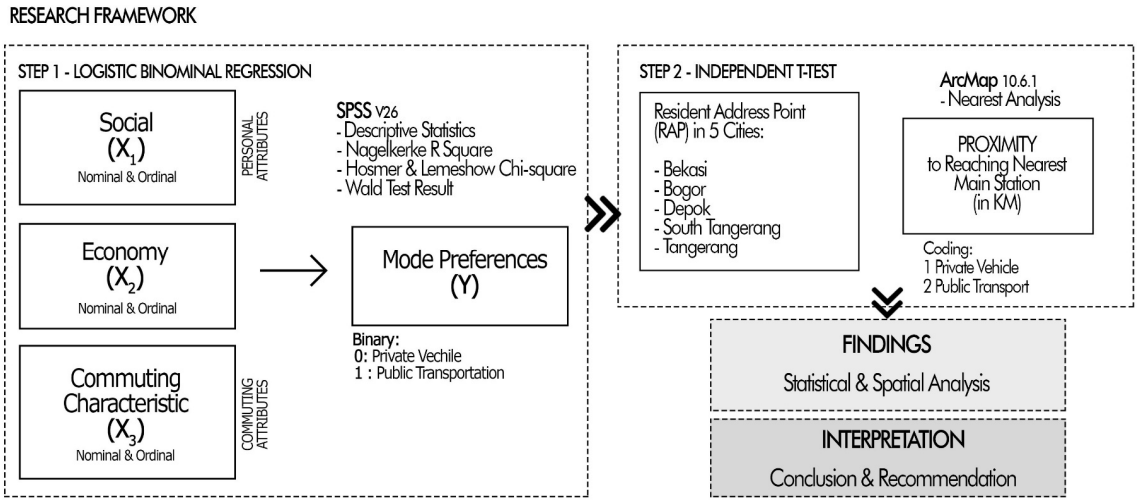

Figure 2. Variables in the research model (source: Author, 2021)

This study divided the research scheme into descriptive analysis, binominal logistic regression, and independent T-Test using nearest analysis (ArcMap 10.5.1). The method chosen in this study was a quantitative-positivist paradigm in binominal logistic regression using SPSS V 26.0. Data coding on the predictor variable used nominal and ordinal data types. Thus, the variables to be used in the model can be seen in the research scheme (see Figure 2 above).

IV. Discussion

IV.1 Descriptive statistics

The study's descriptive statistics can be explained by the frequency and mean table below (see Table 2):

Table 2. Descriptive statistics of Variables (Author, 2021)

Variables	Mean	St. Dev	Variables	Freq
$X_{1.}$ Personal Characteristic			$X_{3.}$ Commuting Attributes**	
$X_{1.1.}$ Gender			$X_{3.1}$ Reason for Choice	
Male (1)		63.6%	Affordable (4)	56.0%
Female (0)*		36.4%	Comfortable (3)	19.4%
			Faster (2)	18.4%
			No Traffic (1)	3.2%
			No need to switch (0)*	3.0%
$X_{1.2.}$ Age *(Cont.)*	39.91	10.025	$X_{3.2}$ Commuting Time	
			1 - 60 Minutes (2)	50.4%
			61 - 100 Minutes (1)	44.0%
			101 Minutes + (0)*	5.6%
$X_{1.3}$ Resident Status			$X_{3.3}$ Commuting Distance	
Local/Native (1)		54.6%	1 – 50 Km (2)	74.0%
Non-Local/Migrant (0)*		45.4%	51 – 100 Km (1)	24.6%
			101 more (0)*	1.4%
$X_{1.4}$ Education Level			$X_{3.4}$ Commuting Cost	
Diploma Above (1)		84.4%	1 – 50000 IDR (2)	56.4%
SHS Below (0)*		15.6%	50001 – 100000 IDR (1)	34.4%
$X_{1.5}$ Work Place Type			1000001 + IDR (0)*	9.2%
Private (1)		81.6%		
Non-Private (0)*		18.4%		
$X_{2.}$ Economic Characteristic			Y. Main Mode Choice	

$X_{2.1.}$ Monthly Income (in IDR) < 2000000 (6) 2000001 – 5000000 (5) 5000001 – 8000000 (4) 8000001 – 10000000 (3) 10000001 – 15000000 (2) 15000001 – 20000000 (1) > 20000001 (0)*		 4.4% 29.4% 42.8% 14.0% 5.8% 2.6% 1.0%	Private Vehicle (0)	86.8%
$X_{2.2.}$ Housing Tenure Rent (1) Owned (0)*		 74.6% 25.4%	Public Transportation (1)	13.2%
$X_{2.3.}$ Car Ownership *(Cont.)*	.98	.724	**as reference in binominal logistic regression; **calculate roundtrip in one day; As of 21st December 2021, 1 U.S. Dollar = 14331.60 IDR*	
$X_{2.4.}$ Motorcycle Ownership *(Cont.)*	1.97	1.004		

Source: Author, 2021

Based on the gender indicator, males dominate at 63.6%. Local residents dominate resident status at 54.6%. The education level of respondents dominated with diploma education is 84.4%. The private sector dominates workplace type at 81.6%. Average monthly income mostly ranges between IDR 2000001 to 5000000 at 42.8%. Car ownership is dominated by the condition in which one family owns one car by 51.8%. Meanwhile, two motorcycles dominate motorcycle ownership in one family. Commuting attributes (X_3) can be described by commuting cost, commuting time, commuting distance, the reason for the choice, and mode choice preferences. The average commuting cost ranges from IDR 1–50000 dominates the choice by commuters as 56.4%. The commuting time is dominated by the roundtrip commuting time between 1–60 minutes at 50.4%. The average roundtrip commuting distance is between 1–50 kilometers, and respondents dominate at 74.0%. Up to 86.8% of all commuters dominate the use of private vehicles. Choosing modal transportation for daily travel-to-work is dominated by affordability at 56%.

IV.2 Logistic Binominal Regression

Testing the significance of parameters using the Wald test shows the results in Table 3:

Table 3. Variables in The Equation (SPSS, 2021)

	B	S.E.	Wald	df	Sig.	Exp(B)
Gender (1)	-.601	.432	1.938	1	.164	.548
Age	-.068	.025	7.615	1	**.006**	.568
Resident Status (1)	.240	.394	.372	1	.542	1.272
Education Level(1)	1.190	.488	5.957	1	**.015**	3.344
Workplace Type (1)	.211	.499	.179	1	.673	1.293
Monthly income			21.058	6	**.002**	
Monthly income (1)	-33.449	47643.231	.000	1	.999	.000
Monthly income (2)	-32.915	47643.231	.000	1	.999	.000
Monthly income (3)	-30.865	47643.231	.000	1	.999	.000
Monthly income (4)	-3.873	48008.798	.000	1	1.000	.019
Monthly income (5)	1.087	47553.184	.000	1	1.000	2.851
Monthly income (6)	1.462	47688.712	.000	1	1.000	4.414
Housing tenure (1)	-.778	.502	2.405	1	.156	.495
Car Owned	.228	.288	.626	1	.372	1.290
Motorcycle Owned	-.253	.195	1.686	1	.199	.780

Reason Choice			12.445	4	**.016**	
Reason Choice (1)	.107	1.329	.006	1	.809	1.373
Reason Choice (2)	-15.308	2044.582	.000	1	.994	.000
Reason Choice (3)	1.525	.461	10.945	1	**.001**	4.428
Reason Choice (4)	-.404	.765	.279	1	.537	.623
Commuting time			.000	2	1.000	
Commuting time (1)	54.410	10065.619	.000	1	.996	426735565434660200000000.000
Commuting time (2)	4.934	9860.290	.000	1	1.000	138.901
Commuting Distance			8.037	2	**.018**	
Commuting Distance (1)	-.496	1.746	.081	1	.776	.609
Commuting Distance (2)	.993	1.809	.301	1	.583	2.699
Commuting Cost			1.378	2	.502	
Commuting Cost (1)	-.267	.811	.109	1	.742	.765
Commuting Cost (2)	-.870	.897	.940	1	.332	.419
Constant	-20.608	46567.894	.000	1	1.000	.000
-2LL						181.393[a]
Model chi-square						208.778
Cox & Snell R Square						.341
Nagelkerke R Square						**.630**
Hosmer and Lemeshow Chi-square						4.030
Number of observations						500
Percentage correct						93.0

Source: SPSS, 2021

The results of the omnibus test show the chi-square value of 208.778 with a significance of 0.000, so the model used is acceptable. Based on the value of Nagelkerke R Square, personal-economic attributes and commuter attributes affect mode choice preferences by 63%, while 47% are factors outside the model. The percentage of model accuracy in classifying observations is 93.0%. The parameter used for the partial test of this study is to compare the significance value with the actual value of 5%. Table 4 shows that at the 5% significance level, age, education level, monthly income, the reason for the choice, and commuting distance simultaneously significantly affect mode choice preferences. Wald test results in detail can be seen from the following explanation:

- Reason for Choice ($X_{3.1}$) with the comfortability indicator obtained by 1.525 with a significance level of **0.001**. This result means that the more comfortable the travel experience, the more likely commuters will choose public transportation.
- Monthly Income ($X_{2.1}$) with an average monthly income of more than IDR 20000000 (the highest monthly income in this model) has a significant level of **0.002**. This result means that high-income commuters will be more likely to choose public transportation.
- The age ($X_{1.2}$) variable was obtained by -.068 with a significance level of **0.006,** and based on the age indicator, the younger commuter age, the more likely to choose public transport.
- Education Level ($X_{1.4}$) was obtained by 1.190 with a significance level of **0.015**. Based on the education level indicator, it can be shown that the higher education of commuters, the more likely they are to choose public transportation.
- Reason for Choice ($X_{3.1}$) stated “no need to transfer/switch to other modes” has a significant level of **0.016**. This result means that the fewer shifts from one mode to another, the more likely commuters will choose public transportation.

- Commuting Distance ($X_{3.3}$) with a distance indicator of more than 100 kilometers (long trip) has a significant level of **0.018**. It is indicated that commuters who take long trips from their locations to the workplace tend to choose public transportation as their primary daily mode of transport.

IV.3 The Independent T-test Results

After finding the character of commuting behavior from socio-economic and commuting attributes, we tried to look at commuting characteristics by using proximity measures. Respondents were asked to mention their resident address points at the village level. A total of 500 respondents in this study, 478 respondents, specifically mentioned addresses at the street name level. The distribution of respondents' locations in this research model can be seen in Figure 3:

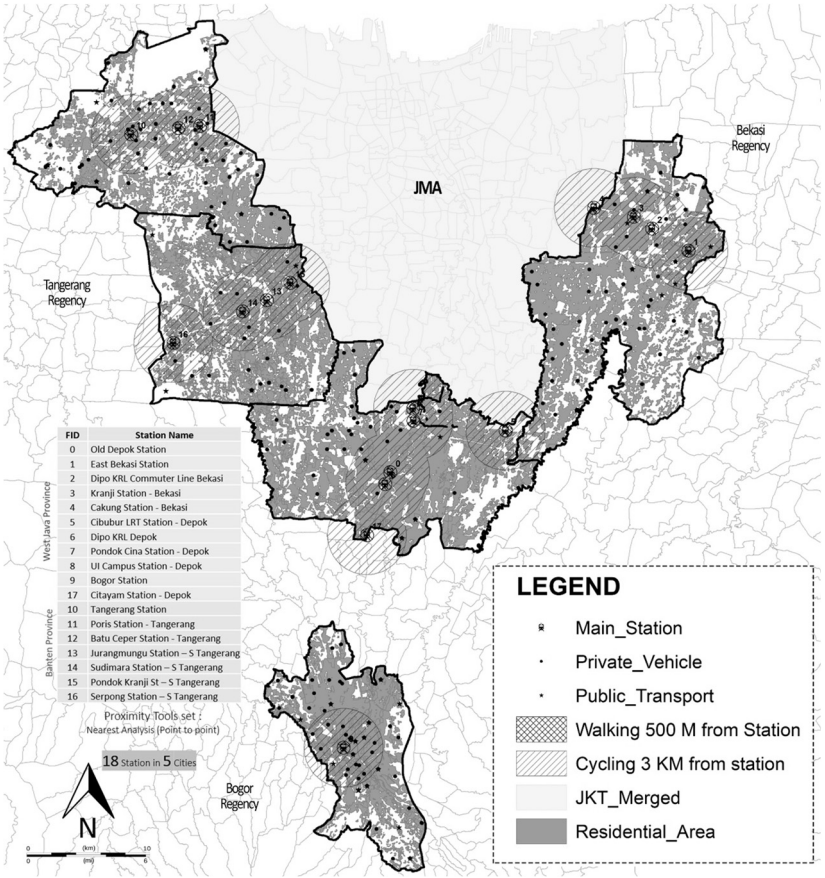

Figure 3. Respondent address point distribution and nearest station location (Author, 2021)

After seeing the respondent's residence distribution, the distance from the home location to the nearest station is measured using Nearest Analysis. After getting the proximity value (in Kilometers), the results of the statistical descriptive can be seen in Table 4.

Table 4. Descriptive statistics after and before grouping

Proximity	N	Min	Max	Mean	Std. Dev	Mode Choice	N	Mean	Std. Dev
Bekasi	98	.60	9.73	4.9849	2.38223	Private Vehicle	92	5.1801	2.31269
						Public Transport	6	1.9917	1.13992
Bogor	96	.79	8.91	3.5742	2.37490	Private Vehicle	79	3.6766	2.39940
						Public Transport	17	3.0982	2.26490
Depok	96	.47	8.45	3.8518	1.46615	Private Vehicle	90	3.9533	1.45389
						Public Transport	6	2.3283	.49596
South Tangerang	100	.54	7.08	4.6303	1.54519	Private Vehicle	97	4.6313	1.50753
						Public Transport	3	4.5967	3.01636
Tangerang	88	.38	6.47	3.2864	1.81594	Private Vehicle	81	3.1889	1.82759
						Public Transport	7	4.4143	1.29181

Source: SPSS, 2021

Furthermore, an independent T-Test was conducted to determine the difference in the average of two independent data groups: commuters who choose private vehicles (1) and commuters who choose public transportation (2). In this analysis, the variables used are continuous and categorical data with only two groups. The results of the independent T-Test can be seen in Table 5:

Table 5. Independent T-Test (SPSS, 2021)

		Levene's Test for Equality of Variances		T-Test for Equality of Means				
Proximity		**F**	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**
Bekasi	Eq. variances assumed	4.106	**.046**	3.339	96	.001	3.18844	.95505
	Eq. variances not assumed			6.083	8.013	**.000**	3.18844	.52412
Bogor	Eq. variances assumed	1.303	.257	.910	94	.365	.57835	.63553
	Eq. variances not assumed			.945	24.370	.354	.57835	.61207
Depok	Eq. variances assumed	2.471	.119	2.715	94	**.008**	1.62500	.59844
	Eq. variances not assumed			6.399	12.146	.000	1.62500	.25393
South Tangerang	Eq. variances assumed	3.798	.054	.038	98	.970	.03467	.91041
	Eq. variances not assumed			.020	2.031	.986	.03467	1.74821
Tangerang	Eq. variances assumed	1.334	.251	-1.732	86	.087	-1.22540	.70732
	Eq. variances not assumed			-2.317	8.237	.048	-1.22540	.52880

Source: SPSS, 2021

From the independent T-Test's output above, it can be seen that the variances of the two groups in Bekasi City are different, while the variances in Depok, Bogor, South Tangerang, and Tangerang cities are the same. The

results of *Levene's test* scores in Depok City are not significant (ρ > 0,05), which means the variance of the two groups in this city are the same. Then next, we can see the *t-value* in the first row, which is significant at 0.008 (ρ < 0,05). It can be interpreted that in Depok City, the distance from the house location to reach the nearest station in the two groups is significantly different. Thus, it can be said that in the cities of Bekasi and Depok, the proximity from the house location to the nearest station influences the modal choice for commuters. This means that the farther the distance from the house location to the nearest station, commuters will tend to choose a private vehicle, whereas if the distance from the house to the nearest station is getting closer, the commuters will choose public transportation.

The findings in this study agreed with the latest research findings conducted in Southeast Asia Countries, in which comfortability aspects, higher monthly income, youngest age, higher education level, no need to change to other modes, and long commuting distance have influenced the tendency to choose mass transportation (Tuan, 2015; Bastarianto *et al.,* 2019; Indriany et al., 2019; Statistic Bureau of Commuters in Jabodetabek, 2019; Puan *et al.,* 2019; Witchayaphong et al., 2020; Mayo and Taboada, 2020; Irjayanti *et al.,* 2021). However, these research results contrast with the findings that elderly commuters with higher education and higher monthly income are more likely to choose private vehicles (Setyodhono, 2017; Al-Salih and Esztergár-Kiss, 2021). The different results may have been caused by factors external to the model, such as weather conditions, spatial patterns, and commuter psychology, which do not directly intersect with predictors. The findings for the reason or motivation for choice are rarely discussed in previous studies.

V. Conclusion

This study provides insights into the issues and challenges facing sustainable urbanism in commuting behavior utilizing transportation infrastructure. Policy recommendations that can project further infrastructure development in the Jabodetabek area, such as:

1. The comfortability aspect was the most significant indicator. The humid tropical conditions in Indonesia affect the comfort of commuters at wait times and congestion at arrival and departure during peak hours, especially during traffic jams that occur between two cities, for example, from Jakarta to Bodetabek area or *vice versa.* In this case, the comfort aspect can be achieved by proper air conditioning, reducing sun glare for visual comfort, providing shade/canopy when it rains, improving air quality and odors, and ensuring cleanliness to improve the ambiance. In the design interventions of transit points such as train stations or bus stops, ease of movement for the elderly and people with disabilities through ticket gates and elevators, ease of listening to announcements, contrasting colors on signage, and integrated access for non-motorized modes must be considered.
2. Urban design can affect commuter psychology related to comfortability aspects, and how many times they should switch or transfer to another mode must be limited to reduce the stress level of travel. The consideration in the transfer mode from home locations to the workplace is to minimize the transfer at least three times in one trip. Increasing the number of bus stops at the sub-district level or providing a feeder at every public facility such as a hospital, school, or city hall will also increase user satisfaction. A well-designed network of sidewalks connecting stations, lighting at night for safety reasons in the walking experience, parking areas for non-motorized modes close to the mass transportation transit point, and investment in maintenance of bicycle lanes to encourage non-motorized transport should be implemented

together.

3. The Independent T-Test results show that not all respondents who live in the Bodetabek area consider the proximity to reaching the nearest station from their housing location as the factor that influences mode choice preferences. Recommendations that can be given for infrastructure development in the cities of Tangerang, South Tangerang, and Bogor are polycentric city models consisting of regional centers and sub-regional centers with the distribution of mass transportation points in each sub-district. Meanwhile, to support the Government's program in shifting to using mass transportation, especially in the cities of Bekasi and Depok, the Transportation Agency needs to provide financial subsidies such as cheap tickets for commuters to reach feeders and buses easily, considering the affordable cost is the main reason why commuters rely on private vehicles in this research model.

   The limitation of this study is that the number of respondents is still too small. The indicators used are still within social attributes such as personal and economic characteristics for workers in productive age only, not precisely discuss indicators in design intervention. Further research may aim to determine transit place for suburban workers using the variance of indicators such as: commuters' leisure time, specifications distance from home locations to reach several mass transport points (not only train station), multinominal mode choice that also consists of motorized/non-motorized and housing conditions, which may be relevant to travel costs. These indicators will provide an overview of policies and innovation in making spaces that support commuting activities and designing interventions for non-motorized commuters.

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郊外地域の通勤行動に影響を与える要因の解明

―インドネシア・ボデタベックを事例として―

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【要旨】

都市基盤は急速な郊外化を経験する世界の大都市でますます重要な役割を果たしている。本研究は、日々の通勤における交通手段の選択判断をする際の通勤者の選好に影響を与える要因を解明することを目的とする。方法論としては、通勤者の公共交通の選択要因について二項ロジスティック回帰モデルによって定量的に推計している。標本の収集においては、インドネシア・ジャカルタ大都市圏のボデタベック（BODETABEK）地域の 5 つの郊外の行政区域ごとの年齢階層の母集団比率に基づいて、非確率的な層化抽出を行った。分析の結果、公共交通を選択する者は、年齢が若い（$X_{1.2}$）、教育レベルが高い（$X_{1.4}$）、月収が高い（$X_{2.1}$）、快適さを重視する者であることがわかった。また、乗り換えの少ない者（$X_{3.1}$）、およびより長い通勤距離（$X_{3.3}$）である者も、公共交通を選択していることもわかった。また、ブカシ（Bekasi）とデポック（Depok）において、自宅から最寄り駅前の距離が有意に長かったこともわかった。政策の方向性としては、快適さを重視する者と乗り換え回数の少ない者を対象として、何らかの支援策を考えられないかどうか検討している。また、都市デザインによって郊外の通勤者を支援しつつ政策の効果を高めるような条件を検討する必要があることなどを論じた。

キーワード：通勤行動, 郊外地域, 手段選好