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Parents Perception toward Road Safety Related to the Potential of Cycling to School in Urban Area

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Abstract: This study focuses on parents' perception on road safety with regards to potentially consider cycling to school as a mode of transportation in Taman Medan, within the Petaling Jaya Municipal area in Selangor, Malaysia. The data was obtained from a set of questionnaires, from two hundred and fifty five (n = 255) respondents whom participated in this study. The parents' concerns on road safety as are the reason why most parents do not allow their children to cycle to school. Road safety concerns are also explored with regards to the cycling facilities along the route to schools that was suggested, the majority of parents suggested on the exclusive bike path facilities for their children cycling to school. Finally, parents will only allow their children to cycle to school if the distance is within 500 meters.

Keywords: *road safety, cycling to school, physical activity, active transport, encouraging factor for cycling*

1. Introduction

Doing physical activity regularly for children and youth is very important for their health (Buliung et al., 2009). According to Chriqui et al. (2012), ideally 60 minutes of physical activity should be spent every day. In their researches,Tudor-Locke et al. (2001); Cooper et al. (2003); Timperio et al. (2004); Boarnet et al. (2005); Timperio et al. (2006); Faulkner et al. (2009) and Buliung et al. (2009) stated that for youth, cycling as one of the active mode of transport to school could increase physical activity for the children.

Parents are actually aware that cycling as a physical activity is essential for health of their children. It can be the beginning of realization of willingness to allow their children to cycle to school. But it must be supported with some convincing factors such as a friendly neighborhood to carry out activities outside the residence, a safe and friendly environment away from potential accidents and crime when cycling to school.

The willingness of the children to cycle to go to school is high enough. But unfortunately only a few children can do it, because parents do not allow their children to cycle to school. Gatersleben et al. (2001) conducted a survey among parents of primary school children, the result of willingness to cycle to school is 30% but only 1% of them can make this a realization.

Parents have an influencing role in the lowering the chances of bicycles used as a means of transportation for children to go to school. They are really concerned of their child's safety along the travelling routes to school. They are concerned on the safety from other traffic users and crime. The availability of adequate and environmental friendly cycling route will also be a consideration. According to Soole et al. (2011), child-related risks, children's safety as pedestrians and cyclists was also compromised by the behaviour of drivers, especially those exceeding the speed limit in residential environments, and in addition their research stated that young children are typically still developing their ability to make sound and accurate judgments when interacting with the road environments. The number of accidents involving children are also consideration for their parents before allowing their children to cycled to school, María de Lourdes Martínez (2010) suggested that more than 50 % of children less than < 15 years old are involved in transport-related injuries in Nicaragua.

Parents are also concerned on the availability of an officer at intersections to help their children cross the road safely. If the requirement mentioned above is not met, then they would rather let their children to use other transportation, such as; school buses, public transport or the parents themselves drop and pick up their children from school by car and motorcycle.

2. The Survey

This study focuses on parents perception regarding road safety for cycling to school within Taman Medan areas, within the Petaling Jaya Municipal area in Selangor, Malaysia**.** A field survey was undertaken. A set of questionnaires was prepared and distributed to parent as respondents in this area. The questionnaire covers sociodemographic data, mode share for travelling to school and the road safety perception for cycling to school.

Analyses were conducted using descriptive procedures from SPSS version 17. Chi-square tests are conducted to explore the influence of socio demographic characteristic corresponding to road safety perception. To seek the most encouraging factor on the parents permitting cycling to school, The Analytical Hierarchy Process (AHP) was conducted.

Socio-demographic data of respondents are summarized in Table 1, two hundred and fifty five (n = 255) parents participated in this study. There was 61.3% males and 38.7% females (Table 1). Respondent's ages are placed in 4 groups. As presented in Table 1, the majority age of respondents is between 30 and 40 years old (43.8%), followed by 40-50 years old (29.7%), more than 50 years old (21.9%) and under 30 years old (4.5%). Moreover the majority of respondent is married (90.2%). Regarding occupation of respondents, there are five categories of respondent's occupation in this study, namely under the trading (23.0%), private (31.9%), housewife (7.0%), government employee (27.7%) and retired (3.1%).

As shown in Table 1, the majority of respondent have an income at the level between 326 USD and 978 USD (44.9%), followed by 978-1630 USD (22.3%), less than 326 USD (12.9%), and more than 1630 USD (19.9%). Most of the respondents only have one car (55.9%) followed by two cars (22.3%), don't have a car (16.0%) and More than 3 cars (2.0%).

Table 1: *Socio-demographic data of respondents*

Demographic characteristic	N	Percentages
Gender		
Mother	156	61.30%
Father	99	38.70%
Marriage status		
Married	248	97.30%
Divorced	8	3.10%
Occupation		
Government employee	71	27.70%
Trading	59	23.00%
Private	100	39.10%
Housewife	18	7.00%
Retired	8	3.10%
Age		
< 30 years old	12	4.70%
30 – 40 years old	112	43.80%
40 – 50 years old	76	29.70%
> 50 years old	56	21.90%
Income		
< 326 USD	33	12.90%
326 – 978 USD	114	44.90%
978 – 1630 USD	57	22.30%
> 1630 USD	51	19.90%
Car ownership		
None	41	16.00%
1	143	55.90%
2	57	22.30%
3	10	3.90%
> 3	5	2.00%

3. Parents Perception on the Safety of Neighborhood Surroundings

Timperio et al. (2006) and Isler et al. (2008) argued that physical neighborhood environment and social aspects are among aspects that could influence children to go to school by cycling and walking. It was also stated that many children in neighborhood environment would give higher opportunities for cycling and walking together with other children to school. Regarding safety of neighborhoods surrounding for physical activities alone, the parental concerns where about road safety and 'stranger danger'. Both of them are major causes that becomes are parent's concern to restrict their children's outdoor play and active transport (Carver et al., 2008).

Regarding neighbourhood surrounding safety for children doing physical activity alone outside their home, in Table 2 it can be seen that, most parents slightly suggested that the neighbourhood surroundings was not safe for doing physical activities, only 48.4% of parents stated that their neighbourhood surrounding is safe for their children. In this study, there is a different viewpoint among fathers, mothers and single parents regarding their neighborhood surroundings' safety for physical activities. Most fathers stated that their neighbourhood environment is safe (60.2%), while the majority of mothers and single parents stated that their neighbourhood environment is not safe (58.0% and 56.0%). The percentage of fathers who answered safe, is was higher than mother. Based on Chi-square test, there is a significant influence of the position of the family corresponding to the perception of neighbourhood surroundings safety, $\chi^2_0 = 7.498 > \chi^2_{0.05\,(2)} = 5.991$.

Table 2: *The perception of neighbourhood environment safety*

Socio-demographic characteristic	Safe	Not Safe
All respondents	48.4%	51.6%
Mother	42.0%	58.0%
Father	60.2%	39.8%
Single parent	44.0%	56.0%
≤ 326 USD	69.7%	30.3%
326 – 978 USD	50.4%	49.6%
978 – 1630 USD	49.1%	50.9%
≥ 1630 USD	29.4%	70.6%

Table 2 also presents the correlation among group of parent's level of income againts the perception of the neighbourhood surroundings safety for their chidren to do physical activity outside. There is a consistent pattern of the respondents' income level corresponding to the perception of the neighbourhood surroundings safety perception for doing activities outside their home. The parents who stated that the neighbourhood environment is "safe" decreased as the

income level increased. The percentage of parents who earned an income below 978 USD who stated neighborhood surroundings is are "safe" are higher than the percentage of the parents who earned an income more than 978 USD. Chi square test is also conducted to explore the difference between parent's income less than 978 USD with the income 978 USD above, the result is the significant difference occurs between those income regarding the perception of the neighborhood environment safety , $\chi^2_0 = 5.561 > \chi^2_{0.05\,(1)} = 3.841$.

4. The Transportation Mode used to School

It was reported that there was a decrease of active transport in several countries. USA, Germany, Austria and United Kingdom has been reported the decrease of active travel to school (ATS), (Van der Ploeg et al., 2008; Metcalf et al., 2004; Scherer, 2006 and Chriqui, 2012). Cole et al. (2010) said that in a majority of countries in the late 20th century have observed that active transports were significant decreased.

Parents often preferred to drop and pick up their children to school rather than encouraging their children to walk, cycle or use public transport as the result of that knowing other families are no longer encouraging those active transport (Carver et al. 2008). Due to concern about road safety and crime, many children are dropped and picked up after their activities at the school in order to protect them. Moreover, 'chauffeuring' of children to school were an attempt by parents to avoid from risk and injury to their children (Timperio et al. 2004). In line with the findings Hillman et al. (1990) and Carver et al. (2008), it was stated that parents put the restriction on their children's physical activity due to concerns about possibility of child injury. Temperio et al. (2004) stated regarding the issues of safe active transport conditions, the parental perceptions have had negative correlation with 10 - 12-year-old children's active transport to their destination. The parents' protections for their children safety along the journey to the school are likely contributing factors as to why active commuting is at low levels. The parents' safety concern was mostly related to dangers from traffic (Isler et al. 2008).

The study by Hillman et al., (1990) and Carver et al., (2008) suggested that parent' concerns about road safety resulted in the restriction of their children in travelling alone from school to their home. Parental concern on traffic and pedestrian safety may not be unfound, as the cause of pedestrian and cyclists injured, fatality and hospitalization in Australian children (Timperio et al., 2004). Further research is needed to objectively measure neighborhood road safety by analyzing road characteristics and traffic calming measures in detail, and to examine its influence on children's physical activity and active transport, Carver et al., (2008).

As presented in Table 3, with regards to the means of transportation for their children from home to school, most parents (55.8%) would drop and pick them up at school by private vehicle (by motorcycle, 29.2% and by car, 26.6%), followed by letting their child take a bus school (36.9%). Only 4.2% of parents would allow them to take public transport and 3.6% allowed them to walk to and from school. Furthermore, most mothers and fathers also drop and pick them up at school by private vehicle (56.1% and 57.8%). Based on Chi-square test, there is no significant influence of the position in household towards the transportation mode of choice for the children to go use to go to school, $\chi^2_0 = 15.438 < \chi^2_{0.05\,(8)} = 15.507$.

Table 3: *Transportation mode used for the children to go to school*

Socio-demographic	You take them by car	You take them by motor cycle	School bus	Walking	Public transport
All respondents	26.6%	29.2%	36.5%	3.6%	4.2%
Mother	26.3%	29.8%	40.4%	1.8%	1.8%
Father	26.8%	31.0%	26.8%	7.0%	8.5%
Single parent	28.6%	-	71.4%	-	-
≤ 326 USD	8.0%	72.0%	4.0%	12.0%	4.0%
326 – 978 USD	15.7%	33.7%	41.6%	4.5%	4.5%
978 – 1630 USD	33.3%	16.7%	45.2%	-	4.8%
≥ 1630 USD	58.3%	2.8%	36.1%	-	2.8%

Based on Chi-square test, there is a significant influence of the income level towards the Transportation mode for the children to go to school, $\chi^2_0 = 65.564 > \chi^2_{0.05\ (12)} = 21.026$. As presented in Table 3, most parents earned income less than 326 USD uses a motorcycle to drop at and take their children from school (72.0%), while the parents who earned an income of 326 – 978 USD (41.6%) and 978 – 1630 USD (45.2%) would allow their children to take the school bus and parents who earned an income more than 1630 USD would drop at and take their children from school by car (58.3%).

The consistent pattern occurs among income levels towards car and motorcycle usage as transportation mode to the school. The car user increased as the income level increased. However, as the income levels increased motorcycle users decreased. No parents earned an income of 978 – 1630 USD and more than 1630 USD would let their child walk to school. In several countries, social-economic status (SES) influenced active travel to school for children.

In Rotterdam the adolescent with at least one parent without a paying job were more likely to be a non-active commuter while travelling by either walking

and cycling seems to be a most commonly prominent transportation mode among adolescents of two working parents (Bere et al., 2008). In the areas of low SES, the neighborhood provides the opportunities for inexpensive forms of physical activity, such as walking and cycling (Carver et al, 2008).

There was a contrary phenomenon seen happening in the USA and Portugal, adolescents from higher socioeconomic status were not more likely to walk or cycling to school (McDonald, 2007; Mota et al. 2007; Bere et al, 2008). McMilan (2012) in her research stated that both socio-demographic variables showed significant influence for active transport probability to school: as household income increased the probability of the active transport to school increased, the likelihood of the decreasing of non-motorized school travel was seen as the increasing of number of children in the household (KIDS), so did the likelihood of active transport to school.

5. The Parent whom permitted the Children to Cycle to School

Figure 1 summarizes the bicycle ownership of the children, the results in Figure 1 reflect the parents slightly that more of them do not allow their children to own a bicycle (54.3% compared to 45.7%). Most mothers do not allow their children to have their own bike (40.8%), while the majority of fathers allow (52.9%). Based on Chi-square test, there is no significant influence of the position in household towards the permission of having their own bike, $\chi^2_0 = 3.206 < \chi^2_{0.05\,(1)} = 3.841$.

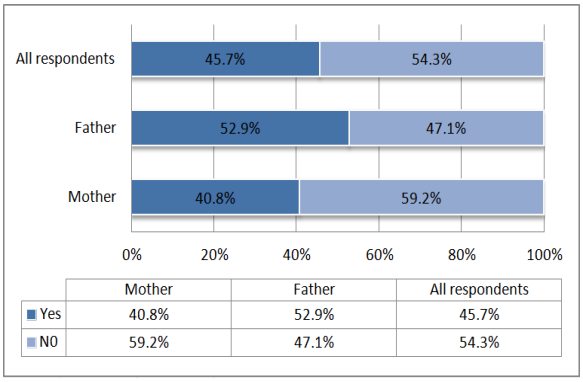

Figure 1 *Bicycle ownership*

In Figure 2 it can be seen that, the main reason why parents do not allow their children to own their own bicycle was due to road safety (50.7%), followed by the fact that the neighborhood was not safe for cycling (37.7%) and they argue that is not necessary for children to have their own bike (11.6%) . Most fathers' and mothers' concerns where about road safety (61.0%; 45.9%). Based on Chi-square test, there is no significant influence of the position in household towards the reason parents do not allow their children to own a bike, $\chi^2_0 = 5.145 < \chi^2_{0.05\,(4)} = 9.488$.

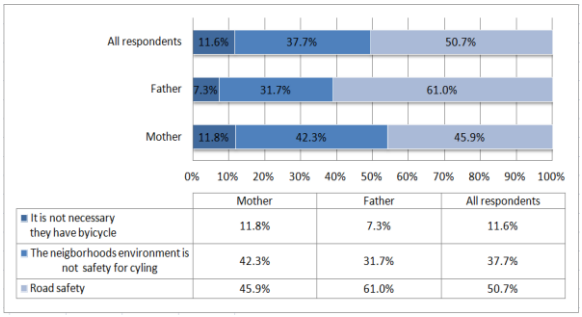

Figure 2 *The reason why parents do not allow their children to have their own bicycle*

Cycling to school is not an easy task: one needs to keep a steady rhythm and remain on the cycle track. One also needs to stop and cross the streets with care (Kullman and Palludan, 2011). Owen et al.,(2004); Mokhtarian et al., (2001); Saelens et al., (2003); Carver et al, (2008); Cole et al, (2010) stated that the decreasing of cycling to school was because the 'chauffeuring' of children to school increased. They also have found that environmental factors and demographic factors to be associated with the decreasing need of walking and cycling.

As presented in Table 4, most parents do not allow their children to cycle to school (76.8%). The percentage of fathers who allow cycling is higher than mothers (26.7% compares to 19.6%). Based on Chi-square test, there is no significant influence of the position in household towards the permission to cycle to school, $\chi^2_0 = 0.803 < \chi^2_{0.05\,(2)} = 5.991$.

Table 4: *The permitted for cycling to school*

Socio-demographic characteristic	Allow	Do not allow
All respondents	23.2%	76.8%
Mother	19.6%	80.4%
Father	26.7%	73.3%
Single parent	27.3%	72.7%
≤ 326 USD	64.7%	35.3%
326 – 978 USD	28.6%	71.4%
978 – 1630 USD	3.4%	96.6%
≥ 1630 USD	-	100.0%

Table 4 also shows the correlation of parent's level income towards the permission to cycle to school. There is a consistent pattern between the parent's income levels towards the permission for cycling to school. The permission decreased as the income level increased. The interesting result is that for parents who earned an income of ≤ 326 USD, most of them allow their children to cycle to school, while parents who earned > 326 USD do not allow. Moreover not one of the parents who earned an income > 1630 USD allowed their children cycling to cycle to school. Based on Chi-square test, there is the significant influence of the parent's income level corresponding to the cycling permission to school, $\chi^2_0 = 28.703 > \chi^2_{0.05\,(3)} = 7.815$.

6. The Factor Concerned Regarding the Permissions to Cycle to School

The distances, road traffic, the weather conditions, hilly routes, the safety, busy intersections for crossing, bad access to pedestrian crossings, and many things to carry are among commonly cited barriers for children when active transport to school is considered (Dellinger, 2002; DiGuiseppi et al., 1998; Timperio et al., 2004, 2006; Cole et al, 2010). Barriers for allowing children to cycle and walk to school is the fact that cycling and walking to, parents and caregivers have common concerns about their child's safety and distance to school (Ahlport et al., 2008; Di Guiseppi et al., 1998; Faulkner et al., 2010; Kerr et al., 2006; Martin and Carlson, 2005; Timperio et al., 2006; Chriquí et al, 2012).

As stated in the Muller research in 2005, respectively, the weather condition or seasons have a strong impact on student transport mode preference for students for travelling to school. Furthermore, linked with costs, the distance is recognized as the most important factor for discrimination between transport modes (public transport and car/motorcycle) and those with lower travel costs (walking and cycling). In Timperio et al, 2006 it was suggested that the present study found that some factors, such as the travel distance to school, hilly routes, the dangerous high traffic volume for crossing, and less accessibility and infrastructure for crossing were negatively associated with walking/cycling to school, those all factors mentioned have an important influence for the improvement of safer active transport environments and child-friendly urban design.

Table 5 shows reasons why parents do not allow their children to cycle to school. The parents concerned about the road safety as the reason. Most of the parents do not allow due concerns o road accidents (43.7%), followed by crime (32.2%), inadequate cycling facility on the road (17.2%), and the distance is too far (6.9%). This result is in line with researches before. As presented in Isler et al., 2008; Carver at al., 2008; Kerr et al., 2006; McDonald, 2007; Nelson, 2008; Sjolie and Thuen, 2002; Timperio et al., 2006; Bere et al, 2008 research, different reasons have been suggested for low and decreasing levels of active commuting such as safety concerns, traffic, road crossing, crime, convenience to drop children off on the way to work and environmental factors such as the ability to be able to walk and distance to school.

Table 5: *The main reason why parents do not allow for cycling to school*

Socio-demographic characteristic	The distance	Road accident concerned	Adequate cycling facility	Concerned about the crime
All respondents	6.9%	43.7%	17.2%	32.2%
Mother	8.9%	48.9%	17.8%	24.4%
Father	6.1%	36.4%	18.2%	39.4%
Single parent	-	44.4%	11.1%	44.4%
≤ 326 USD	20.0%	40.0%	33.3%	6.7%
326 – 978 USD	5.6%	44.4%	8.3%	41.7%
978 – 1630 USD	4.3%	47.8%	17.4%	30.4%
≥ 1630 USD	-	38.5%	23.1%	38.5%

Mothers more concerned about road accidents (48.9 %) while fathers are more concerned about the crimes (39.4%). Based on Chi-square test, there is no significant influence of respondent's position in household toward the Transportation mode for the children to go to school, $\chi^2_0 = 5.161 < \chi^2_{0.05\ (6)} = 12.592$.

In Table 5 can be seen that the reason why the parents do not allow their children to cycle to school is based on income level. Based on income level, most of the parents do not grant permission due to concerns on road accident. Except the reason of distance, there is no consistent pattern amongst income level towards the reason. Based on Chi-square test, there is the significant influence of respondent income level towards the Transportation mode for the children to go to school, $\chi^2_0 = 14.155 > \chi^2_{0.05\ (6)} = 12.592$.

7. The Encouraging Factors for Cycling to School

In this research the parents were asked regarding factors that could encourage them to allow their children to cycle to school.

The data analysis was conducted by using the Analytical Hierarchy Process (AHP). Consistency Ratio for the AHP analysis (All respondents, father and mother respondents) are 6.9 %; 6.8 %; 7.4 %. According Saaty in 1984, the Consistency Ratio value is not more than 10%.

The result can be seen in Table 6 the main factor that could encourage the parents to allow their children to cycle to school was the distance. Parents ranked the adequacy and safety route in second place and the safety of the neighborhood environment in third place. Children's physical activity can be impacted by road safety, Petch and Henson (2000); Carver et al., (2008) stated that it is now realized that road accidents involving children could be happening due to the various factors including the driver's attitude and/or the children and the physical/social environment conditions

Table 6: *Encouraging factors for cycling to school*

	All respondents	Father	Mother
Adequate and safe cycling facilities along the route to school	2	2	2
Need bicycle	7	7	8

facilities (bicycle parking area)			
Need helmet for your children	6	6	6
Need separate path for cycling	4	3	4
Safety neighbourhood environment for children	3	4	3
Speed zones along the cycling route	8	8	7
The crossing guard along the cycling route	5	5	5
The distance from your house to school is not far	1	1	1

Fathers and mothers have equal view point for first rank until sixth rank regarding the encouraging factors for cycling to school. In the seventh rank fathers consider the bicycle facilities (bicycle parking area) more while mothers consider more about speed zones along the cycling route.

8. The Permitted Distance for Cycling to School

As stated in Carver et al research in 2008, safety is identified as a potential influence for active transport. Timperio et al., (2006) suggested that the attention on school location related to areas of residence and traffic routes. This is an important factor in planning for new communities and when the policy of school zone is made.

Children whom have shorter distance are likely have more opportunity to commute by active transport to school (McDonald, 2007; Merom et al., 2006; Nelson et al., 2008; Børrestad et al 2011). The Netherlands have a tradition of cycling for a long time; they a better built environment for cycling, which has the result the good infrastructure which is more safe and comfortable for cycling than in other countries (Bere et al, 2008).

In line with Dellinger (2005); Ewing et al., (2004); Timperio et al., (2006); Merom et al., (2005); Isler et al., (2008) research, suggested that travel distance to school and high volume of traffic were significantly associated with non-active transport commuting. While as stated in Buliung et al, 2009 research, the migration from elementary schools to larger secondary schools could change the type of transport.

From the school authorities, road traffic, distance from the residence to school, lack of sidewalks and cycling paths, lack of guards for crossing, bad weather and the crimes reported are considered as barrier for active transport to school (Chriqui et al, 2012).

As stated in Boarnet et al., (2005) research, the improvement of pedestrian and bicycle facilities such as improvement of sidewalks and traffic control system can impact the preference of children for active transport to school. Isler et al., (2008) stated in Payerne urban area, the concerned about safety, there are more student to be accompanied by their parents

Figure 3 shows that most of the parents only allow their children cycling to school within 1 km (75%).

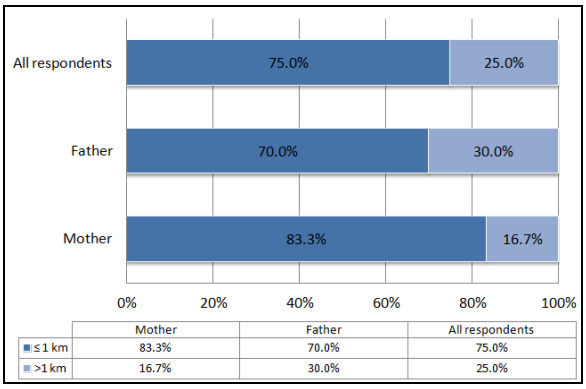

Figure 3 *The permitted distance for cycling to school*

Figure 3 also shows fathers that allow their children to cycle further than the mothers. The percentage of fathers that allowed their children to cycle to school with the distance more than 1 km is higher than mothers.

9. The Cycling Facilities Suggested to Cycle to School

The road safety concerned was shown by parents on the cycling facilities suggested. The parents concern on dangers from other traffic on the road is very high. As the result in Figure 4, regarding cycling facilities, the majority of parents suggested the exclusive bike path for their children to go to school (64.1%). A few parents suggest on the existing road but it must be provide a cycling lane to separate the cyclist from other traffic. No one would let their children ride their bicycle on a road mix with other traffic, most of them proposed an exclusive bike path for their children.

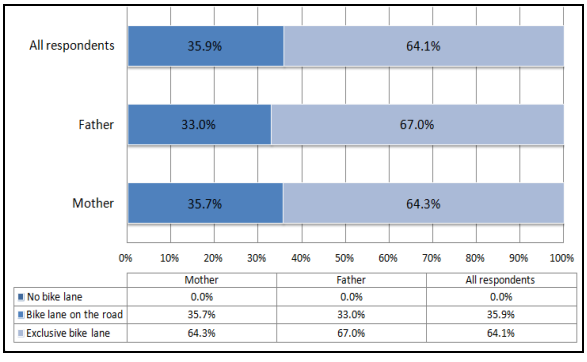

Figure 4 *Cycling facilities suggested*

Based on Chi-square test, there is no significant influence of respondent's position in household toward the cycling facilities suggested, $\chi^2_0 = 1.295 < \chi^2_{0.05\,(6)} = 12.592$.

10. Conclusion

Regarding neighborhood surroundings safety for their children doing physical activity, the majority of parents stated that their neighborhood surrounding are not safe for their children to do physical activity alone outside the home. Most fathers argue that the neighbourhood surrounding is safe while most mothers and single parents stated that their neighbourhood environment is not safe. There is significant influence of the position in the family towards the perception. The consistent pattern occurs on the respondents' income level corresponding to the perception of the surrounding neighbourhood safety. Parents who stated neighbourhood environment is 'safe' decreases as the income level increases. There is significant influence of the position in the income level towards the perception of the neighborhood environment safety.

Regarding the means of transportation for their children from home to school, most of the parents would let their children take a school bus. Even though the dependence on private vehicle ishigh enough, almost 50% of the parents drop and pick them up from school. Fathers are higher than mothers on private vehicle dependence, but the difference is not significant. The consistent pattern occurs among income levels toward cars and motorcycles used as transportation mode to school. The car used increases as the income level increases. While as the income level increases motorcycle usage decrease. There aren't parents who earned income more than 978 USD that would let their children walking to school. There is significant influence of the income level towards Transportation mode for the children to go to school.

Most parents do not allow their children to cycle to school. The percentage of fathers who allow cycling is higher than mothers. There is no significant influence of the position in household toward the permission for cycling to school. The consistent pattern is between the parent's income level toward the permission for cycling to school. The permitted decrease can be seen as the increasing of income level. There is the significant influence of parents' income levels towards the permission to cycle to school. The interesting result is for parents who earned an income ≤ 326 USD, most of them allow their children to cycle to school, while parents > 326 USD do not allow.

As the reason for permitting their children to cycle to school, most parents do not allow this due to concerns of road accidents. The mothers are more concerned on road accidents while fathers more concerned about crimes. There is no significant influence of respondent's position in household towards the transportation mode for the children to go to school. Based on income level, most parents do not allow due to concerns of road accidents. Except that the reason of the distance, no consistent pattern amongst income level toward the reason. There is no significant influence of respondent income level towards the transportation mode for the children to go to school.

The road safety concerned was shown by parents by the cycling facilities suggested. The parents concerns about the dangers from other traffic on the road are very high. Regarding cycling facilities, a majority of parents suggested exclusive bike path for their children to go to school. A few parents suggested this on the existing road but that this must be provided by a cycling lane to separate the cyclist from other traffic. No one would let their children ride their bicycle on the road which is mixed with other traffic, most of them proposed exclusive bike path for their children.

Parents would like to allow their children to cycle to school if there is a safe bicycle path along the route to school, they also stated that the friendly neighborhoods for cycling is important for children to cycle to school. Fathers expect the friendly neighborhood for active transport in order to encourage them to allow their children to cycle to school, followed by the presence of a guard to help their children across the street. While mothers more concern about the availability of safe cycling path.

Most of the parents only allow their children to cycle to school within 1 km. Fathers allow their children to cycle further than mothers. The percentage of fathers that allowed their children to cycle to school with the distance more than 1 km meters is higher than mothers.

11. Acknowledgements

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