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Regional Development and Interregional Migration Decisions in Jakarta

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Abstract

Purpose: *this study aims to examine the community's decision to migrate between regions in the Jabodetabek area using the KRL Commuterline public transportation and analyse regional criteria based on regional development based on Oriented Development Transit, where these criteria become integration with community movements in migrating to an area.*

Methods: *secondary data is used to find the number of people in migrating obtained from pt. Kai Indonesia. While to complete and explain each variable to be studied using primary data with several questions through a questionnaire submitted to 398 people who migrate between regions using logistic regression analysis techniques in their measurements. While to analyze the criteria for regional development in each region using an assessment approach from the Institute for Transportation and Development Policy. With qualitative analysis techniques and to assist in this research, a spatial approach is used which is used to display a picture of the distribution of migration.*

Results: *(1) Regional development in each part of the Jabodetabek area is in the silver standard category which indicates that the regional development project has almost met the performance targets that have been conceptualized by the Institute for Transportation and Development Policy. (2) People in making decisions to migrate between regions will be affected by the variables of distance, travel costs, gender, travel time, migration destination and regional development, while age and transit distance cannot provide a large enough influence on people's movements in migrating.*

Conclusions and Relevance: *the results of the study prove that regional development in the Jabodetabek area tends to be a non-metropolitan area where people who move prefer areas that are integrated with public facilities that lead to the destination rather than towards the metropolitan area, this is evidenced by the standard silver criteria obtained in the area in Jabodetabek.*

Keywords: *Regional Development, Migration, Interregional Migration, Transit-Based Area Development*

Conflict of Interes. *The Authors declare that there is no Conflict of Interest.*

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Оригинальная статья

Региональное развитие и межрегиональная миграция: решения Джакарты

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Аннотация

Цель *представленной работы – исследование решения сообщества о миграции между регионами в районе Джабодетабек с использованием пригородного общественного транспорта KRL Commuterline, а также анализ региональных критериев, основанных на специфике региона и вытекающих из транзитно-ориентированного развития, где эти критерии становятся базой эффективной интеграции с общественными движениями при массированной миграции на больших площадях.*

Методы или методология проведения работы. *Для определения количества мигрирующих людей используются вторичные данные, полученные из pt. Kai Indonesia. Для объяснения каждой изучаемой переменной используются первичные данные, полученные методом анкетирования (с помощью нескольких вопросов, отправленных выборке из 398-ми мигрантов, которые перемещаются между регионами), и методы анализа логистической регрессии. Для анализа критериев регионального развития в каждом регионе использован оценочный подход Института политики транспорта и развития. Также, наряду с используемыми методами качественного анализа, применяется пространственный подход для отображения картины распределения миграции.*

Результаты работы. *(1) Региональное развитие в каждой части района Джабодетабек находится в категории «серебряный стандарт», что указывает на то, что проект регионального развития почти достиг целевых показателей эффективности, которые были разработаны Институтом политики транспорта и развития. (2) При принятии решений о миграции между регионами на людей будут влиять такие переменные как расстояние, транспортные расходы, пол, время в пути, пункт назначения миграции и его региональное развитие; в то время как возраст и транзитное расстояние не оказывают достаточно большого влияния на передвижения людей при миграции.*

Выводы. *Региональное развитие в районе Джабодетабек происходит вне агломерации. Как правило, мигранты предпочитают районы, интегрированные с общественными объектами, которые ведут к месту назначения (по работе или для получения услуг), а не просто в сторону мегаполиса. Об этом свидетельствуют стандартные «серебряные критерии», полученные на исследуемом участке в районе Большой Джакарты.*

Ключевые слова: *региональное развитие, миграция, межрегиональная миграция, транзито-ориентированное развитие районов (территорий)*

Конфликт интересов. *Авторы заявляют об отсутствии конфликта интересов.*

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Introduction

Community activities that take place in various sectors, infrastructure as well as culture and services in big cities will make Indonesia's economic growth develop every year (OECD Economics, 2018)[1]. DKI Jakarta Province is one of the areas that is experiencing rapid development, marked by the presence of metropolitan and non-metropolitan areas, besides that the city of Jakarta is also connected to sub-regional areas such as Bodetabek (Bogor, Depok, Tangerang and Bekasi). DKI Jakarta Province is the center of the economy and government with the most populous population, where based on BPS data, the population of DKI Jakarta in 2019 was 10.557 million/person, increasing to 10,770 people/km in 2020 (BPS DKI Jakarta Province, 2020)[2].

Density in DKI Jakarta is caused by natural growth such as migration factors, besides that natural growth is supported by the existence of an area that is categorized as the Central Business District (CBD), where the area is divided into several parts of activities where people carry out their activities ranging from large-scale to large-scale big (Jenk and Burgess [1]). In the DKI Jakarta area which is included in the CBD area, there are most of the integrated public facilities such as the Commuter line KRL train station which becomes an access link and becomes a transit point for migrants to carry out mobility to parts of the city of Jakarta and sub-regions (Firdaus et al. [2]) according to Dewi et al. [3]. The city of Jakarta is the center of business, industry, economy, government and becomes the central point of all activities, with this phenomenon will lead to the movement of community mobility or inter-regional migration with great attraction from the Jakarta city area as well as from sub-regional areas as commuter movements.

Stevens [4] said that the emergence of community movements as commuters there are push-pull factors owned by each region such as non-monetary factors, regional facilities, pollution levels and quality of life that encourage people to move to metropolitan and non-mentropolitan areas, this agrees with Wajdi et al. [5] that the city of Jakarta has a greater outflow than inflow, on the grounds of relatively low air quality, congestion and high density, in addition Wajdi et al. [6] revealing the movement of migration between

[1] OECD Economics, 2018. https://doi.org/10.1787/eco_outlook-v2018-2-en

[2] BPS DKI Jakarta Province, 2020. https://jakarta.bps.go.id/publication/2020/04/27/20f5a58abcb80a0ad2a88725/provinsi-dki-jakarta-dalam-angka-2020.html; DKI Jakarta Central Statistics Agency. (2019). DKI Jakarta Province in 2019 Figures. DKI Jakarta Province in 2019 Figures

regions is related to the development of the available areas in each region, so that migration will move to more developed areas, be it metropolitan or non-metropolitan areas, where the movement is also integrated with public facilities.

The mobility that occurs outside the Jakarta area has a high economy as evidence that the destination area is suitable as a destination to meet and achieve the needs of migrants who cannot be found in their place of residence, this is reinforced URDI (2018)[3] which states that sub-regions such as the Bogor, Depok, Bekasi and Tangerang areas are designated as buffer zones for the city of Jakarta to accommodate all government, trade and industrial activities because these areas are also relatively close and connected to other areas. Mulder [7] revealed that a situation and situation in people's lives to carry out mobility not only affects migration decisions in general but there is a difference in types of migration, one of which is the choice of distance and public facilities in the destination area.

Clemente et al. [8] Geographical distances between regions will affect migration flows and create commuter communities, Fukurai [9] also stated that the interaction between regions, the distance that tends to be closer will be the main determinant of mobility after job opportunities and wages. Pregi & Novotny [10] states that the age difference will determine the purpose of the movement for migration and for employment opportunities. De Haas [11] Migration movement patterns are assisted by infrastructure and public facilities, social networks (networks) and interventing. Frey [12] revealed that there is support for the development of transportation technology, communication, government agency policies and the expansion of various economic activities and there are different perspectives on society in the stimulation of migration and there are also individual factors that are determined by the area of origin and destination (Wajdi et al. [5]; Feliciano; Rahman; Lee [13]).

Migration between Jakarta and sub-regions will create mobility movements as a commuter community or without settling if they are close, agrees with Cervero et al. [14] which reveals that migrants travel as commuters by means of transit, those who are within a radius of 1 mile (1.61 kilometers) to 2 miles (3.22 miles) from the station and continue their journey by public transportation to their final destination, p. This is evident where interactions between Jabodetabek areas reach 20.43 percent creating migration mobility movements in 2020 or as many as 10 million people at night, while during the day it reaches 14 million human movements in and out of Jakarta (Greenpeace Indonesia, 2020)[4].

Migration movements in the Jabodetabek area that occur due to intervening, one of which is congestion and congestion on the highway, therefore causing people to tend to choose public transportation modes that save costs and travel time and reduce private vehicles, one of which is using the Commuterline KRL public transportation which where it is more efficient and facilitated the development of good and comfortable public areas and facilities (Cervero & Kockelman [15], Cervero [16]). This is in line with what was stated by Ravenstein that the migration pattern will continue to increase and develop along with the development of industry and improvement of transportation infrastructure (Grigg [17]). Table 1 below shows the movement of the number of people migrating between regions, either to the Jakarta area or to sub-regional areas using Commuterline KRL Transportation.

Table 1

Community of Commuterline KRL Users at Jabodetabek Station

Таблица 1

Сообщество пользователей пригородной линии KRL на станции Джабодетабек

No.	Station Name	Number of People
1	Jakarta	25,743
2	Bogor	42,199
3	Depok	56,800
4	Tangerang	21,433
5	Bekasi	37,210
	Amount	183.385

Source: PT. KAI KRL Commuterline Indonesia, 2021.

Источник: PT. KAI KRL Commuterline, Индонезия, 2021.

Cervero [16] based on the application of transit-oriented area development, it is closely related to the pattern of migration movement by means of commuting, especially in the field of public transportation which affects the level of mobility movement (Untermann & Lewicki [18], Cervero et al. [14]). Interregional migration in Jabodetabek has its own magnet to serve as a destination, where regional development in an area can solve the problem of high interregional mobility such as creating an integrated area with public facilities with public space (Calthorpe [19]).

[3] URDI. (2018, February). Jabodetabek One Metropolitan and Nonmetropolita Area - Urban and Regional Development Institute. Development and Regional Development Communication Institute. https://www.urdi.org/2018/02/22/jabodetabek-satu-kawasan-metropolitan.html

[4] Greenpeace Indonesia. (2020). Greenpeace Indonesia - Metropolitan and Nonmetropolitan Residents. In Greenpeace Indonesia. https://www.greenpeace.org/indonesia/supporter-care/

Literature Review

Area Development

An area that is declared developing if the land use is used as a place for various urban transportation activities (activities), such as work, school, sports, and shopping. To support all public access, a transportation network (walking or driving) is needed to create a flow of mobility. This is reinforced by John [20]. In the micro scope, the needs of the movement system and transportation system interact and influence each other, where the two relationships between the two systems have a significant relationship with the place of residence and the purpose of movement, besides that an action taken by the community to find a place to live or stay and carry out activities in an area that has public transportation facilities and lower or more to leave the habit of people driving private cars (Cervero [16]), whereas Jenk and Burgess [1] said the regional development of a densely composed region can be seen from the ratio between the distance from the house to the centre *Central Business District* (CBD) or the main transit point to get to the final destination where there is a development model such as *Neighbourhood, Supportive Area* and *Cores*. According to Bourne [22] revealed the development of the regional structure in which there are various places with the existence of a network and public facilities that support the community's activities so as to create a feedback effect on the new spatial layout. agree with what was stated by Ortuzar & Willumsen [22] that the relationship between spatial planning and transportation is accessibility which means ease of movement between two places, accessibility increases in terms of time or money and distance when movement becomes easier and more efficient (Cervero [16]).

Calthorpe [19] revealed that development in the area must pay attention to a comfortable and safe public transportation network as well as interaction with pedestrian paths and the reduction of motorized vehicles. Interaction of pedestrians with integrated public transportation within walking distance according to the radius that contains the place. Renaissance Planning [23] in a study that discusses regional development in metropolitan and non-metropolitan areas, it is revealed that developing areas must *Vibrant, Pedestrian Friendly*, and integrated with transit and public transport modes, Regional development, especially the Urban Core which is located in the centre of the Central Business District (CBD) according to Cervero & Kockelman [15] can help the movement of mobility between areas of society, all of which have been integrated with public transportation and public facilities. In addition, according to Homer's sectorial zone model conceptually, which takes the approach of the concentric theory of Burgess where Homer states that the distribution of concentric and sectoral zones is integrated with public transportation by connecting with city centres both far and near.

The Gravity Model of Migration

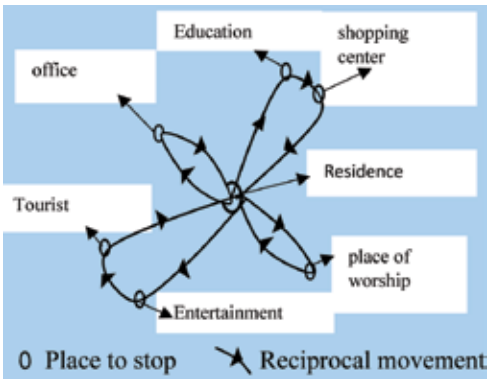
Stillwell [24] said to add and clarify migration patterns using non-demographic information, where the model can be applied to explain regional differences between regions, both for out-migration and in-migration in a destination area, explaining the spatial distribution of migration flows between regions. Therefore, the model is combined with the Gravity model approach in model Fotheringham et al. [25] relates two basic elements of scale impact, for example areas with large populations tend to generate and attract more activity than areas with small populations and distance impacts, eg the farther apart people or activities are, the less interaction there is. Model of Fotheringham et al. [25] to explain how urban and suburban areas interact. Model developed by Sjaastad [26] who use distance, cost proxies and non-monetary factors as migration decisions choose to commuting, such as transportation costs, food costs and lodging costs during activities as well as network barriers. Spatial differences between regions are a measurement of migration and where using data in the form of mapping an area is used in order to clarify the distribution of migration flows and decisions described in the land use area, whether the destination of migrants is to the centre of the office area, a trading area or to an industrial area.

Spatial Interaction Model

Spatial approach Roseman [27]. There are different points of view between migration decisions and the scale of the region (e.g. intra-urban, inter-city, rural-urban and inter-regional). One point of view is that the spatial aspect of migration between regions does not have precise location specifications, where these specifications are useful for understanding the attributes/characteristics of the location and the circumstances of the situation in the origin and destination areas in migration decisions, in this case migration and human movement areone of the forms of human movement through space, other than that according to Smith (1976). Migration is more focused on domestic migration and is closely related to the location of regional and geographic characteristics and where wages are not the only determinant of a person to move to another area but there are factors such as the spatial condition of the region. Meanwhile, according to Alonso [28] said that in the non-permanent mobility movement carried out by the community there is a utility maximization factor, namely that the choice of place or residence is influenced by the costs incurred by migrants, in this case they tend to choose the characteristics of land use such as

the environment/houses and other facilities where the distance is closer to the administrative centre or the scope of the office where they carry out their activities, this is also for example transportation fares, transportation costs and land costs, this is called the theory migration Hump curve (Martin & Taylor [29]).

According to Roseman [27]. Many networks in a given cycle are visited on a daily, weekly, or monthly period at regular time intervals, and others are visited irregularly.

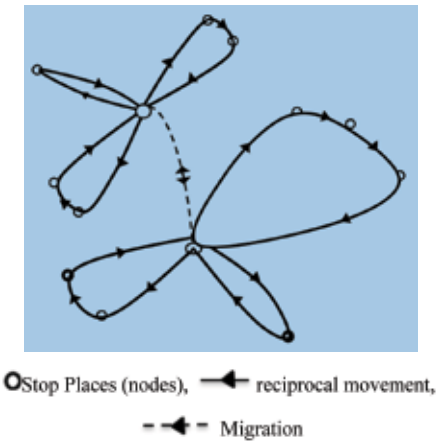


Source: [27]

Fig. 1. Daily Migration Cycle in Spatial Concept

Источник: [27]

Рис. 1. Ежедневный цикл миграции в пространственной концепции



Source: [27]

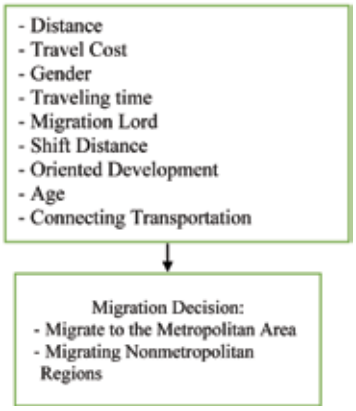
Fig. 2: The Commuter Migration Cycle as a Spatial Process Between Regions

Источник: [27]

Рис. 2. Цикл пригородной миграции как пространственный процесс между регионами

Reciprocal motion on human displacement which is essentially one-way and relatively non-permanent can be identified as the second major movement category or referred to as commuter migration. These movements are defined as migrations and represent the transfer of the centre of gravity of the cycle. Movements may be same day/daily from home, to a new location. Each change of residence is treated as a migration, because changes in the most frequently visited nodes in the cycle, houses, offices, education and shopping centres while tourist attractions, entertainment become alternative visits.

Previous research about the relationship between the characteristics of migration movements between regions with the development of interconnected and integrated areas, where Ye et al. [30] examine travel time and travel satisfaction, while Taki & Maatouk [31] there is interventing in public facilities with public transportation so that time and costs are not efficient, as well as Staricco & Vitale Brovarone [32] transit-oriented areas in metro and non-metro areas that are not integrated will hinder migration movements, in thick proportion to Zhang et al. [33] development of areas that are integrated with transportation will reduce private vehicles. Further research by Han et al. [34], Beenstock [35] and Credit [36] find interactions between regions that complement each other with migration patterns where the movement becomes effective and positive if it is integrated with public transportation. Study Cazzuffi & Modrego [37] there is an age grouping that divides the destination of the region into a migration destination, while Lima & Silveira Neto [38] facilities in an area will have a significant positive impact on regional development and the creation of spatial effects in intra-urban areas. Next Cattaneo et al. [39] studying migration with education, Brutus et al. [40] enter travel time and costs as well as Carlsson et al. [41] examines distance, where the research has a positive impact on the movement of people in inter-regional migration. The latest research reviewed by Pregi & Novotny [10] stated that migrants tend to choose to leave the city which is a short distance or sub-regional area, because the area they are going to contributes more significantly to their status as well as good facilities.



Source: Developed by the authors.

Fig. 3. Flow of Thought

Источник: Разработано авторами.

Рис. 3. Развитие мысли

Based on *literature review* which has been described in detail earlier, conceptually the relationship is built between the variables that measure inter-regional migration decisions and regional development. Based on Figure 3, it explains the decision to migrate between regions, either to metropolitan areas or non-metropolitan areas by using public transportation. Areas with integrated transit-based regional development will provide interest and a positive effect on the community in assisting the movement of migration between regions in Greater Jakarta.

Materials and Methods

This study aims to analyze the linkages between transit-based area development and inter-regional migration decisions in Jabodetabek using KRL Commuterline transportation. This study uses secondary data to find the number of people who are mobile obtained from PT. KAI Indonesia and primary data are used to clarify each variable studied using a questionnaire obtained by means of field observations and to see the characteristics of the regional development assessment assisted by google map street and using an assessment approach from the Institute for Transportation and Development Policy (ITDP). And for empirical evidence, statistical testing is carried out with the following logistic regression analysis:

$$ln\left(\frac{Mji1}{Mji0}\right) = \beta 0 + \beta 1\, X1_{it} + \beta 2\, X2_{it} + \ldots \ldots + \beta k X k_{it} \quad (1)$$

In general, the logistic regression probability model involving several independent variables x can be formulated as follows:

$$(X) = \frac{e\beta^1 + \beta^1 X^1 + \beta^2 X^2 + \cdots + \beta k X k}{1 + e\beta^0 + \beta^1 X^1 + \beta^2 X^2 + \cdots + \beta k X k} \quad (2)$$

according to Gujarati (1988) [5] the general form of the logit regression model of (x) is expressed as g(x), namely:

$$g(x) = \ln \frac{\pi(x)}{1-\pi(x)} \quad (3)$$

So get:

$$ln\left(\frac{Mji1}{Mji0}\right) = \beta 0 + \beta 1\, Distance_i + \beta 2\, TravelFare_i + \beta 3\, Gender_i + \beta 4\, Traveling\ time_i + \beta 5\, Intention\ Migration_i + \beta 6\, TransitPointDistance_i + \beta 7\, TOD_i + + \beta 8\, Age_i \beta 8\, Transportasi\ Penghubung_i \quad (4)$$

Where:

Mj_i1 = Migrate To Metropolitan Area

Mj_i0 = Migrating To Non-Metropolitan Regions

$\beta 0 = Intrcept$

$\beta 1\, Distance_i = Jarak$

$\beta 2\, TravelFare_i = Ongkos\ Perjalanan$

$\beta 3\, Gender_i = Jenis\ Kelamin$

(1 = male; 0 = female)

$\beta 4\, Traveling\ time_i = WaktuTempuh\ Perjalana$

$\beta 5\, IntentionMigration_i = Niat\ Bermigrasi$

(1=work; 0=education; 0=trade; 0=other)

$\beta 6\, TransitPointDistance_i = Jarak\ Titik\ Transit;$

$\beta 7\, TOD_i = Oriented\ Development$

$\beta 8\, Age_i = Umur$

$\beta 9\, TrC_i =$ Transport Penghubung

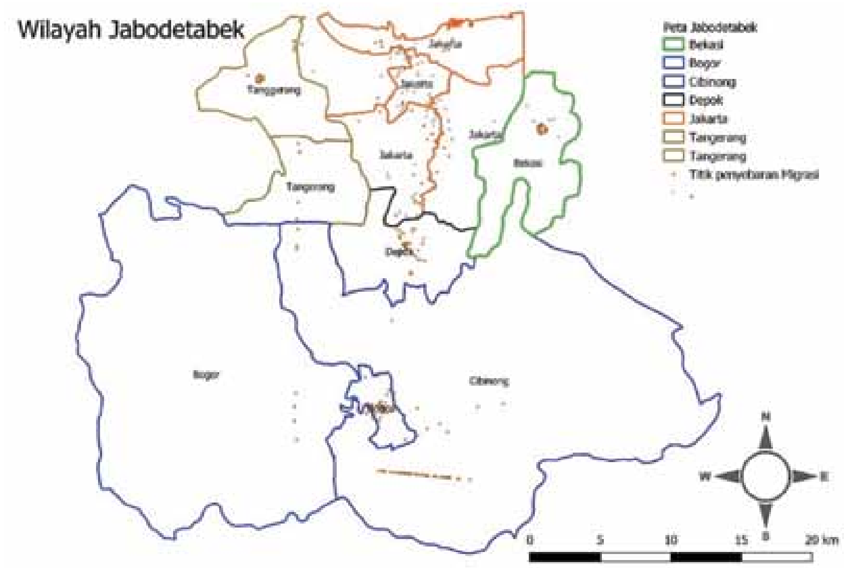
(1= walking, 0 = public transportation; 0 = ojek; 0 = city transit)

Results

The distribution of people who carry out migration movements between Jabodetabek areas, where people who carry out movements are dominated towards the capital city of Jakarta, while the rest go to suburban areas or supporting areas such as Depok, Bekasi, Bogor and Tangerang. In addition, people also tend to choose to stop at areas closer to their places of activity which are in areas smaller than the Greater Jakarta area. Further explanation can be seen in Figure 4 below.

Based on Figure 4 shows that the spread of migration between regions using KRL Commuterline public transportation, from the information in the legend the distribution of the community can be seen from the latitude and longitude points while

[5] Gujarati D. Basic Econometrics (Second Edi). McGraw Hill Book Company, 1988.



Source: Primary data processed, Qgis (2021).

Fig. 4. Interregional Migration Map for Jabodetabek

Источник: Обработанные первичные данные, Qgis (2021).

Рис. 4. Межрегиональная миграционная карта для Джабодетабека

the Jabodetabek point is a central region or area, which from the central area has and is divided again with other areas. This is done by migrants to find the area closest to their activities. So from this explanation it is known that 201 people headed for the capital city of Jakarta, where this movement is spread again in several suburban areas of Jakarta such as the south, east, west. The spread continues in the Bogor area which has a spread of 72 people, which is where the spread of the area towards bojonggede, cibinong and nambo. Furthermore, in the Depok area, the movement of people as many as 44 people tends to spread towards educational areas such as the Indonesian university area, Pondok Cina and residential areas in Citayam. The rest of the distribution of migration to the Tangerang City area is as many as 25 people, where in this area people tend to go to industrial areas such as Rangkas Bitung, Poris and Tanah Tinggi. The last area, namely Bekasi City, has a distribution of 47 people who go to the Cipinang, Kranji and Buaran areas, in this area the migrants move to industrial areas or as factory workers and some of them go for recreation and visit to meet friends and family. Furthermore, in the Depok area, the movement of people as many as 44 people tends to spread towards educational areas such as the Indonesian university area, Pondok Cina and residential areas in Citayam. The rest of the distribution of migration to the Tangerang City area is as many as 25 people, where in this area people tend to go to industrial areas such as Rangkas Bitung, Poris and Tanah Tinggi. The last area, namely Bekasi City, has a distribution of 47 people who go to the Cipinang, Kranji and Buaran areas, in this area the migrants move to industrial areas or as factory workers and some of them go for recreation and visit to meet friends and family. Furthermore, in the Depok area, the movement of people as many as 44 people tends to spread towards educational areas such as the Indonesian university area, Pondok Cina and residential areas in Citayam. The rest of the distribution of migration to the Tangerang City area is as many as 25 people, where in this area people tend to go to industrial areas such as Rangkas Bitung, Poris and Tanah Tinggi. The last area, namely Bekasi City, has a distribution of 47 people who go to the Cipinang, Kranji and Buaran areas, in this area the migrants move to industrial areas or as factory workers and some of them go for recreation and visit to meet friends and family. china hut and residential area in citayam. The rest of the distribution of migration to the Tangerang City area is as many as 25 people, where in this area people tend to go to industrial areas such as Rangkas Bitung, Poris and Tanah Tinggi. The last area, namely Bekasi City, has a distribution of 47 people who go to the Cipinang, Kranji and Buaran areas, in this area the migrants move to industrial areas or as factory workers and some of them go for recreation and visit to meet friends and family. china hut and residential area in citayam. The rest of the distribution of migration to the Tangerang City area is as many as 25 people, where in this area people tend to go to industrial areas such as Rangkas Bitung, Poris and Tanah Tinggi. The last area, namely Bekasi City, has a distribution of 47 people who go to the Cipinang, Kranji and Buaran areas, in this area

the migrants move to industrial areas or as factory workers and some of them go for recreation and visit to meet friends and family.

In the observations of this study descriptively describe the research variables, both independent and dependent variables. Based on data, the total respondents in this study amounted to 398 people who explained about regional-oriented development and inter-regional migration decisions towards metropolitan or non-metropolitan.

Table 2

Descriptive Statistics of Research Variables

Таблица 2

Описательная статистика переменных исследования

Variable	Minimum	Maximum	Average	Standard Deviation
Mileage	3,800 Meters	105,000 Meters	39,962 Meters	21239.50
Cost	Rp. 5,000	Rp. 50,000	Rp. 20,552	9061.55
Traveling time	20 minutes	180 Minutes	68 Minutes	34,61347
Transit Distance	100 Meters	5,330 Meters	2,082 Meters	1351.571
Area Development	31 Points	66 Points	53 Points	7.74541
Age	18 years	61 years old	34 Years	11.13521

Source: Primary Data (processed, 2021).

Источник: Первичные данные (обработано в 2021 г.).

Based on Table 2 shows that the minimum value of travel distance is 3,800 meters (3.8 km) and the farthest is 105,000 meters (105 km) with an average of 39,962 meters (40 km) and the standard deviation value is 2.1239, meaning that the data is evenly distributed. In addition, it shows the distance of the respondent's journey from the area of origin to the area of destination, here it can be seen that as many as 152 respondents tend to move with a distance of 25,000 meters – 45,999 meters (38.2%), while those with mobility > 88,000 meters/ 88 km are 22 respondents.

Meanwhile, the lowest value for travel costs is Rp. 5,000, and the highest is Rp. 50.000, with an average of Rp. 20,552 and the standard deviation value is 9061,557, this shows that the distribution of data is evenly distributed, with conditions known that most respondents save costs by using their personal vehicles to go to the train station and think about it, while respondents who use public transportation are relatively cheap compared to those who use public transportation, ojek pangkalan, while the respondents after getting off the KRL Commuterline they prefer to walk to their place of activity.

Furthermore, on the travel time variable which has the shortest length of travel for 20 minutes and the longest 180 minutes with an average travel time of 68.54 minutes and a standard deviation value of 34.6134 that this indicates that the deviation of the data that occurs is low, the spread of the value evenly, from the results of observations it is known that those who move with a time of more than 2 hours are moving to other suburban areas outside Jabodetabek where the area is Rangkas Bitung is an industrial area.

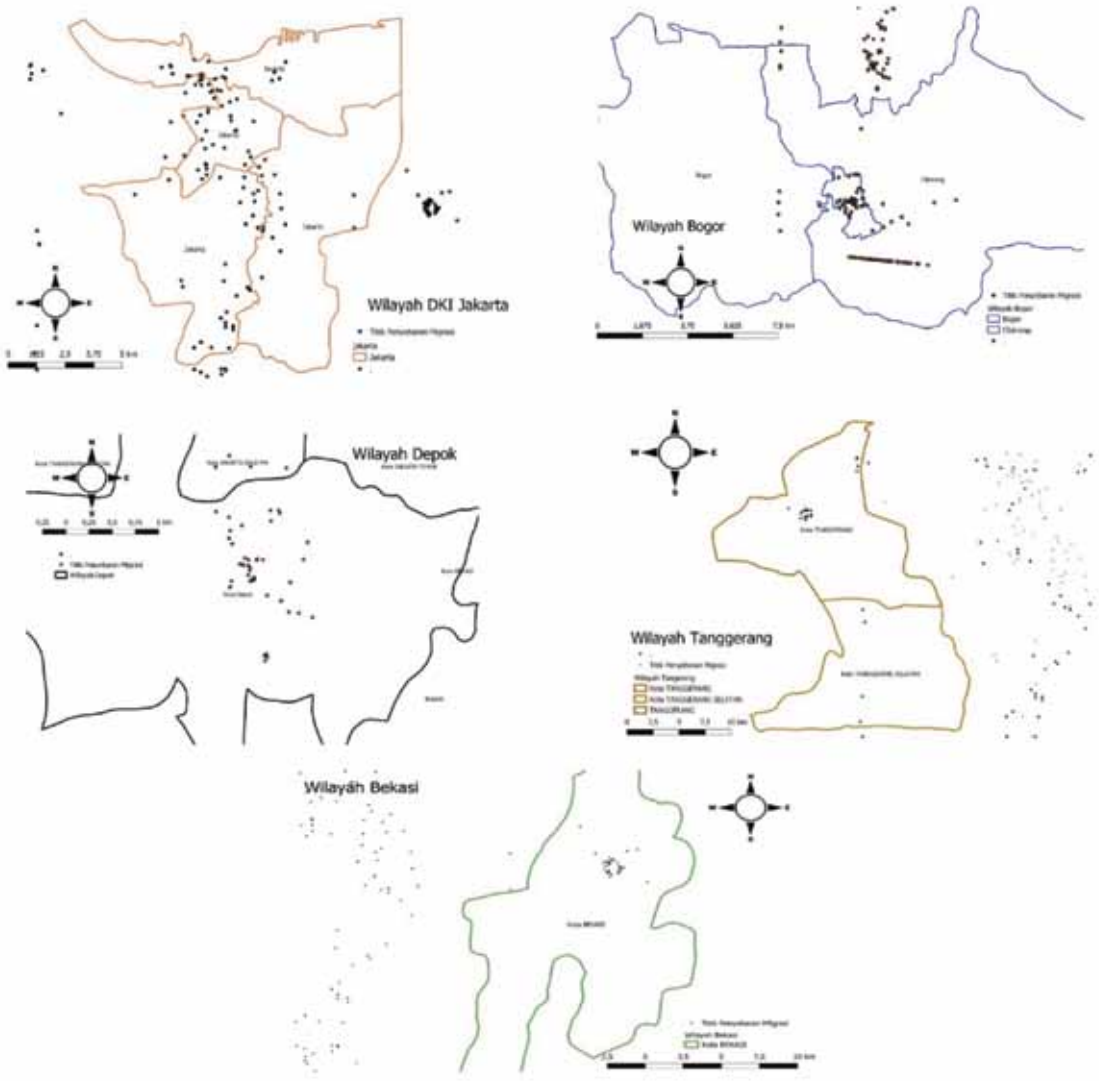
Then for the variable distance transit to the nearest destination has a radius of 100 meters and the farthest a radius of 5,330 meters (5.3 km) with an average of 2,082 meters (2.1 km) the standard deviation value is 1351,571 meaning that the data is evenly distributed. and it can be concluded with the average transit distance taken to carry out activities after getting off the Commuterline KRL to the destination area where most of the area is outside the radius reached or entered the study and migrants tend to choose areas that have access and are close to the radius the destination.

Then on the age variable, the youngest respondent is 18 years old and the oldest is 61 years old with an average of 34.52 where the standard deviation value is 11.1352. And lastly for the age variable where the lowest age is 18 years and for the oldest age 61 years with an average age of 34 years with a standard deviation value of 11,13521 which means the average value is greater than the standard value so that the data deviations that occur are low and providing an even distribution of data, this research shows that both productive and non-productive respondents still seem to be moving to their destination areas by using KRL Commuterline public transportation.

Variable development oriented which states the development of transit-based areas or orientation which states the development of developments in each station area, where the lowest point is 31 which in this assessment gets a standard or low bronze category and the largest has a point of 66 where the point gets a gold standard rating with a value of an average of 53.58 followed by a standard

deviation of 7.745. This can be interpreted where this area has a low category or bronze standard, from monitoring this area is known that the characteristics of public facilities for walking and bus stops are still not improved.

Transit orientation-based area development is a planning concept carried out to provide an assessment of an area that is built and integrated with public facilities and public transportation that helps the movement of the community for mobility. In this case, the approach of the Institute for Transportation and Development Policy (ITDP) assesses the concept which is divided into several assessments and criteria. From the results of observations on the object of research, it can be seen in the explanation in Figure 4 below Figure 5 provides an identification point for the distribution of people in migrating to areas where they last stopped at the outskirts of Jabodetabek. In this case, the distribution map helps to review and identify and provide an assessment based on the criteria and facilities built as well as the availability of public facilities that have a positive impact on the flow of community mobility using an approach from the Institute for Transportation and Development Policy (ITDP, 2017)[6]. These results can be seen in table 3.



Source: Primary data processed, Qgis (2021).

Fig. 5. Migration Distribution Map in the Greater Jakarta area

Источник: Обработанные первичные данные, Qgis (2021).

Рис. 5. Карта распределения миграции в районе Большой Джакарты

[6] ITDP. (2017). TOD Standard. TOD Standard, 3, 61. URL: www.ITDP.org

Table 3

Regional Criteria Assessment Results

Таблица 3

Результаты оценки региональных критериев

area	Region	1			2			3				4				Total
		a	b	c	a	b	c	a	b	c	d	a	b	c	d	
Jakarta City	West	4	4	5	8	2	2	10	5	6	3	8	0	3	5	65
Manggarai	South	4	4	5	0	2	2	10	5	6	3	4	3	3	5	56
Tanah Abang	center	4	4	0	0	2	2	10	5	6	3	4	3	3	5	51
Tanjung Priok	North	4	4	0	0	2	2	10	5	6	3	4	3	3	5	51
Jatinegara	East	4	4	0	0	0	2	10	5	6	3	4	3	3	5	49
Bogor	Bogor	4	4	5	4	2	2	10	5	6	3	8	3	3	5	64
Bojonggede	Bogor	0	4	0	0	0	0	5	5	6	1	4	0	3	1	29
University of Indonesia	Depok	4	4	0	8	2	2	10	5	6	3	8	3	3	5	58
Chinese hut	Depok	0	0	0	0	2	0	5	5	6	3	4	3	3	3	34
Tangerang	Tangerang	2	0	0	0	2	0	5	5	6	3	8	3	3	2	39
Rangkas Bitung	Tangerang	0	0	0	0	0	0	0	5	6	1	0	0	3	1	16
Bekasi	Bekasi	4	4	10	8	2	2	10	5	6	3	4	0	3	5	66
Kranji	Bekasi	4	4	5	0	2	2	10	5	0	3	8	3	3	0	51

Source: Research Results, Primary (2021).

Источник: Результаты исследования, первичные данные (2021).

The assessment of all criteria for regional development is oriented based, after monitoring through google map street, google map and identifying each area through the opinions of the respondents, therefore after knowing the suitability value and monitoring of each criterion, a calculation of the level of conformity of the criteria has been calculated determined. In the Jakarta city area, Bogor and Bekasi have a gold standard category, which means that in these areas the category of achieving integration between mobility movements and built public facilities is fulfilled, while for the suburbs of Jakarta, In the bronze standard category, it is obtained from the results of monitoring that each region has a focus on its own development and planning, such as the Rangkas Bitung area, Bojonggede where the area is more focused on urban planning developments that are bustling with housing centres and long-distance travel connectivity. In addition, currently there are areas in the development process such as expansion of parking lots and such as JPO, assimilation, shaded roads, selection of other modes of transportation available and bus stops are also available but not for cycling facilities this area is lacking. In the southern part of Jakarta, there are areas that fall into the bronze standard category, namely Manggarai, Tebet, and Lenteng Agung, where the area has a lack of distribution and sidewalks for pedestrians that are still not comfortable. Meanwhile, other areas are included in the silver standard category, where on average the area is already sufficient to meet the public facilities desired by the community, including connectivity and parking areas, such as the Indonesian university area. So in these results it can be concluded that each Commuterline train station in the Jabodetabek area has its own focus of development and planning, as is the case in Sudirman where the area focuses on city parks, Jakarta city stations which are the largest distance points even though all public facilities are available but not according to its use, and for the South Jakarta area which is the second area with the most distance points because the area is an area where government and private offices are located, where connecting transportation is dominated by online motorcycle taxis rather than public transportation. And there are areas that are directly related to markets and shopping centres, making the access road narrow and congested. As well as the Depok and Bogor areas as housing and education sectors.

The selection of the best model was determined from the logistic regression estimation test, Wald's test, Goodness of Fit Test, and Nagelkerker Coefficient Test.

Table 4

Logistics Regression Results

Таблица 4

Результаты логистической регрессии

		B	SE	Wald	df	Sig.	Exp(B)
Step 1a	Distance	.487	.243	4.289	1	.038	1,628
	Cost	-.963	.286	11,340	1	.001	.382
	Gender	-.607	.260	5.467	1	.019	.545
	Traveling time	-.890	.317	7,872	1	.005	.411
	Migration Destination	1,635	.265	38.093	1	.000	5.129
	Transit Point Distance	.095	.175	.296	1	.587	1.100
	Area Development	-2,720	.911	8.916	1	.003	.066
	Age	-157	.386	.165	1	.685	.855
	Connecting Transportation	1,662	.373	19,863	1	.000	.5,270
	Constant	18,839	4.852	15,074	1	.000	151,870

a. Variable(s) entered on step 1: distance, fee, x3 gender, travel time, work education, trade work, work other, lnx6 distanceshift, development area, age, ¡lnkakiangkot, ¡lnkakiojekonline, ¡lnkakitranskota.

Gender; {1=male, 0=female}*
Migration Purposes; {1= work; 0= Education, trade, recreation, etc.}**
Connecting Transportation: {1= walking; 0= public transportation, online gojek, transkota}***

а. Переменные, введенные на шаге 1: расстояние, плата, x3 пол, время в пути, работа, образование, профессия, работа, другая работа, lnx6 дистанционная смена, область развития, возраст, ¡lnkakiangkot, ¡lnkakiojekonline, ¡lnkakitranskota.

Пол: {1 = мужской, 0 = женский}*
Цели миграции: {1 = работа; 0 = образование, торговля, отдых и т.д.}**
Соединительный транспорт: {1 = пешком; 0 = общественный транспорт, онлайн Gojek, transkota}***

Source: Research Results, 2021 (processed).

Источник: Результаты исследований, 2021 г. (обработано).

The estimation equation for the regression results above can be analyzed for the effect of each independent variable on the dependent with the following equation:

$$(x_i) = \mathrm{Ln} = \frac{\pi(X_i)}{1-\pi(X_i)} 18.839 + 0{,}563X_1 + 0{,}563X_1 - 0{,}963 - 607X_3 - 890X_4 + 1.635X_5 + 0{,}095X_6 - 2.720X_7 - 0157X_8 + 1.662X_9 \quad (5)$$

Regional Development in the Greater Jakarta Area

Through field observations and assisted by google maps and google map street, it can be seen that areas in the Jakarta, Bogor, Depok, Tangerang and Bekasi areas that carry public and transit-based facilities such as the availability of pedestrian bridges, sidewalks, availability of parking areas, connectivity with other transportation, a place that is comfortable for pedestrians and shaded with lots of trees and other facilities that support the community in moving or mobility to the destination area. From this review, it was found that almost all areas have a silver standard category, in which this category is a planning and development project with almost all of the performance targets being good.

In addition, there are areas where the development only focuses on one goal to organize the area, such as the Sudirman Station area which has managed its regional layout as a beautiful city park, a busy recreation area visited in the morning and evening with pedestrians and cycling. Meanwhile, regional points that are the last centers to become migration destinations, such as the Jakarta Kota, Bogor, and Bekasi stations, focus on developing facilities in the station area, such as increasing people's crossing bridges, bus stops or waiting areas to connect other transportation. As for small stations or connecting stations, there is no proper construction.

Relationship between variables

With the decision to migrate between regions, where the distance of travel has an influence and becomes an important role for the community in making decisions to migrate between regions, the distance traveled by people to migrate both long and short distances has several reasons, namely, the availability of safe, comfortable and convenient transportation. Cheaper

and time spent traveling than taking a private vehicle. This is in line with research conducted by Lomax et al. [42] which states that in migrating within an area, both short distances and short distances, the distance of travel will be one of the reasons for them to move and have a significant influence. In addition, the research conducted Sen et al. [43] distance that has a positive influence on interregional migration decisions in Southeast Queensland in the Australian state. Sen et al. [43] also shows that travel distance and destination/migration mode have a significant positive simultaneous influence on decisions to migrate between regions.

Meanwhile, in terms of travel costs, which have a relationship in making decisions to migrate to an area, this means that travel costs have a contribution to decisions made by people in moving to an area. In general, the travel costs incurred will have an impact on the destination they want to be used as a distance or last stop for work, looking for work, education, recreation, trading and visiting family and relatives, the closer the trip will make the costs incurred are less, and the farther the trip will have an effect on the community to make decisions and think about delaying their trip. Azhar [44] which is where the cost of travel will provide a choice on the basis of time which depends on the choice of the chosen mode of transportation, if people want to move in a fast time it will incur a fairly large travel cost and the travel costs incurred are greater with the facilities desired by the passengers, migrants, such as travel insurance, food provided by the transportation party. Travel costs have a negative and significant impact on migration decisions, according to research conducted by Sen et al. [43] where distance is a determinant of travel in Southeast Queensland. In addition, partially research involving travel costs has a significant negative effect on migration movements (Poot [45]; Zhao et al. [46]). The study is in accordance with this study which partially travel costs have a value of 0.000 <0.05.

In movement, it is inseparable from differences in gender who are mobile to an area where movement or migration between regions is gender, with proven results in research that has been carried out where the value of sig < 0.005 which means that gender has a significant relationship to migration decisions. This is in line with the results of research from Marta et al. [47] which shows that gender has a significant negative effect on migration decisions, where research from Marta et al. [47] make some of the variables categorical/dummy, the same as in this study where in the variables there are categorical/ dummy variables. So that it can be explained that the higher the migration flow will reduce the movement of men and women by choosing other types of transportation and other destinations. While research from Davis & Winters [48] shows that gender has a significant positive influence on migration decisions, as in this study which has a sig value of 0.000 < 0.005, so it can be concluded that the higher the migration flow will increase the movement of people, both men and women.

Furthermore, in migrating to an area, people tend to be very concerned about the travel time they take, where time shows a negative value, which means that if the travel time is increased by 1 hour, it will reduce people to migrate between regions using public transportation KRL Commuterline by 0.10%. This is in line with research from Kambuata et al. [49] which shows that travel time is one of the factors that have an impact on migration decisions in the selection of transportation modes and the purpose of migrating, while research from Davis & Winters [48] travel time in terms of the seven regions and the migration network. From the results of observations that have been made that no one has complained about their travel time to their destination by using public transportation KRL Commuterline which is always on time and they have also made estimates on their journey, but travel times are often hampered due to weather, schedule delays. The transportation they use and the policy that often comes suddenly from the station so that this reason often causes travel time to be delayed than expected.

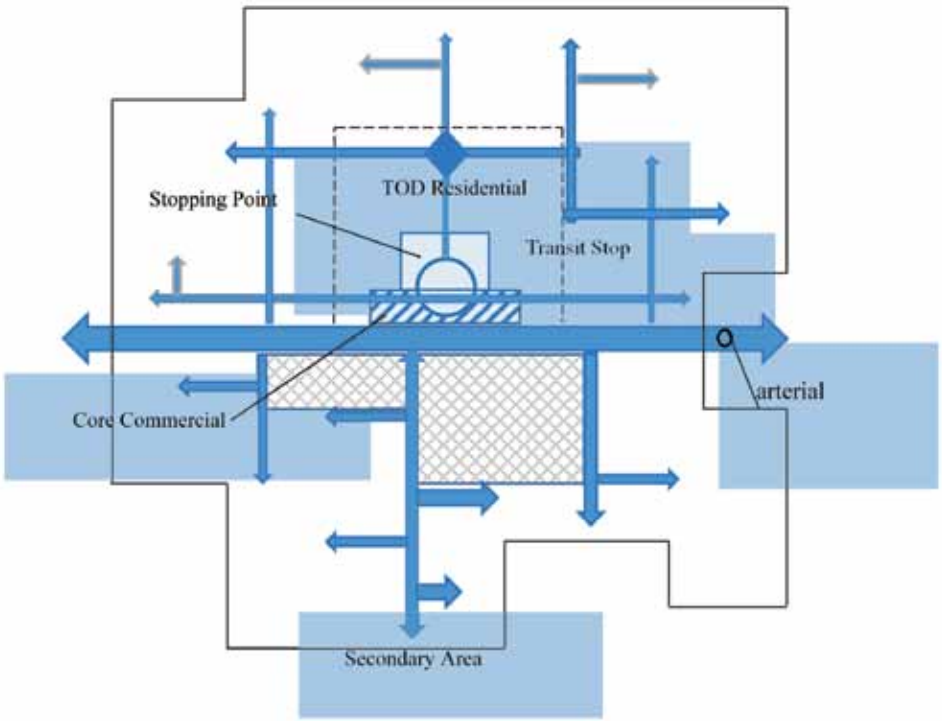
Then in determining the purpose of migrating to work, study, trade, go to tourist attractions to visit friends' or family's homes. From the results of the research on migration destinations which provide a significant positive value, which means that if the migration destination to an area increases by 1 percent, it will reduce migration decisions with the same goal in terms of gender and their activities such as to work, study, trade and others or with In other words, every migration decision will have a different goal from one another and there is also a different pattern of migration goals every day, Roseman [27] where in making a movement sometimes someone changes and has a movement goal to an area with different intentions. This is also in line with research from Davis & Winters [48] which is where the migration destination has a significant effect on the mobility movement carried out by the community with several reference destinations that they make their last activity place such as the downtown area for work, the north pacific area for education, the northern part for other activities and the bay for shopping needs, where things is always changing with the same person to move to an area.

The transit distance which is the calculated distance starting from the stopping point of the migrants to continue their journey to their destination is calculated in meters, besides that in this study limiting the transit distance traveled around a radius of 100 meters to 3.5 kilometers, so that the results obtained

which shows that transit distance does not have a significant influence on interregional migration decisions. Shift distance is the distance traveled by migrants after getting off the main transportation, namely the commuterline train to their last activity place, the shift distance variable is one of the variables in the development of a transit-oriented-based area where this distance is traveled in various ways, such as walking or using public transportation. This is in accordance with the results of observations which show that there is no relationship and there is no significant relationship to migration decisions because the supporting variables of shift distance of public facilities are almost all in the observation area which are still imperfect and not suitable for use or fall into the silver standard category. This is in line with research from Rakhmatulloh & Kusumo Dewi [50] which states that the development of the route in the Jakarta area has not fulfilled the transit-oriented based area, therefore the research on travel time, transit distance, transit time is not significant to mobility movements.

The next estimation results are seen from age, where age does not have a significant influence on migration decisions. These results are in line with research conducted by Marta et al. [47] which states that age does not have a significant influence on migration decisions in Indonesia, areas that do not have a significant influence between age and migration decisions are the islands of Java and Bali. All ages go to the area and are not divided evenly, the statement made Marta et al. [47] the same is the case with the results of estimates and observations that have been made in this study, where the age range from 20 years to > 50 years is mostly dominated by metropolitan areas, causing metropolitan areas to be under higher pressure than other suburban areas. In addition, research from Regmi et al. [51] shows that age has a significant negative influence in making migration decisions and migration destinations.

Then the results of the last discussion are related to regional development and connecting transportation related to interregional migration decisions in Jabodetak, where every movement of migrants from their observations after getting off the Commuterline KRL train to go to their last activity place tends to choose a closer area and continue by walking, as for continuing with public transportation, online motorcycle taxis and transkota, people who continue their journey with their own choices cannot be separated from the role of planning public facilities that are built to provide a sense of comfort and safety in mobility.



Source: [19].

Fig. 6. Pedestrian Scale and Connectivity

Источник: [19].

Рис. 6. Пешеходный масштаб и возможности подключения

In observing field observations and using the help of Google Street and satellite imagery, all these facilities and developments in some areas have begun to be built and are appropriate, but some areas have made plans with a focus on one goal to build the area as in the Sudirman area, which focuses on development. Taman Kota, Tangerang Station focuses on station facilities because this station is a transit station for long-distance travel, which is different from the Jakarta city area, even though it is the most densely populated migration destination and is complete with public facilities. As well as the southern part of Jakarta, namely the Tebet area, which is currently starting to build with its planning with green open spaces along the road in the Tebet station area. Rakhmatulloh & Kusumo Dewi [50] which shows that there are several characteristics in the development of transit-based areas that have an influence on the pattern of movement of mobility between regions. According to Cervero & Kockelman [15] the development of this transit-based area is one of the supporters in migrating, especially by commuting, one of which is a large parking area around the area where they can park their vehicles and switch to other transportation so as to save costs, time and reduce private vehicles. Whereas in the selection of connecting transportation, where in this variable has a category in the selection of connecting transportation after getting off their main transportation KRL Commuterline such as public transportation, motorcycle taxis, transkota and walking to get to their place of activity. And from these results it can be concluded that respondents who move every 1 percent increase in migration movement will reduce one of the choices of the connecting transportation mode. Adwiluvito [52], Kambuata et al. [49] and Rakhmatulloh & Kusumo Dewi [50] which is where the choice of transportation mode in assisting movement has a significant negative influence on migration decisions to an area, this happens because there is a mode of choice so that at any time and at any time the migrants choose which type of transportation to choose.

Conclusion and Relevance

The research focuses on regional development and inter-region migration decisions using public transportation KRL Commuterline Jabodetabaek with a total of 398 respondents, where the area development in each part of the Jabodetabek area is entirely in the silver standard category, which indicates that regional development projects have almost met the targets of good performance. Has been conceptualized such as the availability of parking areas, transit connectivity, comfortable pedestrian and bicycle paths, bridges for crossing people and mixing the mix between pedestrians and public transportation. And each area has its own regional planning and development such as green open spaces, city parks and the connectivity of public facilities.

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