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STUDY ON PUBLIC TRANSPORT AND NON-PUBLIC TRANSPORT VOLUMES ON SUSTAINABLE NOISE

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ABSTRACT

Transportation is the movement/transfer of both people and goods from one place of origin to a destination. In this transfer or movement, of course, transportation is used in the form of a vehicle, which in its operation produces noises such as the sound of an engine coming out through the exhaust or horn. At a certain level, these sounds can still be tolerated in the sense that the effects they cause are not a nuisance, but at a higher level, the sound produced by the vehicle is already a nuisance or pollution called noise. The formulation of this problem is, a) is there an influence of the volume of public transport vehicles on noise? b) Is there an effect of non-public transport volume on noise? c) how big is the noise effect caused by the volume of public transport? d) how big is the noise effect caused by non-public transport volumes? This research aims to find out how much influence the volume of public transport and non-public transport traffic has on noise. The novelty of this research is the continuation of the influence of noise caused by the volume of public and non-public transportation. The conclusion is that the influence of public transport traffic volume does not have a significant influence on the noise that occurs. From all analytical calculations, the greatest similarity was found on the second day of research at the third point (Sound Level Meter 3), with a contribution of 12.1%. From this analytical calculation, we get the equation as below, namely: Y = a + bX1 = 70.718 + 0.013X1. This means that if there is no increase in public transport volume, the noise level at SLM 3 will be 70,718 dBA. For every additional volume of public transport by 0.013 vehicles/hour, the noise will increase by 0.013 dBA at SLM 3. The volume of non-public transport traffic has a significant influence on the noise that occurs. From all analytical calculations, it was found that the greatest similarity was on the fourth day of the research. point (Sound Level Meter 1) with a contribution of 19.5%.

Keywords: volume, noise, public transportation, non-public transportation, SLM.

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INTRODUCTION

Transportation is the movement/transfer of both people and goods from a place of origin to a destination. In this transfer or movement, of course, transportation is used in the form of a vehicle, which in its operation produces noises such as the sound of an engine coming out through the exhaust or horn. At a certain level, these sounds can still be tolerated in the sense that the effects they cause are not a nuisance, but at a higher level, the sound produced by the vehicle is already a nuisance or pollution called noise [1]. On KS road. Tubun (Jl. Bogor-Jakarta KM 43) is a road in the city of Bogor whose traffic volume continues to increase, the road is traversed daily by motorized vehicles, both public transport, private transport, and goods transport [2]. With the condition of the traffic volume being quite dense, the impact of the noise that occurs can disturb local residents and activities in the area, one of which is the Cibuluh 1 State Elementary School.

According to Decree [3], [4], it is defined that the Threshold Limit Value (NAB) or standard noise level permitted for educational areas is 55 dBA. To obtain a value for the noise level caused by public and non-public transportation passing through the road in front of the Cibuluh 1 State Elementary School.

Waves are propagating vibrations followed by the movement of intermediate particles. Based on the direction of vibration, waves can be divided into transverse waves where the direction of vibration is perpendicular to the direction of propagation. Sound is a longitudinal wave that propagates through a medium. The medium for sound propagation can be solid, liquid, and gas. Sound comes from a sound source that is vibrated by force or energy which is then emitted out. If the vibration reaches the ear, the sound will be heard. Vibrations from the sound source propagate through intermediary substances in the form of density and spacing. Most sounds are a combination of several signals, but pure sound can be described by measuring the frequency in Hertz (Hz). The unit used to determine the level of sound intensity is the decibel (dBA) which is a measure of sound energy or quantity used as a unit of sound pressure level with weight A. Where decibel (dBA) is a measure of sound energy or quantity used as a unit of sound pressure level with a weight of A. Where decibel A is a measure of the sound pressure level that can be received by the human ear [3].

The decibel unit (dBA) is the lowest sound ratio that can be heard by the average human. The conditions for hearing sound include the presence of a vibrating sound source, the presence of an intermediary substance that can propagate sound waves from the source to the ear, vibrations with a certain frequency (20 -20,000 Hz) and the sense of hearing being in good condition. As we age,

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the human ear becomes less sensitive to high-frequency sounds. The speed of sound propagation in the air is 1,224 km/hour and will get faster as temperature and air pressure increase due to more air particles. The sound intensity limits that can be received by normal human ears include: The smallest intensity that can cause stimulation to the human ear is 10-12 W/m2 which is called the hearing threshold intensity. The greatest intensity that the human ear can still hear without pain is 1 w/m2 which is called the pain threshold [3].

Based on the decision issued by [3] concerning Noise Level Standards, it is stated that noise is unwanted sound from human business or activities at a certain level and time which can cause problems with human health and environmental comfort. Even though noise is an unwanted sound, sometimes noise can be useful [5], [6], [7]. Useful in the sense that noise can be used to attract attention or expect a response from someone. For example, a baby crying and someone screaming for help. Meanwhile, the impact caused by noise is a physical and psychological disturbance. Currently, noise is one of the causes of environmental disease [8].

Noise intensity levels are measured and expressed in decibels (dBA). Meanwhile, what is meant by noise level quality standards is the maximum limit of noise levels that are permitted to be discharged into the environment of a business or activity so that it does not cause harm to human health and environmental comfort. Several factors related to noise include: Frequency - is the number of vibrations that occur in one second in Hz units. The frequency that humans can hear is between 20 - 20,000 Hz. Frequencies below 20 Hz are called Infra Sound. Meanwhile, frequencies above 20,000 Hz are called Ultra Sound which can only be received by the ears of dogs and crickets. Humans cannot hear both types of sounds at these frequencies [3], [5].

Based on [5]. regarding Guidelines for the Implementation of Health-Related Noise Monitoring in 1992, describes noise levels as follows: Equivalent continuous noise level = Leq is a continuous noise level in dBA(A). The resulting energy is equal to the intermittent noise energy in one measurement period or time interval and can be used for all noise level fluctuations. The recommended and maximum permissible noise levels are the average mode values of the noise levels during the day, evening and night. The ambient noise level (background noise level) or background noise level is the average minimum sound level in conditions without noise interference at the place and time when the measurement was taken, if the value is taken from the distribution it is 95% or L-95. The sound generated from transportation activities is a sound that is not constant. The disturbance caused by noise depends on the intensity level of the sound, how often it occurs and the frequency produced. Noise in motorized vehicles is mainly produced by the vehicle engine during combustion, exhaust, horn, braking and due to the interaction between the wheels and the road in the form of friction which produces sound [8], [12].

Most motorized vehicles in 2nd or 3rd gear produce noise of 75 dBA with a frequency of 100 - 7000 Hz. Heavy vehicles (trucks and buses) are the main source of noise on the highway [9]. Private cars tend not to make too much noise. But because there are so many of them, the noise produced is quite large. When the engine is started and is about to accelerate to maximum, noise is produced by the sound of the engine, whereas when the vehicle is traveling at high speed the main source of noise is the sound of wheel friction and road pavement. For trucks with diesel engines and the power produced by the engine is greater, the noise level is 15 dBA greater than private vehicles. The combustion sound that occurs in the engine makes a large contribution to the cause of noise, especially when the truck reaches a speed of 80 km/hour. Traffic noise is in the frequency range of 100 – 4000 Hz. Noise due to motor vehicle exhaust sounds occurs above a frequency of 250 Hz [9]. Traffic parameters related to noise level analysis. Volume is the number of vehicles that pass one observation point in one unit of time. Speed is the rate of travel in distance per unit time, while density is the number of vehicles occupying a length of road or lane in vehicles per km or vehicles per km per lane. Speed using formulas 1 and 2 [9], [11].

$$\mathbf{v_i} = \frac{s}{t} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$V = \frac{(V_{AUM} X n NAUM) + (V_{NAUM} X n NAUM)}{nAUM + nNAUM} \qquad \ldots. (2)$$

with:

Q	= vehicle volume (vehicles/hour)
Q_{AUM}, Q_{NAUM}	= volume of each type of vehicle (vehicles/hour)
n	= number of vehicles (vehicles)
t	= observation time interval (hours)
nAUM, nNAUM,	= number of samples for public transportation (AUM), non-public transportation vehicles (NAUM).

Volume (Q) and percentage of motorized vehicles (PMC) are found using the equation:

$$Q = \frac{n}{t} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

$$Q_{total} = Q_{AUM} + Q_{NAUM} \qquad \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

with:

Qtotal	= total vehicle volume (vehicles/hour)
QAUM, QNAUM	= volume of each type of vehicle (vehicles/hour).

Density is calculated based on speed and current values. Formulated:

$$D = q/Vsms \qquad \ldots (5)$$

with:

Q = Flow(pcu/hour) and Vsms = Space mean speed (km/hour)

Public Transportation

The definition of public transportation according to the law is transportation for which users are charged. The concept of public or general transportation emerged because not all citizens have private vehicles, so the State is obliged to provide transportation for society as a whole. People transportation services by public transportation consist of:

- Inter-city transportation from one city to another is separated here into inter-city inter-province (AKAP) and inter-city within a province (AKDP).
- City transportation which is the movement of people within the city area.
- Rural transportation which is the movement of people within and/or between rural areas.
- Border transportation, namely those related to border areas of other countries.

Apart from that, public transportation includes motorized vehicles that are rented to other people either with or without a driver for a certain period of time (rental cars) and also learning cars for driving schools.

Public transportation can be provided after fulfilling the following requirements:

- Have a transportation business permit
- Have a route permit
- Insure the vehicle and its passengers
- Suitable for use by vehicles being operated

The operation of public transportation is generally carried out by private companies/cooperatives which are usually called operators. DAMRI and PPD are public transport operators which are state-owned enterprises. Public transport planning and regulation is carried out by the government, generally through the Road Traffic and Transport Service [10], [11].

Private Transportation

One of the characteristics of private transportation is the freedom to determine the route and travel time itself. Private vehicles (cars) or public transportation have high mobility, thereby increasing a person's ability to carry out activities (movement). Examples of private transportation without motorized vehicles are pedestrians, bicycles, pedicabs, trains, carts and others. [10], [12], [13].

Pedestrians

Pedestrian is the simplest example of private transportation in the sense that it does not require difficult requirements. Facilities needed by pedestrians can include:

- Pedestrian paths (sidewalks)
- Road crossing (zebra crossing)
- Crossing control signals
- Shelters

Motorcycle

Motorcycles are two-wheeled motorized vehicles. In terms of coverage, public transport is much larger than bicycles, but its capacity is still small (carrying 1 person) [25].

Passenger Car

A passenger car is a motorized vehicle equipped with a maximum of 8 (eight) seats, not including the driver's seat. The conditions for implementation are like the conditions for public transportation [10], [27].

Freight Transportation

In contrast to human travel, goods are generally transported for longer distances, with fewer customers and more variety. In addition, various types of goods have varying volume and weight ratios as well as various characteristics that require special transportation systems. For example, transporting liquid goods is not the same as transporting solid goods. Transporting explosives or other dangerous goods must meet special requirements.

In general, goods can be grouped into three types, namely dry bulk goods, liquids, and general goods. Each requires a different type of mode because the nature of the goods is different and requires certain handling during the transportation process [6], [11], 14], [29].

People Travel Concept

The travel of people and goods must be based on the provisions set by the government. This determination is a means that each person travels according to definite and clear needs and goals. The current development of transportation is different from the 1990s to the 2000s. In that year, transportation development was still not as fast as it is now [15], [16], [19], [21]. This development determines that someone can move places simply by means of transportation with many choices. This choice will determine that each person travels for one or more purposes with only one concept implemented online. This online transportation is based on a person's form of travel which assesses the form that is most necessary and determines travel patterns [17], [18], [20], [21], [23]. Road geometry influences the planning a person needs. Traveling using a vehicle that is good and in good condition as well as roads that are well planned and have a smooth surface will have an impact on the durability of the road and the vehicle tires used. Vehicles that have good features will get results in making short or long trips feel comfortable [24], [26], [28], [30].

Sound Concept Included with the Vehicle

Sound cannot be heard in a vacuum because sound requires an intermediary substance to propagate. Wave speed varies for each medium. For the same type of medium, several factors such as source geometry, surrounding atmospheric conditions and surface effects influence the propagation of sound waves. The distribution of energy affects the geometry of the sound wave source due to the spread of the wave front. There are two types of wave source geometries [3], [22].

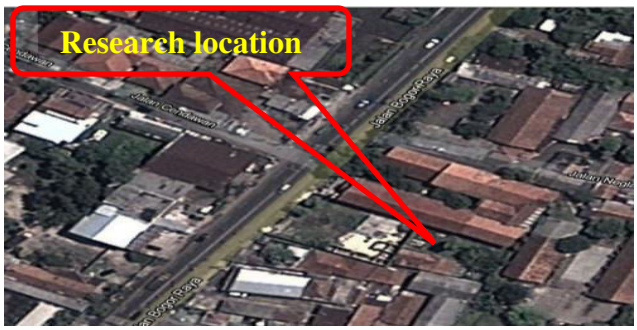

Figure-1. Research Location.

RESEARCH METHODOLOGY

Research Methods

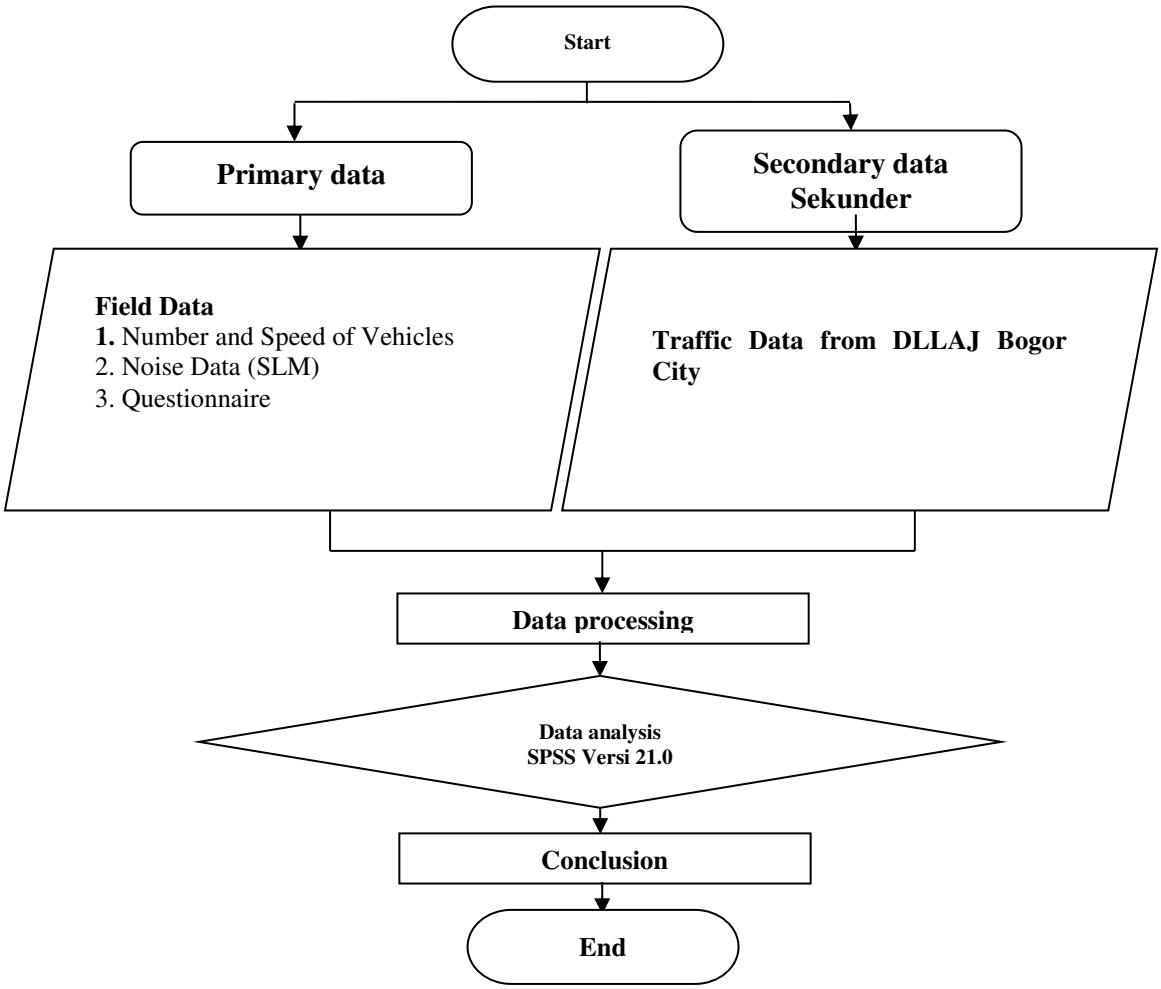

Figure-2. Research method flow diagram.

RESULTS AND DISCUSSIONS

Traffic Volume Data Results

The traffic volume data calculated is data per 15 minutes for 12 hours a day. Data was taken from 6.00 to 18.00. This data was taken for 4 days. This traffic volume is divided into 2 groups, namely public transportation vehicles and non-public transportation vehicles. In its implementation, it is calculated in two directions, namely the direction to Jakarta and the direction to Bogor. This traffic volume data was obtained from the results of Passenger Car Equivalence (EMP) calculations [3]. The use of this calculation is intended to make traffic analysis easy to carry out. The passenger car unit factor (PCU) for each motor vehicle according to the Indonesian Road Capacity Manual, for urban roads is as follows:

- Heavy Vehicles (HV) = 1.30
- Light Vehicles (LV) = 1.00

- Motorcycle (MC) = 0.40
- Non-motorized vehicles = 1.00

In its implementation, the grouping is divided into two groups, namely public transportation and non-public transportation, where non-public transportation vehicles include heavy vehicles and light vehicles where the EMP value taken is 1.00. From all traffic volume calculations during data collection in the field, the following results were obtained:

Traffic Volume Data Results 1

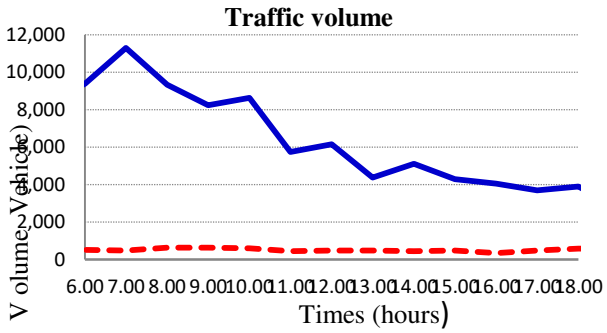

Figure-3. Traffic volume results.

The highest volume results were obtained for public transport traffic at 824.0 vehicles/hour, which occurred at 12.15 - 12.30, while for non-public transportation traffic it was 11,304 vehicles/hour, which occurred at 07.30 - 07.45. The lowest volume results for public transport traffic were 123.4 vehicles/hour, which occurred at 17.45 - 18.00, while for non-public transportation traffic it was 1,296.0 vehicles/hour, which occurred at 06.00 - 06.15. And today the average traffic volume for public transportation is 464.66 vehicles/hour and an average of 4,820.94 vehicles/hour for non-public transportation traffic.

Traffic Volume Data Results 2

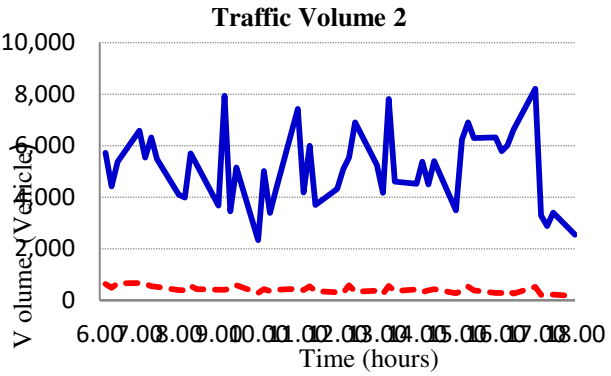

Figure-4. Traffic volume results 2.

The highest volume results were obtained for public transport traffic at 668.0 vehicles/hour, which occurred at 06.45 - 07.00, while for non-public transportation traffic it was 8,216.0 vehicles/hour, which occurred at 16.45 - 21.00. The lowest volume results for public transport traffic were 161.8 vehicles/hour, which occurred at 17.45 - 18.00, while for non-public transportation traffic it was 2,332.0 vehicles/hour, which occurred at 09.45 - 10.00. And today the average traffic volume for public transportation is 406.71 vehicles/hour and an average of 5,135.49 vehicles/hour for non-public transportation traffic.

Traffic Volume Data Results 3

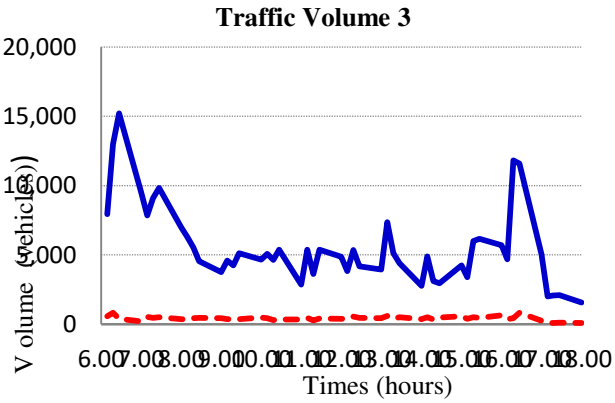

Figure-5. Results of traffic volume 3.

On the third day, the highest volume results were obtained for public transport traffic of 828.0 vehicles/hour, which occurred at 16.30 - 16.45, while for non-public transportation traffic it was 15,208.0 vehicles/hour, which occurred at 06.30 - 06.45. The lowest volume results for public transport traffic were 74.4 vehicles/hour, which occurred at 17.45 - 18.00, while for non-public transportation traffic it was 1,555.5 vehicles/hour, which occurred at 17.45 - 18.00. And today the average traffic volume for public transportation is 407.29 vehicles/hour and an average of 5,612.27 vehicles/hour for non-public transportation traffic.

Traffic Volume Data Results 4

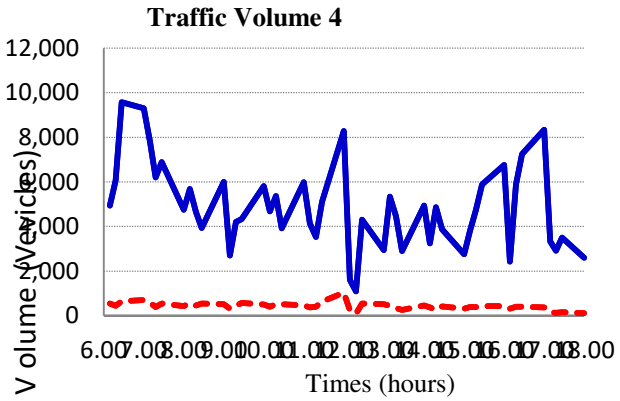

Figure-6. Traffic volume results 4.

On the fourth day, the highest volume results were obtained for public transport traffic of 1,032.0 Vehicles/hour, which occurred at 11.45 - 12.00, while for non-public transport traffic it was 9,580.0 Vehicles/hour, which occurred at 06.30 - 06.45. The lowest volume results for public transport traffic were 116.9 Vehicles/hour, which occurred at 17.45 - 18.00, while for non-public transport traffic it was 1,084.0 Vehicles/hour, which occurred at 12.15 - 12.30. And today the average traffic volume for public transport is 451.92 Vehicles/hour and an average of 4,868.35 Vehicles/hour for non-public transport traffic.

Noise Data Results 1

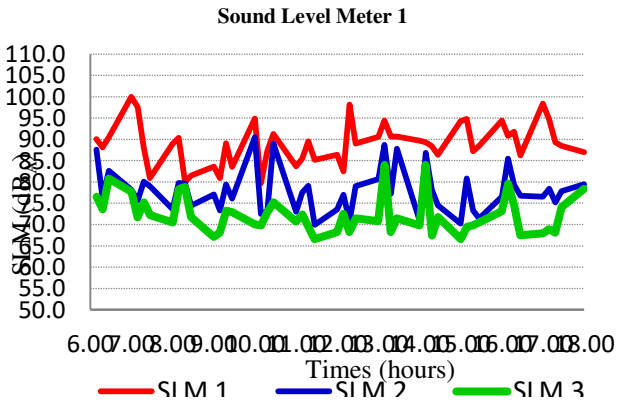

Figure-7. Noise results 1.

On the first day, the highest noise results were obtained in SLM 1, which was 100.0 dBA, which occurred at 06.45-07.00, in SLM 2, which was 90.5 dBA, which occurred at 09.45 - 10.00, and in SLM 3, which occurred at 84.0. at 13.0 - 13.15. The lowest noise results in SLM 1 were 79.7 dBA, which occurred at 10.00 - 10.15, in SLM 2 it was 69.9 dBA which occurred at 11.30 - 11.45, in SLM 3 it was 66.6 which occurred at 14.45 - 15.00. And today the average noise figure in SLM 1 is 89.0 dBA, in SLM 2 it is 78.0 dBA, and in SLM 3 it is 72.3 dBA.

Noise Data Results 2

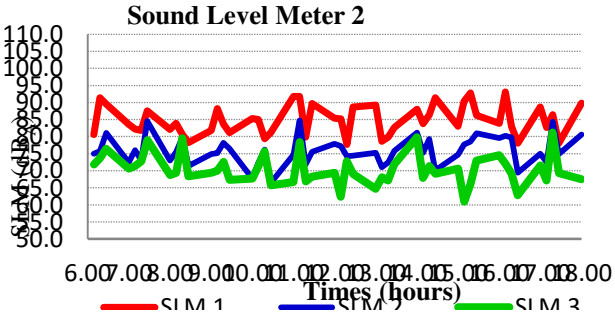

Figure-8. Noise results 2.

On the second day, the highest noise results were obtained in SLM 1, which was 93.1 dBA, which occurred at 16.00-16.15, in SLM 2, which was 84.7 dBA, which occurred at 11.00 - 11.15, and in SLM 3, which occurred at 81.2. at 17.15 - 17.30. The lowest noise results in SLM 1 were 77.7 dBA, which occurred at 12.15 - 12.30, in SLM 2 it was 66.4 dBA which occurred at 10.30 - 10.45, in SLM 3 it was 61.0 which occurred at 15.00 - 15.15. And today the average noise figure in SLM 1 is 84.9 dBA, in SLM 2 it is 75.9 dBA, and in SLM 3 it is 70.4 dBA.

Noise Data Results 3

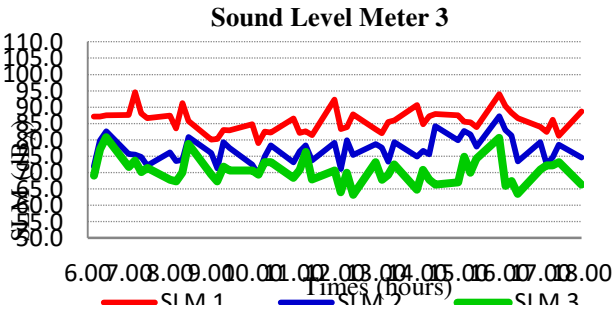

Figure-9. Noise results 3.

On the third day, the highest noise results were obtained in SLM 1, which was 94.6 dBA, which occurred at 07.00 - 07.15, in SLM 2 it was 87.2 dBA, which occurred at 15.45 - 16.00, and in SLM 3 it was 80.8, which occurred at 06.30 - 06.45. The lowest noise results in SLM 1 were 77.7 dBA, which occurred at 12.15 - 12.30, in SLM 2 it was 66.4 dBA which occurred at 10.30 - 10.45, in SLM 3 it was 63.2 which occurred at 12.30 - 12.45. And today the average noise figure in SLM 1 is 85.7 dBA, in SLM 2 it is 76.9 dBA, and in SLM 3 it is 70.5 dBA.

Noise Data Results 4

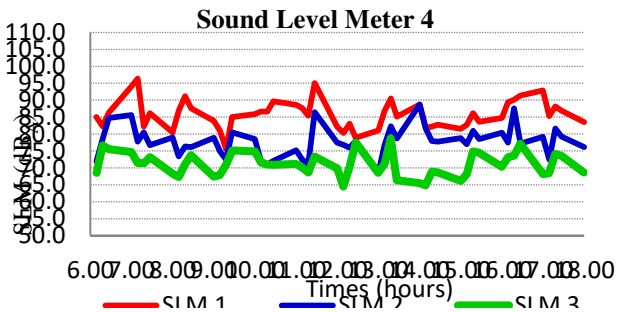

Figure-10. Noise results 4.

On the fourth day, the highest noise results were obtained in SLM 1 at 96.4 dBA, which occurred at 07.00 - 07.15, at SLM 2 at 88.7 dBA which occurred at 13.45 - 14.00, and at SLM 3 at 78.8 which occurred at 13.15-13.30. The lowest noise results in SLM 1 were 75.6 dBA, which occurred at 09.15 - 09.30, in SLM 2 it was 68.6 dBA which occurred at 12.45 - 13.00, in SLM 3 it was 64.5 which occurred at 12.00 - 12.15. And today the average noise figure in SLM 1 is 85.8 dBA, in SLM 2 it is 77.8 dBA, and in SLM 3 it is 71.1 dBA.

Results of Multiple Regression Analysis

Correlation testing is used to find the magnitude of the relationship and contribution of two or more independent variables simultaneously to the dependent variable. With this, it will be possible to know the magnitude of the contribution of all the independent variables that are the object of research to the dependent variable. To determine the correlation coefficient value that is considered good and has sufficient influence on the number of trip attractions (dependent variable) can be seen in the Table-1 below.

r	Interpretation
0	Not correlated
0,01 – 0,20	Very low
0,21 – 0,40	Low
0,41 – 0,60	A bit low
0,61 – 0,80	High enough
0,81 – 0,99	Tall
1	Very high

Table-1. Interpretation of r values.

Source: [31]

Results of multiple regression statistical analysis SLM 1 distance 0.00 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 1 (Y) which is located from the edge of the highway at a distance of 0.00 meters, with a confidence level of 95% and a probability value of 0 .05 or 5%, which was taken from forty-eight data processing using the SPSS version 21.0 program. From this equation it is taken to represent the conditions in SLM 1 on the first day of the research.

The results of the calculations obtained a mean value for SLM 1 of 89.0063 dBA, for public transportation 465 vehicles/hour and non-public transportation of 4821 vehicles/hour. The validity of the results of the SLM 1 analysis, the volume of public transportation and non-public transportation has a value one which means all data is valid. The summary and ANOVA tables are presented in Table-2 and Table-3.

Table-2. Summary of the relationship between public and non-public transportation volume and noise on the first day at SLM 1.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.027[a]	.001	-.044	5.01103	.001	.017	2	45	.983
a. Predictors: (Constant), Non-public transportation volume, public transportation volume									
b. Dependent Variable: Position SLM 1									

Source: Results of data analysis

Table-3. ANOVA of the relationship between public and non-public transportation volume and noise

on the first day at SLM 1.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.837	2	.419	.017	.983[a]
	Residual	1129.971	45	25.110		
	Total	1130.808	47			
a. Predictors: (Constant), Non-public transportation volume, public transportation volume						
Dependent Variable: Position SLM 1						

Source: Results of data analysis

Results of multiple regression statistical analysis of SLM 2, distance 5.12 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 2 (Y) which is located from the edge of the highway at a distance of 5.12 meters, with a confidence level of 95% and a probability value of 0 .05 or 5%, which was taken from forty-eight data processing using the SPSS version 21.0 program. This equation is taken to represent the conditions in SLM 2 on the first day of the research.

The results of the calculations obtained a mean value for SLM 2 of 77.9896 dBA, for public transportation of 465 vehicles/hour, and non-public transportation of 4821 vehicles/hour. The validity of the SLM 2 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid. The summary and ANOVA tables are presented in Table-4 and Table-5.

Table-4. Summary of the relationship between public and non-public transportation volume and noise on the first day at SLM 2.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.129[a]	.017	-.027	5.24786	.017	.380	2	45	.686
a. Predictors: (Constant), Non-public transportation volume, public transportation volume									
b. Dependent Variable: Position SLM 2									

Source: Results of data analysis

Table-5. ANOVA of the relationship between public and non-public transportation volume and noise on the first day at SLM 2.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.922	2	10.461	.380	.686[a]
	Residual	1239.303	45	27.540		
	Total	1260.225	47			
a. Predictors: (Constant), Non-public transportation volume, public transportation volume						
b. Dependent Variable: Position SLM 2						

Source: Results of data analysis

Results of multiple regression statistical analysis of SLM 3, distance 10.24 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 3 (Y) which is located from the edge of the highway at a distance of 10.24 meters, with a confidence level of 95% and a probability value of 0.05 or 5%, taken from forty-eight data processing using the SPSS version 21.0 program.

This equation is taken to represent the conditions in SLM 3 on the first day of the research.

The results of the calculations obtained a mean value for SLM 3 of 72.3250 dBA, for public transportation of 465 vehicles/hour and for non-public transportation of 4821 vehicles/hour. The validity of the SLM 3 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid. The summary and anova tables are presented in Table-6 and Table-7.

Table-6. Summary of the relationship between public and non-public transportation volume and noise on the first day at SLM 3.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.162[a]	.026	-.017	4.41311	.026	.606	2	45	.550
a. Predictors: (Constant), Non-public transportation volume, public transportation volume									
b. Dependent Variable: Position SLM 3									

Source: Results of data analysis

Table-7. ANOVA of the relationship between public and non-public transportation volume and noise on the first day at SLM 3.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.610	2	11.805	.606	.550[a]
	Residual	876.400	45	19.476		
	Total	900.010	47			
a. Predictors: (Constant), Non-public transportation volume, public transportation volume						
b. Dependent Variable: Position SLM 3						

Source: Results of data analysis

Results of multiple regression statistical analysis on the second day

Results of multiple regression statistical analysis SLM 1 distance 0.00 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 1 (Y) which is located from the edge of the highway at a distance of 0.00 meters, with a confidence level of 95% and a probability value of 0 .05 or 5%, which was taken from forty-eight data processing using the SPSS version 21.0 program. From this equation, it is taken to represent the conditions in SLM 1 on the second day of the research.

The results of existing calculations show that the mean value for SLM 1 is 84.8667dBA, for public transportation it is 407 vehicles/hour, and for non-public transportation it is 5135 vehicles/hour. The validity of the SLM 1 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid.

Results of multiple regression statistical analysis of SLM 2, distance 5.12 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 2 (Y) which is located from the edge of the highway at a distance of 5.12 meters, with a confidence level of 95% and a probability value of 0 .05 or 5%, taken from forty-eight data processing using the SPSS version 21.0 program. This equation is taken to represent the conditions in SLM 2 on the second day of the research.

The results of the calculations obtained a mean value for SLM 2 of 75.9188 dBA, for public transportation of 407 vehicles/hour and non-public transportation of 5135 vehicles/hour. The validity of the SLM 2 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid.

Results of multiple regression statistical analysis of SLM 3, distance 10.24 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 3 (Y) which is located from the edge of the highway at a distance of 10.24 meters, with a confidence level of 95% and a probability value of 0 .05 or 5%, taken from forty-eight data processing using the SPSS version 21.0 program.

This equation is taken to represent the SLM 3 condition on the second day of the study.

The results of existing calculations show that the mean value for SLM 3 is 70.4375 dBA, for public transportation it is 407 vehicles/hour and for non-public transportation it is 5135 vehicles/hour. The validity of the SLM 3 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid.

Results of multiple regression statistical analysis on the third day

Results of multiple regression statistical analysis SLM 1 distance 0.00 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 1 (Y) which is located from the edge of the highway at a distance of 0.00 meters, with a confidence level of 95% and a probability value of 0.05 or 5%, taken from forty-eight data processing using the SPSS version 21.0 program. From this equation, it is taken to represent the conditions in SLM 1 on the third day of the research.

The results of the calculations obtained a mean value for SLM 1 of 85.6854 dBA, for public transportation of 407 vehicles/hour and non-public transportation of 5612 vehicles/hour. The validity of the SLM 1 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid.

Results of multiple regression statistical analysis of SLM 2, distance 5.12 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 2 (Y) which is located from the edge of the highway at a distance of 5.12 meters, with a confidence level of 95% and a probability value of 0.05 or 5%, taken from forty-eight data processing using the SPSS version 21.0 program. From this equation, it is taken to represent the conditions in SLM 2 on the third day of the research.

The results of the calculations obtained a mean value for SLM 2 of 76.8875 dBA, for public transportation of 407 vehicles/hour and non-public transportation of 5612 vehicles/hour. The validity of the SLM 2 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid.

Statistical analysis of multiple regression SLM 3 distance 10.24 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 3 (Y) which is located from the edge of the highway at a distance of 10.24 meters, with a confidence level of 95% and a probability value of 0.05 or 5%, taken from forty-eight data processing using the SPSS version 21.0 program. From this equation, it is taken to represent the conditions in SLM 3 on the third day of the research.

The results of the calculations obtained a mean value for SLM 3 of 70.5333 dBA, for public transportation of 407 vehicles/hour and non-public transportation of 5612 vehicles/hour. The validity of the SLM 3 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid.

Results of multiple regression statistical analysis on the fourth day

Results of multiple regression statistical analysis SLM 1 distance 0.00 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 1 (Y) which is located from the edge of the highway at a distance of 0.00 meters, with a confidence level of 95% and a probability value of 0 .05 or 5%, which was taken from forty-eight data processing using the SPSS version 21.0 program. From this equation it is taken to represent the conditions in SLM 1 on the fourth day of the research.

The results of the calculations obtained a mean value for SLM 1 of 85.8229 dBA, for public transportation of 427 vehicles/hour and non-public transportation of 4868 vehicles/hour. The validity of the SLM 1 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid.

Results of multiple regression statistical analysis of SLM 2, distance 5.12 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 2 (Y) which is located from the edge of the highway at a distance of 5.12 meters, with a confidence level of 95% and a probability value of 0 .05 or 5%, which was taken from forty-eight data processing using the SPSS version 21.0 program. This equation is taken to represent the conditions in SLM 2 on the fourth day of the research.

The results of the calculations obtained a mean value for SLM 2 of 77.7937 dBA, for public transportation of 427 vehicles/hour and non-public transportation of 4868 vehicles/hour. The validity of the SLM 2 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid.

Results of multiple regression statistical analysis of SLM 3, distance 10.24 m from the main road

Results of research on the relationship between the volume of public transport (X1) and non-public transport (X2) on noise that occurs at SLM 3 (Y) which is located from the edge of the highway at a distance of 10.24 meters, with a confidence level of 95% and a probability value of 0 .05 or 5%, which was taken from forty-eight data processing using the SPSS version 21.0 program. From this equation it is taken to represent the conditions in SLM 3 on the fourth day of the research.

The results of the calculations obtained a mean value for SLM 3 of 71.0812 dBA, for public transportation of 427 vehicles/hour and non-public transportation of 4868

vehicles/hour. The validity of the SLM 3 analysis results, the volume of public transport and non-public transport has a value of one, which means all data is valid.

DISCUSSIONS

This discussion describes the results of the analysis from each research day and at each Sound Level Meter (SLM) research point. This discussion uses a hypothesis based on the t test, including the hypothesis, significance testing rules from the SPSS version 21.00 software used, test statistics, test criteria, hypothesis decisions, equations and detailed instructions for the analysis results in the attachment.

Overall for the hypothesis, the SPSS version 21.0 significance testing rules and test statistics are as follows:

Hypothesis

Ha = There is a significant influence between public transport volume/non-public transport volume and noise

Ho = There is no significant influence between public transport volume/non-public transport volume and noise

α = 5.00%

SPSS version 21.0 significance testing rules

- If the probability value of 0.05 is less than or equal to the probability value of Sig or (0.05 < Sig), then Ho¬¬ is accepted and Ha is rejected, meaning it is not significant.
- If the probability value of 0.05 is greater than or equal to the probability value of Sig or (0.05 > Sig), then Ho¬¬ is rejected and Ha is accepted, meaning it is significant.
- If the F-Calculated value < F-Table, then Ho is accepted and Ha is rejected.
- If the F-Calculated value > F-Table, then Ho is rejected and Ha is accepted.
- If the t-Calculated value < t-Table, then Hodi accepts and Hadi rejects.
- If the t-Calculated value > t-Table, then Hodi rejects and Hadi accepts

Test statistics

The results of statistical tests carried out using SPSS Version 21.0 software showed a relationship between public transport volume and noise.

The influence of the volume of public and non-public transportation on noise on the first day

Discussion on SLM 1, distance 0.00 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.001, which means that X1 only has an effect of 0.1% on Y.

The results of the ANOVA test obtained an F-Calculation value = 0.017 with a probability value (sig) = 0.983. From the input data, we get the F-Table value = 3.19 so F-Calculate < F-Table, then Ha is rejected and Ho is accepted.

The results of the coefficients test, the volume of public transport (X1) has a constant value (a) = 88,582 (B) = 0.001 and a t-count value = 0.120 and a value (sig) = 0.905. From the data we get a t-table value = 2.014, then t -Calculate < t-Table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurs at SLM 1 on the first day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a + bX1 = 88.582 + 0.001 X1

This means that if there is no increase in public transport volume, the noise level at SLM 1 will be 88,582 dBA. And for every additional public transport, there is an increase of 1 dBA in SLM 1.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and anova test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 88.582 (B) = 2.283E-5 and a t-count value = 0.060 and a value (sig) = 0.952. From the processed data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is no significant influence or relationship between non-public transport volume and noise that occurs at SLM 1 on the first day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a + bX2 = 88.582 + 2.283E-5X2

This means that if there is no increase in public transport volume, the noise level at SLM 1 will be 88,582 dBA. And for every additional public transport of 2,283E-5, there is an increase of 1 dBA in SLM 1.

The discussion on SLM 2 is 5.12 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.017, which means that X1 only has an effect of 1.7% on Y.

The results of the ANOVA test obtained an F-Calculation value = 0.380 with a probability value (sig) = 0.686. From the input data, the value of F-Table = 3.19 is obtained, so, F-Count < F-Table, then Ha is rejected and Ho is accepted.

` The results of the coefficients test, the volume of public transport (X1) has a constant value of (a) = 80.116, (B) = -4.391E-5 and t-calculation value = -0.697 and value (sig) = 0.490. From the data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurs at SLM 2 on the first day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a - bX1 = 80.116 – 0.697X1

This means that if there is no increase in public transport volume, the noise level at SLM 1 will be 80,116 dBA. And for every decrease in public transport of -0.697, there is a decrease of 1 dBA in SLM 1.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 80.116, (B) = -4.391E-5, and t-calculation value = -0.111 and value (sig) = 0.14. From the processed data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is no significant influence or relationship between non-public transport volume and noise that occurs at SLM 2 on the first day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a - bX2 = 80.116 – 0.697X2

This means that if there is a decrease in non-public transportation volume, the noise level at SLM 2 will be 80,116 dBA. For every decrease in non-public transport volume of -0.697 vehicles/hour, there will be a decrease of -0.697 dBA, and for every increase of 1 vehicle/hour, the noise will also decrease by -0.697 dBA.

The discussion on SLM 3 is 10.24 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.026, which means that X1 only has an effect of 2.6% on Y.

The results of the anova test obtained an F-Calculation value = 0.606 with a probability value (sig) = 0.550. From the input data, we get the F-Table value = 3.19 so, F-Calculate < F-Table, then Ha is rejected and Ho is accepted.

The results of the coefficients test show that the volume of public transport (X1) has a constant value of (a) = 70,708, (B) = 0.000, t-count value = 0.055 and value (sig) = 0.956. From the processed data, we get a t-Table value = 2.014, then t-Calculate < t-Table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurs at SLM 3 on the first day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a + bX1 = 70.708+ 0.000X1

This means that if there is no increase in public transport volume, the noise level at SLM 1 will be 70,708 dBA. For every 0,000 additional public transportation, there is an increase of 1 dBA in SLM 1.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value of (a) = 70.708, (B) = 0.000, and a t-count value = 0.929 and a value (sig) = 0.358. From the processed data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is no significant influence or relationship between non-public transport volume and noise that occurs at SLM 3 on the first day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a + bX2 = 70.708 + 0.000X2

This means that if there is no increase in non-public transport volume, the noise level at SLM 3 will be 74,111 dBA.

The influence of the volume of public and non-public transportation on noise on the second day

Discussion on SLM 1, distance 0.00 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.039, which means that X1 only has an effect of 3.9% on Y.

The results of the ANOVA test obtained an F-Calculation value = 0.922 with a probability value (sig) = 0.405. From the input data, we get the F-Table value = 3.19 so, F-Calculate < F-Table, then Ha is rejected and Ho is accepted.

The results of the coefficients test show that the volume of public transport (X1) has a constant value of (a) = 83,761, (B) = -0.006, t-count value = -1.005 and value (sig) = 0.320. From the processed data, we get a t-Table value = 2.014, then t-Calculate < t-Table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurred at SLM 1 on the second day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a -bX1 = 83.761 - 0.006X1

This means that if there is no increase in public transport volume, the noise level at SLM 1 will be 83,761 dBA. For every decrease in the volume of non-public transport by -0.006 vehicles/hour, there will be a decrease of -0.006 dBA, and for every increase of 1 vehicle/hour, the noise will also decrease by -0.006 dBA.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 83.761, (B) = 0.001 and t-count = 1.294 and value (sig) = 0.202. From the processed data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is no significant influence or relationship between non-public transport volume and noise that occurred at SLM 1 on the second day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a + bX2 = 83.761+0.001X2

This means that if there is no increase in non-public transport volume, the noise level at SLM 1 will be 83,761 dBA. For every additional non-public transportation of 0.001, there is an increase of 1 dBA in SLM 1.

The discussion on SLM 2 is 5.12 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.003, which means that X1 only has an effect of 0.3% on Y.

The results of the ANOVA test obtained an F-Calculation value = 0.060 with a probability value (sig) = 0.942. From the input data, we get the F-Table value = 3.19 so, F-Calculate < F-Table, then Ha is rejected and Ho is accepted.

The results of the coefficients test, the volume of public transport (X1) has a constant value of (a) = 76.709, (B) = 0.000, t-calculation value = -0.032, and value (sig) = 0.975. From the processed data, we get a t-Table value = 2.014, then t-Calculate < t-Table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurred at SLM 2 on the second day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a + bX1 = 76.709 - 0.032X1.

This means that if there is a decrease in the volume of public transportation, the noise level at SLM 2 will be 76,709dBA. For every 0.032 decrease in non-public transportation, there is a decrease of 1 dBA in SLM 2.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 76.709, (B) = -0.051, and t-calculation value = -0.282 and value (sig) = 0.779. From the processed data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is no significant influence or relationship between non-public transport volume and noise that occurred at SLM 2 on the second day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a + bX2 = 76.709- 0.051X2

This means that if there is no increase in non-public transport volume, the noise level at SLM 2 will be 76,709 dBA. For every decrease in non-public transport volume of 0.051 vehicles/hour, there is an increase of 1 dBA in SLM 2.

The discussion on SLM 3 is 10.24 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.121, which means that X1 only has an effect of 12.1% on Y.

The results of the ANOVA test obtained an F-Calculation value = 3.094 with a probability value (sig) = 0.055. From the input data, we get the F-Table value = 3.19 so, F-Calculate < F-Table, then Ha is rejected and Ho is accepted.

The results of the coefficients test show that the volume of public transport (X1) has a constant value of (a) = 70,718, (B) = 0.013, t-calculation value = 2,231 and value (sig) = 0.031. From the processed data, we get a t-Table value = 2.014, then t-Calculate> t-Table, then Ha is accepted and Ho is rejected.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is a significant influence or relationship between the volume of public transport and the noise that occurred at SLM 3 on the second day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a + bX1 = 70.718 + 0.013X1.

This means that if there is no increase in public transport volume, the noise level at SLM 3 will be 70,718 dBA. For every increase in public transport volume of 0.013 vehicles/hour, there is an increase of 1 dBA in SLM 3.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 70.718, (B) = -0.001 and t-count = -2.068 and value (sig) = 0.044. From the processed data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is no significant influence or relationship between non-public transport volume and noise that occurred at SLM 3 on the second day.

(4) Eq

The output of the calculation above is obtained by the following equation.

Y = a - bX2 = 70.718-0.001 X2

This means that if there is an increase in non-public transport volume, the noise level at SLM 3 will be 70,718 dBA. For every decrease in non-public transport volume of 0.001 vehicles/hour, there is an increase of 1 dBA in SLM 3.

Discussion of the influence of the volume of public and non-public transportation on noise on the third day

Discussion on SLM 1, distance 0.00 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.059, which means that X1 only has an effect of 5.9% on Y.

The results of the ANOVA test obtained an F-Calculation value = 1.418 with a probability value (sig) = 0.253. From the input data, the value of F-Table = 3.19 is obtained, so, F-Count < F-Table, then Ha is accepted and Ho is rejected.

From the coefficients test, the volume of public transport (X1) has a constant value of (a) = 83.504, (B) = 0.0034, t-count value = 0.707, and value (sig) = 0.483. From the processed data, we get a t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is rejected.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurs at SLM 1 on the third day.

(4) Eq

The output of the calculation above is obtained by the following equation.

Y = a + bX1 = 83.504 + 0.003X1.

This means that if there is no increase in non-public transport volume, the noise level at SLM 1 will be 83,504 dBA. For every additional non-public transport volume of 0.003 vehicles/hour, there is an increase of 1 dBA in SLM 1.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 83.504, (B) = 0.000 and a t-count value = 0.916 and a value (sig) = 0.364. From the processed data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is no significant influence or relationship between non-public transport volume and noise that occurs at SLM 1 on the third day.

(4) Equation

The output of the calculation above is obtained by the following equation.

Y = a + bX2 = 83.504 + 0.000X2

This means that if there is no increase in non-public transport volume, the noise level at SLM 1 will be 83,504 dBA.

The discussion on SLM 2 is 5.12 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.029, which means that X1 only has an effect of 2.9% on Y.

The results of the ANOVA test obtained an F-Calculation value = 0.687 with a probability value (sig) = 0.508. From the input data, we get the F-Table value = 3.19 so, F-Calculate < F-Table, then Ha is rejected and Ho is accepted.

The coefficients test results show that the volume of public transport (X1) has a constant value of (a) = 75.113, (B) = 0.004, t-calculation value = 0.930, and value (sig) = 0.357. From the processed data, we get a t-Table value = 2.014, then t-Calculate < t-Table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurs at SLM 2 on the third day.

(4) Eq

The output of the calculation above is obtained by the following equation.

Y = a + bX1 = 75.113+ 0.004X1.

This means that if there is no increase in public transport volume, the noise level at SLM 2 will be 75,113dBA. For every additional non-public transport volume of 0.004 vehicles/hour, there is an increase of 1 dBA in SLM 2.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 75.113, (B) = 2.347E-5, and a t-count value = 0.104 and a value (sig) = 0.918. From the processed data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is no significant influence or relationship between non-public transport volume and noise that occurred at SLM 2 on the third day.

(4) Eq

The output of the calculation above is obtained by the following equation.

Y = a +bX2 = 75.113+ 2.347E-5X2

This means that if there is no increase in non-public transport volume, the noise level at SLM 2 will be 75.113dBA. For every additional non-public transport volume of 2,347E-5 vehicles/hour, there is an increase of 1 dBA in SLM2.

The discussion on SLM 3 is 10.24 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.067, which means that X1 only has an effect of 6.7% on Y.

The results of the anova test obtained an F-Calculation value = 1.624 with a probability value (sig) = 0.208. From the input data, we get the F-Table value = 3.19 so, F-Calculate < F-Table, then Ha is rejected and Ho is accepted.

The results of the coefficients test, the volume of public transport (X1) has a constant value of (a) = 69,891, (B) = -0.004, t-calculated value = -0.953 and value (sig) = 0.346. From the processed data, the t-table value is obtained = 2.014, then t-Calculate < t-Table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurs at SLM 3 on the third day.

(4) Eq

The output of the calculation above is obtained by the following equation.

Y = a - bX1 = 69.891 – 0.004X1.

This means that if there is a decrease in non-public transportation volume, the noise level at SLM 1 will be 69,891 dBA. For every decrease in non-public transport volume of – 0.004 vehicles/hour, there will be a decrease of - 0.004 dBA.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise
Ho = There is no significant influence between non-public transport volume and noise
α = 5.00%
(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 69,891, (B) = 0.000, and a t-count value = 1,802 and a value (sig) = 0.078. From the processed data, the t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.
(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the influence of non-public transportation volume on noise, that there is no significant influence or relationship between non-public transportation volume and noise that occurs at SLM 3 on the third day.
(4) Eq

The output of the calculation above is obtained by the following equation.
Y = a + bX2 = 69.891 + 0.000X2

This means that if there is no increase in non-public transport volume, the noise level at SLM 2 will be 69,891 dBA.

The influence of public and non-public transportation volume on noise on the fourth day

Discussion on SLM 1, distance 0.00 meters from the main road Influence of public transport volume
(1) Hypothesis
Ha = There is a significant influence between the volume of public transportation and noise
Ho = There is no significant influence between the volume of public transportation and noise
α = 5.00%
(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.195, which means that X1 has an effect of 19.5% on Y.

The results of the ANOVA test obtained an F-count value = 5.447 with a probability value (sig) = 0.008. From the input data we get the F-Table value = 3.19 so, F-Calculate>F-Table, then Ha is accepted and Ho is rejected. The results of the coefficients test, the volume of public transport (X1) has a constant value of (a) = 82.018, (B) = -0.005, t-calculation value = -1.149, and value (sig) = 0.257. From the processed data, we get a t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.
(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurred at SLM 1 on the fourth day.
(4) Eq

The output of the calculation above is obtained by the following equation.
Y = a - bX1 = 82.018-0.005X1.

This means that if there is a decrease in the volume of public transportation, the noise level at SLM 1 will be 84,094 dBA. For every decrease in the volume of public transport by -0.005 vehicles/hour, there will be a decrease of -0.005 dBA, and for every increase of 1 vehicle/hour, the noise will also decrease by -0.005 dBA.

Influence of non-public transport volume
(1) Hypothesis
Ha = There is a significant influence between non-public transport volume and noise
Ho = There is no significant influence between non-public transport volume and noise
α = 5.00%
(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, the non-public transport volume (X2) has a constant value (a) = 82.018, (B) = 0.001, a t-count value = 3.058, and a value (sig) = 0.004. From the processed data, the t-table value = 2.014, then t-Count > t-Table, then Ha is accepted and Ho is rejected.
(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is a significant influence or relationship between non-public transport volume and noise that occurred at SLM 1 on the fourth day.
(4) Eq

The output of the calculation above is obtained by the following equation.
Y = a + bX2 = 82.018+ 0.001X2

This means that if there is an increase in the volume of non-public transport, the noise level at SLM 1 is 82,018 dBA. For every increase in non-public transport volume of 0.001 vehicles/hour, there will be an increase of 0.001 dBA, and for every increase of 1 vehicle/hour, then Noise will also increase by -0.001 dBA.

The discussion on SLM 2 is 5.12 meters from the main road

Influence of public transport volume
(1) Hypothesis
Ha = There is a significant influence between the volume of public transportation and noise
Ho = There is no significant influence between the volume of public transportation and noise
α = 5.00%
(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.139, which means that X1 has an influence of 13.9% on Y.

The results of the ANOVA test obtained an F-Calculation value = 3.645 with a probability value (sig) = 0.034. From the input data we get the F-Table value = 3.19 so, F-Calculate> F-Table, then Ha is accepted and Ho is rejected.

The results of the coefficients test show that the volume of public transport (X1) has a constant value of (a) = 74,854, (B) = -0.006, t-calculation value = -1.196, and value (sig) = 0.238. From the processed data, we get a t-Table value = 2.014, then t-Calculate < t-Table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurred at SLM 2 on the fourth day.

(4) Eq

The output of the calculation above is obtained by the following equation.

Y = a - bX1 = 74.854- 0.006X1.

This means that if there is no increase in non-public transport volume, the noise level at SLM 2 will be 74,854dBA. For every decrease in non-public transport volume of -0.006 vehicles/hour, there is a decrease of -0.006 dBA in SLM2.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 74,854, (B) = 0.001 and a t-count value = 2,593, and a value (sig) = 0.013. From the processed data, the t-table value = 2.014, then t-count> t-table, then Ha is accepted and Ho is rejected.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the influence of non-public transportation volume on noise, that there is no significant influence or relationship between non-public transportation volume and noise that occurred at SLM 2 on the fourth day.

(4) Eq

The output of the calculation above is obtained by the following equation.

Y = a +bX2 = 74.854+ 0.001 X2

This means that if there is an increase in non-public transport volume, the noise level at SLM 2 is 74,854dBA. For every increase in non-public transport volume of 0.001 vehicles/hour, there will be an increase of 0.001 dBA, and for every increase of 1 vehicle/hour, then Noise will also increase by -0.001 dBA.

The discussion on SLM 3 is 10.24 meters from the main road

Influence of public transport volume

(1) Hypothesis

Ha = There is a significant influence between the volume of public transportation and noise

Ho = There is no significant influence between the volume of public transportation and noise

α = 5.00%

(2) Test criteria

The results of testing the summary model obtained a value of RSquare = 0.130, which means that X1 only has a 13% effect on Y.

The results of the ANOVA test obtained an F-Calculation value = 3,371 with a probability value (sig) = 0.043. From the input data we get the F-Table value = 3.19 so, F-Calculate> F-Table, then Ha is accepted and Ho is rejected.

The results of the coefficients test show that the volume of public transport (X1) has a constant value of (a) = 68,100, (B) = -0.002, t-calculation value = -0.389, and value (sig) = 0.699. From the processed data, we get a t-table value = 2.014, then t-count < t-table, then Ha is rejected and Ho is accepted.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the influence of public transport on noise, that there is no significant influence or relationship between the volume of public transport and the noise that occurred at SLM 3 on the fourth day.

(4) Eq

The output of the calculation above is obtained by the following equation.

Y = a - bX1 = 68.100- 0.022X1.

This means that if there is no increase in public transport volume, the noise level at SLM 3 will be 69,784 dBA.

Influence of non-public transport volume

(1) Hypothesis

Ha = There is a significant influence between non-public transport volume and noise

Ho = There is no significant influence between non-public transport volume and noise

α = 5.00%

(2) Test criteria

The results of the summary model testing and ANOVA test are the same as the results of the influence of public transportation volume.

The results of the coefficients test, non-public transport volume (X2) has a constant value (a) = 68,100,

(B) = 0.001, and a t-count value = 2,156 and a value (sig) = 0.036. From the processed data, the t-table value = 2.014, then t-count> t-table, then Ha is accepted and Ho is rejected.

(3) Hypothetical decision

The statistical results of the test above can be drawn from the results of a hypothetical decision regarding the effect of non-public transport volume on noise, that there is a significant influence or relationship between non-public transport volume and noise that occurred at SLM 3 on the fourth day.

(4) Eq

The output of the calculation above is obtained by the following equation.

Y = a +bX2 = 68100+ 0.001X2

This means that if there is an increase in non-public transport volume, the noise level at SLM 3 is 74,854dBA. That for every increase in non-public transport volume of 0.001 vehicles/hour, there will be an increase of 0.001 dBA, and for every increase of 1 vehicles/hour, then Noise will also increase by -0.001 dBA.

4. CONCLUSIONS

The results of the analysis of data obtained in the field during the research show that the influence of traffic volume on noise generated by public and non-public transportation, the results obtained are that volume of public transportation traffic does not have a significant influence on the noise that occurs, from all calculations The analysis found that the greatest similarity on the second day of research was at the third point (Sound Level Meter 3), with a contribution of 12.1%. From this analytical calculation, we get the equation, namely: Y = a + bX1 = 70.718 + 0.013X1. This means that if there is no increase in public transport volume, the noise level at SLM 3 will be 70,718 dBA. For every increase in the volume of public transport by 0.013 vehicles/hour, the noise will increase by 0.013 dBA at SLM 3. The volume of non-public transport traffic has a significant influence on the noise that occurs. From all analytical calculations, it was found that the greatest similarity in today's research fourth at the point (Sound Level Meter 1) with a contribution of 19.5%. From this analytical calculation, we get the equation, namely: Y = a + bX2 = 82,108 + 0.001X2. This means that if there is an increase in non-public transport volume, the noise level at SLM 1 will be 82,018 dBA. For every increase in non-public transport volume of 0.001 vehicles/hour, the noise will increase by 0.001 dBA at SLM 1.

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