

# Improvement of Psychosocial Supportive Mobility through 7-seater Vehicles: The Scope of Child Restraint System

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## REVIEW

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**Abstract** – *The regulation of Child Restraint System (CRS) in Malaysia will pose a psychosocial challenge for road users' mobility: specifically, the limitation of in-vehicle space to allow for the whole family to travel together. Secondary data that various agencies published indicate significant number of road users will face this issue as their family sizes are five and above. The country's collectivistic culture further contributes to the seriousness of the issue as people need to travel together to fulfil the demands and norms of the society, which includes various "makan-makan" and gathering events. While 7-seater are the potential solution for this issue, the users' financial constraints limit them to only selective options of such vehicles in the market requiring them to make trade-offs. The article ends with a calling to the government to consider various approaches as to make the mobility in Malaysia safer and more psychosocially supportive.*

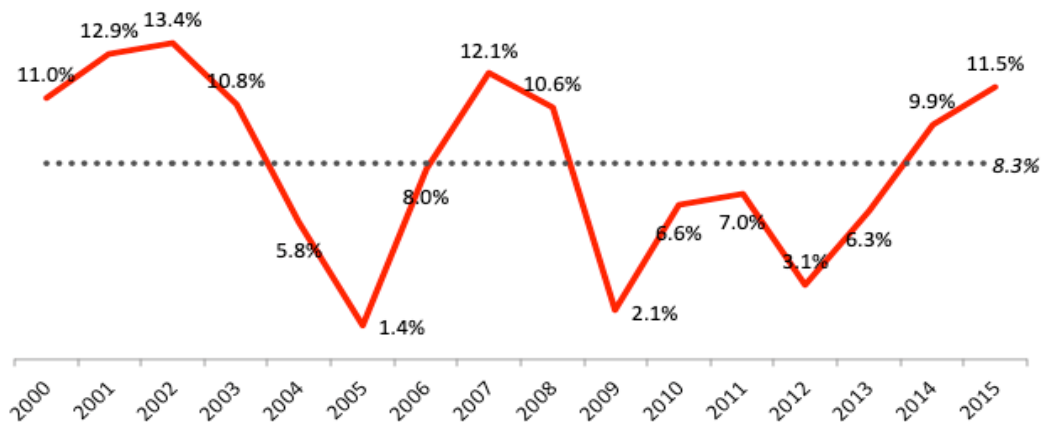
**Keywords:** Child Restraint System (CRS), psychosocial, 7-seater

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## 1.0 BACKGROUND

Road safety is one of the prominent land transportation issues in Malaysia. Scrutinising the statistics from the Royal Police Malaysia triggered a mixed of sadness and frustration. Figure 1 shows the trend of fatalities for the passive road users (RUs) (Ab-Rashid & Jawi, 2017). The trend highlights fatality percentages involving passive RUs of age 0 to 10 years old. They are the users of child restraint system (CRS), as Wazir and colleagues (2012) has established that children around 11 years old are tall enough to use the adult seatbelt (i.e. 130 cm). The trend indicates fluctuation across the 16 years. There was a marginal increase from 11.0% in 2000 to peak at 13.4% in 2002 before diving to the lowest figure at 1.4% in 2005. The next peak was in 2007 at 12.1% before it went down to 2.1% two years after. The

number increased in the next two years before decreased to 3.1% in 2012. The statistics since then has increased to peak at 11.5% in 2015, which is above the 16 years average of 8.3%.



**Figure 1:** Plot fatalities figure for percentage of inferred inactive RUs over the years

These figures show the fatalities of children who would probably were safe if the use of CRS was made mandatory earlier (Jawi et al., 2016), as most of these passive road users were travelling unrestrained (Ariffin et al., 2014; Sharina et al., 2015; Lamin et al., 2015; Lamin et al., 2016; Low et al., 2016; Borhan, 2017). Despite evidences of its benefit, various studies have demonstrated the effectiveness of CRS in mitigating non-fatal injury risk for these passive road users (Elliott et al., 2006; Rice & Anderson, 2009; Arbogast et al., 2004). Anderson et al. (2017), furthermore, supported the use of booster seat among older children.

This circumstance, however, is about to change as the Minister of Transport Malaysia has announced the intention to regulate child seating when travelling in Malaysia by 2020 (The Star Online, 2018). While this is a positive development for road safety in the country, the announcement has stirred up public uneasiness. Anecdotal evidences indicate that besides financial issue, other prominent reason of CRS low usage is the cabin space. For instance, the A-segment and B-segment sedan car can arguably carry up to five persons with three of them at the back seat. Resultant of installing two CRS at the rear is insufficient space for one of the rear occupants. Simply, both the lower end segments, which populates most of the registered vehicles in Malaysia (Jawi et al., 2017), cannot fit in a family of five if there are at least two CRS users.

When travelling is supposedly can become quality family time, they are left with either having leaving somebody at home, or splitting into two or more vehicles. Neither option encourages a psychosocial supportive mobility. A low psychosocial supportive mobility is when the moving system is not sensitive to the psychosocial needs of the road users.

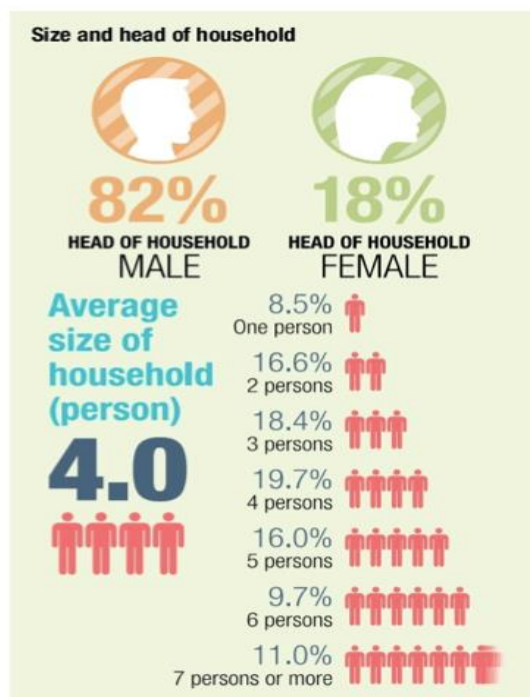
A psychosocial supportive mobility refers to “movement system that strengthens and retains the ability of people to move and interact in accordance to mental and emotional wellbeing principles, and social values” (Ab-Rashid et al., 2018). In other words, a psychosocial supportive mobility would allow the users to travel in harmony, secure, safe and comfort regardless to any change in the regulations. In the case of CRS, a psychosocially supportive system should allow the whole family member to travel together without compromising the safety and comfort of every occupant.

This paper intends to discuss the issue of CRS usage considering psychosocial and socioeconomic factors of Malaysian road users and the potential solution for this quandary.

## 2.0 IN-VEHICLE SPATIAL CONFLICT

The idea of a family travelling together in the same car is very compelling to Malaysian. As a collectivistic culture, Malaysian upholds togetherness among family members. This includes attending relatively frequent *makan-makan* events that normally welcome extended family members and friends. From the small gathering to celebrate a new home to a grand wedding reception, for instance, family size is a legit factor contributing to the in-vehicle spatial conflict.

The fifth Malaysian Population and Family Survey 2014 reported that the average household size in Malaysia is four persons corresponding to 19.7% of the respondents (NPFDB, 2016). Further scrutiny of the survey data revealed compelling situation: 16.0% of the respondents have five people in the family, and 20.7% of them reported the family size of six and above. Accumulating these two groups, 37.2% of the respondents in the survey will potentially face the issue of travelling together once the CRS regulation takes place.



**Figure 2:** Household size in Malaysia (NPFDB, 2016)

This argument, however, stands only if at least one of the family members is the user of CRS. The survey data indicates that this is indeed the case. The average age of respondents during their first marriage are 26.4 and 23.0 years old for male and female, respectively. This young age provides a strong indication about the demands of CRS in the family for the next nine years, the least. To strengthen the argument, furthermore, when asked about the number of children the respondents aspire, their answers range from 3.4 to 4.3 with the average of 3.9 children.

Besides the local social gatherings, Malaysia is where a multitude of cultural celebrations and festivals exists all year round. At the time of writing, the feast of festivals begins with the Thaipusam in January; and Chinese New Year in February; *Isra'* and *Mikraj* in April; Labour Day, *Awal Ramadhan*, *Wesak*, *Nuzul Al-Quran* and *Pesta Keamatan* in May; *Hari Gawai* and *Hari Raya Aidilfitri* in June; *Hari Raya Aidiladha*, and *Hari Kemerdekaan* (Independence Day) in August; *Awal Muharam* and *Hari Malaysia* (Malaysia Day) in September; Deepavali in October; and *Maulidurrasul* in November before ending with Christmas in December. Of course this list excludes other state-specific holidays such as the Hari Hol of Pahang and Johor, and Federal Territory Day.

As these are the national holidays, people take the opportunity to *balik kampung*, i.e. a normally long distance travel of working age people and their family from various parts of the urban area to the semi- or non-urban area visiting their parents and relatives. Consequently, the in-vehicle spatial conflict becomes prominent. Not compromising this social norm, some users simply make do with improper seating and restraining to be on the road with this multi-fold increase of traffic volume and crash risk.

In short, the insufficient space and safety is not irrelevant for a significant numbers of road users in Malaysia, for a remarkable period of traveling time. While a more sustainable solution is preferred, the readily available potential solution in the market is 7-seater. Being able to ferry seven passengers at one time, it is not totally uneventfully nevertheless. The following section discusses further on its feasibility.

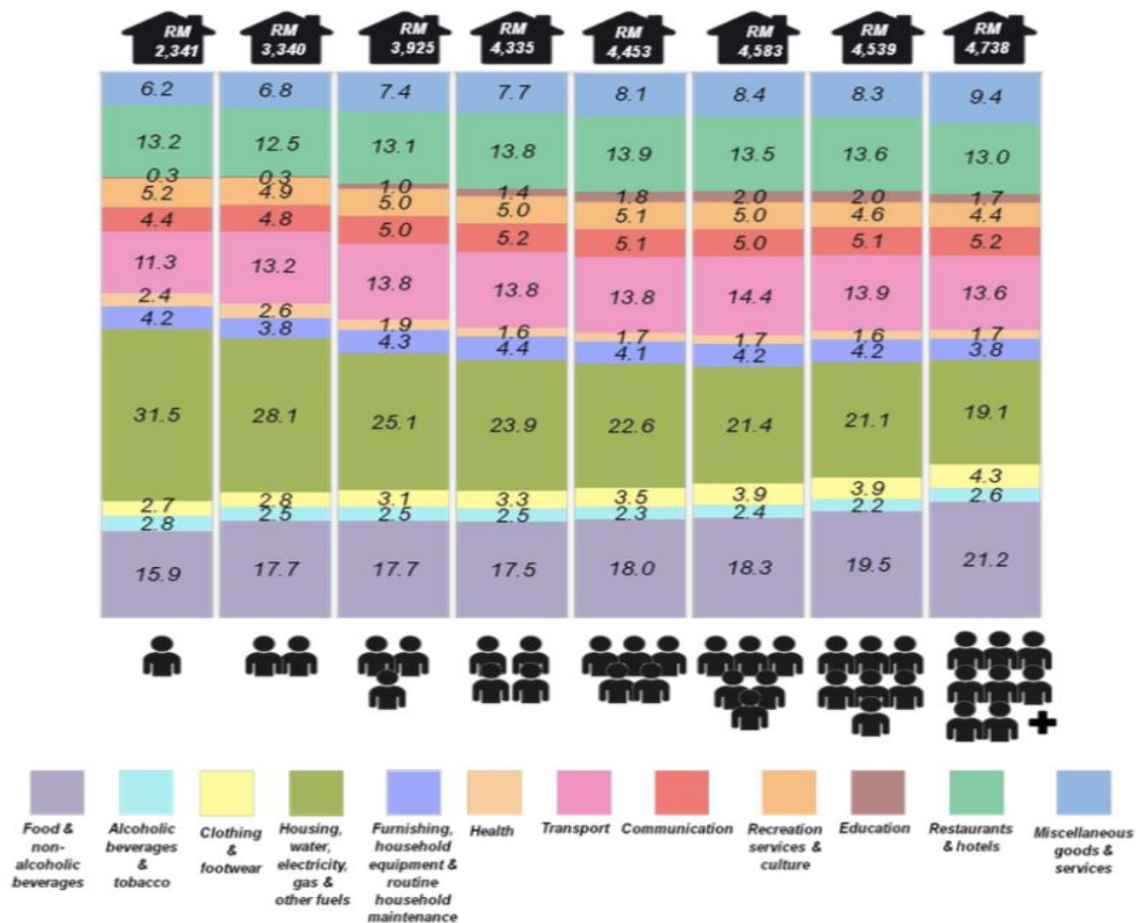
### **3.0 7-SEATER: THE POTENTIAL SOLUTION**

A potential solution for the post-CRS regulation in-vehicle spatial conflict is the 7-seater vehicles. Such vehicles have the capacity to ferry more people at the same time, which is accommodative to the relatively big family. Even though the use of 7-seater cannot eliminate the issue, certainly the 16.0% of the participants of fifth Malaysian Population and Family Survey will benefit from the vehicle, and possibly a significant other from the remaining 20.7% participants.

While the 7-seater are already in the market, their feasibility to fully address this issue is still of a question. This is because another noteworthy finding from the fifth Malaysian Population and Family Survey was about the financial struggle the family are facing. The top two problems or issue for these families are financially related.

In addition, the Report on Household Expenditure Survey 2016 reported that the average household spends 13.7% of their income for transportation (DOSM, 2017). Inspection of Figure 3 reveals detailed expenditures based on family size. The per cent of income the families of five and above committed in a month for transportation varies from 13.6% to 14.4%. Given the median monthly income is RM 5,228, about RM 711 to RM 752 per month is allocated for transportation excluding fuels and other related travelling expenses such as highway tolls.

Therefore, for users to buy a 7-seater to fit RM 752 monthly for nine years (i.e. the maximum years for car loan in Malaysia), assuming the interest rate of 2.5% and 10% down payment, the maximum vehicle price for them is approximately RM 88,000. Online surveys on the available 7-seater in the market at the time of writing that meet this requirement are in Table 1.



**Figure 3:** Expenditures based on family size

Inspection of Table 1 indicates that to get the most space, users would have to opt for Proton Exora that offers the most horizontal space at 1809 mm. This option, however, would force the customer to sacrifice the safety. Alternatively, users who consider safety as higher priority than space may settle with Honda BR-V but with the catch of price increase. Honda BR-V is at the top of the chart in terms of pricing ranging from RM 80,989.00 to RM 87,701.00. In contrast, the cheapest of them is Perodua Alza for RM 51,490.00.

This comparison highlights the dilemma, or rather limitation users will be facing when the implementation of CRS regulation takes place in 2020. To address this, the government could encourage more manufacturers to bring in more 7-seater in the market; and also to take into account the purchasing power users have in acquiring the vehicles.

Present article has no intention to discuss in depth about approaches that government can adopt to influence the final price of the car, but taxation mechanism is one of the significant contributions to the final price of the vehicle. Besides manufacturers and users, the financial institutions are also involved in determining the price through their hire-purchase credit facility. The lower the interest rate, the lower the final price users need to bear. Alternatively, users can also opt for used 7-seater vehicles (with higher interest rate) or long-term rental to the access of psychosocial supportive vehicles for their family.



**Table 1:** Summary of 7-seater available in the market with its associated price

Make & Model	Price (RM)	Year of Introduction / Latest Facelift	Year of Sale (Reference)	Vehicle Width (mm)	NCAP Rating
Proton Exora	62,008.00 – 69,347.00	2009 / 2017	2017 (www.carbase.my/proton/exora)	1809	4-star
Perodua Alza	51,490.00 – 62,690.00	2009 / 2018	2018 (www.perodua.com.my/ourcars/alza)	1695	4-star
Honda BR-V	80,989.00 – 87,701.00	2017 / -	2018 (m.honda.com.my/brv)	1735	5-star
Toyota Avanza	73,800.00 – 86,000.00	2012 / 2015	2018 (www.carbase.my/toyota/avanza)	1660	4-star
Proton Ertiga	56,773.00 – 62,278.00	2016 / -	2018 (www.proton.com/en/find-a-car/ertiga)	1695	4-star
Grand Livina	82,194.71 – 85,968.31	2007 / 2013	2018 (www.carbase.my/nissan/grand-livina)	1695	4-star
Toyota Sienta	90,200.00 – 101,900.00	2016 / -	2018 (www.carbase.my/toyota/sienta)	1695	5-star

Note: All NCAP ratings are from ASEAN NCAP except for Proton Exora's ANCAP rating. The year of sale takes into account face-lifted model as well.

### 3.0 CONCLUSION

Road safety, being a social issue, deserves a social approach treatment. The mobility system in Malaysia demands novel, radical yet realistic ideas to uphold the ethos of collectivistic culture and psychosocial supportiveness. This article highlights potential conflict when the regulation of CRS takes place in 2020 – insufficient space inside the vehicle to allow for psychosocial supportive travelling. Significant number of road users, due to the big number of family members, will likely to face the issue. While 7-seater is the potential solution for this issue, the users' financial constraints limit them to only selective options of such vehicles in the market requiring them to make trade-offs. The government, therefore, is called on to consider various approaches to minimise the required sacrifices so that mobility of road users in Malaysia is psychosocially supported.

### REFERENCES

- Ab-Rashid, A.A., Jawi, Z.M. & Azman, N.S. (2018). *A Psychosocial Approach to Sustainable Mobility in Malaysia*. Paper presented at the 3rd International Conference on Sustainable Mobility, Melaka, Malaysia.
- Ab-Rashid, A.A., & Jawi, Z.M. (2017). From Cradle to Rocking Chair: Road User Safety Investigation Framework. *Journal of Advanced Research in Social and Behavioural Sciences*, 9(3), 61-67.

- Arbogast, K.B., Durbin, D.R., Cornejo, R.A., Kallan, M.J., & Winston, F.K. (2004). An evaluation of the effectiveness of forward facing child restraint systems. *Accident Analysis & Prevention*, 36(4), 585-589.
- Ariffin, M.Q.M., Soid, N.F.M., Borhan, N., & Sukardi, A. (2014). Child restraints system use among children while travelling to day care centres Kajang, Malaysia. *Journal of Asian Scientific Research*, 4(7), 356.
- Borhan, N. (2017). *CRS Usage in Vehicles Entering Klang Valley in Effectiveness of OPS Selamat 8/2016: An Evaluation Study*. MRR No. 241, Malaysian Institute of Road Safety Research.
- DOSM (2017). *The Report on Household Expenditure Survey 2016*. Department of Statistics Malaysia, Putrajaya, Malaysia.
- Elliott, M.R., Kallan, M.J., Durbin, D.R., & Winston, F.K. (2006). Effectiveness of child safety seats vs seat belts in reducing risk for death in children in passenger vehicle crashes. *Archives of Pediatrics & Adolescent Medicine*, 160(6), 617-621.
- Jawi, Z.M., Isa, M.H.M., Mohamed, N., Awang, A., & Osman, M.R. (2016). A systemic analysis of the usage of safety items among Malaysian private vehicle users. *Journal of Mechanical Engineering and Sciences*, 10(3), 2262-2274.
- Jawi, Z.M., Solah, M.S., Ariffin, A.H., Shabadin, A., Ali, A., Osman M.R., & Wong, S.V. (2017) *Automotive Consumerism: A Study of Car User's Practices & Behaviour in Klang Valley, Malaysia*. MRR No. 217, Malaysian Institute of Road Safety Research.
- Lamin, F., Osman, M.R., Low, S.F., Ishak, S.Z., & Wong, S.V. (2015). *Effectiveness of OPS Selamat 7/2015 An Evaluation Study*. MRR No. 211, Malaysian Institute of Road Safety Research.
- Lamin, F., Osman, M.R., Low, S.F., Ishak, S.Z., & Wong, S. V. (2016). *Effectiveness of OPS Selamat 8/2016: An Evaluation Study*. MRR No. 241, Malaysian Institute of Road Safety Research.
- Low, S.F., Borhan, N., Shariff, S., & Idrus, S.H. (2016). *Impediments to the Use of Child Restraint System in Selangor*. MRR No. 182, Malaysian Institute of Road Safety Research.
- NPFDB (2016). *Report on the Key Findings of the Fifth Malaysian Population and Family Survey (MPFS-5)*. National Population and Family Development Board, Kuala Lumpur, Malaysia.
- Rice, T.M., & Anderson, C.L. (2009). The effectiveness of child restraint systems for children aged 3 years or younger during motor vehicle collisions: 1996 to 2005. *American Journal of Public Health*, 99(2), 252-257.
- Shariff, S., Borhan, N., & Ali, A. (2015). *Child restraint system use in vehicles among children aged 0-11 in Klang Valley*. Paper presented at Conference of ASEAN Road Safety 2015, Kuala Lumpur, Malaysia.
- The Star Online (2018). *Child seats to be made compulsory by 2020, says Loke*. Retrieved from <https://www.thestar.com.my/news/nation/2018/10/30/child-seats-to-be-made-compulsory-by-2020-says-loke>
- Wazir, M.R., Amri, S., Kok, L.Y., Ujang, H., Fazil, A., & Dewi, A.M. (2012). *Corak tumbesaran dan tumbesaran puncak pelajar berumur 9 hingga 16 tahun*. Jabatan Pengajian Sukan, Fakulti Pengajian Pendidikan, Universiti Putra Malaysia.