

## CAR DEPENDENCY PHENOMENON IN PULAU PINANG

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### ABSTRACT:

Malaysia has been through the phenomenal economic growth in the past two decades. The significant changing is started from structural transformation, economic growth to the increasing cities, at the same time is followed by the escalating of car traffic, especially the growing of car ownership and its usage. The main problem that comes from car ownership is congestion where Penang Island is on the third place after Kuala Lumpur Federal Territory and Johor Bahru for car ownership. This elevated rate of the car ownership can drive us to the phenomenon of car dependency, which needs serious attention from the authorities. Therefore, government policy should be more adequate to handle the car dependency; such as by strengthening the governmental policies, traffic regulations and public transportations. Besides trying to analyze the problems that have been faced by Penang Island, which are: factors that caused car dependency, the effect of car dependency and the using of public transport, this paper also try to give alternatives and necessary actions that can be considered to reduce the car dependency in Penang Island.

**Keywords:** congestion, car dependency, public transport, government policy

### 1. INTRODUCTION

The increasing number of vehicle (car or automobile ownership), has become a major issue in many countries in the world. According to O'Sullivan (2003), Automobile has caused three transportation problems: congestion, air pollution and accidents. Congestion during rush hour is inevitable, and a certain level of congestion is actually efficient.

About 77 percent of central-city residents commute by automobile (car, truck or van) (O'Sullivan, 2003). In United States urban transportation is dominated by the private automobile and over 80 percent of all trips in American cities (beyond the house and workplace) were made by automobile (Meyer and Gomez-Ibanez, 1981).

Penang as one of urbanized city has aware the increasing numbers of private vehicle since the 1980s and it's been proven after the research conducted by Penang Local Government on 1996.

The increasing number of car ownership has lead to car dependency and its usage of the cars owner. This car dependency phenomenon needs to be taken seriously by the local government in order to reach a sustainable transportation goal. Most of penangites daily commute used their car to every purpose of journey and destination. Since the car owners depend on their cars it will contribute to congestion on the road. Penang has suffered for congestion during the week days in the peak hours on certain main road, especially in central

business district (CBD) area, and also in inter-urban road. This congestion has resulted the increasing of delays and travel times.

Many factors has influence the increasing number of car ownership. First, the household income, it has shown a big contribution to the increasing number of vehicle. And secondly, is the loan and payment mode to own a car. Easy loan and easy payment mode with low interest has played the important role in the increasing number of car ownership. Since the household income getting higher, they can effort to buy a new car; even they can own more than one car per household and this situation is triggered by the availability of easy loan and easy payment.

Another factor that plays the increasing number of cars usage is the inadequate public transport service (bus). Penang bus has been tried to enhance the service since 1990s. It become quite reliable in 1990s but today are generally unsystematic and do not have a reputation of reliability.

This is a familiar situation happened in Penang, the congestion caused by the car usage. The question is: is that due to the inadequate public transportation service in Penang? Will the bus services encounter the public transport problem in Penang? Will it reduce the car usage? Will it reduce the congestion?

To achieve an excellent result of public transport and to reduce car dependency, the government should play a big role throughout the policy and regulation enforcement. And some of idea to achieve a better urban transport in Penang is discussed in this paper.

## **2. PENANG CITY PROFILE**

The state of Penang is located in the northern part of peninsular Malaysia and is the second smallest state in Malaysia. Penang state is geographically and administratively divided into two sections:

- Penang Island; an island consist of 293 square kilometers located in the straits of Malacca, with estimated population around 670 thousand.
- Seberang Perai (also known as province Wellesley); located on the mainland occupies an area of about 738 square kilometers with a population of 790 thousand. (Penang statistic, 2005)

Penang state has the highest population density in Malaysia with 2,286.69 people per square kilometer on the island and 1,070.46 people per square kilometer on the mainland. Georgetown is the major urban center on the island

as the administrative center, and Butterworth and Bukit Mertajam on the mainland. Penang, being one of the earliest most establish urban centers in Malaysia has grown respectively and on the 21st century remains a thriving commercial and industrial center. Penang which was a little behind, now is one of states in Malaysia which are in front in realization government mission to be a developed country in the year 2020.

There are two local authorities in Penang, The Municipal Council of Penang Island (Majlis Perbandaran Pulau Pinang) and The Municipal of Province Wellesley (Majlis Perbandaran Seberang Perai). The State is divided into five administrative divisions:

- Penang Island
  - North-East District
  - South-West District
- Province Wellesley
  - Central Province Wellesley
  - Northern Province Wellesley
  - Southern Province Wellesley

### 3. VEHICLE REGISTRATION

From 1967 to 1976, Kuala Lumpur experienced the increasing number of private vehicles, which is about to reach the total number of public vehicles or public transport of 13.9% for private vehicles and 13.0% for busses. In 1983, the use of private vehicles has increased up to 13.7% and 7.4% for busses (Ibrahim Wahab, 1990).

Between 1990 and 2000, Malaysia has experienced a very significant increase of cars until 125.77%, while busses use decreased to 72.55% (Malaysia Transportation Ministry). The statistic can be seen in this following table.

*Table 1. Motorcar and Bus Registration, Malaysia, 1990 – 2004*

YEAR	MOTORCAR	BUS
1990	152,737	1,985
1991	148,724	1,337
1992	99,867	1,506
1993	138,203	2,591
1994	180,052	2,213
1995	248,398	2,465
1996	318,765	2,620
1997	372,343	2,947
1998	159,642	797

1999	296,716	508
2000	344,847	544
2001	395,891	652
2002	419,713	919
2003	424,753	1,014
2004	472,116	1,290

Source: Malaysia Ministry of Transport

The following table describes the level of private vehicles ownerships in Malaysia compared to several countries.

*Table 2. Car Use in Several Countries*

Bandar	Penggunaan mobil/capita (km)	GRP/capita (\$ US)
Perth	7203	17,697
Sydney	5885	21,520
Los Angeles	11,587	24,894
San Francisco	11,933	31,143
London	3892	22,215
Frankfurt	5893	35,126
Singapore	1864	12,929
Tokyo	2103	36,953
Hong Kong	493	14,101
Kuala Lumpur	4023	4066
Bangkok	2664	3826
Seoul	1483	5942

Source: Newman and Kenworthy (2000).

#### 4. URBAN TRANSPORTATION ISSUES IN PENANG

Below is the description of some transportation problems encountered in Pulau Pinang.

##### 4.1 Public Transport

###### a. Taxi

Public Transportation that largely used in Penang is bus and taxi. Taxi is one of important mode in city, mostly in city center and surrounding area. However, taxis in Penang have not confirmed to the meter system as exhorted by federal authorities, citing unprofitability. On August 1, 2006 a new ruling implemented makes the taxis compulsory to use the meter system. But the rule is not adhered to by the taxi driver in Penang, although it has been repeatedly warned by the state government and the Commercial Vehicle Licensing Board (CVLB).

###### b. Bus

As mention in introduction, bus as a very important public transport in Penang is in inadequate condition. The numbers of bus provided to serve

are not in enough numbers, limited capacity, poor reliability, the quality of public transport facilities, time scheduling is delay and unpredictable, and the route coverage is not in an excellent level. The bus stop provided also not in a good condition.

Another matter that related to bus services is bus station, public service and driver behaviour. In order to encounter this problem, on April 2006, the government of Penang announced a revamp of the public bus service to bring out a more reliable and efficient network. And on February 20, 2007, Penang government announced that Rapid KL will operate the Public bus service in Penang under the new entity called Rapid Penang which is formed for this purpose. And on July 2007 Rapid Penang start operated.

#### 4.2 Car Ownership and usage

The numbers of cars in Penang is increasingly every year. Once a household own a car, the intention to use it for their mobility will be in the top priority rather than to use the bus. Frequently their mobility is to work, take and drop the children for school, shopping, leisure, sport, etc.

According to Ganesh Rasagam, a member of Sustainable Transport Environment in Penang (STEP), respectively, ownership of cars and motorcycle in Penang has shown an increasing number at average rates of 9.5 percent and 7.2 percent a year.

The following table shows the number of private vehicles registered in 2003 and 2004 from Road Transport Department website (JPJ, Jabatan Pengangkutan Jalan).

*Table 3. New registered private vehicle (car) year 2003 and 2004*

State	Number of private vehicle (car)	
	2003	2004
Johor	58,765	61,049
Kedah	10,019	11,035
Kelantan	9,560	10,942
Melaka	12,936	14,428
Negeri Sembilan	11,749	12,568
Pahang	12,307	14,431
Perak	24,210	27,264
Perlis	625	677
Pulau Pinang	44,057	49,169
Sabah	22,564	24,978
Serawak	31,068	37,578
Selangor	42,269	42,213
Terengganu	5,760	6,759
Wilayah Persekutuan	138,335	158,689

As can be seen from the above table, Pulau Pinang is situated on the third place of private vehicles ownership after Federal Territory (Wilayah Persekutuan) and Johor, with 10.40% rate of increase.

## **5. SOME FACTORS CAUSED CAR DEPENDENCY**

One of the factors of the increasing and significant rate of private vehicles use in the urban city is the constant increase numbers of private vehicles ownership annually. This can be triggered by several factors as follows:

### **a. Living Standard**

The rising of living standard (economically) has lead to the changes in vehicle ownership natures. Prior to this, one family only have one car, but soon after their purchasing power and revenue is levelled up, the number of vehicle ownership will goes up as their revenue or income increased. The increasing income has economically justifies a family to buy more than one private vehicles

In Singapore, employees with high incomes are placed in highest rank of citizens who use private cars to have official trips. Statistic in 2000 has shown that about 45% of workers with salary more than \$8,000 are depend very much on cars, whilst workers with salary less than \$2,000 are only 6.4% from the total population (Singapore Census of Population, 2000).

### **b. Trip Generation and Accessibility**

Trip Generation and accessibility to reach destinations (for example a trip to the workplaces) is also become one critical factor that cause the increasing number of private car use and ownership.

The use of private vehicles is usually for personal trips and that can be caused by two connected concepts, that is mobility and accessibility. As has been mentioned by "The Independent Commission of Transport" that the true meaning of mobility or exact definition of transportation is accessibility (Tolley & Turton, 1995).

In many industrial countries, the level of mobility and accessibility is strongly related to public transport and car ownership, whereas in developing countries, the infrastructure quality and personal income are more important.

### **c. Public Transport Service**

The issue of public transport should be considered as the main focus. One of

the factors which might contribute the greatest portion in the increasing use of private vehicles in many cities is less services provided by public transport that might not really cover the needs, expectations and criteria of public transport users. Comfortability and security that can not be fulfilled by public transport has led to the alteration to the use of private cars for mobility. The biggest responsibility of bus operation in developed countries is to release themselves from cars as the main cause of traffic congestion (Tolley and Turton, 1995).

**d. National Transport Policy**

The policy from Malaysian government to produce and sell the National Cars to push the development of national economy might be considered as one of the factors. Moreover, the policy to sell car in cheap prices, low or zero interest and easy loan has encouraged people to have car.

**6. SOME THEORIES OF TRAFFIC CONGESTION REDUCTION MODELS**

Models of traffic management have been introduced as the growth of traffic congestion in the urban city. Some models have been acknowledged as the principles for traffic policy in many countries. Below are some examples (Ibrahim Wahab, 1990):

**a. Model of CONVENTRY, that is:**

- Limitation the entering vehicles
- Roads changed into pedestrian system
- Roads nearby and surrounding the city center has to be renewed as a road to open access to sub urban sites
- Integrated concept in the city center can be improved by provided the parking system, bus terminals and bus stops which are relatively close to city center activities and it is on walking distance.

**b. Model of BUCHANAN, that is by improving public transportation system and to restricted the use and entering of private cars to city center.**

**c. Model of RADBURN by trying to separate the route for pedestrians and private vehicles.**

**d. Model of BREMEN**

He offers a "cell", as follows

- Concept of "traffic cell"
- Every "cell" formed is separated by pedestrian system
- Vehicles moving from one "cell" to another "cell" is designed to pass the main road covering all places.

**e. MICHAEL PIKES**, has introduced a model of traffic congestion reduction concept by trying to create the existence of local transportation to overcome the traffic congestion and use media to encourage road users to be familiar with light rail, bus, carpools, vanpools, bicycle and walking.

**f. Model of STEPHEN POTTER:**

- Linear segregation, by closing road access to vehicles to give more spaces to the pedestrians
- Vertical segregation, by creating small roads or terraces for pedestrians, not in the main roads or busy sites in the city.
- Time Segregation

Vertical segregation model has been applied in a few cities such as Stockholm, Vienna, London and Singapore.

## **7. ALTERNATIVES TO REDUCE CAR DEPENDENCY IN PENANG**

Some alternatives to solve this problem and several necessary actions that can be considered to reduce the car dependency phenomenon in Penang will be explained in the following section. These alternatives are taken from model theories of traffic congestion reduction that has been discussed above, but the current situation in Penang will be adjusted to those theories.

### **7.1 Enhancing Public Transport Service**

Enhancing the quality of public service transport is essential to improve the comfortability and security of users and customers. 3C's of public transport concept must be fulfilled; first, CHEAP, bus ticket must be affordable for every trip. Second, CONVENIENT, bus operates on time, the interval between the arrival and departure must be relevant, on time bus stop arrival, wide coverage area, including the sites which are mainly become permanent destinations, such as housing complex. Third, COMFORTABLE, bus should be able to provide



comfortability to the user; bus must be in good condition, clean and comfortable. Better public transport can improve urban mobility.

Adding new route as requested by the user is also crucial. This is important to provide the facility within the bus in the preferred routes. Sometimes, the lack of information and socialization related to public transport can also reduce public interest to use public transport.

Similar thing must also apply to taxi, particularly in improving customers trust because of 'naughty taxi drivers'. In this sense, government support for the users is also an issue.

## **7.2 Bus Lane**

The other possible alternative is by prohibiting on-street parking and replacing it to bus lane. Provision for bus priority allowed the bus to bypass the traffic and also to reduce and time travel efficiency (O' Flaherty, 1997). By bus lane, the duration of trip will be more efficient, bus will not be trapped in congestion, and therefore bus will reach their next stops on time. This will encourage commuters to prioritize bus in their daily commute and activity. Bus lane has been introduced in many big cities in Europe, and some in Asia, like Hong Kong and Jakarta. Bus lane is the common measurements and it has been used in Hong Kong city center to avoid traffic congestion and to reach more scheduling time travel (Cullinane, 2002).

## **7.3 Reducing vehicles entering the city center**

### **a. Parking Control in CBD**

Limitation of parking space and expensive parking price in CBD is also a control of private vehicle entering city center. Parking area is strongly related to parking space and parking policy. Controls of car park potentially are one of effective way to reduce car using (O'Flaherty, 1997). This control can be done by reducing the car parking areas, restricting the time or the opening time for parking, until the regulation of payment permit. Lack of parking can also become a control for car use. This model is expected to reduce private car entering to the city center because it will be very difficult to find the parking sites and the parking ticket price is expensive. Parking supply control and law enforcement of parking regulation is necessary in order to reach the transportation objectives and to avoid congestion.

In the same time, free parking regulation is also applied to new development areas as the reason to keep the distance from CBD.

#### **b. Regulatory Restriction on Car Use**

This method has been used as an alternative in reducing car use. Some regulations have also been implemented in several countries.

Scheduling the incoming car into city center, such as, as has been introduced in Greece and Lagos, that is the regulation of “Odd and Even”, where cars with odd number can come in the given days and cars with even number on the other day (O’Flaherty, 1997). This can also implemented on Sunday when private cars are prohibited to come to the downtown. This could encourage people to use public transport.

The System and regulation of “Three in one” has been operating in Jakarta, where in the peak hours only cars occupied minimum with three persons are allowed to enter the cities through certain roads.

#### **7.4 Provide the provision for non-motorized**

To provide comfortability to commuters, need space for pedestrians, special routes for bikers and moving spaces for disabled person. This is also useful for commuters to move and enjoy city landscapes.

#### **7.5 Build another mode of transport**

Besides buses, The Municipal Council of Penang Island should think another alternative mode of transport to server the commuters. Light rail (or monorail or LRT) is another alternative. Light rail provide wider accessibility, frequent stop time and could reach city center faster and also suitable to be applied in small cities (Flaherty, 1997). Last year, a plan to build monorail has been on the agenda but it was postponed.

#### **7.6 Campaign “Car Free Day”**

One of many ways to encourage people not to use private cars and to socialise the use of public transport is by carrying out a “Car Free Day” campaign. For example, in every month the government held a campaign of “Car free day”, where people can not use private car and must use public transport (or another mode) for every trip. Also a campaign of “cycle to work”, “cycling day” or “Let’s walk”. There are many more campaigns that can be introduced to stimulate the use of public transport (or another mode of transport) and avoid private cars.

### **7.7 Government Policy in restraining urban traffic**

All those ideas that have been presented will not meet the success without a strict policy from the government. Therefore, The Municipal Council of Penang Island should consider a policy to reduce traffic congestion in city center and this policy also should be support by law enforcement and control of some necessary actions in order to achieve the objective. Cooperation with the government and officials, NGO's and also transportation agencies is necessary to overcome and reduce this problem. Besides, The Municipal Council of Penang Island must try to implement some alternative ideas to reduce traffic congestion in the city center.

## **8. CONCLUSION**

Traffic congestion is a common problem in all over the world and difficult to solved, even if the transportation system is efficient and well organized. Traffic congestion problem in main roads is mainly caused by the increasing number of private vehicles operating, particularly private car and motorcycle. This is a serious problem and intensely occurred in specific locations and times, especially in urban cities during peak hours.

Local authority should be have high awareness and sense of problem and should take appropriate actions to solve it. The most important thing is supporting on public transport (The 3C's: **C**heap, **C**onvenient and **C**omfortable) to serve people. Local authority can not disallow people to buy a car, but at the same time it is impossible to let the society fully depend on private vehicles, even that is an individual right to exercise. To overcome this problem, the local authority can implement several policies to limit the incoming private cars to city center on peak hours or off-peak hours.

Many idea have been formed by the transport expert to solve traffic problem, such as by improving the public transport system, but the local authority (The Municipal Council Of Penang Island) as public servant need to conduct a research first before choosing the appropriate way to solve it.

All ideas introduced are deserved to be implemented or to try in a probation time. If these ideas are running smoothly and can respond and answer the problems, than it is worth to try and enforce in a form of traffic regulation or bill.

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