

# Keeping up with the Kardashians: A Report on the Imbalance Between Car and Public Transportation Use During Peak Hours in Iligan City, Philippines

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## Abstract

During peak hours, traffic in the Philippines may be extremely severe and congested, particularly in big areas such as Metro Manila. This is due to a number of causes, including a large number of automobiles on the road, limited road capacity, and insufficient public transportation networks. It is the same situation in Iligan, despite the city being just a fraction of what Metro Manila is. In this data note, we report a massive imbalance between car and public transport use, especially in peak hours where large volumes of traffic pass through the main arterial road networks, and what this imbalance implies on the current state of the mass transportation system of Iligan city.

**Keywords:** Environmental Engineering, Iligan, Public Transportation, Transportation Policy, Peak Hour Demand

## 1. Introduction

Transport connects population and commercial hubs across the Philippine islands, making it a crucial component of the Philippine economy. 98% of passenger traffic and 58% of cargo traffic are transported by road, making it by far the leading subsector. Although the nation's transport network has been expanded and enhanced, the quality of service has not kept up because there is not enough sustainable funding. For the investment climate to be strengthened and for economic growth to be enhanced, transport infrastructure must be improved. The Philippines' transport systems have experienced a slight improvement in quality, but multimodal integration is still generally lacking and a sizable portion of the country's road network is in bad shape. Ineffective sector governance also prevents the sector from operating efficiently.

During peak hours, traffic in the Philippines may be extremely severe and congested, particularly in big areas such as Metro Manila. This is due to a number of causes, including a large number of automobiles on the road, limited road capacity, and insufficient public transportation networks. Commuters and students rush to work or school during peak hours, which often occur in the morning and late afternoon/early evening, creating a large rise in the number of vehicles on the roadways. This can result in huge lines of slow-moving traffic, which can be annoying for drivers and cause delays for those attempting to arrive on time. Other variables, in addition to the number of vehicles on the road, might contribute to traffic congestion in the Philippines. Poorly maintained highways, insufficient road infrastructure, and a lack of efficient public transportation options are among them. Many Filipinos rely on private vehicles to get

around, such as cars and motorcycles, which can increase traffic congestion during peak hours.

While the government and transportation authorities are working to improve traffic conditions in the Philippines, including the adoption of traffic management systems and the growth of public transportation choices, During peak hours, traffic remains a severe concern for many Filipinos.

## 2. Methodology

A peak hour demand study is a comprehensive analysis conducted by traffic engineers to determine the peak hour traffic volume for a given day. Identifying the location where the study will be conducted is the first stage in conducting such a study, which can be an intersection, a section of roadway, or a transportation hub. In this short report, the intersection at Barangay Tubod, Iligan city, was selected.

### 2.1 Selection of Peak Hours

Peak hours range from the rush hour during the morning, from 6-8AM, and lunch break from 10AM to 12NN. For the afternoon, the peak hours are usually from 4-5PM until 6PM.

### 2.2 Cycling of Times

The prescribed cycling was adopted from the methodology of the Federal Highway Administration's (n.d.) pocket guide on traffic data computation methods. 15-minute cycles were made over a selected 2-hour period. 8 cycles were used per peak-hour period.

### 2.3 Recording/Surveying Method

A simple tallying sheet drawn and derived from the Federal Highway Administration's guide was used for this surveying activity.

### 3. Results and Discussion

Two surveyors are stationed at a small roofed waiting shed in front of the ILPI Substation, adjacent to the Mercury Drug-Tubod Branch.

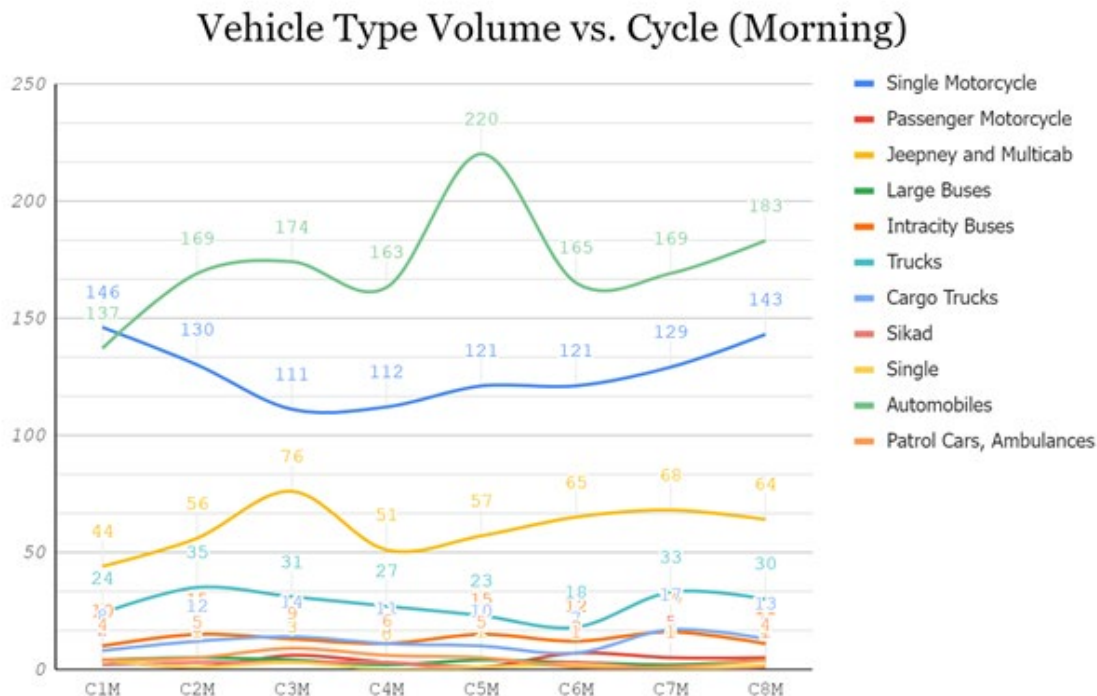


Figure 1: Volume of Vehicles over a 2-hour Observation Period in the Morning.

In the morning, starting at 9:20AM as indicated by the code C1M (Cycle 1-Morning), there was a sudden increase in automobiles in the area, indicating a fast flow and transport of people and goods through the area. However, jeepney and multicab numbers decreased by the 5th cycle (C5M), in comparison to the private automobiles where there was a sudden increase in cars passing through.

Single motorcycle numbers were on a steady increase on both sides of the highway from the third cycle until the end of the observation period.

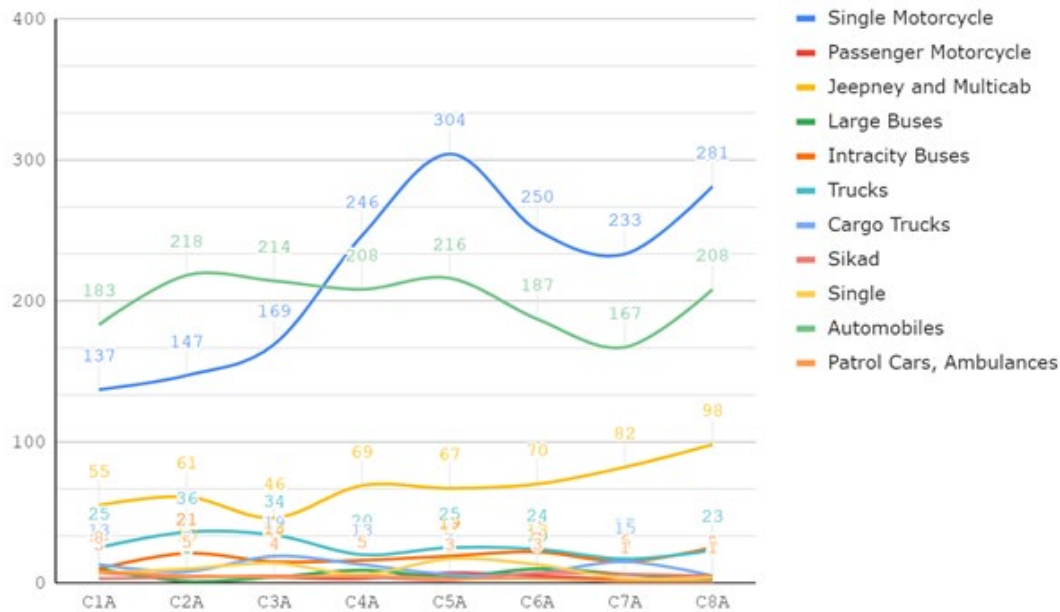
Due to the perceived convenience and comfort they provide in comparison to jeepneys, which are often more crowded and may not have air conditioning, private cars may be more popular at rush hour periods like 9am. For those with lengthier commutes or who prefer privacy and control over their mobility, this might be especially true. Furthermore, there might be some routes or locations that are simpler to reach by private cars, including suburban areas or places with few public transit choices. Jeepneys,

on the other hand, might be more frequently used for shorter distances or in metropolitan areas.

The availability of parking spots is another aspect that can play a role in the rise of private cars at 9am. Public parking may not always be available or may be scarce in certain locations, which can deter people from driving their own cars. However, people could be more inclined to choose their own vehicle if there are adjacent private parking possibilities.

As many individuals take their lunch breaks from work or school between 11:30am and 1:00pm, this is when Iligan City, Philippines, experiences its lunch rush hour. There can be a dramatic rise in the number of people in public areas like eateries, cafes, and food stands during this time. Since people head to and from their lunch destinations, there may be an increase in traffic and congestion during the lunch rush hour. This might be especially true in areas with a lot of eateries or other eating places. This is why we already see a significant increase in vehicle flow by the 6th cycle.

## Vehicle Type Volume vs. Cycle (Afternoon)



**Figure 2:** Volume of Vehicles over a 2-hour Observation Period in the Late Afternoon.

The afternoon rush hour in Iligan city is likely to occur between 4:30pm and 6:30pm, when people are leaving work or school and returning to their homes or other destinations. During this time, there may be a sudden increase in the number of people using public transportation, such as jeepneys, buses, and taxis. In addition to public transportation, there may also be an increase in the number of private automobiles on the road as people commute home from work. This can lead to traffic congestion in certain areas, especially along major roads and highways.

There was an observed overlap of automobile traffic and single-motorcycle traffic, indicated by the rapid exchange of volumes between the 3rd and 4th cycle. This can be attributed to the workers already leaving their offices by that time. While the increase is attributed to the out-time of workers and employees, the stagnation of automobile traffic is something that cannot be thoroughly explained. On the first two phases (C1A, C2A), there was a noticeable increase in the number of entering Large-sized buses which were from factories situated in the western side. There were also a convoy of Pisay buses pooling the students back to the city.

By the time the seventh cycle started (C7A), there yet another was a very significant increase in the number of vehicles passing through. This indicates that the rush hour has just started to peak. Post-C8A phase, the traffic frequencies in the area have actually

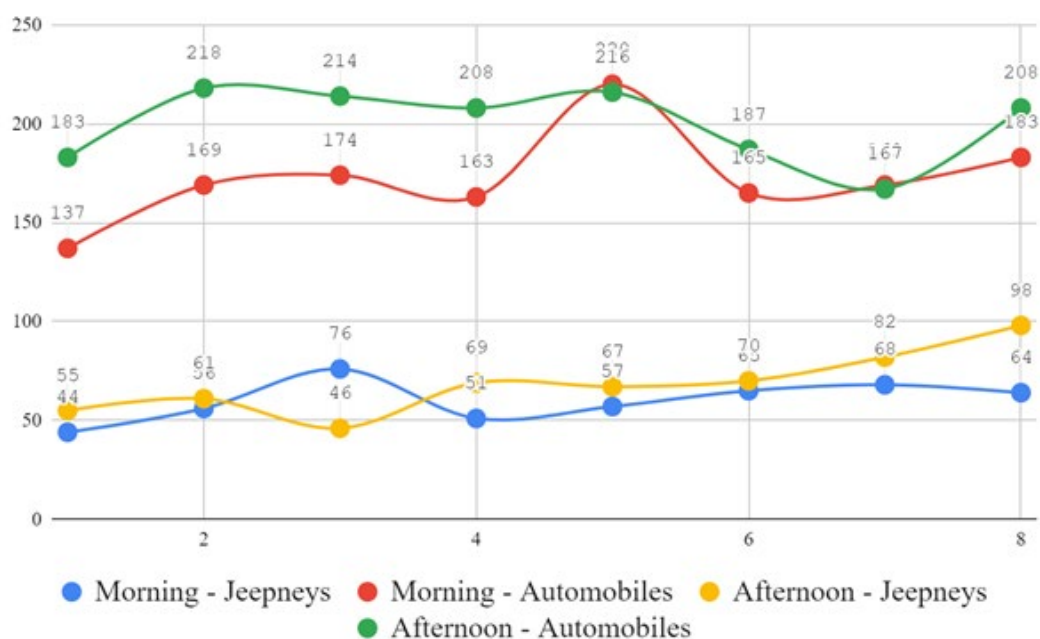
stagnated, further indicating that the peak periods in the afternoon-evening times are actually not as long as projected.

### 3.1 The Salient Imbalance Between Public Transport and Car Use

Because there was a massive imbalance of public utility vehicles for mass transit use (Buses, Jeepneys, Multicabs) vis-a-vis with privately-owned cars, in Figure 6, we establish the relationship between the two vehicle types across different time periods. This imbalance can lead to greater traffic congestion, which has already been observed in this report, and severe economic losses. Congestion, for example, can entail delays, greater fuel use, and higher transportation expenses for consumers and businesses. This can have a negative influence on productivity, economic growth, and commuter quality of life.

Individuals who rely on public transport may experience longer and more unpredictable commuting times, limiting their social mobility. As a result of spending more time travelling and less time participating in local activities and events, social cohesion may suffer. Increased usage of private cars can cause environmental deterioration, including increased air pollution and greenhouse gas emissions, which can harm both human health and the ecosystem. This can lead to an increase in respiratory illnesses, cardiovascular disease, and other health problems.

## Morning - Jeepneys and Morning - Automobiles



**Figure 3:** The Relationship Between PUV and Automobile Volume During The Two Observation Periods.

An imbalance in transportation modes can have serious consequences for public safety. Increased traffic congestion and lengthier commute times can cause drivers to become stressed and fatigued, increasing the risk of accidents and injuries. Private car use can also lead to less physical activity and more sedentary behaviour, which can contribute to a variety of health problems. If there are more cars on the road than public utility vehicles, it indicates that people rely more on private transportation modes and less on public transportation. Individuals, society, and the environment may all suffer as a result of this. Individuals must pay for their own automobiles, as well as the accompanying maintenance and fuel expenditures, if they rely more on private forms of transportation. This has a disproportionate impact on low-income individuals and families, who may have limited access to inexpensive transportation.

Problems of similar intensity are also ultimately experienced in almost all parts of the Philippines, the transportation and mobility problem has been studied extensively and a considerable amount of recommending actions and studies have been given to improve the quality of life of the common commuter, but to no avail.

#### 4. Conclusion

A range of variables influence traffic demand patterns in the Philippines, including population expansion, urbanisation, and economic development. Due to rising urbanisation and motorization, traffic demand in the country has increased over the last decade. According to the study, peak hour traffic congestion and low vehicle occupancy rates characterise traffic demand in the Philippines.

Several studies have already been conducted on traffic demand patterns in the city of Manila, and it has been discovered that traffic volume varies throughout the day, with peak hours occurring in the morning and evening rush hours. The study also discovered distinct traffic demand patterns on weekdays and weekends, with weekday traffic volume being higher due to the presence of commuters.

This salient imbalance of public transportation and car use is very telling of the current state of the Philippine public transportation system. Through this short report, we were able to better grasp the nature of traffic patterns and behavior's as a result of these trends, particularly in cities like Iligan. With a relatively lesser quantity of traffic in the morning and a considerable increase in traffic by rush hour in the afternoon, it tells us something about how the public transport and transport systems in local governments are neglected.

#### Author Statements

The authors do not declare any conflict of interest.

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