# Preliminary Study on Travel Behavior of Working Parents Among Universiti Malaya: Focusing On Chauffeuring Children

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**Abstract:** Preliminary study has been conducted with 100 staff of Universiti of Malaya as respondents to give some insight about chauffeuring children among the working parents in public university in Malaysia. The outcome of this study allows us to understand the travel behavior of working parents related to chauffeur children with consideration of socio-demographic characteristics. Interestingly, majority both parents managed to personally chauffeur their children together instead of take-turns. Evidence found that attended childcare services is strongly related to distance, time travel taken and mode of transportation.

*Keywords*: Working Parents, Chauffeuring, Travel Behaviour, Childcare Services

## 1. INTRODUCTION

In Malaysia, 54.7% of women compared to 80.1% of men, were involved in the labour force in 2017 (Khazanah Research Institute, 2019). According to Statistics Department of Malaysia, female labour force participation rate increased to 55.1% in December 2020 (Department of Statistics Malaysia, 2019). As the female labour force participation rate gradually increased, this indicates the growth of dual-earner family or working parents and the demand for childcare services. Malaysian Population and Family Survey (MPFS 5) in 2014 discovered that 34.2% working women surveyed want childcare services at workplaces (Khazanah Research Institute, 2018). As chauffeuring children to various childcare services is major problems to coordinate work schedules (Solomon, Juliet, Helena, 2008).

A research suggest that long working hours can decrease the possibility of joint trips, by suggesting parents a flexibility in arranging their schedule at work but the flex-time option may mitigate the impact of labour participation (Schwanen, 2007). Apart from that, longer travel distance can increase the possibility of making child-serving travel because they linked the travel to work or home Mauch and Taylor (1997). As matter of fact, there is higher number and complexity of trip chains with presence of children in the household especially those who are aged 0-9 years old in order to accommodate their need (Valiquette & Morency, 2010).

Despite a lot of research have been conducted related to children's school travel, there is lack of research focusing on travel to childcare services, especially in Malaysia. The basis of the travel behaviour focusing on chauffeuring is required to give general understanding of the needs of parents especially for working parents as it can provide an essential base to both transportation and childcare services planning. Therefore, this preliminary study is conducted to give an insight of understanding travel behaviour of working parents focusing on chauffeuring children to childcare services.

## 2. LITERATURE REVIEW

### 2.1 Theoretical Framework

This preliminary study adopted a theoretical framework constructed by (Jing et al., 2018) which originally based on the theory of planned behaviours and escort mode choice mode motivation model (refer to Figure 1). The researchers concur parents' choices over an escort mode are based on logical assumptions. Each parent is an agent and children are considered as dependent agent. And they have their own personality individuality and their socio-economic relations. Author further explained that there are two sorts of agents which are parent agent and neighbour agent. But in this preliminary study, only parent agent is considered because this study focusing on the parent's travel behaviour and not the neighbour.

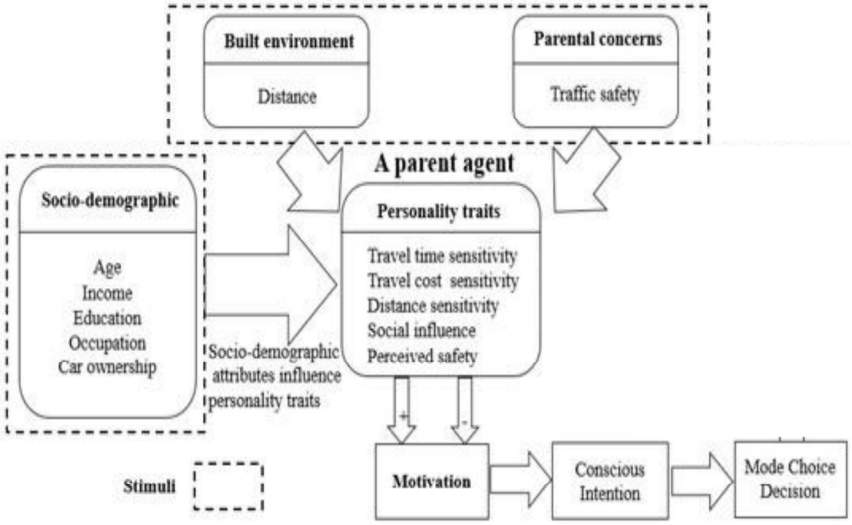


Figure 1: The parent agent's escort mode choice decision model

According to the model, two factor that influence motivation of agents to decide their escort decision: mixture of explicit and psychological changeable element. The contribution of each stimulus to the motivation of the parent agent's escort mode option is calibrated by the specific personality function of the parent agent. (Jing et al., 2018)

### 2.2 Reason for Parents to Chauffeur Children

Socio-demographic characteristic of household and individuals related significantly with travel behaviour (Sánchez et al., 2014) . Higher income family with two or more adult in the family tend to chauffeur children more than lower income family (Mauch & Taylor, 1997). And regardless accessibility of car, low-income household are less likely to chauffeur children than high-income household (Liu et al., 2012). The author then conclude it might be due to inflexible working hour of parents in low-income household and how high-income household is highly associated with access of car. This result is consistent with recent research conduct by Bosch et al., (2020) in 2020, which state that high-income family tend to chauffeur their children because they have access to car than low-income family.

Children's demographic characteristic often associated with chauffeuring, especially age. Age, ethnicity, and gender are found influence mode choice decisions (Yarlagadda & Srinivasan, 2008). Age has significant aspect in parent's decision making to chauffeur children as it is indicated to children's ability to travel unaccompanied (Ahern et al., 2017). Travel

behaviours research proved that the older the children, the children would be less likely chauffer by their parents (Elias & Katoshevski-Cavari, 2014; He, 2013; Murtagh et al., 2012; Zwerts et al., 2010). According to the research of the school-travel behaviour of children and the related interdependencies among the travel patterns of parents and children, it shows that young children (under the age of five) are more likely than older children to be walked to school by their mothers (Yarlagadda & Srinivasan, 2008). Other than that, Drianda & Kinoshita, (2011) proved that children young children aged below 10 years old are more likely to be chauffeured.

Other than socio-economic and demographic factor, psychological factor such as traffic danger and stranger strongly linked with the chauffeuring. McDonald & Aalborg (2009) asked parents why they chauffeur their children to school. Parents cited two main reasons for chauffeuring their children: convenience and safety. (Fallah Zavareh et al., 2020) reported evidence that there is relationship between household income and level of worry when children walk to school. For children chauffeured by parents to school, the result shows that higher household income have higher parental worry.

### 2.3 Who Chauffeured the Children?

Majority of women tend to carry out the responsibility in chauffeuring. A research done by (Mauch & Taylor, 1997) proved that women make a significantly higher proportion of childcare stops, regardless of household type, even among households with no children present.

For working mother, those with less flexibility in working hour increase the possibility to chauffeur their children to school but father with the same reason decrease their possibility to chauffeur their children to school (Yarlagadda & Srinivasan, 2008). Yarlagadda & Srinivasan (2008) further mentioned that with or without flexibility in working hour father are less likely to chauffeur their children but do not have clear reason for this result. The probability of fathers doing the chauffeuring is higher when fathers' working hours are consistent with school and the mothers' working hours are incompatible (Motte-Baumvol et al., (2017).

## 3. METHODOLOGY

### 3.1 Study Design

To study the relationship between travel behaviour and socio-demographic factor, the sample is drawn from working population who works as staff of university at public university by using stratified random sampling method. The selected public university is University of Malaya or Universiti Malaya (UM). The University of Malaya or Universiti Malaya (UM) is a public university situated in capital city of Malaysia, Kuala Lumpur. For information, Universiti Malaya is the oldest and top-ranking Malaysian institution of higher education.

Universiti Malaya is selected because the campus is located in the city. Although there is other university located in the city, Universiti Malaya have several entrances including main entrance from Kuala Lumpur. Other entrances can be access from difference places such Petaling Jaya and Damansara which is a city from other district. Hence, this allows the campus to be easily access not only from Kuala Lumpur but from another district as well. Therefore, the staff working in Universiti Malaya can be origin from various places. In addition, Universiti Malaya have various public transportation located outside and even entering the campus. This leads to the several alternative transportations to the campus as well as private vehicles.

Universiti Malaya have a total number of 5516 staff including academic and non-academic staff. The staff is divided into four categories: Management and Professional

(Academic), Management and Professional (Non-Academic), Highest Management and Support. Since 2019, Universiti Malaya have flexible working arrangement, allowing staff to clock in between 7.00 am to 10.00 am. However, it is believed that staff in academic category have more flexibility than staff in non-academic despite having flexible working hour because the nature of white-collar worker.

To ensure that each categories equal number of representatives, proportionate stratified random sampling method is used. Given the data from Human Resources Department of Universiti Malaya, total number of staff marriage's status according to categories are displayed in Table 1. By using the proportionate stratified random sampling method with total of 100 respondents, there are 38 respondents from Management and Professional (Academic)'s category, 11 from Management And Professional (Non Academic)'s category and 51 from Support's category.

Table 1: Statistic of Staff Marriage's Status in Universiti Malaya

| BIL | CATEGORY | MARRIED |
|---|---|---|
| 1 | Management And Professional (Academic) | 1648 |
| 2 | Management And Professional (Non-Academic) | 477 |
| 3 | Highest Management | 5 |
| 4 | Support | 2229 |
| Total | | 4359 |

Specified that each of the respondents which participate in this preliminary study have characteristics as below:

a. married
b. spouse are currently working
c. have children aged 12 years old and below

An online questionnaire survey was conducted to provide a preliminary study about the travel behaviour with children (age 12 years old and below), chauffeuring behaviour, and preference of transportation mode and childcare services for the children. Given data by Human Resources Department of Universiti Malaya, the online survey is distributed through official email of the university.

### 3.2 Measures .

#### 3.2.1 Household demographics

Demographic information was collected on both working parents and children. Parental demographics included age (18-35, 36-54, >55 years), gender, education level (bachelor's degree or higher, upper secondary, or lower secondary), employment status (full time, part time or freelance), working hour (fixed, shift, or flexible), household size and household monthly income (high-, middle- or low-income group). Children demographic included age ( 1 month, >1 month-1 year, >1-2 years, 3-5 years, 6-12 years), gender, number of children, and type of childcare services attended.

#### 3.2.2 Travel behaviour

Parents were asked to give details on their daily travelled to work and childcare services. This included the mode of transportation use to work and childcare services, time travel, distance and who responsible for chauffeuring their children.

The given options of transportation were car, motorcycle, public transportation, taxi or e-hailing services, walking or cycling and an addition of school bus or van for their children. Time taken to travel was evaluated using the response choices of (a) <10 min, (b) 11-30 min, (c) 31 min-1 hour and (d) >1 hour. Distance in kilometres between the household, workplace and childcare services was evaluated using the response options of (a) <5km, (b) 6-10 km, (c) 11-20km and (d) >20 km.

3.2.3 Influencing factors

Parents asked to rank their preference that influence their selection in childcare services and transportation mode for their children. The influence factors for childcare services were (1) travel cost, (2) distance, (3) fee of childcare services, (4) quality of childcare services, (5) operation hour of childcare services and (6) safety and security.

The influence factors for transportation mode were (1) cost, (2) distance, (3) time, (4) age of children, (5) access to transportation and (6) safety and security.

## 4. RESULTS

### 4.1 Sample Characteristics

Table 2 shows the demographic characteristics for both parents and children. The gender of sample was exactly split at half percentage, female (50.0%) and male (50.0%). The majority of the sample was middle-aged adult between 36 to 55 years old (59.0%), received higher education (81.5%), employed as full-time workers (91.5%) and have fixed working hour (59.0%). In addition, 44% of the parents was from low-income group followed by 42.0% from high-income group. The means for household size was 4.8. For children characteristics, almost half of them were female (53.5%) and majority of the children were pre-schooler aged between 3 to 5 years old (47.9%). The mean for the number of children present in the household was 2.23.

Table 2: Demographic characteristics of parents and children

| **DEMOGRAPHIC CHARACTERISTICS** | |
|---|---|
| **Parental characteristics** | |
| Gender, %(n) | |
| Female | 50.0% (100) |
| Male | 50.0% (100) |
| Age (years) %(n) | |
| 18-35 | 41.0% (82) |
| 36-55 | 59.0% (118) |
| Education Level, %(n) | |
| Diploma/Bachelor's degree and/or higher | 81.5% (162) |
| Upper Secondary/equivalent | 17.5% (35) |
| Lower Secondary/ equivalent | 1.0% (2) |
| Employment status, %(n) | |
| Full time | 91.5% (183) |
| Part time | 2.0% (4) |
| Freelance | 6.5% (13) |
| Working hour, %(n) | |
| Fixed | 59.0% (118) |
| Shift | 4.5% (9) |
| Flexible | 36.5% (73) |
| Household monthly income, %(n) | 4 |
| RM4,000 and below (Low) | 14.0% (14) |
| RM4,001 – RM8000 (Middle) | 44.0% (44) |
| Above RM8,000 (High) | 42.0% (42) |
| Household size, μ | 4.8,1.44 |
| | |
| **Children characteristics** | |
| Gender, %(n) | |
| Female | 53.5% (46) |
| Male | 46.5% (40) |
| Age (months/years), %(n) | |
| <1 month | 1.7% (2) |
| >1 month – 1 year old | 9.9% (12) |
| >1 years old – 2 years old | 11.6% (14) |
| 3 years old – 5 years old | 47.9% (58) |
| 6 years old – 12 years old | 28.9% (35) |
| Number of children in household, μ | 2.23, 1.02 |
| | |
| Type Of Childcare Services, %(n) | |
| Informal Childcare Centres | 26.3% (15) |
| Government agency-based childcare center | 7.9% (4) |
| Registered private childcare center | 24.6% (14) |
| Workplace Childcare Centres | 17.5% (10) |
| Transit centres | 17.5% (10) |
| Maid Services/Did not send to any (WFH) | 7.0% (4) |

## 4.2 Chauffeuring to Childcare Services

Table 3 shows the descriptive statistics of people who responsible for chauffeuring their children. Both of parents (35.1%) are majority personally chauffeured their children followed by mother (31.9%) with small difference in percentage.

Table 3: Chauffeuring responsibility

| Distance, %(n) | Pick up | Send |
|---|---|---|
| Father | 24.5% (23) | 23.7% (23) |
| Mother | 31.9% (30) | 29.9% (29) |
| Both father & mother | 35.1% (33) | 41.2 (40) |
| Grandparents/relatives | 4.3% (3) | 5.2% (5) |
| School bus/van | 5.3% (5) | 3.1% (3) |
| Maid/Work from home | 12.8% (12) | 12.4% (12) |

### 4.2.1 Household demographic

By using Chi-square analyses, there is statistically significant association between category of staff with parents who pick up, $x^2(30) = 136.523$, $p= 0.000$ and send their children to/from childcare services, $x^2(30) = 118.786$, $p= 0.000$. But there is no statistically significant association between employment status with chauffeuring children to/from childcare services. In addition, working hour of spouse is significantly related with person who pick up, $x^2(30) = 25.016$, $p= 0.015$ and send their children to/from childcare services, $x^2(30) = 27.338$, $p= 0.007$. But working hour of respondents is not significantly related with the chauffeuring.

For children's demographic characteristic, there is no significant discovered between children's age and gender with person who pick up and send their children from/to childcare services.

For monthly household income, there is no significant value found with chauffeuring but there is with type of childcare services, $x^2(12) = 30.579$, $p= 0.002$.

### 4.2.2 Mode of transportation

Table 4 shows the descriptive statistics of transportation mode used to work by respondents and spouse, and transportation used for chauffeuring. High percentage of car is used for transportation to work by respondent (61.7%), spouse (59.1%) and to childcare services (49.6%).

Mode of transportation used for children is associate with person who pick up, $x^2(12) = 21.779$, $p= 0.040$ and send their children to/from childcare services, $x^2(12) = 19.824$, $p= 0.000$. Next, there is statistically significant association between mode of transportation used to work by respondents with person who pick up children from childcare services, $x^2(30) = 57.692$, $p= 0.012$.

In addition, there is statistically significant relationship between type of childcare services and transportation mode to childcare services, $x^2(30) = 74.680$, $p= 0.000$, respondent's transportation mode, $x^2(30) = 45.436$, $p= 0.035$ and spouse's transportation mode, $x^2(24) = 36.493$, $p= 0.049$.

Table 4: Mode of transportation used to work and childcare services

| Distance, %(n) | To work (respondents) | To work (spouse) | To childcare services |
|---|---|---|---|
| Car | 61.7% (74) | 59.1% (68) | 49.6% (71) |
| Motorcycle | 25.0% (30) | 29.6% (34) | 11.9% (17) |
| Public Transportation | 2.5% (3) | - | - |
| Taxi/E-hailing Services | 1.7% (2) | 1.7% (2) | 8.4% (12) |
| Walking/Cycling | 1.7% (2) | 0.9% (1) | 22.4% (32) |
| School Bus/ Van | - | - | - |
| Maid Service Work from home | 7.5% (9) | 8.7% (10) | 7.7% (11) |

### 4.2.3 Distance and time travel

Table 5 shows the descriptive statistics of distance from home, respondent's workplace and spouse's workplace to childcare services. It can be conclude that majority of the respondents send their children to childcare service less than 5km distance from home (48.5%) but farther than their own workplace with distance more than 20km from childcare services (37.1%).

Chi-square analyses revealed there is association found between type of childcare services with distance from home to childcare, $x^2(30) = 48.966$, $p= 0.016$ with significantly the distance were majority (48.5%) less than 5 km from home to childcare.

Both distance, $x^2(25) = 53.234$, $p= 0.001$ and time travel taken from home to childcare service, $x^2(25) = 67.537$, $p= 0.000$ are associate with mode of transportation used to childcare services.

In addition, there is statistically significant association between type of childcare services with distance from respondent's workplace which was Universiti Malaya to childcare services, $x^2(30) = 47.441$, $p= 0.023$ but there is no association discovered for distance from spouse's workplace to childcare services ($p=0.794$).

Table 5: Distance from home and workplace to childcare services

| Distance, %(n) | From Home to Childcare Services | From Workplace to Childcare Services | From Spouse's to Childcare Services |
|---|---|---|---|
| <5 km | 48.5% (16) | 14.3% (5) | 36.7% (11) |
| 5-10 km | 12.1% (4) | 17.1% (6) | 23.3% (7) |
| 11-20 km | 15.2% (5) | 14.3% (5) | 10.0% (3) |
| >20 km | 9.1% (3) | 37.1% (13) | 16.7% (5) |
| Maid Services/Work from home | 15.2% (5) | 17.1% (6) | 13.4% (4) |

For time travel taken to childcare services, there is statistically significant association between type of childcare services and time travel taken from home to childcare, $x^2(30) = 50.133$, $p= 0.01$ with significantly the time travel taken were majority (48.5%) less than 10 min from home to childcare.

In addition, there is statistically significant association between type of childcare services and time travel taken from respondent's workplace to childcare services, $x^2(30) =$

50.133, p= 0.012 but there is no statistically significant association found for distance of spouse's workplace to childcare services (p=0.574).

Table 6: Time travel taken from home or workplace to childcare services

| Time Travel, %(n) | From Home to Childcare Services | From Workplace to Childcare Services | From Spouse's to Childcare Services |
|---|---|---|---|
| <10 min | 47.5% (19) | 22.5% (9) | 25.0% (8) |
| 11-30 min | 20.0% (8) | 22.5% (9) | 34.4% (11) |
| 31 min – 1 hour | 12.5% (5) | 30.0% (12) | 21.9% (7) |
| >1 hour | 2.5% (1) | 10.0% (4) | 3.1% (1) |
| Maid Services/Work from home | 17.5% (7) | 15.0% (6) | 15.6 (5) |

### 4.3 Factor Influencing Parents' Decision to Select Childcare Services

Friedman test result of the factor influencing parents' decision to select childcare services shows there was a statistically significant difference between the factor to select childcare services, $\chi^2(5) = 88.411$, $p = 0.000$. Thus, there were consistency in the manner in which the parents rank the factors.

Table 7 shows the mean rank of factor influencing parents' decision to select childcare services. Higher mean rank defines as the least influence factor and conversely, lower mean rank defines as the most influence factor in selecting childcare services. The most influence factor is quality of childcare (2.65) followed by distance (2.69) with small difference mean. The least influence factor is travel cost (4.53).

Table 7: Mean rank for factor influencing parents' decision to select childcare services

| Factor influencing parents' decision to select childcare services | Mean Rank |
|---|---|
| Distance | 2.69 |
| Quality of Childcare Centre | 2.65 |
| Safety and Security | 3.12 |
| Operation Hour of Childcare Centre | 4.02 |
| Fee of Childcare Centre | 3.99 |
| Travel Cost | 4.53 |

### 4.4 Factor Influencing the Mode of Transportation In Chauffeuring

The Friedman test result of the factor influencing the mode of transportation in chauffeuring. There was a statistically significant difference between the factor to select the transportation mode for their children to childcare services, $\chi^2(5) = 55.811$, $p = 0.000$. Thus, there were consistency in the manner in which the parents rank the factors.

Table 8 shows the mean rank of factor influencing the mode of transportation in chauffeuring. Higher mean rank defines as the least influence factor and conversely, lower

mean rank defines as the most influence factor in mode of transportation for their children. The most influence factor is safety and security (2.56) and the least influence factor is cost (4.50).

Table 8: Mean rank for factor influencing the mode of transportation in chauffeuring.

| **Factor influencing the mode of transportation in chauffeuring** | Mean Rank |
|---|---|
| Safety and Security | 2.56 |
| Distance | 3.53 |
| Time | 3.36 |
| Children's Age | 3.37 |
| Availability of Transportation | 3.68 |
| Cost | 4.50 |

## 5. DISCUSSION

When both parents are working, chauffeuring children could be a challenge to the parents especially for younger children. Therefore, there is need to understand the basis travel behaviour of working parents in chauffeuring children. This includes their preference in childcare services and transportation used to chauffeur.

This preliminary study is conducted to investigate the travel behaviour of working parents in chauffeuring children among university's staff. Using the Chi Square test, the influence of demographic variables of parents and children is examined with the travel behaviour characteristics (person who chauffeured, distance, time travel and mode of transportation). Other than that, parents' preference in selecting childcare services and transportation used in chauffeuring is examine as well.

There is no association discovered between demographic characteristics of parents with chauffeuring except for categories of staff and working hour of spouse. Interestingly, high percentage of both parents personally chauffeured their children to childcare services instead of taking turns the in chauffeuring discovered in this preliminary study. This suggest that the parents could be car pooling to childcare services and workplaces. Such information could indicate a parent have to cope with the burden by carry out all the trip by carpooling.

No significant relationships found for children's demographic characteristic with chauffeuring as well. Although past research has proved that age of children was strongly related with chauffeuring, the ranking result of factor influencing the mode transportation in chauffeuring revealed that age of children ranked second last out of six factors. This could be the reason why there is no association found between age of children with chauffeuring. As there is no association found for gender with chauffeuring in this preliminary study, the results always undivided between significant and not significant related for prior research (Ermagun & Samimi, 2016; Scheiner, 2016).

Overall, the staff prefer childcare services to be near home. The ranking shows that distance is the second influence factor when choosing childcare services after quality of childcare services. It also explained that the reason travel cost is ranked as the least factor because the distance is near. Some may claim that having more childcare centres at the workplace would encourage more women to be part of the labour force, but such an alternative is not feasible especially for the private sector as it is pricey. Based on the result, proposing that

every housing area should have a quality childcare centre need to be highlighted instead of having more childcare services at workplaces.

As for factor influencing mode of transportation in chauffeuring, they ranked safety and security as the most significant factor. This defines the high percentage of parents personally chauffeured their children by car. High percentage of car is used as transportation observed in this preliminary study. In Malaysia, majority of parents chauffeured their children to school by private vehicle (Ibrahim et al., 2014; Nasrudin & Nor 2013; Wong, 2011; Yaacob et al., 2015). The transport used for chauffeuring is associate with person who chauffeured, and mode of transportation used by respondents but not with spouse. And the distance between home and childcare is near but far away from respondent's workplace. It can be assumed that most of university's staff is responsible for chauffeuring their children to childcare services on the way to university by car. As mentioned before, Universiti Malaya implemented flexible working arrangement, allowing staff to clock in between 7.00 am to 10.00 am. Hence, flexibility in working hour associate with chauffeuring their children because working parents able to schedule between work and chauffeuring (Sener et al., 2019). And flexible working hours encourage parents to link and chauffeur their children (He, 2013).

## 6. CONCLUSION

Overall, the aim of this preliminary study is to obtain insight of travel behaviour of working parents in chauffeuring children among university's staffs. This preliminary managed to identify socio-demographic variables associated with travel behaviour in chauffeuring children to childcare services. To conclude, this preliminary survey will be improved to conduct an actual survey for in dept and statistically analyse. It is necessary to conduct a better survey in order to investigate the travel behaviour of working parents in chauffeuring children as it will be contributed to not only transportation planning but also childcare services planning. Understanding how working parents travel with their children especially to childcare services should remain as a priority to suggest appropriate support systems.

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