

Private Vehicle Ownership and Transportation Planning in Malaysia

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Abstract. This paper analyzes current trends in private vehicle ownership in Malaysia. For the past decades private vehicle ownership has increased tremendously in this country which is partly due to the economic growth, rapid urban development, population growth and inadequate public transport availability and services. In 2010, Malaysia has a population of 28.3 million, 17.4 million private vehicle automobiles and 11.7 million registered drivers. Traditionally, income has been hypothesized as a major determinant of private vehicle ownership. However, the spatial arrangement of urban fabric has becoming more important determinant of owning a vehicle. Other determinants such as government policy, auto vehicle financing, household characteristics and travel characteristics are also important. Therefore this paper is analyzing the spatial determinants of private vehicle ownership in Malaysia with a special reference to the Penang Island. Penang Island is located on the northeastern region of Malaysia and is an industrialized and a highly developed island. Penang Island has a population of 575,498 in 2000 and 740,200 in 2010, an increase of 29 percent for the last 10 years. In 2010 alone, there are 111,882 number of new registered vehicles in Penang Island. As private vehicle ownership is also associated with externalities such as traffic congestions, accidents, inadequate parking spaces and pollutions, it is an important component of local and regional transportation policy making. Thus, the implications of the vehicle ownership level on spatial and transportation planning are also mentioned in this paper.

Keywords: Motorization, vehicle ownership, transportation planning, Malaysia

1. Introduction

Malaysia has witnessed an explosive rise in the demand for transport vehicles in recent decades in conjunction with its rapid economic growth. The highest growth of urbanization and motorization was recorded in Kuala Lumpur, the capital of Malaysia and the Klang Valley region in which the rates of increase in vehicle ownership are the highest in Kuala Lumpur compared to any other part of the country [1]. Currently, the number of private own vehicles registered in Malaysia shows increasing trends. Malaysia's national car projects also have played a role in motor vehicle growth by limiting the options available to the government [2]. The public transport system in Malaysia is poor and hence, the private transport flourished that about 24% increase was observed in private transport usage between the years 1985-2005 [3]. Most of the urban cities like Kuala Lumpur, Penang, Johor Bahru, Kuching and Kota have an increased car population rate. More than 35% of the nation's oil consumption is by transportation sector [4]. Private vehicles today have become the main means of travel of urban living in developing countries. Consistent economic growth, rising incomes, and urbanization have led to rapid growth in vehicle ownership and usage hence air pollution and other environmental hazards are another important concern. The rapid urbanization and motorization seen in Malaysia at present is mainly due to the expanding economy since 1987 [5]. Malaysian economy is developing so fast that most of the people afford to have private vehicles and hence the vehicle population has also boomed [3]. The current trend shows that private vehicle ownership is consistently increasing in Malaysia which may have serious environmental and socio-economic

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consequences. Congested roads, lack of public transport facilities and parking space are main problems among other.

In Malaysia, the total number of registered motor vehicles has increased 15 million vehicles (motor cars, motorcycles, taxis, buses and freight vehicles) at the end of 2005 in which Motorcycle takes the largest share at 7 million (47%), followed closely by passenger cars at 6.5 million (43%) [7]. Vehicle ownership in the Klang Valley increased from 247 vehicles per 1,000 persons in 1990 to 546 and 994 vehicles per 1,000 persons in 1996 and 2002 respectively, far beyond the national level per 1,000 population of 91 vehicles in 1990, 133 in 1996 and 210 vehicles in 2002 [3], [8]. Rising vehicle congestion and slower travel speeds are the most obvious impact of rapid motorization. With the increase in vehicle ownership, it has been emphasized that the demand for travel to central city areas would grow far beyond the capacity of the road network. The strong fleet growth as compared to low road network growth has resulted in rising vehicle-density ratios in Malaysia. The ratio reached 71 vehicles per road kilometre in 1999 as compared to only 46 vehicles in 1994, further intensifying traffic congestion. The difficulty of constructing new roads and widening existing ones, especially in Kuala Lumpur, is already well known [9]. These authors pointed out that the future challenge is to provide more road space that can allow more motor vehicles and other road users to be accommodated in conjunction with appropriate mitigation measures that go beyond road construction.

In the context of Penang Island, before the widening of Penang Bridge, every day hundreds of thousands of Penangites faced traffic congestion as they commuted to work by cars via the Penang Bridge. Figure 1 shows the road network system and urban development in Penang Island. The impact from this congestion is substantial in terms of time, resources, and pollution. The vehicle trips per day are estimated to be 120,000. It is estimated that the Penang Bridge congestion alone costs travelers 328 million hours of delay, 10 million liters of wasted fuel, and minimum RM140 million in toll fees per annum [10]. The rapid growth of the Malaysian economy lead to the increase of motor vehicles ownership, in 2006, there are 6.91 million registered cars running on the roads in Malaysia. In Penang, about 1.6 million registered motor vehicles (MV) averaging to 1.06 cars per person for a population that totals 1,468,800 [11]. The MV registration rate is increasing at an average of 9.5 percent per annum – higher than the country's rate of 7.2 percent and the fact that in 2001, Asian Demographics placed Malaysia second only to Japan in the number of households owning a car indicates the comparatively high level of vehicle ownership in Penang [12]. Recently, the data from the Road Department showed that there are more vehicles than people in Penang (1.75mil vehicles for a 1.58 mil population) in 2009. The average vehicle registration growth for Penang is 9.5 per cent per year making it the highest in the country. Figure 2 shows new registered motor vehicles by types in 2010. While Figure 3 shows the current trends of vehicle ownership (cars and motorcycles). Furthermore, the population density in Penang Island is very high accounting to 2,031.74 people per km². So, it has been widely recognized that for the transportation system to sustain future growth we must use road space and transit facilities more efficiently and we should not be too dependent on private vehicles.

2. Private Automobile and the spatial and transportation planning implications

Transformation from compact to more dispersed structures such as 'urban sprawl' has significant implications on the urban environment. The sprawl type of development in the built-up area is generally associated with high social, economic and environmental costs [13]. Traffic congestion, automobile dependence, air pollution, social segregation, and decreasing quality of life are often cited as some of the most important problems faced by many large urban metropolitan centres [14]; [15]; [16]. As city size, and particularly spatial extent, increases, so typically do the average length of commute, the level of traffic congestion, and the environmental impact of road traffic. Motorized road transport is the main mode of movement in Malaysia. Rising vehicle congestion and slower travel speeds are considered the most obvious impact of rapid motorization. The most immediate response to this problem is to construct more roads and transport infrastructure. Congestion on roads mainly leads to loss of economic productivity (man hours lost) and increase in environmental pollution. Space shapes transport as much as transport shapes space, which is a salient example of the reciprocity of transport and its geography. Throughout history, transport networks have structured space at different scales. The fragmentation of production and consumption, the locational

specificities of resources, labor and markets generate a wide array of flows of people, goods and information [17]. The structure of these flows in terms of origin, destination and routing is closely related to spatial organization. Population explosion and planning and layout of cities are recognized as major challenges in healthy modes of transport in developing nations. Researchers have suggested that the problem of overpopulation and congestion can be solved if cities are compact, and the transport is well staid out and sustainable. It has been found that in cities where the spatial distribution of population is more compact, households are less likely to own a car [18]. Recently, [19] suggested that the relationship between the growth of vehicle ownership and per-capita income is highly non-linear. Vehicle ownership grows relatively slow at the lowest levels of per-capita income, then about twice as fast as income at middle-income levels, and finally, about as fast as income at higher income levels, before reaching saturation at the highest levels of income. These authors also suggested that developing countries will face the challenge of building the infrastructure (roads, bridges, fuel delivery, etc.) needed to support the growth in vehicle ownership. Moreover, the future vehicle ownership growth is assumed to mostly take place in developing countries that have so far been able to deal with the environmental issues less successfully than advanced economies [20].

3. Conclusion

The investments in public transport infrastructure, particularly bus rapid transit and railways like metro, surface, and elevated rails, is considered to help reduce any types of externalities like congestion, emissions, and accidents. As already discussed, adopting vehicle global warming emission standards and incentives for the purchase of vehicles that produce less carbon dioxide per mile will definitively help in making cities more sustainable and resilient. Adequate emphasis should be paid on integrating sustainable transport planning with urban planning of new cities, and by improved land use and exploring the relationship between transport and spatial development. In urban areas, some people think that car and public transport both are good transport alternatives. But some draw a comparison between car and public transport regarding travel costs, time and so forth, and select the best alternative. In some places, travelers do not have a bad image of public transport, regardless of their like or dislike of the mode. To mitigate the environmental and health impacts of the transport sector, the government has implemented a number of policies and measures. Especially to improve the efficiency of public transportation, considerable efforts are underway and the Tenth Malaysia Plan has greatly recognized the importance of public transportation, ways to reduce private motorized travel and encourage a shift toward public transportation. However, the proper enforcement of urban planning, environmental regulation and transport policies is crucial for reducing vehicular emission which often leads to health and environmental damages. Many studies have emphasized that transportation plans should be developed in conjunction with the land use development plans and there is a need of rethinking sustainable transportation while keeping in mind the challenges faced by the Malaysian transport sector. It is suggested that there should be public debates over urban growth patterns and transportation sustainability in the rapidly developing cities of Malaysia. These additional studies are needed to understand the present traffic and transportation scenario and evaluate changes in the urban transport policies.

4. Acknowledgements

The author gratefully acknowledged financial support from the Universiti Sains Malaysia.

5. References

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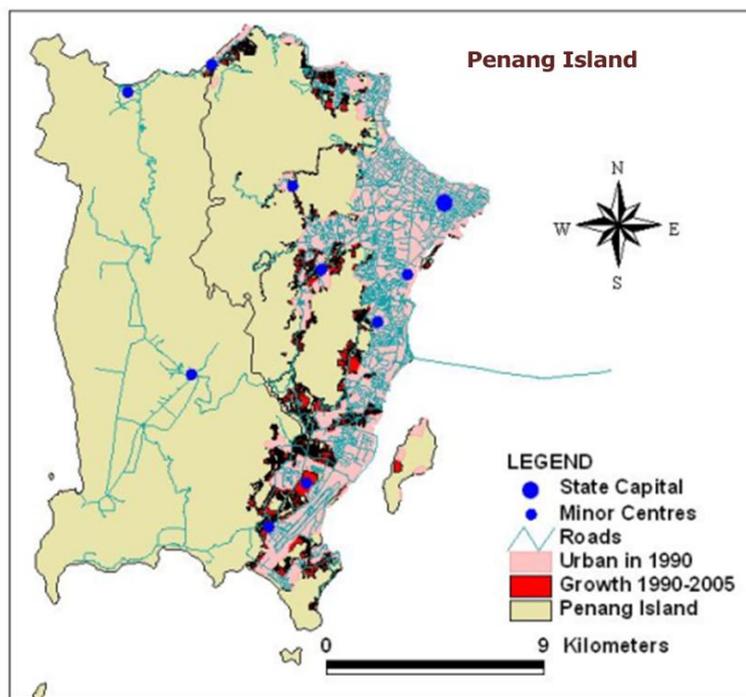


Figure 1. Map of Penang Island showing road networks and urban growth.

(Source: Department of Surveying and Mapping, Malaysia)

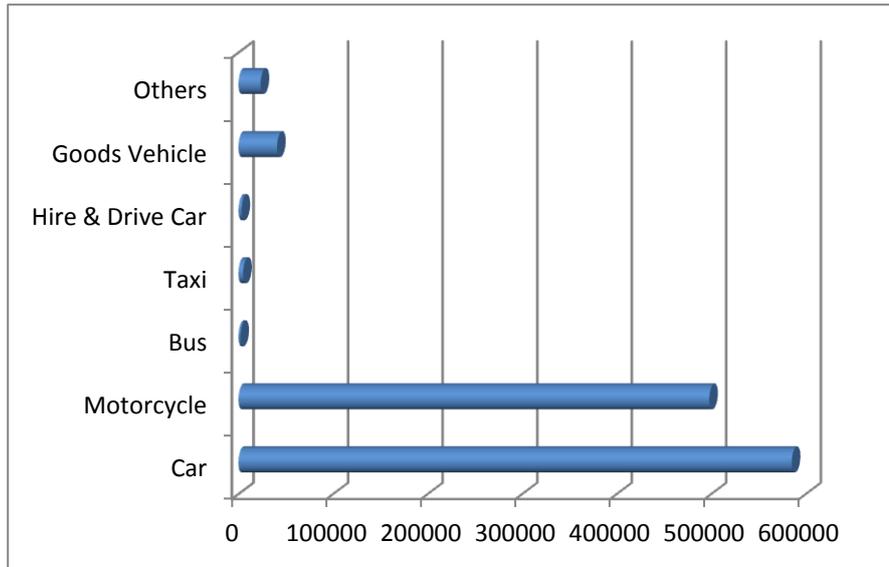


Figure 2: New registered motor vehicles by type, 2010
Source: Ministry of Transport Malaysia, 2011

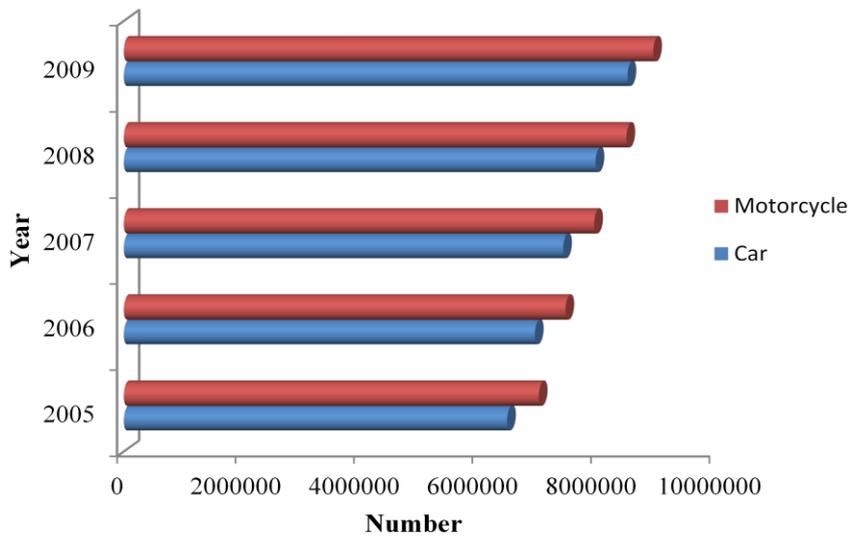


Figure 3. Current trend of growth in private vehicle (Motorcycle and car) ownership in Malaysia. (Source: MIRSR, 2010)