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STUDY OF NOISE ON PASSENGER CAR SPEED

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ABSTRACT

Bogor Regency has an economic growth rate including the highest among cities and other districts around the Jakarta Capital Region. Regarding the condition of the vehicle population in Bogor Regency, the number of motorized vehicles in 2017 and 2018 experienced a growth of between 2% and 12%. In contrast to the growth rate of vehicles, the road growth rate is only 0.1% per year. Nurul Hidayah Mosque is located on Salabenda Rd, the object of the author's research to find out how much influence the sound of motorized vehicles has on worship activities around the Nurul Hidayah Mosque. In public transport car speed, motorcycle speed, and private car speed do not have a significant effect on the noise pollution produced. The noise level around the Nurul Hidayah Mosque, Salabenda Raya Rd, Bogor Regency which has been measured the smallest is 56.4 dB_A. This value exceeds the noise threshold of the Noise Level Standard Value for the Ministerial Decree, which is 55 dB_A. So that it requires attention and cooperation from the government and the community to overcome the noise in the worship area. The calculation and analysis obtained is on the equation with the largest R Square value on the fourth day of the study, the third point (Sound Level Meter 3), with a contribution of 22.67%. Like the equation on the side, $y = 73.251 + 0.004x_1 - 0.311x_2 - 0.003x_3$. The meaning of this equation is that if there is no decrease in the speed of motorbikes, private cars and public transport cars, the noise pollution level in SLM3 is 73,251 dB_A. If there is an increase in the speed of public transport cars by 0.004, the decrease of motorbikes by 0.311, and an increase in the speed of private cars by 0.003, the noise pollution level will decrease by 0.31 dB_A at SLM3.

Keyword: speed; passenger; noise; pollution; public transportation.

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INTRODUCTION

Bogor Regency has a rate of economic growth including the highest among cities and other districts around the Jakarta Capital Region. Regarding the condition of the vehicle population in Bogor district, the number of motorized vehicles in 2017 and 2018 experienced a growth of between 2% and 12%. In contrast to the growth rate of vehicles, the road growth rate is only 0.1% per year. Fernanda, et al (2017) conducted a study of vehicle volume and speed on noise, concluding that the greater the volume of the vehicle, the lower the vehicle speed will result in a high noise level (Arlan.M, 2011; Bogor Regency Central Bureau of Statistics, 2020; Ikron.I.M, 2007; Juliansyah.M. 2019; Kryter.K, 1996; Nababan.D, 2014). Likewise, if the vehicle volume is low, the vehicle speed will be higher, resulting in a lower noise level. This study is to determine the relationship between passenger car speed and the noise generated in the city of Bogor. Nurul Hidayah Mosque, located on Salabenda Rd, is the object of the author's research to find out how much influence the sound of motorized vehicles has on worship activities. The purpose of this research is to determine the relationship between passenger car speed and the noise it causes.

Salabenda T-junction trip is the busiest location at this time. Along with that, it is necessary to take action to implement the process of calculating traffic conditions in the field. This condition will greatly affect motor vehicle traffic activities that pass through the area where the noise investigation is carried out (Syaiful.S, 2020; Syaiful.S, 2021; Syaiful.S, Andana.R, 2021; Syaiful.S, Elvira.Y, 2017; Syaiful.S, Fadly.A, 2020; Syaiful.S, Hariyadi.D, 2019). The noise in question is the condition of the traffic being quiet, moderate and crowded. Calculations will be made based on field conditions. It also affects the asphalt road surface and the condition of the reinforced concrete surface (Akbardien.et.al, 202; Syaiful.S, 2017; Syaiful..S, 2020; Syaiful.S, Akbardin.J, 2020). The

condition of paved vehicle traffic is very stable. Surface conditions using reinforced concrete will affect the collision between the tires and the road surface(Syaiful.S, Hariyadi.D 2020; SyaifulS, Mudjanarko.S.W, 2019; Syaiful.S,et.al, 2020; Syaiful.S, Sutarsa.S,2020). The road surface will be smooth and comfortable, there will be no noise. while the bumpy road surface and many potholes will affect the sound condition caused by the exhaust, rough engine and friction between the vehicle body and the uneven surface (Syaiful.S, Pratama.Y, 20219; Syaiful.S, Yuliantino.M, 2017; Syaiful.S, Wahid.N, 2020).

RESEARCH METHODS

The location for calculating vehicle speed and measuring the level of noise intensity was chosen in front of the Nurul Hidayah mosque. Jalan Salabenda Raya, Kemang sub-district, Bogor district. The time of the research was carried out for 3 months (July 2020 to September 2020). Data were collected for 4 days, without specifying certain days such as Saturdays and Sundays. The following is the location and research that will be carried out.

Picture 1. Research Locations (Source: Google Earth)

Materials and Tools

The material in this research is in the form of data - The material used in this study is primary data related to existing conditions, such as road damage conditions carried out by direct survey to the location, road dimensions. Secondary data were obtained from related Dinas data. Meanwhile, the tools used are SLM, stopwatch, meter, office stationery, hand tally counter for calculating traffic data and computer software in the form of Microsoft Excel, Microsoft Word, Google Earth Pro and AutoCAD.

Research Flowchart

The following is a flowchart of the stages of the research which is outlined figure 2 below:

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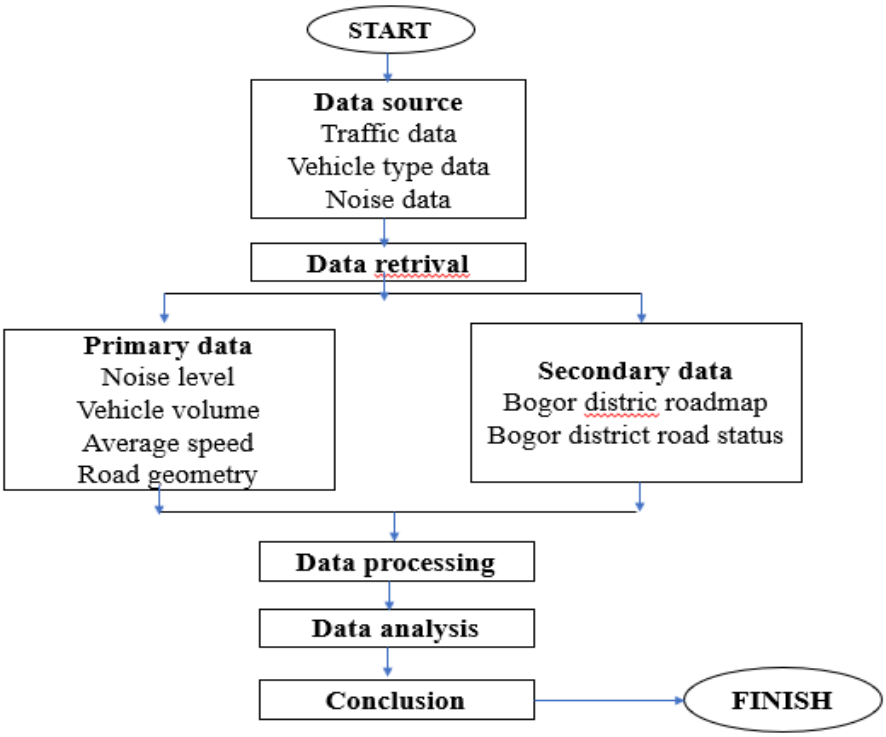

Figure 2. Research Flowchart

RESULTS AND DISCUSSION

Data analysis

Data analysis of the observation of the level of noise pollution on a straight road with the type of object of the mosque research. In this case it is assumed that the increase in the level of noise pollution (Y) is an independent variable. Dependent variables are placed in three measuring points, namely:

SLM 1 on the sidewalk as a point of 0 meters,

SLM 2 is located 3 meters from the sidewalk, and

SLM 3 is located 24 meters from the sidewalk to the alley of the Nurul Hidayah mosque.

This dependent variable will be influenced by several independent variables, namely:

X1 is the first independent variable / speed of Public Transportation Car (MAU)

X2 is the second independent variable / motorcycle speed (SMR)

X3 is the third independent variable / private car speed (MPR)

Based on the data above, the linear regression model approach is obtained, namely: Y = ao + a1.X1 + a2.X2 + a3.X3. The respective coefficients ao, a1, a2, and a3 are coefficients determined based on research data.

Discussion on Statistical Analysis on Monday, July 6, 2020

Discussion on SLM1 analysis with a distance of 0.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU /x_1), motorbike speed (SMR /x_2), and private car speed (MPR /x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 86.951 - 0.280x_1 + 0.060x_2 + 0.029x_3$$

Test criteria

In the discussion of testing the summary model, it is obtained that the value of RSquare = 0.039, which means that. $x_1, x_2,$ and x_3 has an 3,94 % effect on y. Anova test results obtained by the value of F-count = 0.602 with the probability value (sig) = 0.617. From the data input, it is obtained the value of F-Table = is 2.816, obtained F-Count < F-Table, then Ha is rejected and Ho accepted.

Discussion of the results of the coefficients test, motorbike speed, private car speed and public transport car speed have a constant value (a) = 86,951, (b) = −0.280, (c) =0.061, (d) = 0.029, the value of t-count = 15,941, and the value (sig) = 0.000, from the data obtained the value of t-table = 2.015, then t-count > t-table, then Ha is accepted and Ho is rejected.

Discussion on SLM2 analysis at a distance of 3.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU /x_1), motorbike speed (SMR /x_2), and private car speed (MPR /x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 71.522 - 0.326x_1 + 0.458\,x_2 - 0.381x_3$$

Test criteria

In the discussion of testing the summary model, it was obtained that the value of RSquare = 0.138, which means that x_1, x_2, and x_3 it has an 13.86 % effect on y. Anova test results obtained by the value of F-count = 2.361 with a probability value (sig) = 0.084. From the data input, the value of F-Table = 2.816, obtained F-Count < F-Table, then Ha is rejected and Ho is accepted.

Discussion of coefficients test results, motorbike speed, private car speed and public transport car speed have a constant value (a) = 71.522, (b) = -0.326, (c) = 0.458, (d) = -0.381, the value of t-count = 11,717, and value (sig) = 0,000, from the data obtained the value of t-table =, then t-count > t-table, then Ha is accepted and Ho is rejected. 2,015

Discussion on SLM3 analysis at a distance of 24.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU /x_1), motorbike speed (SMR /x_2), and private car speed (MPR /x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 65.200 - 0.080x_1 + 0.126x_2 - 0.164x_3$$

Test criteria

In the discussion of testing the summary model, the value of RSquare = 0.089 is obtained, which means that x_1, x_2, and x_3 it has an 8,88 % effect on y. Anova test results obtained by the value of F-count = 1.430 with a probability value (sig) = 0.247. From the data input, it is obtained the value of F-Table = 2.816, obtained F-Count < F-Table, then Ha is rejected and Ho is accepted.

Discussion of coefficients test results, motorbike speed, private car speed and public transport car speed have a constant value (a) = 65,200, (b) = 0.081 -, (c) = 0.127, (d) = .−0.208, the value of t-count = 22,133, and value (sig) = 0.000, from the data obtained the value of t-table = 2.015, then t-count > t-table, then Ha is accepted and Ho is rejected.

Discussion on Statistical Analysis on Wednesday, July 8, 2020

Discussion on SLM1 analysis with a distance of 0.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU / x_1), motorbike speed (SMR / x_2), and private car speed (MPR / x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

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$$y = 79.217 - 0.155x_1 - 0.012x_2 + 0.342x_3$$

Test criteria

In the discussion of testing the summary model, it is obtained that the value of RSquare = 0.044, which means that x_1, x_2, and x_3 has an 4.35% effect on y. Anova test results obtained by the value of F-count = 0.688 with a probability value (sig) = 0.576. From the data input, it is obtained the value of F-Table = 2.816, obtained F-Count < F-Table, then Ha is rejected and H_o is accepted.

Discussion of the results of the Coefficients test, motorbike speed, private car speed and public transport car speed have a constant value (a) = 86,951, (b) = -0.280, (c) = 0.061, (d) = 0.029, the value of t-count = 15,941, and the value (sig) = 0.000, from the data obtained the value of t-table = 2.015, then t-count > t-table, then Ha is accepted and H_o is rejected.

Discussion on SLM2 analysis at a distance of 3.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU / x_1), motorbike speed (SMR / x_2), and private car speed (MPR / x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 67.175 - 0.141x_1 - 0.014x_2 - 0.222x_3$$

Test criteria

In the discussion of testing the summary model, the value of RSquare = 0.013 is obtained, which means that it has an effect of 1 on y. Anova test results obtained by the value of F-count = x_1, x_2, x_3.34% 0.200 with a probability value (sig) = 0.896. From the data input, it is obtained the value of F-Table =, obtained F-Count < F-Table, then H_a is rejected and H_o is accepted.2.816

Discussion of coefficients test results, motorbike speed, private car speed and public transport car speed have a constant value (a) = 67.175, (b) = .−1.141, (c) = 0.014, (d) = 0. 222, the value of t-count = 14.142, and the value (sig) = 0.000, from the data obtained the value of t-table = 2.015, then t-count > t-table, then H_a is accepted and H_o is rejected.

Discussion on SLM3 analysis at a distance of 24.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU / x_1), motorbike speed (SMR / x_2), and private car speed (MPR / x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 64.411 - 0.056x_1 + 0.021x_2 - 0.010x_3$$

Test criteria

In the discussion of testing the summary model, it was obtained that the value of RSquare = 0.015, which means that x_1, x_2, and x_3 it has an effect of 0. 48 % on y. Anova test results obtained by the value of F-count = 2.816 with a probability value (sig) = 0.881. From the data input, it is obtained the value of F-Table = 0.221, obtained F-Count < F-Table, then H_a is rejected and H_o is accepted.

Discussion of coefficients test results, motorbike speed, private car speed and public transport car speed have a constant value (a) = 64,411, (b) = -0.056, (c) = 0.021, (d) = .−0.010, the value of t-count = 30,026, and the value (sig) = 0.000, from the data obtained the value of t-table = 2.015, then t-count > t- Table, then H_a is accepted and H_o is rejected.

Discussion on Statistical Analysis on Thursday, July 9, 2020

Discussion on SLM1 analysis with a distance of 0.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU / x_1), motorbike speed (SMR / x_2),

and private car speed (MPR / x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 87.975 - 0.629x_1 + 0.157x_2 + 0.278x_3$$

Test criteria

In the discussion of testing the summary model, it is obtained that the value of RSquare = 0.162, which means that it has an effect on y. Anova test results obtained by the value of F-count = $x_1, x_2, x_3$16.15% 2.826 with the probability value (sig) = 0.159. From the data input, the value of F-Table =, obtained F-Count > F-Table, then H_a is accepted and H_o is rejected.2.816

Discussion of the results of the coefficients test, motorbike speed, private car speed and public transport car speed have a constant value (a) = 81.011, (b) = .−0.539, (c) = 0.259, (d) =0.280, the value of t-count = 10.313 , and the value (sig)) = 0.000, from the data, the value of t-table = 2.015, then t-count > t-table, then H_a is accepted and H_o is rejected.

Discussion on SLM2 analysis at a distance of 3.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU / x_1), motorbike speed (SMR / x_2), and private car speed (MPR / x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 69.260 - 0.543x_1 + 0.177160x_2 + 0.377x_3$$

Test criteria

In the discussion of testing the summary model, it is obtained that the value of RSquare = 0.162, which means that $x_1, x_2,$ and x_3 has an effect of 16 on y. Anova test results obtained by the value of F-count = .18% 2.832 with a probability value (sig) = 0.049. From the data input, the value of F-Table = 2.816, obtained F-Count > F-Table, then H_a is accepted and H_o is rejected.

Discussion of the results of the Coefficients test, motorbike speed, private car speed and public transport car speed have a constant value (a) = 58.. 877, (b) = −0.459, (c) = 0.454, (d) = 0.327, the value of t-count = 7. 575, and the value (sig) = 0.000, from the data obtained the value of t-table = 2.015, then t-count > t-table, then H_a is accepted and H_o is rejected.

Discussion on SLM3 analysis at a distance of 24.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU / x_1), motorbike speed (SMR / x_2), and private car speed (MPR / x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 63.205 - 0.209 + 0.083x_2 + 0.158x_3$$

Test criteria

In the discussion of testing the summary model, it is obtained that the value of RSquare = 0.083, which means that $x_1, x_2,$ and x_3 has an effect on y. Anova test results obtained by the value of F-count = 8.29 % 1.326 with a probability value (sig) = 0.278. From the data input, it is obtained the value of F-Table = 2.816, obtained F-Count < F-Table, then H_a is rejected and H_o is accepted.

Discussion of coefficients test results, motorbike speed, private car speed and public transport car speed have a constant value (a) = 63,205, (b) = .−0.209, (c) = 0.083, (d) = 0.158, value of t-count = 15.409, and value (sig) = 0.000, from the data obtained the value of t-table = 2.015, then t-count > t-table , then H_a accepted and H_o was rejected

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Discussion on Statistical Analysis on Saturday, July 11, 2020

Discussion on SLM1 analysis with a distance of 0.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU / x_1), motorbike speed (SMR / x_2), and private car speed (MPR / x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 81.294 - 0.211x_1 - 0.040x_2 + 0.264x_3$$

Test criteria

In the discussion of testing the summary model, it is obtained that the value of RSquare = 0.018, which means that x_1, x_2, and x_3 has an effect 1.77% on y. Anova test results obtained by the value of F-count = 0.265 with a probability value (sig) = 0.850. From the data input, it is obtained the value of F-Table =, obtained F-Count < F-Table, then H_a is rejected and H_o is accepted.2.816

Discussion hThe results of the coefficients test, motorbike speed, private car speed and public transport car speed have constant values (a) = 81.294, (b) = .−0.211, (c) =−0.040, (d) = 0.2641, the value of t-count = 4.676, and the value (sig) = 0.000, from the data, the value of t-table = 2.015, then t-count > t-table, then H_a is accepted and H_o is rejected

Discussion on SLM2 analysis at a distance of 3.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU / x_1), motorbike speed (SMR / x_2), and private car speed (MPR / x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 74.392 - 0.320x_1 - 0.233x_2 + 0.456x_3$$

Test criteria

In the discussion of testing the summary model, the value of RSquare = 0.074 was obtained, which means that x_1, x_2, and x_3 it has an effect 7.38% on y. Anova test results obtained by the value of F-count = 1.169 with a probability value (sig) = 0.332. From the data input, it is obtained the value of F-Table = 2.816, obtained F-Count < F-Table, then H_a is rejected and H_o is accepted.

Discussion of coefficients test results, motorbike speed, private car speed and public transport car speed have a constant value (a) = 74.392, (b) = −0.320, (c) = -0.233, (d) = 0.456, the value of t-count = 14.778, and the value (sig) = 0.000, from the data obtained the value of t-table = 2.015, then t-count > t-table, then H_a is accepted and H_o is rejected

Discussion on SLM3 analysis at a distance of 24.00 m from the edge of the highway.

Processing and discussion of data using the SPSS version 26.00 program obtained the level of noise pollution (y) and the speed of public transportation cars (MAU / x_1), motorbike speed (SMR / x_2), and private car speed (MPR / x_3). Calculation and data processing based on a 95% confidence level. The results and discussion of equations that represent conditions in the field are shown as follows,

$$y = 73.251 + 0.004x_1 - 0.311x_2 - 0.003x_3$$

Test criteria

In the discussion of testing the summary model, it is obtained that the value of RSquare = 0.227, which means that x_1, x_2, and x_3 has an effect of 22. 67 % on y. Anova test results obtained by the value of F-count = 4.300 with a probability value (sig) = 0.964. From the data input, the value of F-Table = 2.816, obtained F-Count > F-Table, then Ha is accepted and Ho is rejected.

Discussion of coefficients test results, motorbike speed, private car speed and public transport car speed have a constant value (a) = 73,251, (b) = 0.004, (c) = .−0.311, (d) = −0.003, the value of t-count = 26,267, and the value (sig) = 0.000, from the data obtained the value of t-table = 2.015, then t-count > t-table, then H_a is accepted and H_o is rejected

CONCLUSION

From the results and discussion, it can be identified that the increase in the speed of motorbikes, private cars and public transport vehicles against the noise they cause, the following results are obtained, the noise level around Nurul Hidayah Mosque, Jalan Salabenda Raya, Bogor Regency which has been measured the smallest is 56.4 dB_A. The value exceeds the noise threshold of the provisions Noise Level Standard Value, that is 55 dB_A. So that it requires attention and cooperation from the government and the community to overcome the noise in the worship area. In public transport car speed, motorbike speed, and private car speed do not have a significant effect on the noise pollution produced. The calculation and analysis obtained is on the equation with the largest R Square value on the fourth day of the study, the third point (Sound Level Meter 3), with a contribution of 22.67%. Like the equation on the side,. The meaning of this equation is that if there is no decrease in the speed of motorbikes, private cars and public transport cars, the noise pollution level in SLM3 is 73,251 dB_A. If there is an increase in the speed of public transport cars by 0.004, a decrease in motorbikes by 0.311, and an increase in the speed of private cars by 0.003, the noise pollution level will decrease by 0.31 dB_A at SLM3. $y = 73.251 + 0.004x_1 - 0.311x_2 - 0.003x_3$

REFERENCES

Arlan, M. (2011). The Effect of Vehicle Volume on Noise and Noise Mapping Using Arcview Software in Pondok Cina Village, Due to Transportation Activities on Jalan Margonda Raya. Depok: University of Indonesia.

Bogor Regency Central Bureau of Statistics. (2020). Bogor City Central Bureau of Statistics. Retrieved from Bogor Regency Central Bureau of Statistics: https://bogorkab.bps.go.id/subject/17/transportasi.html#subjekViewTab1

Fernanda Gilsa Rahmatunnisa, MR (2017). Analysis of the Effect of Vehicle Volume and Speed on Noise Levels on Jalan Dr. Djunjunan in the city of Bandung. Industrial Research Workshop and National Seminar on Bandung State Polytechnic, 42-51.

Ikron, IM (2007). The Influence of Road Traffic Noise on Psychological Health Problems of Children at Cipinang Muara Elementary School, Jatinegara District, East Jakarta City, DKI Jakarta Province, 2005. MAKARA HEALTH VOL 11, 32-37.

Kryter, K. (1996). The Handbook of Hearing and the Effects of Noise: Physiology, Psychology and Public Health. USA: New York Academy Press.

Juliansyah, M. (2019). Noise Analysis Due to Traffic on Jalan Kolonel H Burlian in Palembang City. Palembang: Sriwijaya University.

Nababan, D. (2014). A Heterogeneous Traffic Prediction Model That Considers the Sound of a Vehicle Horn. Makassar: Hasanuddin University.

Syaiful S. 2020. Analysis of Motorized Vehicle Sound Pollution in front of Mall Yogya Plaza Bogor, International Journal Of Scientific & Technology Research 9 (8), pp 400-405. https://www.ijstr.org/final-print/aug2020/Analysis-Of-Motorized-Vehicle-Sound-Pollutionin-Front-Of-Mall-Yogya-Plaza-Bogor.pdf

Syaiful S. 2020. Analysis on the Addition of Fiber the Strong Bending Mixed Concrete, ARPN Journal of Engineering and Applied Science. 15(6): 724-729. http://www.arpnjournals.org/jeas/research_papers/rp_2020/jeas_0320_8152.pdf

Syaiful S. 2021. Additional Betonmix To Increase The Strength Of Concrete Press. ARPN Journal of Engineering and Applied Science. 16(15): 1583-1589. http://www.arpnjournals.org/jeas/research_papers/rp_2021/jeas_0821_8652.pdf

Syaiful S. & Akbardn J. 2020. Civil Engineering Students' Conceptual Understanding On Centrifugal Force Implementation Through Geometrical Design Of Inter-City Road In Indonesia. International Journal Of Scientific & Technology Research 9 (10), pp 345-349. https://www.ijstr.org/final-print/oct2020/Civil-Engineering-Students-Conceptual-Understanding-

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On-Centrifugal-Force-Implementation-Through-Geometrical-Design-Of-Inter-city-Road-In-Indonesia.pdf

Syaiful S. & Andana R. 2021. Passenger Car Speed Assessment Relationship To The Noise Caused. Astonjadro: Jurnal Rekayasa Sipil 10 (1), pp 41-49. http://ejournal.uika-bogor.ac.id/index.php/ASTONJADRO/article/view/3494

Syaiful S. & Elvira Y. 2017. Case Study On Use Area Parking At New Market City Shopping Center Bogor. IJTI (International Journal Of Transportation And Infrastructure), 1(1), 34-40. Retrieved from http://jurnal.narotama.ac.id/index.php/ijti/article/view/330

Syaiful S. & Fadly A. 2020. Analysis Of The Effectiveness Of Bus Services Outside Of Campus IPB Dramaga Bogor. Astonjadro: Jurnal Rekayasa Sipil 9 (2), pp 173-186. http://ejournal.uika-bogor.ac.id/index.php/ASTONJADRO/article/view/3597

Syaiful S & Hariyadi D. 2019. Case Study on Sustainable T-Jungtion Cibinong City Mall (CCM) in Bogor Indonesia. ARPN Journal of Engineering and Applied Science. 14(17): 2960-2971. http://www.arpnjournals.org/jeas/research_papers/rp_2019/jeas_0919_7895.pdf

Syaiful S. & Lasmana L. 2020. Study about level of railway road damage railways with sustainable PCI method, ARPN Journal of Engineering and Applied Science. 15(8): 962-968. http://www.arpnjournals.org/jeas/research_papers/rp_2020/jeas_0420_8184.pdf

Syaiful S. & Mudjanarko S. W. 2019. Noise of Motor Vehicles at from of Baiturrahman Great Mosque Semarang City, The Spirit Of Society Journal, 2 (2) March 2019. https://jurnal.narotama.ac.id/index.php/scj/article/view/902

Syaiful S., Prayoga H. & Akbardin J. 2020. Sustainable About The Need Of Parking Systems At The Mall RDS Bogor. ARPN Journal of Engineering and Applied Science. 15(22): 2620-2626. http://www.arpnjournals.org/jeas/research_papers/rp_2020/jeas_1120_8397.pdf

Syaiful S. & Sutarsa S. 2020. Analysis of Sustainable Financial Investment Feasibility Study on Housing Casase Cetrene. Proceeding of the 5th NA International Conference on Industrial Engineering and Operations Management Detroit, Michigan, USA, August 10 - 14, 2020, pp 3631-3639. http://www.ieomsociety.org/detroit2020/papers/716.pdf

Syaiful S & & Pratama Y. 2019. Sustainable Studies about General Public Transport Performance in the City of Bogor. ARPN Journal of Engineering and Applied Science. 14(18): 3241-3247. http://www.arpnjournals.org/jeas/research_papers/rp_2019/jeas_0919_7925.pdf

Syaiful S. & Yuliantino M. 2017. The Study Of Land Parking Mall Bogor Indah Plaza. Proceedings of the Conference on Global Research on Sustainable Transport (GROST 2017) ISSN: 2352-5401, volume: 147 ISBN 978-94-6252-449-1. doi:10.2991/grost-17.2018.25 p. 286-303. https://www.atlantispress.com/proceedings/grost-17/25889389

Syaiful S. & Wahid N. 2020. A Study Of The Density Of Motor Vehicles In Front Of Hospital Bunda Margonda Depok Against Noise Pollution, The Spirit Of Society Journal 3 (2), pp 45-67. https://jurnal.narotama.ac.id/index.php/scj/article/view/1094