IDENTIFICATION OF THE MOVEMENT STATE POLYTECHNIC OF SRIWIJAYA STUDENT'S JOURNEYS

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Abstract. Palembang is one of the cities in South Sumatra that has experienced rapid growth in the fields of education, industry, and tourism. There are several universities in Palembang, both public and private. One of the universities in Palembang is the State Polytechnic of Sriwijaya. The movement of student journeys has resulted in an increase in transportation issues, such as the rising traffic flow due to the movements of these students. From this research, the results of student movement identification based on origin and destination show that 30% of students come from Ilir Barat 1 District. Based on the travel distance, the farthest distance traveled is > 20 km. Regarding the mode of transportation, 67% of students use motorcycles as their preferred mode. In terms of travel time, the longest duration is 1 hour. Additionally, it was found that students only make one trip, and most of them were in their twenties

Keywords: Indentification, The Movement, Trip, Student

1 Introduction

1.1 Research

Transportation is a very important need at present. The function of transportation has an important role in the economic development of a nation. One function of transportation is to move passengers or goods from one place to the destination. Besides that transportation also facilitates access and mobility of the transfer of goods orpassenger transportation.[5] State Polytechnic of Sriwijaya (Polsri) is one of the college institutions in South Sumatra, located in the provincial capital, which is the city of Palembang. Polsri is situated in an educational area where there are also universities and schools nearby. Conducting research and identifying student movements in this area is neces -sary, and this can be done by conducting surveys to determine the extent of travel

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distribution that occurs. Fidel Miro in the title of the study "Analysis of Travel Distribution in Four Zones in Solok City Administrative Area" produced research using a growth factor model to determine future trips in 4 zones in Solok City with 5 methods and by repeating or iterating until the growth results were between 0.99 and 1.01. [1] Putu Alit Suthanaya comrades in 2019 with the research title "Analysis of Movement Patterns in Denpasar City" The purpose of this study is to predict travel spark plugs and traffic loading on the road network in Denpasar City in the future with the help of Visum software version 15. [3]

2 Methodology

2.1 The Scope of Research

The location of this research is an educational area around the Bukit Besar sub-district in Palembang City. The target of this research is the students of State Polytechnic of Sriwijaya. The sample size taken for the origin-destination survey at this research is 5% of the total number of students. The study area consists of the total number of students at State Polytechnic of Sriwijaya (Main Campus) in 2023, which is 9716 individuals.

2.2 Data Collection

The data required to support this research consists of primary and secondary data. Primary data is data obtained through interviews with questionnaires (*home interview survey*) or by using Google Forms. In this study, an *origin-destination* survey will be conducted by filling out survey data only. [4] Secondary data is obtained from various relevant agencies from multiple sources, including: Previous research conducted. Data issued by relevant agencies such as the Road Network Map of Palembang City.

2.3 Data Analysis

This trip distribution generates the MAT for each travel intent as a function of activity system attributes (rise and pull) and network attributes (interzone travel time), with a measure of travel resistance (travel time and generalized cost) between the two zones.[2] The method to obtain an O-D Matrix (MAT) in this research is the direct method, which involves interviewing respondents in person or using a survey form. The primary data obtained from the survey is processed and entered into the Origin-Destination Matrix (OD Matrix/MAT) database file. [5] In addition to MAT made also desire line. desire line assistance that shows a picture of the movement that occurs, although there is also a disadvantage in the form of inaccurate information of the movement flow (the magnitude of the movement flow is only expressed by the thickness of the desire line). [6]

3 Result and Discussion

3.1 Origin Destination Survey Results

In research, an origin-destination survey was conducted to obtain the Origin-Destination Matrix. The number of respondent samples was calculated using the Slovin Formula. Out of a total of 9,716 students at State Polytechnic of Sriwijaya, 384.18 respondents were calculated, which was rounded up to 400 samples. The results of origin-destination survey data processing can be seen in Figure 1.

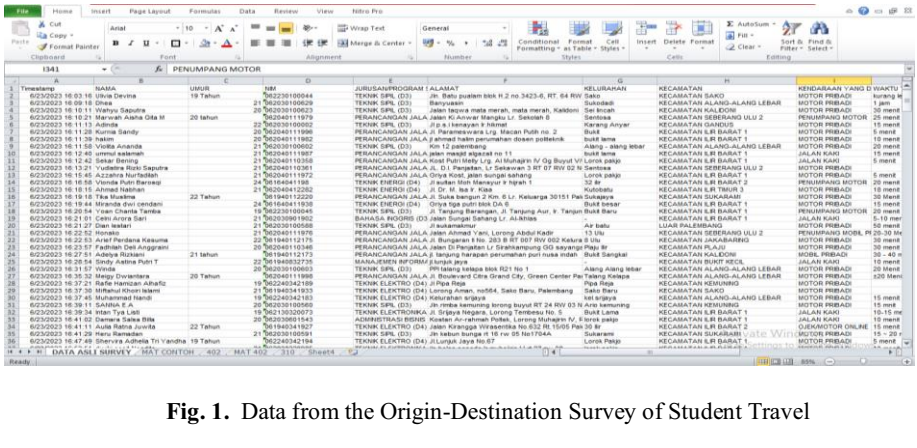

Fig. 1. Data from the Origin-Destination Survey of Student Travel

3.2 Identification of Student Movements Based on Origin-Destination

Based on the survey results, the origin and destination determine the number of movements made by students. Figure 2 illustrates the number of journeys to 22 sub-district zones. The student travel movements are depicted in the form of a bar chart. In the chart, it can be seen that the Ilir Barat 1 sub-district is the one with the highest number of movements, totaling 119 journeys per day or 2440 Journeys per day in actually. Ilir Barat 1 is also the focus of this research, considering that many students reside in the vicinity of State Polytechnic of Sriwijaya campus.

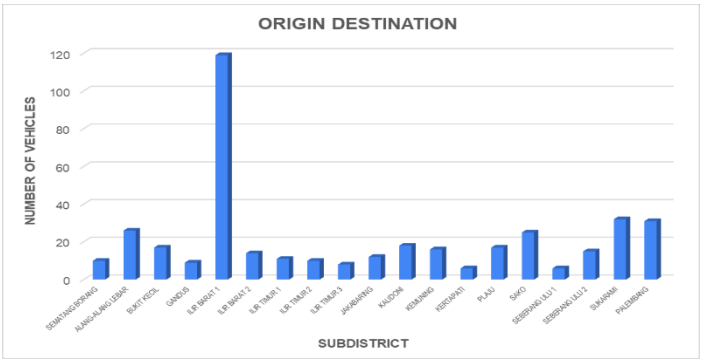

Fig. 2. The number of vehicle movements in each district.

3.3 Identification of Student Movements Based on Travel Distance

The identification process involves collecting and analyzing data on the distance traveled by students from their residences to the campus location. In Figure 3, a diagram depicts the percentage of the most common distance ranges. In the chart, the distance from students' homes to the campus within the 6-10 km range is the most prevalent. This means that many students live approximately 6-10 km from the campus, with a total of 121 students.

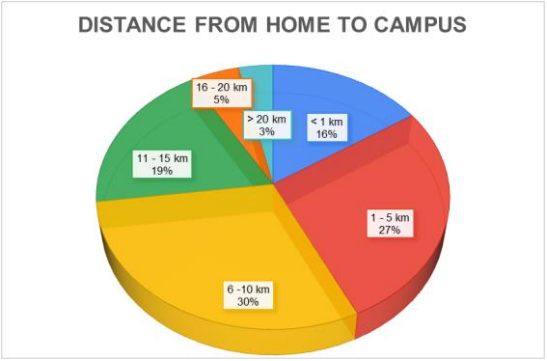

Fig. 3. Percentage of Travel Distance

3.4 Identification of Student Movements Based on the Transportation Modes Used

The identification process includes the selection made by students among various transportation modes, such as walking, cycling, private vehicles, public transportation, and others for their journey to their campus. This identification is depicted in a bar chart that illustrates the relationship between the transportation modes used and the number of students themselves. In Figure 4, it is explained that the most commonly used mode of transportation is private motorcycles, with 270 students using motorcycles. Meanwhile, the least used mode of transportation is cycling, with only 1 user.

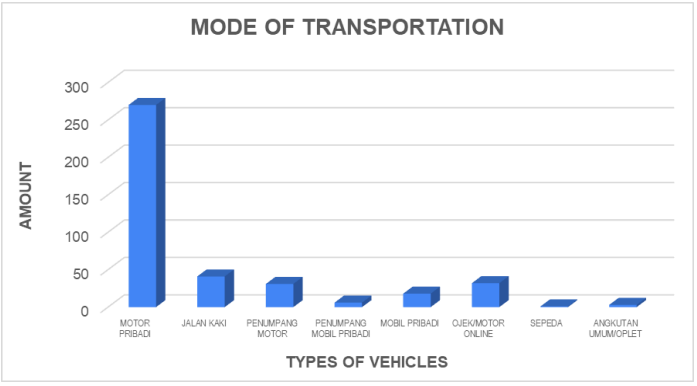

Fig. 4. Comparison of the Number of Vehicles

3.5 Identification of Student Movements Based on Travel Time

The identification of student movements based on travel time includes the analysis of data related to the amount of time students require to reach the campus from their residential location. In Figure 5, a diagram explains the percentage of the longest travel times. From the diagram, we can observe that the largest percentage is for travel times between 10-20 minutes, which accounts for 31%. This means that 124 students travel from their homes to the campus within a 10 - 20 minutes time frame.

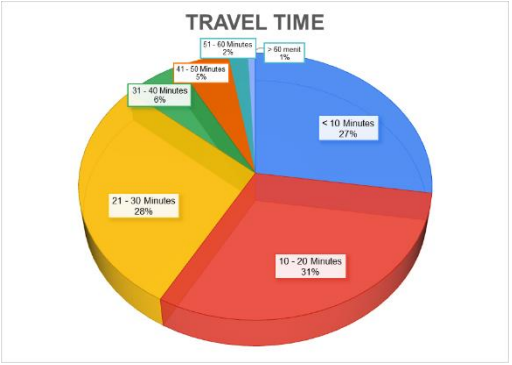

Fig. 5. Percentage of Travel Time

3.6 Identification of Student Movements Based on the Number of Journeys

This identification includes factors like the frequency or the number of trips made by students, as depicted in a pie chart as shown in Figure 6. The diagram explains that 89% of the surveyed students only make one trip from home to campus. The number of students making a round trip to campus (home to campus and back) is 358 individuals

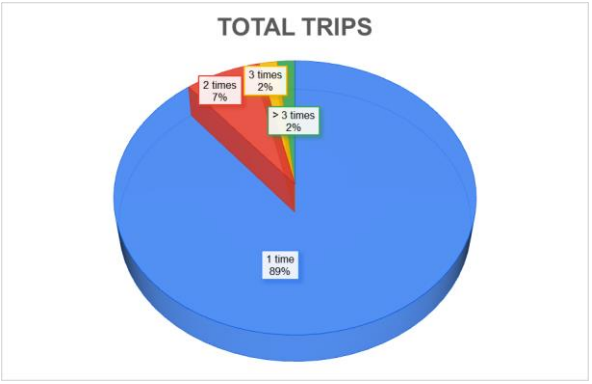

Fig. 6. Percentage Number of Journey

3.7 Identification of Student Movements Based on Age

The identification of student movements based on age in this study is depicted in a pie chart, as shown in Figure 7. The chart reveals that 20% of the total percentage belongs to the age group of students who travel to the campus. Most of them, 105 individuals, are 19 years old, while there are 103 students who are 20 years old.

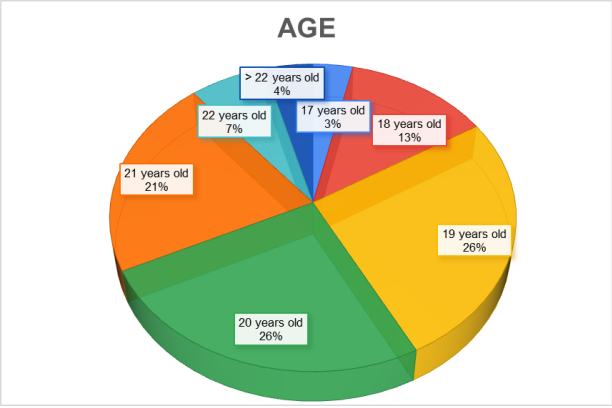

Fig. 7. Percentage of Student Ages

4 CONCLUSION

From this research, the results of identifying student movements based on various variables were obtained, including origin and destination, travel distance, transportation modes used, travel time, the number of trips, and age. The identification revealed that the Ilir Barat 1 Subdistrict is the zone with the highest student movements, amounting to 119 trips per day or 2440 trips in reality. Furthermore, a significant number of students live within a 6-10 km distance from the campus, totaling 121 students. Private motor vehicles were the most widely used transportation mode among students, with 270 vehicles in use. On the other hand, the least used mode was bicycles, with only one user. Most students traveled for 10-20 minutes per trip and made a single journey. The age range of students was approximately 19-20 years. Based on the analysis above, we can conclude that further assessment is needed for implementing demand management, which involves organizing and streamlining student's transportation needs and vehicle usage for greater efficiency and effectiveness.

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