# Management of missing Link in Kabupaten Bogor

**Hafid Zulisan**

Civil Engineering Departement Ibn Khaldun University Bogor, INDONESIA
E-mail: zulifanhafiz@gmail.com

Received February 17, 2021 | Accepted April 05, 2023 | Published April 20, 2023

## ABSTRACT

Bogor Regency is one of the regencies in West Java Province, with a central government located in the District of Cibinong. Bogor Regency consists of 40 subdistricts, of which 40 are cumulative after the division. Regarding the important role of the road network and public transport connectivity in the Bogor Regency, a problem called the missing link arises. The purpose of this study is reviewed from the aspects of road network performance, connectivity of activity centers, TOD areas and transportation nodes, then obtained by loading the Origin Destination Matrix (MAT) to the road network with the help of transportation modeling software using Saturn. Travel speed between cities / districts in Jabodetabek or origin of Bogor Regency does not reach the target speed of 40 km / hr, for Bogor District the average speed that occurs within the regency is 34.77 km / hr, so it is necessary to increase network capacity Street. The TOD area will have a missing link if the TOD has no connectivity with the mass transit node at a distance of more than 800 meters and is not on the main high-capacity mass transit line, such as the Cibinong TOD. The need for handling the missing link TOD area of the road network in the Greater Jakarta area, especially in the Cibinong area.

**Keywords:** feasibility of public transport; network services; handling missing links; public transport; service network connectivity.

## INTRODUCTION

The road is a transportation infrastructure. This transportation infrastructure network has a strategic function in providing services to the movements that occur. Road transportation is an important transportation network in the land transportation system. Its flexible nature and door-to-door service are the advantages of road transportation. In addition, road transportation has a high coverage. This mode is also very well used for short and medium distances. The most basic thing in providing a road network system for an area scale is to ensure accessibility and efficiency. In this regard, an increase in private vehicle ownership, as a support tool in moving from one place to another. Is a reflection of the interaction between increasing living standards and mobility of population movements in urban areas.

The jlan infrastructure network consists of nodes in the form of terminals, both passenger and freight terminals and traffic space. Traffic space in road transportation is in the form of roads which are hierarchically determined according to their role, consisting of arterial roads, collector roads, and local roads.

Sofar the Bogor district government has planned various efforts to overcome traffic problems. In addition to improving the road network, as well as creating a disconnected public transport service network (missink link), which will have an impact on the mobility of the people of Bogor Regency.

The road network is a network unit consisting of a primary network system and a secondary network system that are interwoven in hierarchical relationships. Meanwhile, the road network system is a unit of road that connects and binds growth centers with areas under the influence of its services in one heirarchic relationship.

Bogor Regency is geographically located between 6 ° 18 '0 "-6 ° 47" 10 "South Latitude and 106 ° 23" 45 "- 107 ° 13" 30 "East Longitude. Morphologically, Bogor Regency has a morphological type that varies from relatively low land in the north to highlands in the south. Bogor Regency has an area of ± 2,663.81 km2, the area of Jasinga sub-district is the most extensive of 208.06 km2 and the sub-district with the smallest area is Ciomas sub-district with an area of 16.30 km2. Bogor Regency has territorial boundaries, namely in the north it borders Tangerang, Bekasi City and Depok City, to

pISSN 2302-4240
eISSN 2655-2086
Volume 12, Issue 2, June 2023, pp.314-325
DOI: http://dx.doi.org/10.32832/astonjadro.v12i2 http://ejournal.uika-bogor.ac.id/index.php/ASTONJADRO

the east it is bordered by Cianjur and Karawang districts, to the south it is bordered by Sukabumi and Cianjur districts and in the middle it is bordered by Kota Bogor.

**Planning steps:**

1. Transportation System

Transportation is the activity of moving people and goods from one place to another using a mode for these activities.

2. Road Network Infrastructure

Transportation infrastructure has two main roles, namely as a tool in directing development in urban areas and as an infrastructure for movement of people or goods due to activities in urban areas (Tamrin, 1997).

3. Road Generation

This stage aims to study and identify the magnitude of the generation and attraction of the movement by studying several variations of the relationship between movement characteristics and the land use environment (Tamin, 2008).

4. Mode Selection

This stage serves to calculate and estimate the number of flows of people or goods from the zone of origin to the zone of destination.

5. Route Selection

Aim to allocate every movement between zones to the various routes most often used by someone moving from the origin zone to the destination zone.

6. Road Section Capacity

The road network capacity is the maximum traffic flow that a road network can maintain under certain conditions, which is expressed in units of passenger cars (SMP) per hour (MKJI, 1997).

In his study, the road that will be studied is based on the concept that it is possible for people to walk and walk together (Akbardin J et.al, 2020; Syaiful S, Yogi P, 2019). This understanding is very common and often found in transportation science. This knowledge will produce a very important impact on the function of the road itself. Seeing from the very important function of roads, the government through the Public Works Department of the Directorate General of Highways specifically takes care of roads and their supporters (Syaiful S, 2017; Syaiful S, Ahmad F, 2020; Syaiful S et.al, 2021). Supporters of this activity will make the concept of highways interdependent. Passengers and motorized vehicle transportation or not, roads as infrastructure (Syaiful S et.al, 2023).

## RESEARCH METHODS

During the first month of the study, the consultant had done several things as a first step for the overall study. Things that have been done include:

1. Survey preparation in the form of selecting a survey method, preparing survey forms and equipment, determining survey points and human resources (SDM) executor.
2. Introduction of the study area in the form of development plans, institutional approaches, traffic systems, transportation facilities and infrastructure, land use and environment and socio-economic
3. Updating the transportation model based on the primary survey results by calibrating the transportation model with a survey of passenger ups and downs and modal shift patterns.
4. Analysis of missing links in the three stages of missing links, namely the missing link for public transport, missing link in connecting TOD, and missing link connecting transportation nodes.

5. Primary survey of passenger ups and downs and interview surveys for public transport users in Bogor Regency

## RESULTS AND DISCUSSION

The missing link can be interpreted into 2 categories, namely the missing link on the road network and the missing link for the public transport network. Each of these categories has a different focus, where the missing link road network focuses on road network integration along with its status; while the missing link for public transport focuses on public transport connectivity, nodes, and activity centers.

1. The missing link road network is called missing if there is no road network that connects activity centers, national, local and environmental, as well as activity nodes.
2. Missing public transport links the disconnection of public transport at activity centers, nodes (terminals, ports, airports, stations) and TOD, as well as unconnected public transport integration can cause public transportation services to be suboptimal and there are missing links.


**Figure 1.** Map missing link Kabupaten Bogor.

### Analysis of missing link in Bogor Regency

The zone of origin and destination in the Bogor Regency network model is based on sub-districts and a combination of several kelurahan. In this case 46 zones have been defined. This zone will later affect the modeling that will be carried out, especially for the matrix of origin and destination and demand for public transport. The following are the zones of origin and destination in the Bogor Regency network.

**Tabel 1.** Zone of origin for modeling the area of Bogor Regency.

| No | Combined name of the district | District name | No | Combined name of the district | District name |
|---|---|---|---|---|---|
| 1 | Tenjo | Bogor | 24 | Cibinong | Bogor |
| 2 | Gunung Putri | Bogor | 25 | Cariu | Bogor |
| 3 | Parung Panjang | Bogor | 26 | Citeureup | Bogor |
| 4 | Parung Panjang | Bogor | 27 | Rancabungur | Bogor |
| 5 | Rumpin | Bogor | 28 | Babakan Madang | Bogor |
| 6 | Cilengsi | Bogor | 29 | Sukamakmur | Bogor |
| 7 | Gunung Sindur | Bogor | 30 | Sukaraja | Bogor |

pISSN 2302-4240
eISSN 2655-2086
Volume 12, Issue 2, June 2023, pp.314-325
DOI: http://dx.doi.org/10.32832/astonjadro.v12i2 http://ejournal.uika-bogor.ac.id/index.php/ASTONJADRO

| | | | | | |
|---|---|---|---|---|---|
| 8 | Gunung Sindur | Bogor | 31 | SUkaraja | Bogor |
| 9 | Gunung Putri | Bogor | 32 | Cibungbulang | Bogor |
| 10 | Jasinga | Bogor | 33 | Ciampea | Bogor |
| 11 | Cilengsi | Bogor | 34 | Leuwisadeng | Bogor |
| 12 | Rumpin | Bogor | 35 | Dramaga | Bogor |
| 13 | Parung | Bogor | 36 | Sukjaya | Bogor |
| 14 | Ciseeng | Bogor | 37 | nanggung | Bogor |
| 15 | Gunung Putri | Bogor | 38 | Sukaraja | Bogor |
| 16 | Cigudeng | Bogor | 39 | Ciomas | Bogor |
| 17 | Kalapanunggal | Bogor | 40 | Pamijahan | Bogor |
| 18 | Cibinong | Bogor | 41 | Tamansari | Bogor |
| 19 | Jonggol | Bogor | 42 | Megamendung | Bogor |
| 20 | Tajur Halang | Bogor | 43 | Ciawi | Bogor |
| 21 | Bojonggede | Bogor | 44 | Cisarua | Bogor |
| 22 | Kemang | Bogor | 45 | Cijeruk | Bogor |
| 23 | Rumpin | Bogor | 46 | Caringin | Bogor |

The missing link in the zone of origin and destination in question is if there is no connection to the public transport network in each zone of origin and destination zone, especially activity centers which will also be defined as PKN and PKW.

1. Regions TOD (Transit Oriented Development)

Mass Public Transportation or Transit Oriented Development, which is abbreviated as TOD, is the concept of developing areas in and around mass public transportation nodes so that added value focuses on integrasi antarjaringan angkutan umum massal, dan between mass public transport networks with a network of non-motorized transportation modes, as well as a reduction in motorized vehicles accompanied by the development of mixed, dense areas with moderate to high intensity of spatial use (Regulation of the Head of BPTJ No PR 377 / AJ.208 / BPTJ-2017).

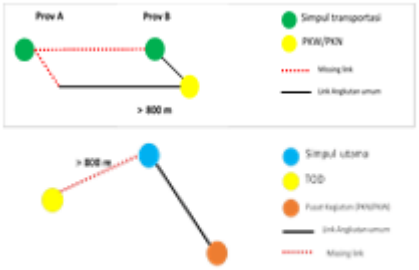


**Figure 2.** Illustration of missing link in TOD

The TOD area will be said to have a missing link if the TOD has no connectivity with mass public transport nodes within a distance of more than 800 meters and is not on the main route of high capacity mass public transport. In this case, there are 2 TOD locations scattered in the Depok City area as follows.

**Table 2.** TOD plan in Bogor Regency

| No | TOD location plan | Regency |
|---|---|---|
| 1 | Cibinong | Bogor |

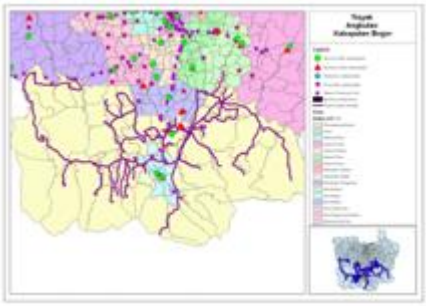

**Figure 3.** Illustration of missing link node

2. Transportation Nodes

The main transportation node is said to have a missing link if there are no AKAP and AKDP transportation passing through that node.

The transportation nodes must be able to connect the TOD and at each of these transportation nodes, the availability and connection of public transportation to the activity center, TOD, and other transportation nodes is to be seen to analyze whether there is a missing link in the transportation node.

3. Study area activity center

The activity center is an area that serves activities in an area in relation to other areas on a certain scale. In this case there are several types of activity centers, namely National Activity Centers (PKN) and Regional Activity Centers (PKW) and Local Activity Centers (PKL). The following are activity centers in Bogor Regency:

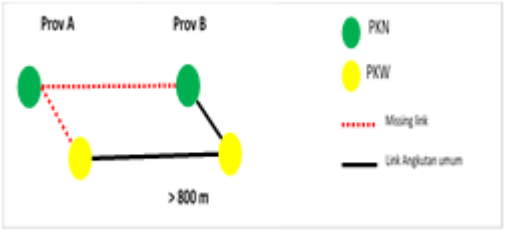


**Figure 4**. Illustration of missing link activity center

In this case there are 5 PKW (Regional Activity Centers) in the Depok City area as follows:

**Table 3.** Activity Center in the Bogor Regency area

| No | Centre | Regency/City | Name/City |
|---|---|---|---|
| 1 | Hierarchy I | Bogor | Cibinong |
| 2 | Hierarchy II | Bogor | Cilengsi |
| 3 | Hierarchy III | Bogor | Leuwiliang |

4. AKAP routes (between cities between provinces)

Intercity and Interprovincial Transportation is public transportation that serves trips from one city to another city with different provinces. In this case, AKAP transportation generally uses the bus mode with rates that vary depending on the distance from the origin and destination cities. AKAP

pISSN 2302-4240
eISSN 2655-2086
Volume 12, Issue 2, June 2023, pp.314-325
DOI: http://dx.doi.org/10.32832/astonjadro.v12i2 http://ejournal.uika-bogor.ac.id/index.php/ASTONJADRO

usually ends at terminal type A in an area and has the last stop at terminal A as well. AKAP routes are detailed in the attachment.

**Table 4.** AKAP routes in the study area

| No | Route | Type |
|---|---|---|
| 1 | Cibinong-Senen | AKAP |
| 2 | Cilengsi-Senen | AKAP |
| 3 | Leuwiliang-Tanjung Priok | AKAP |
| 4 | Tanjung Priok-Cilengsi | AKAP |
| 5 | KOSUB Cibinong-Tanjung Priok | AKAP |
| 6 | Cibinong-Tanjung Priok | AKAP |
| 7 | Kalideres-Ciliengsi | AKAP |
| 8 | Cilengsi-Kp. Rambutan | AKAP |
| 9 | Cibinong-Kp. Rambutan | AKAP |
| 10 | KOSUB Cibinong-Kp. Rambutan | AKAP |
| 11 | Jonggol-Kp. Rambutan | AKAP |
| 12 | Lebak Bulus-Parung | AKAP |
| 13 | Kp. Melayu-Cibinong | AKAP |
| 14 | Bayu Holong Persada Kp. Melayu-Cibinong | AKAP |
| 15 | Pulo Gadung-Cibinong | AKAP |
| 16 | Kowanbisata Pulo Gadung-Cibinong | AKAP |
| 17 | Jati Asih-Cilengsi | AKAP |

From the figure below it can be seen that AKAP routes in the Jabodetabek area have mostly served activity centers in Jabodetabek and TOD, but there are several node locations, especially terminal A, which have not been served by AKAP.

5. Bogor Regency transportation route.

**Table 5.** Transportation Routes in Bogor Regency

| No | Code | Route | No | Code | Route |
|---|---|---|---|---|---|
| 1 | 22 | Terminal Jasinga-Pangkalan Tenjo | 26 | 28 | Terminal Parung-Pangkaln Kuripan |
| 2 | 52 | Terminal Leuwiliang-Pangkalan Gn Salak Endah | 27 | 31 | Pangkalan Pasar Ciluar-Pangkalan Perum Gaperi |
| 3 | 32 | Terminal Cibinong-Taman Pagelaran | 28 | 34 | Pangkalan Bambu Kuning-Pangkalan Jl. Dr. Nurdin |
| 4 | 44 | Pangkalan Citeurup-Pangkalan Babakan Madang | 29 | 40A | Terminal CIlengsi-Pangkalan Pasar Angin |
| 5 | 40 | Terminal CIlengsi-Pangkaan Limas Nunggal | 30 | 41 | Terminal Jonggol-Pangkalan Kebon Nanas |
| 6 | 64 | Terminal Cibinong-Terminal Jonggol | 31 | 17 | Terminal Laladon-Pangkalan Cangkang |
| 7 | 15 | Terminal Laldon-Pangkalan Curug Nangka | 32 | 42 | Terminal Cilengsi-Pangkalan Setu Sari |
| 8 | 448 | Pangkalan Citeurup-Pangkalan Cipanas | 33 | 45 | Terminal Cilengsi-Pangkalan Perum Graha Prima |
| 9 | 29 | Pangkalan Ciawi-Pangkalan Cigombong | 34 | 49 | Terminal Cilengsi-Pangkalan Bojong Kulur |
| 10 | 05C | KOSUB Cibinong-Leuwiliang-Terminal Laldon. Rambutan | 35 | 50 | Terminal Laladon-Term. Bubulak-Pangkalan Tenjolaya |
| 11 | 11 | Jonggol-Kp. Rambutan | 36 | | Terminal Laladon-Pangkalan Segog |
| 12 | 23 | Terminal Ciampea-Pangkalan Patat Nurug | 37 | 53 | Terminal Laladon-Pangkalan Segog |
| 13 | 23 | Terminal Ciampea-Pangkalan Patat Nurug | 38 | 55 | Terminal Leuwiliang-Pangkalan Segog |
| 14 | 43 | Pangkalan Citeurup-Pangkalan SUkamakmur | 39 | 56 | Terminal Leuwiliang-Pangkalan Nanggung |

| | | | | | |
|---|---|---|---|---|---|
| 15 | 33 | Terminal Cibinong-Terminal Cilengsi | 40 | 57 | Terminal Leuwiliang-Pangkalan Puriseda |
| 16 | 38 | Terminal Cilengsi-Ds Tengah (Pengadilan Agama) | 41 | 59 | Terminal Leuwiliang-Pangkalan Gn Salak Endah |
| 17 | 12 | Terminal Cibinong-Terminal Cilengsi | 42 | 60 | Terminal Cilengsi-Pangkalan Pasir Tanjung |
| 18 | 12 | Terminal Ciampea-Pangkalan Bambu Kuning | 43 | 71 | Terminal Cibinong-Pangkalan Kp. Balok |
| 19 | 35 | Terminal Cibinong-Pangkalan Bambu KUning | 44 | 32 | Terminal Cibinong-Taman Pagelaran |
| 20 | 65 | Terminal Cibinong-Terminal Cilengsi | 45 | 72 | Terminal Cibinong-Pangkalan Kp. Sawah |
| 21 | 117 | Terminal Parung-Terminal Bojong Gede | 46 | 73 | Terminal Citeurup-Pangkalan Lulut |
| 22 | 105 | Terminal Cilengsi-Terminal Lalaladon (via tol) | 47 | T02 | Terminal Cilengsi-Pangkalan Ciawi (Via Tol) |
| 23 | 13 | Terminal Laladon-Terminal Curug Luhur | 48 | 81 | Terminal Parungpanjang-Pangkalan Tenjo |
| 24 | 25 | Terminal Parung-Pangkalan Ciseeng | 49 | 05B | Terminal Leuwiliang-Dramaga-Terminal Laladon |

Bogor Regency transportation route is in the form of angkot with rates that vary according to the distance traveled. There are 49 transportation routes in Bogor Regency. The following is a transportation route for Bogor Regency

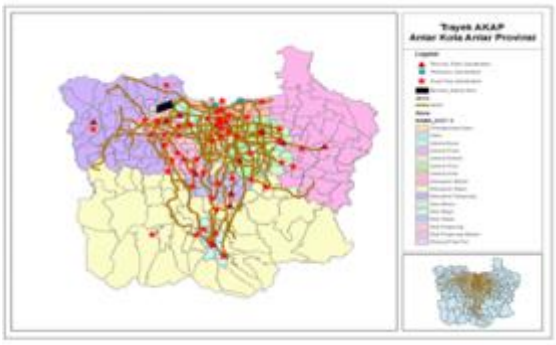

**Figure 5.** Bogor Regency Transportation Route Map

**Discussion of Missing Road Network Links.**

In general, the road network in Jabodetabek has connected activity centers, national, local, and environmental. The target speed that has been set, with a special value for Jabodetabek is a minimum network speed of 20 km / hour. On average, based on the modeling results that have been submitted, the Jabodetabek average network speed has met the target. However, when viewed in more detail per road function, with the minimum speed criteria for arterial and collector roads being 40 km / hour, only the secondary collector road class meets these criteria.

Almost all inter-city / regency speeds in Jabodetabek do not reach the target speed of 40 km / hour. A more detailed review was carried out on the speed between regions and within the lowest district /city areas in Bogor Regency. Tangerang Regency and Kota Tangerang had the lowest speed, with the lowest values being 30.55 km / hour and 30.09 km / hour. This indicates the need to increase the capacity of the road network to and from Tangerang District and Tangerang Regency. For South Tangerang Regency, the average speed information that occurs in the district is 31.08 km / hour, so it is necessary to increase the capacity of the road network to Bogor Regency..

**Analysis missing link center activity**

pISSN 2302-4240
eISSN 2655-2086
Volume 12, Issue 2, June 2023, pp.314-325
DOI: http://dx.doi.org/10.32832/astonjadro.v12i2 http://ejournal.uika-bogor.ac.id/index.php/ASTONJADRO

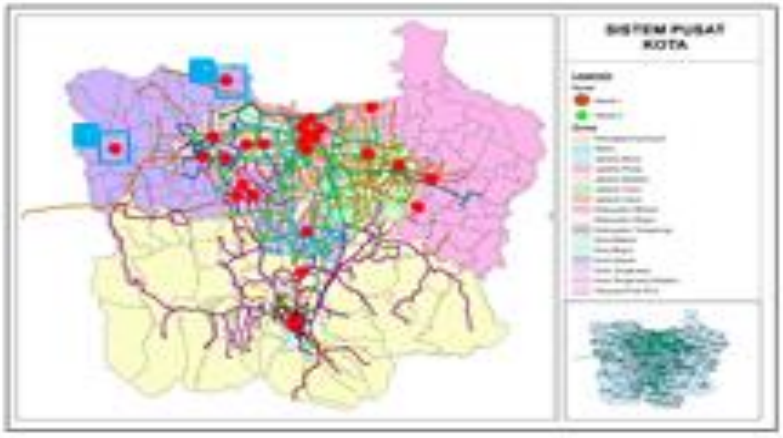

**Figure 6.** Activity center for public transport and its integration into nodes.

From the picture above, it can be seen that there is 1 PKN that is not connected by public transportation to other PKN and is not connected to PKW in the same city. The three PKNs are not connected at all by public transport routes, resulting in a missing link. The PKN members are:

1) Cibinong District, Bogor Regency

For the first PKN, Cibinong District, if you want to add a public transport route, it is best to connect PKN Cibinong with other PKNs in other cities/districts (at least the closest), for example the public transport route that connects PKN Cibinong with PKN Kota Bogor; PKN Cileungsi with PKN Bekasi; as well as additional public transport routes that can be directly connected from PKN Leuwiliang to the train station. In addition, it can be done rerouting the nearest public transport or recommended rerouting of public transportation close to the train route. In addition, rereouting can also be done for the following routes:

2) AKAP Cibinong – Cileungsi

**Table 6.** Illustration of the connectivity of national activity centers.

| No | PKN | PKN-PKN no mass public transit | Distance (km) |
|---|---|---|---|
| 1 | PKN Cibinong | PKN Cibinong-AKAP (Cibinong-Cilengsi) | 37,20 |

**Analysis missing link TOD** areas

The distance between the TOD and the transportation node is a maximum of 800 meters. From the images and analysis of the 800 metre buffer for TOD that has been carried out, it can be seen that there are still several TODs that are more than 800 meters from the transportation node, namely:

Cibinong

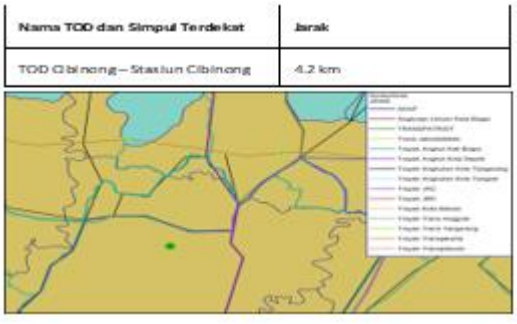


**Figure 7.** Distance TOD areas and note connected

**Transportation node missing link analysis.**

The main transportation node is said to have a missing link if it is not connected to the AKAP and / or AKDP public transport routes. The following is a map of public transport routes that have been previously identified along with transportation nodes:

**Figure 8.** Transportation Routes in the Jabodetabek area.

From the picture above there is one node that is not at all integrated with public transportation, namely Terminal type A Cibinong. Where this terminal is not connected to public transportation at all, this terminal is located between the nearest public transport route.

**Priority for route handling.**

Based on the definitions that have been described and the analysis that has been carried out, the following is a recapitulation of missing links and recommendations for road networks and public transportation. After being carried out on 15 routes, the following are priorities for existing routes that are thirsty for service improvements, such as additional bus schedules or fleets.

**Figure 7.** Priority for handling the existing route.

| No | Route | Type | Route length (km) | Final score |
|---|---|---|---|---|
| 1 | Cilengsi-Senen | AKAP | 34,65 | 0,6 |
| 2 | Kalideres-Ciliuengsi | AKAP | 47,54 | 0,58 |
| 3 | KOSUB Cibinong-Tanjung Priok | AKAP | 42,36 | 0,58 |
| 4 | Senen-Cibinong | AKAP | 20,28 | 0,57 |
| 5 | Lebak Bulus-Parung | AKAP | 19,23 | 0,57 |
| 6 | Cibinong City Mall-Grand Paragon | Trans Jabodetabek | 57,02 | 0,55 |
| 7 | Cibinong-Tanjung Priok | AKAP | 43,16 | 0,54 |
| 8 | Cibinong City Mall-Palza Senayan | Trans Jabodetabek | 35,83 | 0,54 |
| 9 | KOWANBISATA Pulo Gadung-Cibinong | AKAP | 36,22 | 0,52 |
| 10 | Cibinong-Senen | AKAP | 35,22 | 0,49 |
| 11 | Cileungsi-Kp. Rambutan | AKAP | 19,06 | 0,49 |
| 12 | Cibinong-Kp. Rambutan | AKAP | 18,22 | 0,48 |
| 13 | KOSUB Cibinong-Kp. Rambutan | AKAP | 20,61 | 0,48 |
| 14 | Cibarusah-Cibinong | AKAP | 18,11 | 0,46 |
| 15 | Jonggol-Kp. Rambutan | AKAP | 15,51 | 0,46 |

For the route, it is proposed to connect the Kalideres Terminal to Cileungsi. Meanwhile, for the proposed Bogor Regency there is no link.

**Recapitulation of Missing Link of Road Network and Public Transport.**

Based on the definitions described and the analysis that has been carried out, the following is a recapitulation of missing links and recommendations for road networks and public transport.

| Missing link at | Criteria | The existence of missing links | | Missing link description | City and County |
|---|---|---|---|---|---|
| Network | Network speed | The road network goes to Tangerang district and Tangerang City | Road network to South Tangerang district | Has the lowest speed compared to the vehicle speed and existing road functions | Tangerang Regency, Tangerang City and South Tangerang City |
| Hub | In the network within the city, PKN and PKW are not connected | The road network goes to Tangerang Cibinong speed, Bogor district | Has PKN Cibinong (Cibinong-Cileungsi) 3 7.2 km | Has PKN Cibinong (The Cibinong PKN is not connected to the Cileungsi PKN | Bogor Regency |
| TOD | First, the distance between TOD and covering transportation is a maximum of 800 meters | TOD Bogor | TOD Cibinong-Cibinong Station (4.2 km) | The distance between the TOD and the transport node is more than 500m | Bogor Regency |

**Figure 9.** Missing links and recommendations for public transport networks.

**Weighting and priority handling of routes**

In order to obtain the priority order of handling existing routes and subsidies for new routes, weighting is made of each route factor and criteria. The weighting is obtained from the average value divided by the variation. Thus, even though it has a high average value, there is a greater reduction in weighting with a wider range of variations.

weighting on each of the factors and criteria. Mathematically, the calculation of the priority value for both existing and non-existing routes will be obtained by the equation:

$$(Trayek)_i = W_1(W_{11}\ X_{11} + W_{12}\ X_{12} + W_{13}\ X_{13} + W_{14}\ X_{14} + W_{15}\ X_{15} + W_{16}\ X_{16}) + W_2(W_{21}\ X_{21} + W_{22}\ X_{22} + W_{23}\ X_{23} + W_{24}\ X_{24} + W_{25}\ X_{25}) + W_3(W_{31}\ X_{31} + W_{32}\ X_{32}) + W_4(W_{41}\ X_{41} + W_{42}\ X_{42})$$

Based on this, it is carried out in public vehicles by making direct calculations to passengers, so that the characteristics of passenger trips with public vehicles on a route are obtained.

The purpose of this survey is to collect data related to the description of public transport services, including:

1. Origin and destination of passengers on each route.
2. The number of passengers who make the transfer in one trip for each route
3. Other modes used before and after.

This can be done by multiplying the interview data by an expansion factor. The expansion factor is obtained by the formula:

$$\text{Expansion Factor} = \frac{A}{B}$$

Information:

A = The total number of passengers carried by a public vehicle in one route (population).

B = Number of samples of passengers who were successfully interviewed from the same route.

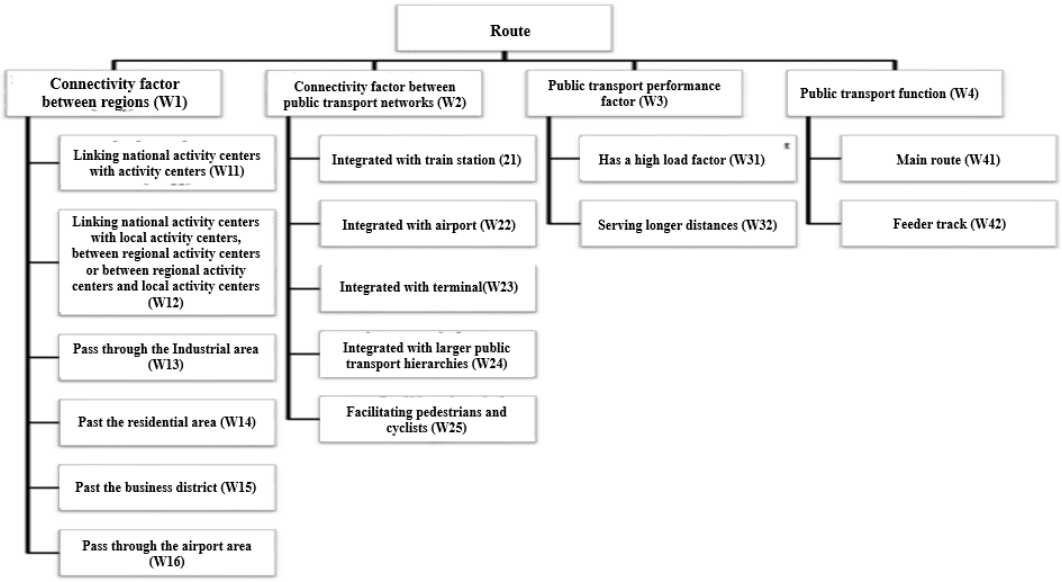


**Figure 10.** Weighting of the existing route.

## CONCLUSION

From description and data processing to data analysis and discussion study of missing link technical planning in the Jabodetabek area in travel speeds between cities / regencies in Jabodetabek do not reach the target speed of 40 km / hour. Tangerang Regency and Kota Tangerang had the lowest speed, with the lowest values being 30.55 km / hour and 30.09 km / hour. So it is necessary to increase the capacity of the road network to and from Tangerang Regency and Tangerang City. For South Tangerang Regency, the average speed that occurs within the district is 31.08 km / hour, so it is necessary to increase the capacity of the road network to South Tangerang Regency. The TOD area will have a missing link if the TOD has no connectivity with mass public transportation nodes that are more than 800 meters away and not on the main route for high-capacity mass transportation, such as the Cibinong TOD. There is 1 PKN that is not connected by public transportation to other PKN and is not connected to PKW in the same city, namely Cibinong - Cileungsi. The technical planning needed to solve the missing link problem in the Jabodetabek area can be grouped into the missing link category of its road network, activity centers, TOD areas, and transportation nodes as well as public transport service networks.

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