

## **A Preliminary Study on Differences of Previous and Current Town Planning On Travel Behavior of Road Users in Malaysia**

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**Abstract:** During the time of colonization, modern town planning was influenced by colonizer's town planning style, and its function was mainly to serve the needs of the colonizer. The gridiron street pattern in Taiping town was established during colonization, and it is unfavorable for motor vehicle due to its design. However, in keeping up with newer towns, more development and attraction needs to be built. On the other hand, it is uncertain for Taiping town could contain such increase in traffic volume as a result of more development in future. This paper describe our pilot study to suggest street pattern in determining travel behavior.

*Keywords:* Travel Behavior, Colonization, Malaysia, Urban Planning

### **1. INTRODUCTION**

This paper discusses our preliminary study on “previous town planning” on the travel behavior of road users. The objective of this paper is to understand current road user perception towards town planned during colonization. In Malaysia, modern towns can be grouped into two basic town planning phase that are town developed during colonization and town develop after colonization. In Malaysia colonization history, the most prominent influence of colonization is during the British colonization. This pilot study is a starting point to embark future research on the impact of colonization in town planning.

According to Chiriyankandath, J. (2008), 84 per cent of the world was once colonized, and the impacts of colonization are differing from place to place. One prominent example is in the influence of colonization in culture and language which later has affects the development of social and economic development (Kachru, 2006). In term of town planning aspects, the development of the city during colonization, building construction and also the inheritance of knowledge and laws are examples of straightforward colonization influences. The development of Malaysia town planning, for instance, was adopted from British town planning (Maidin, 2012). Even after colonization has ended, the independent government referred to the British town planning. According to Yaakop (2010), the British influence has shaped the political system, multi-ethnic society, and the government. While Zakaria (2003) stated that the past national policies and historical events has formed the development pattern of the country. Furthermore, Zakaria (2003) stated that the imbalance urbanization between states due to the British colonial rule that is ethnic and regional bias has influenced the economy activity and transportation development. Consequently, the meddling of the British into the local system is due to their needs during colonization in the country (Yaakop, 2010). As an independent country, Malaysia has developed tremendously, and the urbanization has

occurred. As a result, town planning in Malaysia comprises of both pre and post colonization era. Therefore, motivates us to conduct this pilot study to understand if road users are being concerned by a different phase of town planning. In this paper, a town named Taiping located in Perak, a state of North Peninsula Malaysia is chosen as a preliminary case study. It is one of the earliest modern towns planned during the British colonization in Malaysia.

Oxford Dictionary (2002) stated “behavior” carries the meaning of the way that one acts or conducts oneself. In this case, natural human fondness for easy access, parking availability as well as exterior influences such as the distance between areas during traveling are related to travel behavior. According to Pan *et. al* (2009), the urban form can also influence travel behavior with shorter or longer distances. Prior to this, the previously gridiron street pattern may affect the current road user travel behavior as during colonization motorization was not the main focus of town planning. For example, the design and orientation of gridiron street pattern do not consider vehicles accessibility, parking availability, distance and so on. The gridiron street pattern road was constructed in Taiping town as a great influence on Europe town planning movement at that time. On the contrary, the development of gridiron pattern was meant to solve security and sanitation issues in Taiping town instead to serve the needs of motorization.

Nurdden, A. *et. al* (2007) identified there are several factors influencing the individual choice of transportation such as age, gender, car ownership, travel time, travel cost, household size and income. In the study of travel behavior, Rothengatter (1993) used road user behavior approach, in understanding human behavior in choosing the speed to road problems. Similarly, Jacobs *et. al* (1981) discuss comparison between developing countries road user and Great Britain road user behavior at traffic lights leading to accidents. While, Hine (1998) commented on policy and schemes made in the influences towards road user behavior. Other researchers on travel behavior include using the street layout in assessing travel choice (Shriver, 1997) and Handy, S. (1996). For this pilot study, we have conducted an investigation to understand road user perception about street in Taiping town. Table 1 show the previous and current planning differences found in Taiping town.

**Table 1 shows the previous and present planning differences and the analysis approach used in this study.**

|                         | <b>Previous town planning during colonization</b> | <b>Current town planning post colonization</b>           |
|-------------------------|---|--|
| <b>Road Pattern</b>     | Gridiron pattern.                                 | The hierarchal road pattern.                             |
| <b>Land Use Pattern</b> | Mixed Land use pattern.                           | Planned Development according to the land uses (zoning). |

## 2. UNDERSTANDING TAIPING TOWN

Firstly, it is worth to understand the reasons behind the existence of the town planned during colonization. Taiping town is located in the North state of Peninsula Malaysia. It was one of the earliest modern towns planned during British colonization in Tanah Melayu (Malaysia). The development of the early modern town was developed to improve the old town that was not properly planned before the British came. To elaborate, the land use development concept in Taiping was inspired by the British town planning movement in Britain. As a result, a more

systematic town with a gridiron street pattern was established after 1880 (JPBD, 2005). According to the JPBD report in 2005, among early transportation system in Taiping was the 6.5km road connecting two main areas that are Taiping and Kamunting. The needs of the road construction are to assist the tin working activity including movement of workers between the two primary core areas. Another transportation system used by the British at that time was the railway that connects Taiping town to Port Weld. The development of the railway was mainly for the purpose of transporting tins to the port.

Besides the number of population was relatively small at that time compared to the current population, the design of the town describes much about security and permeability purposes. For example, the short length of shop houses units parted by firebreaks between units of shophouses is designed to ease surveillance and also to protect from fire spreads that happened several times in the town. Currently, centralized parking and parallel parking are use due to the easiness of walking movement from one block of shops to nearby blocks. Figure 1 shows the short length between the building blocks is more suitable for walking distances. However, the short length roads with many junctions aren't favorable for vehicle as it leads to accidents (Rifaat, 2009). On the contrary, in figure 2 shows the short distance between junctions eases security for the British colonizer in the previous planning during colonization. However, in the current condition where traffic volume is high, it is unfavorable for vehicle. Clearly, for decade's adaptation process are seen in Taiping town. The local authority has done their best to ensure traffic congestions and accidents not to occur in the town. However, to increase and sustain Taiping town, more new development and attraction like new malls need to be built. So, streets must also be ready to contain such increase in traffic volume if such action to develop the town establish in future. Can gridiron street pattern sustain a high traffic volume? How does road user respond to this kind of street pattern?



**Figure 1 shows the gridiron pattern road with short length of building blocks**



**Figure 2 displays the distance between junctions in gridiron pattern road in Taiping town**

## 2.1 Methods

Due to circumstances, this study only conducts a pilot study to understand the perception of road user in Taiping town. This is conducted by interviewing road user in Taiping town in the duration of this pilot study conducted. This study focuses on private vehicle user only as a driver of private vehicle decides their own route when driving in Taiping town instead of public vehicle user that does not have control towards route choice. Information gathered includes origin, destination, transport mode used and reasons going to Taiping town. The survey took place at several places where the likelihood of getting respondents from numerous residential areas around the town is high such as parking areas and sidewalks. For this study, two days were allocated to collect respondents by the given time. The number of respondents managed to gather in the preliminary survey are 103 and 86% of them are from the working age group that is between 20 years old to 59 years old. In Table 2 shows the age and mode of transport daily used by the respondents.

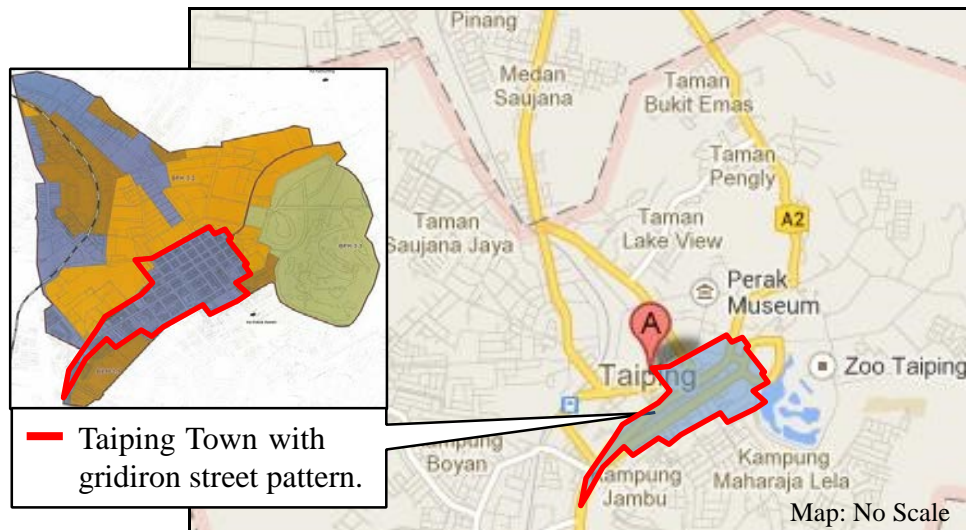
**Table 2 displays the age of respondents and also a mode of transport used daily from residential to working place located in Taiping town.**

| Age                | Mode of Transport Used Daily |              |            |                  |
|--------------------|------------------------------|--------------|------------|------------------|
|                    | <i>Car</i>                   | <i>Motor</i> | <i>Bus</i> | <i>No Answer</i> |
| <i>&lt;19</i>      | 0                            | 0            | 7          | 0                |
| <i>20-29</i>       | 7                            | 2            | 0          | 1                |
| <i>30-39</i>       | 22                           | 5            | 1          | 2                |
| <i>40-49</i>       | 12                           | 2            | 0          | 2                |
| <i>50-59</i>       | 19                           | 5            | 0          | 9                |
| <i>60-69</i>       | 2                            | 0            | 0          | 2                |
| <i>&gt;70</i>      | 0                            | 0            | 0          | 2                |
| <i>Unknown age</i> | 1                            | 0            | 0          | 0                |
| <b>TOTAL</b>       | 63                           | 14           | 8          | 18               |

Interviews are done in a semi-structured way so that information obtained is better and enable a detailed spontaneous response from the respondents. The non-participant observation is used involves data recording using a video camera and camera. An observation is also done towards the condition of traffic in the daytime during working hours when most road users occupy the road. To support the primary findings due to the limitation of this study, secondary data such as the Local Plan of Larut Matang (JPBD) 2015, Special Area Plan, and District Plan of Taiping 1980 are used comprehensively to support the data employed in this analysis.

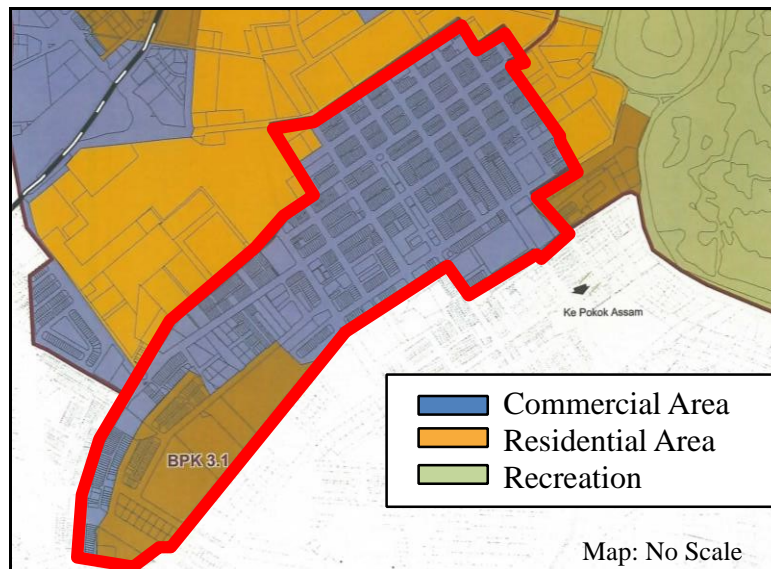
## 2.2 Study Findings

Firstly, gridiron street pattern is located within the town center only while the modern post colonization town planning design is the expansion of the town center. Road user coming from outside the town into Taiping town can immediately recognized the town by the design of the street pattern as well as historical building marks. As highlighted in figure 3 and figure 4, we can find the gridiron street pattern of Taiping town. Based on the survey, 43% of respondents are avoiding junctions, congestions, and they dislike road with poor maintenance when deciding to go to Taiping. So, if it is not necessary, they will avoid going to the town. While 14% respondents commented on the distance between the house and Taiping town for daily shopping is not acceptable, unnecessary and uneconomical. Therefore, they will choose the nearest commercial areas. In comparison, 28% do not bother and offended by the condition of Taiping town street pattern and the mixed land use pattern. This group of respondents will still go to Taiping town whenever desirable. It can be seen that the remaining others in the survey concern about parking availability and also access especially during peak hour and holidays.



**Figure 3** The gridiron street pattern can be found only at the Taiping main town center.

*Source: Map is from Google map and Local Plan of Larut Matang 2015(2010)*

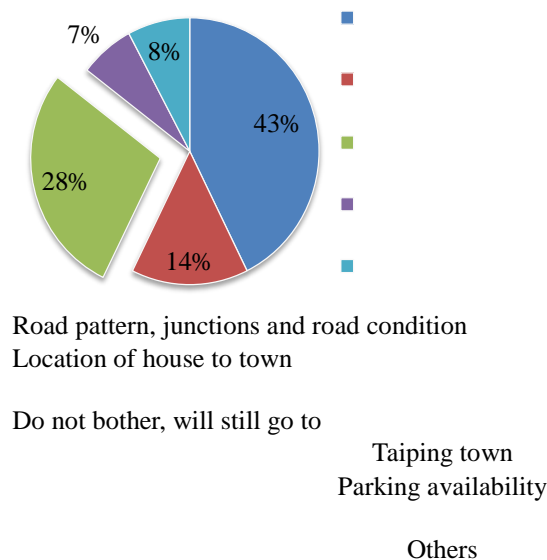


**Figure 4 A clear zoom in of the gridiron street pattern in Taiping main town centre.**

*Source: Map is from Google map and Local Plan of Larut Matang 2015(2010)*

Due to high speed of economy development, it has also speed up private vehicle ownership in Malaysia (Almselati, *et. al* (2011)). Therefore, respondents were also asked about reasons choosing their transportation modes. According to them, the main reasons to use private vehicle were because of the number of family member, flexibility, choices of reasonable car price from second-hand cars to new local made cars and availability of transport mode choices. According to respondent's interview, the location of residential is determined firstly by house price, image or suitability of family, house availability and also the distance to Taiping town. From the findings, 29% of the respondent using private vehicles lives 5km from their working place while 70% lives more than 5.1km from their working place. 1% of the respondents live more than 20km from the town. This means the majority of the respondents depend on motor vehicle when traveling to Taiping town due to the distance. The number also shows how motor vehicles are needed to move around. Despite of the distance, the objective of this survey is to know more about street pattern influence to travel behavior. According to this survey, almost 80% of respondents made trips to Taiping town for work, school, and government related matters. Others are for grocery shopping but limited to certain items that are rarely found in the residential area. This clarifies respondents behavior are avoiding making trips to Taiping town unless necessary. As indicated in figure 5, factors of going to Taiping town can be described in five main factors. There are:

- a) Respondents are feeling discourage to go to Taiping town because of the road pattern with many junctions, traffic lights, and intersections.
- b) Respondent's consideration on economy bases as Taiping town is located far from their houses, and they prefer to shop nearby home.
- c) Despite the location and the condition of the road pattern, they still go to Taiping for other purposes than working.
- d) People think about the availability of parking in deciding to go to Taiping town.
- e) Other factors consider before go to Taiping town are availability product of nearest shop nearby housing area and peak time.



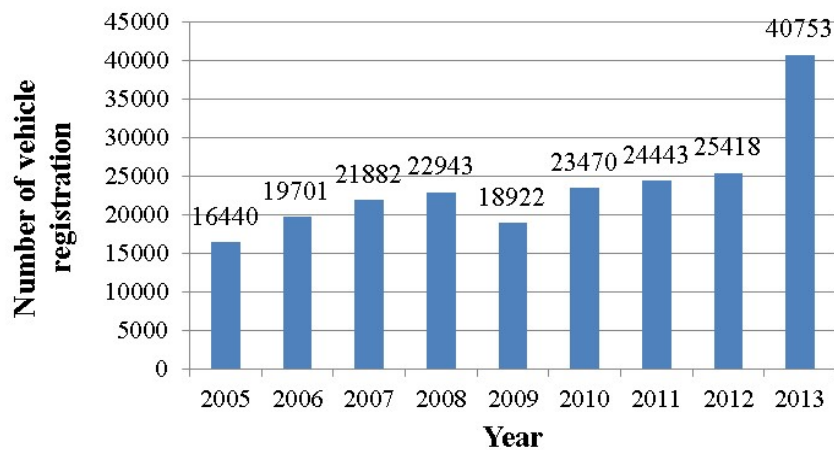
**Figure 5 Factors of consideration on travel made to Taiping Town**

Based on the results, the street pattern became the main concern of our respondents when deciding to go to Taiping town. Travel behavior of 43% respondents shows that road pattern, junctions and road condition in Taiping influence their decision when going to Taiping town. Also, the location of the destination is also taken into consideration. However, 28% of respondents will still go to Taiping town, and this shows gridiron street pattern do not affect travel behavior of people in largely. However, according to the Special Area Plan (2010), the mixed land use pattern and unplanned land use pattern in Taiping has influenced the poor growth of commercial development in the town center. Also, according to the Local Plan of Larut Matang 2015 (2010), the traffic systems are not effective as there are congested junctions as a result of gridiron pattern road design. Therefore, based on this pilot study and also reports of the local authority we can summarize the analysis that traffic condition in Taiping town problematic at certain period only that is during peak hour or holidays. This means the current normal traffic volume do not cause trouble unless the number increases. Due to the lack of data on the traffic volume and the small sample number, this study could not pinpoint the previous town planning influence in detail. But, in general idea, the conventional gridiron street pattern shows it has influence on travel behavior. Hence, there is a need for extensive research in future, and this paper describes the initial pilot study for that purpose.

### **3. SIGNIFICANCES IN TRAVEL BEHAVIOR**

Travel behavior influences are extensive and effects development or even the opposite. However, one main problem that probably will exist by the differences between previous and current town planning is the reduce number of people going into Taiping town. This is because, the previous street pattern was not accommodative to the vehicle. Addition to that, numerous new towns are developed nearby residential areas as a result of urbanization. These new areas are equipt with parking lots, big width roadway as well as nearer to residential

areas. Unlike Taiping town where mostly “old” commercial areas are located, it also has gridiron street pattern that many drivers unfavor off. Junctions and more stops. According to the Road Transport Department of Malaysia (2015), the numbers of motor vehicle are increasing each year in Malaysia. Figure 6 shows tremendous rise in the number of vehicle registration forces the government to plan for an accommodative transport planning and at the same time improving the public transportation to reduce vehicle dependency.



**Figure 6 shows the number of vehicle registration in Malaysia provide by Road Transport Department of Malaysia between 2005 until 2013**

As adaptation of previous town planning to the current condition in Taiping town, the local authority has implement few strategies such as one way road to ease traffic movement, traffic lights at junctions for traffic control and also road divider to control traffic movement. These strategies were used for many years. However, according to the Local Plan of Larut Matang 2015 (2010), traffic congestions occurred at highly concentrated junctions during peak hour and also holidays. According to traffic study as specified in the report, the main reason contribute to congestions are caused by road pattern with junctions in Taiping town. The current traffic growth has reached 5-8% yearly, and it is estimated more junctions will face congestions in the year to come.

Therefore, this pilot study has conforms that there is in need of wide-ranging research on the travel behavior of road users and the effectiveness of current method to manage traffic in gridiron street pattern. The challenge is now is to make used of the street as an advantage to develop and sustain development of Taiping town as a competitive town in the state.

#### **4. CONCLUSION**

Although it is hard to generalized based only on this pilot study, it is important to understand that street pattern can influence travel behavior. For a long time, the local authority has used a conventional technique by putting traffic lights and one-way route to solving traffic issues at junctions. Clearly, as rapid urbanization and motorization occur in Taiping town, the method leads to calamity. The local authority reports prove this statement that traffic congestions often occur during peak hour and holidays. Hence, suggest a high number of traffic volume could not be accommodated in a gridiron street pattern. As many new towns develop around Taiping town, road user will feel discourage to go to Taiping town if it is congested. This will not only affect the traffic but also affect the town economy. The deterioration of town economy is not good for the town. This preliminary study should be a



starting point for extensive study on colonization influences in current town planning. It could not be avoided for many developing countries that were colonized before with severe urbanization issues, colonization influences must be tackle thoughtfully.

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