Traffic flow analysis about the Malaysian city Johor Bahru

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Chapter 1: Introduction

1.1 Introduction

Traffic problems have been a major issue related to people's livelihood since ancient times, and smooth and convenient transportation is conducive to people's travel. However, in the city of Johor Bahru in Malaysia, traffic problems affect people's travel every day, especially in several large arterial roads, Jalan Wong Ah Fook, Jalan Skudai, Jalan Abdullah Ibrahim, these arteries are important traffic arteries connecting the city center and surrounding areas because they are connected to the city center and intersect with many main roads, so they are more likely to become hot spots for traffic congestion during peak hours. Commuting to and from work in the morning and evening is a serious hindrance to people's travel. At the same time, due to the proximity of Johor Bahru to Singapore, there are a large number of migrant workers coming and going in Singapore every day, and these people also exacerbate the traffic problem in Johor Bahru, so accurate and timely traffic flow forecasting is essential

to help people plan their trips properly and help the traffic management department to carry out effective traffic control.

This study aims to analyze the traffic in Johor Bahru through the data provided by the municipal department, drone monitoring data, data obtained from questionnaires, and research through tools such as python, MATLAB, VISSIM, etc. In addition, the objective of the study is to understand the characteristics of traffic flow and identify the temporal distribution of traffic congestion, evaluate the efficiency of the transportation system and improve road safety issues, and then conduct a reasonable analysis of the traffic construction in Johor Bahru, Malaysia based on the analysis of various data and provide suggestions and measures for improvement. This study can help contribute to transportation in the Johor Bahru urban area in Malaysia.

1.2 Problem Background and Problem Statement

The problem of traffic congestion in Johor Bahru is a problem that plagues both local residents and Malaysian and Singaporean workers, and the problem is caused by a combination of factors (1) Special geographical location Johor Bahru is close to Singapore and is an important hub for the movement of people and goods between

the two countries, with a large number of tourists and cross-border workers flowing around every day. Carrying nearly 300,000 people a day, Johor Cswy is one of the busiest land borders in the world. (2) Rapid urban development and population growth Johor Bahru is one of the fastest growing cities in Malaysia, with an impressive rate of population growth and urban expansion, and the location of many universities attracting many students from home and abroad, and the transportation infrastructure is far from keeping up with the rapid development of the city, which greatly increases the pressure on existing roads. and (3) the limitations of public transportation Public transport in Johor Bahru is not well developed, and people tend to travel independently, with private cars and motorbikes being the main means of transport, which also leads to an increase in vehicles on the road during rush hour, which congests traffic. (4) Insufficient road planning Some major roads such as Jalan Tebrau, alan Wong Ah Fook were not designed to accurately predict future traffic flows, resulting in insufficient design capacity of the roads. In addition, the layout and timing of traffic lights in Johor Bahru are not reasonable. (5) The impact of tourism Johor Bahru has several large shopping malls as well as some tourist attractions, which attract many tourists and locals on weekends and holidays, thus exacerbating the traffic problem during these times.

1.3 Research Questions

1 terms of traffic in Johor Bahru, how much is the difference between the traffic flow data during peak and off-peak hours?

2. What are the differences in people's travel patterns in different regions (city center vs. suburbs)

3. What are people's worries and confusions about road planning in Johor Bahru.

4. What is the coverage rate of public transportation.

5. What are the obstacles to the travel mode of Johor Bahru residents due to traffic congestion.

6 In terms of future planning, what measures can be taken in Johor Bahru to improve the road problem.

1.4 Objectives of the Research

In order to solve the above problems, this research following objectives:

The goal of traffic flow analysis is to analyze vehicle information on the road, as well as road information on congested road sections at different times, as well as other traffic conditions to ensure that traffic is safe, efficient, and sustainable. Analyzing traffic flow

information is of great significance for urban Project1 Proposal Form MSc (Data Science) planning, reducing the work of road management departments and improving people's travel efficiency.

1.5 Scopes of the Project:

In the traffic flow analysis in Johor Bahru, this study will be scoped according to the objectives, area and time of the study to ensure the comprehensiveness of the study. Therefore, the study should include the city centre and suburbs, the bustling and backward areas, the commercial and residential areas of Johor Bahru, and collect data on traffic flow in recent years to capture long-term trends, seasonal trends and make data forecasts.

The data will be sourced from government agencies and officials as well as intelligent transport systems and monitoring devices in Johor Bahru including Johor Public Works Department (JKR), Johor Land Transport Department (JPJ), Johor Police Traffic Department (Royal Malaysia Police Traffic Department), Malaysian Highway Management Company (PLUS Malaysia Berhad), Johor Bahru Local Government (MBJB), Closed Circuit Television (CCTV), Sensors and Automatic Traffic Counters (ATC), drones and aerial photography equipment, vehicle-to-everything data (V2X).

Methodologically, different data analysis and visualization tools, such as Python, will be applied in this study.

1.6 References

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