An Assessment of Rear Seatbelt Availability and Accessibility in Malaysia - a Preliminary Study

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Radin Umar R.S
Research Report

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This study was conducted to further understand rear seatbelt issues in Malaysia in terms of seat belt availability and accessibility to rear seatbelts. This study represents an initial effort to provide evidence and perhaps justification towards legislation of the use of rear seatbelt in passenger cars/MPV/vans by 2008. The critical cases that were considered during this particular survey were trip to school both urban and rural, and long trips. Data was collected by surveying the location where passengers were loaded or unloaded. For trip to school, data was collected at schools during times when schoolchildren go and return from school. Data on long trips was collected from the rest areas along highways across Malaysia. In the study, Peninsular Malaysia was divided into four regions North, South, East and Central while Sarawak was selected to represent East Malaysia. The locations selected covered both urban and non-urban areas. The study was conducted over a period of three weeks concurrently in Perak, Johor, Melaka, Negeri Sembilan, Selangor, Kelantan, Terengganu, Pulau Pinang and Sarawak.

The criteria for selection of locations varied for each case. For trip to school, population numbers was the determinant for selection of urban and rural schools. On the other hand, for long trips, the rest place for travellers was the determinant for selection and therefore rest areas along major highways were selected. The survey used an observation technique: a car or van was observed and the number of passengers in the vehicle and the number of rear seatbelts in the vehicle was counted.

A total of 4,994 passenger vehicles was surveyed during the study for both cases throughout Malaysia. Study results show that 62% of vehicles in Rural School Areas do have 3 rear seatbelts and 68% of rear passengers have access to rear seatbelts. In Urban School Areas, 52% of vehicles have 3 rear seatbelts and 56% have rear passengers who have access to rear seatbelts.
Areas, 75% of vehicles do have 3 rear seatbelts and 73% of rear passengers have access to rear seatbelts. As for long trips, 87% of vehicles were found to have 3 rear seatbelts and 76% of rear passengers have access to rear seatbelts. Meanwhile, 78% of passenger vehicles observed had 1.5 to 2 seatbelts available. For urban areas, 82% were observed to have 1.5 to 2 rear seatbelts. For long trips, the percent of passenger vehicles observed was high; 90% had 1.5 to 2 rear seatbelts. Hence, the study clearly indicates that most Malaysian cars have rear seatbelts and that most Malaysian vehicle occupants have access to rear seatbelts.

The study results come very close to the hypotheses that 90% of Malaysia cars have rear seatbelts and that almost 85% of vehicle occupants have access to rear seatbelts.
Introduction

Malaysia has been experiencing rapid growth in the population, economy and motorization. This increase in population and motorization has led to an alarming increase in the number of road accidents. There were 341,252 road accidents in the year 2006 with 6,287 road deaths (PDRM, 2006). Clearly, road accidents impose a major health and social problem in this country and there is an urgent need to implement known and effective interventions to reduce the number of accidents and the severity of the injuries sustained by accident victims.

One proven way to reduce injury severity is making mandatory the use of seatbelt for both front and rear passengers. The seatbelt is a passive safety measure which is categorized as a vehicle safety feature. Although the effectiveness of the use of the front seatbelt is well-documented, relatively not much work has been done in relation to the use of the rear seatbelt. For a developing country that is moving towards industrialization at a rapid pace, the use of the rear seatbelt is not mandatory as yet in Malaysia. Yet each year, Malaysia experiences approximately 350 deaths due to accidents related to unbelted rear passengers (Royal Malaysian Police). Except for Europe, awareness, let alone compliance to rear seatbelt use, in the rest of the world is extremely low.

From accident data (Table 1), rear occupant fatalities are mostly from unbelted occupants. This adds further support to the claim that rear seatbelts save lives because out of 192 fatalities in year 2005 among rear occupants of car accident, 173 unbelted occupants died while of the belted occupants, only 19 died.
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Table 1 Comparison of fatalities among belted and unbelted rear passengers

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Car</th>
<th>4WD</th>
<th>Van</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Belted</td>
<td>Unbelted</td>
<td>Belted</td>
</tr>
<tr>
<td>Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>11</td>
<td>127</td>
<td>0</td>
</tr>
<tr>
<td>2004</td>
<td>13</td>
<td>136</td>
<td>1</td>
</tr>
<tr>
<td>2005</td>
<td>19</td>
<td>173</td>
<td>4</td>
</tr>
</tbody>
</table>

(Source: Royal Police Malaysia)

The purpose of using a rear seatbelt is for occupant restraint. It is essentially important to prevent occupants from sustaining injury due to internal collision inside the vehicle. For instance, the passenger might slam against the front passengers or at worst be ejected out from the vehicle. However, rear seatbelt is not designed to prevent injury due to side and rear impact collision.

In anticipation of mandatory rear seatbelt use, MIROS has already incorporated rear seatbelts into its integrated approach to reduce accident fatality in Malaysia. Table 2 shows the strategic road safety intervention and potential fatality reduction for 2007-2010 set for Malaysia (Radin 2007). The left side of the table shows the list of programs and intervention coverage while the right side shows the probable reduction if the intervention can be accomplished. From the table, it is projected that if 20% of road users in Malaysia were to use rear seatbelts, 21 lives can be saved per year. Similarly, if 80% of road users were to use rear seatbelts, 84 lives could be saved per year.

If rear seatbelt legislation were to be implemented, the major issues that need to be addressed are technical and social in nature. The foremost technical issue would be to ensure that all cars in Malaysia are fitted with rear seatbelts. The social issue that needs to be addressed is accessibility to rear seatbelt use. Access to rear seatbelt implies that the number of rear seatbelts must be adequate for the number of rear passengers. The question is: what if the average family size in Malaysia has more than 3 members thus leading to a problem of passengers outnumbering the number of rear seatbelts?
The purpose of this study is to validate the aforementioned issues. Three hypotheses are proposed for this study:

- Rear seatbelts save lives
- 90% of Malaysian cars are fitted with rear seatbelts
- 85% of Malaysian road users have access to rear seatbelts.

**Table 2** Strategic road safety intervention and potential fatality reduction (2007-2010)

<table>
<thead>
<tr>
<th>Program</th>
<th>% Intervention cover</th>
<th>Potential reduction</th>
<th>No. of deaths</th>
<th>Expected fatality reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2007</td>
<td>2008</td>
<td>2009</td>
<td>2010</td>
</tr>
<tr>
<td>AES</td>
<td>20 60 100 100 30 1400 84 252 420 420</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed Camera</td>
<td>20 60 90 90 40 150 12 16 54 54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redlight Camera</td>
<td>0 20 60 80 20 450 0 18 54 72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lane Discipline</td>
<td>0 20 60 80 20 450 0 18 54 72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helmet Program</td>
<td>30 65 100 100 50 1500 225 488 750 750</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear Seatbelt</td>
<td>20 40 60 80 30 350 21 42 63 84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airbags</td>
<td>10 20 40 30 400 12 24 48 72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driver Training</td>
<td>10 30 50 60 30 300 3 9 15 18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSE and CBP</td>
<td>10 20 50 80 20 400 8 16 40 64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mcycle Lanes</td>
<td>10 20 30 40 80 500 40 80 120 160</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Spots</td>
<td>10 20 30 40 30 350 15 30 45 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>10 20 30 40 30 350 7 14 21 28</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Deaths/10,000 Vehicles

<table>
<thead>
<tr>
<th></th>
<th>6300</th>
<th>4270</th>
<th>1009</th>
<th>1630</th>
<th>1782</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.45</td>
<td>2.94</td>
<td>2.45</td>
<td>2.21</td>
<td></td>
</tr>
</tbody>
</table>

**Benefits of Rear Seatbelt: Literature Review**

The initial stage of this study will attempt to validate, based on existing factual data, that rear seatbelts do save lives. There are two main approaches to support the first hypothesis: (i) factual information from literature on road safety; and (ii) factual information gathered from real-world crashworthiness investigation conducted throughout Malaysia.

**Foreign Studies**

In 1987, Leonard Evans who carried out research on the effectiveness of rear seatbelt revealed that passenger fatality likelihood is reduced by 34 in 40 chances (Evans, 1988).
Shimamura et al. (2005) in his study showed a reduction of 45% in the killed or severely injured category when previously unbelted passengers began to use seatbelts.

Apart from reducing injury severity of passengers, rear seatbelts have also been proven to be life-savers for front passengers. According to Shimamura et al. (2005), the number of vehicles with killed and injured occupants is expected to decrease by about 25% for drivers and by about 28% for front passengers, once unbelted rear seat passengers begin to use seatbelts. Japanese studies show that the risk of death for drivers and front seat passengers who used seatbelts was increased about five-fold when the rear seat passengers were unrestrained (Ichikawa et al., 2002). Similarly, studies in Britain reveal that the risk of a front seat car occupant being killed in a frontal impact is increased by about three-quarters (75%) by the presence of unrestrained rear seat passengers behind them (Broughton, 2004).


• In all crashes, back seat lap belts are 32% effective in reducing fatalities compared to unrestrained back seat occupants. The effectiveness estimate is statistically significant with confidence bounds of 23 to 40%.
• In all crashes, back seat lap/shoulder belts are 44% effective in reducing fatalities compared to unrestrained back seat occupants. The effectiveness estimate is statistically significant with confidence bounds of 35 to 50%.

In summary, based on literature on the effectiveness of the rear seatbelt, it is quite clear that rear seatbelts do save passenger lives.
Methodology

There were two parts to the methodology: observational studies and real-world crashworthiness investigation (further explained in later section). The survey was conducted to access and evaluate the current situation in Malaysia on the availability of the rear seatbelt and its accessibility to car passengers. A survey form was used for data gathering. The method used in this survey was observation with data being collected from a survey of various locations carried out in two stages: school trip and long trip. The school trip stage covered both urban schools and rural schools. The school trip survey was carried out over 6 days from 16 till 21 May 2007, whereas the long trip survey was carried out over 3 days from 25 till 28 May 2007. Both stages of the survey were conducted concurrently throughout Malaysia.

Study Setting

The survey was carried out specifically in several locations throughout Malaysia so as to represent the country situation. The location for the school trip was determined based on urban and rural types of schools. Urban schools were chosen from big cities from each state in Malaysia, whereas rural schools were chosen from areas with the least population density. The cities chosen to select urban schools were Ipoh, Seremban, Johor Bahru, Melaka, Seberang Perai, Kuantan and Bangi while rural schools were chosen from Gua Musang, Sabak Bernam, Dungun, Kuala Lipis and Hutan Melintang.

For the long trip location, the rest areas along the highways were chosen as locations. Four major highways in Malaysia were covered: North-South Highway to the South representing the southern region, North-South Highway to the North representing
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the northern region, East Coast Expressway representing the eastern region and the Pan Borneo Highway representing Sabah and Sarawak.

The locations where the research was undertaken are given in Table 3.

Table 3 Study locations

<table>
<thead>
<tr>
<th>Urban school trip</th>
<th>Rural school trip</th>
<th>Long distance (Highways)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johor Bahru</td>
<td>Sabak Bernam</td>
<td>North-South Highway (Seremban R&amp;R)</td>
</tr>
<tr>
<td>Seremban</td>
<td>Gua Musang</td>
<td>North-South Highway (Sungai Buloh R&amp;R)</td>
</tr>
<tr>
<td>Melaka</td>
<td>Dungun</td>
<td>East Coast Expressway (Genting Sempah R&amp;R)</td>
</tr>
<tr>
<td>Kuantan Bangi</td>
<td>Hutan Melintang</td>
<td>Pan Borneo Highway</td>
</tr>
<tr>
<td>Ipoh</td>
<td>Kuala Selangor</td>
<td></td>
</tr>
<tr>
<td>Kepala Batas</td>
<td>Maran</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kuala Lipis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temerloh</td>
<td></td>
</tr>
</tbody>
</table>

Sample Size

This study involved the selection of a number of vehicles to represent the vehicle population in Malaysia. A confidence interval is a range of values used to estimate the true value of population parameters. When the critical value is increased, the confidence also increases. The choice of a degree of confidence is the major factor determining the critical value for use in this study. A 95% confidence level with a critical value of 1.96 was decided on for this study.

Based on the method used for this research, the sample size of this study should be about 3,631 (minimum sample size). During data collection, though 5,100 samples were collected only 4,994 samples fulfilled the requirements for analytical purposes.
Study Design

A survey method was adopted to gauge the seatbelt scenario in Malaysia because there is no existing database with statistics on rear seatbelt of passenger cars in Malaysia. The study only considered two cases, school trip and long trip, because they are treated as critical issues in any effort to legislate a rear seatbelt policy in Malaysia. School trip was considered critical because it provides a good example of a daily trip that involves many passengers and where overloading may occasionally take place whilst the study on the long trip was deliberately planned for the school holidays to catch the "Balik Kampung" phenomenon where there is a tendency to overload. To facilitate the survey exercise, the site where the loading and unloading of passengers takes place was chosen as the observation site. Figure 1 shows that the period required to complete this preliminary survey was approximately one month.

Prior to the study, a pre-test was done at Sg. Buloh rest area and the Sri Serdang School in an attempt to validate the methodology and to recognize problems that may be encountered before the actual survey takes place. Based on the pre-test, the method and form to record the data were further refined for improved data collection that would allow for a detailed analysis.

Figure 1  Timeline period of the study
Data Collection Method

As described earlier, the survey was conducted in different locations based on the case. For the long trip, given that it was impractical to observe vehicles along any part of an expressway or highway, it was necessary to observe vehicles only at the rest areas when occupants stop for a break in the journey. Similarly, school drop-off zones were chosen for the school trip case for a more accurate observation of seatbelt availability and number of passengers in a vehicle so as to ensure the validity of the observations. At all sites, observers recorded the location of the site, the date, time of the day as well as the following data for back seat passengers.

- Type of vehicle (passenger car, van, taxi, others)
- Gender (male/female)
- Age group (children*/adult)

Passenger vehicles included passenger cars, sport utility vehicles, taxis, vans, minivans and pickup-trucks. Heavy vehicles (lorry), buses and minibuses were excluded.

Vehicles with heavily tinted windows which did not allow for clear observation were also excluded. Special vehicles with special registration plates such as those of the police, government officials and army were noted.

Prior to collecting the data, enumerators were appointed and were briefed on the purpose of the research and the method of observation. They were also exposed to the questionnaire used to record the data. For each location, 1 researcher and 2 enumerators were assigned to undertake the survey.

For the school trip survey, the observers were stationed at the school drop-off zones around the school area for a one-hour

* As it was not always easy to differentiate between a big child and an adult for a school trip, the school uniform was the deciding criteria while for a long trip, differentiating between a child and an adult was based on the enumerator’s judgment.
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period during the time the schoolchildren go and return from school (Figure 2). But the survey conducted at the rest areas was not bound by a specific time as the school trip case as the vehicles could be observed at any time during the day. However, observation was not done at night. All observers were trained on the spot at the time of the survey with a one-hour observational pilot test where the researcher assigned to each team audited the observer’s results. Besides the initial training of the observers, the researcher assigned to each team had also to audit the results of the observers at the end of the observational day to assess the reliability of observers and their observations.

Figure 2  Observers recording presence of rear seatbelts in vehicles in a school area
Real-World Crashworthiness Investigation Case Studies

Lenggong Case

On 22 April 2007, an accident occurred at Jalan Ipoh–Kota Bharu, Lenggong, Perak involving two cars loaded with passengers. The accident claimed the lives of 9 people and prompted MIROS to conduct an in-depth inquiry into the cause of such a large number of fatalities especially in relation to rear passengers.

Figure 3 shows the damage profile of the first vehicle, a Kia Spectra. Based on the police report, the car was carrying 7 passengers and heading for Grik, Perak. There was a crest curve just before the crash site. The Kia Spectra swerved to the opposite side of the traffic and ran smack into a pool of water and subsequently hit an oncoming Honda Accord (Figure 4). The road surface at the crash scene was bleeding which lead to severe aquaplaning. Nine people were fatally injured while one suffered severe injuries.

From Figures 5 and 6, it can be clearly seen that the rear passenger compartment remained intact. No protruding objects hazardous to the passengers were found. From an analysis of this accident, MIROS is of the opinion that had the passengers used the seatbelt, the severity of the injuries would have been reduced. In this case at least two lives could have been saved if seatbelt use had been made mandatory.
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Figure 3  The badly damaged front of the Kia Spectra but with an intact rear passenger compartment.

Figure 4  The badly damaged front of the Honda but with an intact rear passenger compartment.
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Figure 5  A close-up view of rear compartment

Figure 6  The offside and rear compartment remained intact
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Figure 7  Sketch of the Lenggong accident

Footnote: The Spectra was heading to Kuala Kangsar and was alleged to have avoided a water pool after a downhill crest. The car swerved to the opposite lane and was hit by the oncoming Honda Accord heading to Grik. Indication of aquaplaning was quite prominent at the crash site.
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Cherating Case

On 30 September 2007, an accident occurred on KM 45.5 Jalan Kuantan–Kemaman near Cherating, Kuantan. At about 4:30 pm, a Ford Econovan travelling northbound from Kuantan to Kemaman collided with the end rear of the PETRONAS oil tanker that had stopped on the roadside. Seven people were fatally injured and 3 were severely injured.

From Figure 9, it can be seen that the impact of the accident caused significant damage to the front up to A Pillar. Nevertheless, a detailed inspection of the van revealed that the passenger compartment had remained intact with sufficient survival space for the rear passengers (Figure 10). Unfortunately the rear seat was not fitted with rear seatbelts. It is to be noted that 5 of the 7 deceased were rear passengers. The investigation team concluded that had the passengers used the rear seatbelts, injury would have been less severe and lives could have been saved.
Figure 9  The Econovan sustained frontal damage

Figure 10  The intact passenger compartment
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Figure 11  Rear end of the truck that was hit by the Econovan

Figure 12  Delta V and ETS analysis for vehicle involved
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Sungai Pelek Case

On 7 October 2007, an accident occurred on KM 13.8 Jalan Sungai Pelek–Port Dickson near Sepang. At about 6:15 am, a Toyota Harrier (black) 4WD travelling eastbound from Kuala Lumpur to Banting collided with a Nissan diesel lorry travelling from the opposite direction. All occupants of the Toyota Harrier (5 people) died in the side impact collision while the lorry driver sustained minor injuries.

The nature of the accident was over steering on a sharp corner. The Harrier attempted to make a left turn after swerving to the opposite lane. The Harrier was believed to be speeding at the sharp corner and was therefore unable to pull back to its normal course. The truck which came on the opposite lane hit the side of the Harrier, intruding up to B Pillar (Figure 13).

As in the aforementioned cases, the rear compartment especially at the nearside remained intact. However, in this case, rear seatbelts were available but were not used by the passengers (Figure 14). The survival chances of the passengers would have been much higher had they used rear seatbelts.

Figure 13 The Harrier showing severe damage up to B Pillar
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Figure 14  The Harrier with the passenger compartment still intact

Figure 15  Aerial view of damaged Harrier
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Figure 16  No indication of plastic melting on locking buckle suggesting non use of seatbelt by passengers

Figure 17  Delta V and ETS analysis for vehicle involved
Results and Discussion

Profile of Vehicle Trips

A total of 4,994 passenger vehicles were involved in this study. Two critical cases were studied in this survey: school trip and the long trip. The school trip was further divided into two: rural school trip and urban school trip. As shown in Figure 18, the breakdown of vehicles by survey area is as follows: 20% urban school trip, 18% rural school trip and 62% long trip.

Demographic Profile of Vehicle Occupants

The 4,994 vehicles carried a total number of 7,465 rear occupants. A breakdown of rear occupants reveals that rear child occupants outnumbered rear adult occupants as the former constituted 57% of the total sample (Figure 19). Figure 20 shows the distribution of occupants by gender with 52% of them being male and 48% female. In terms of racial composition, the respondents comprised 66.5% Malays, 20.7% Chinese, 5.6% Indians and 7.2% from other ethnic groups as shown in Figure 21.
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Figure 19  Distribution of vehicle occupants by adult and child categories

Figure 20  Distribution of occupants by gender

Figure 21  Distribution of occupants by ethnic group
Rear Seatbelt Study

Figure 22 shows rear seatbelt availability in vehicles. In rural areas, 64.17% of vehicles are fitted with rear seatbelts while 35.83% do not have rear seatbelts. It is found that old vehicles that are not fitted with rear seatbelts are found more often in rural areas. In terms of seatbelt accessibility, in 32% of the vehicles observed, there were more passengers than seatbelts and in 68% of the vehicles observed, there were more seatbelts than passengers (Figure 23). Schools in the rural areas are very often far from the students’ house, and rural families either take turns to send their children to school or hire a car which packs as many children as possible for a school trip. Overloading naturally takes place.
For the urban areas, the percentage of vehicles with rear seatbelts show an increase compared to rural areas. As shown in Figure 24, 75% of vehicles in urban schools are fitted with rear seatbelts while only 25% are without rear seatbelts. This increase may be attributed to the urban lifestyle where there could be a more frequent change to new cars and new cars come fitted with rear seatbelts.

In terms of seatbelt accessibility, 73% of the vehicles observed show more seatbelts than passengers while only 27% of the vehicles had more passengers than seatbelts. Figure 25 shows seatbelt accessibility in urban schools. This could be attributed to the observation that many parents in urban areas send and pick their children themselves before they go to work and after work. This coupled with smaller family size in the urban areas may be contributing factors for the incidence of more rear seatbelts than passenger in urban areas.
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With regard to the long trip, in terms of seatbelt availability, 87% of the vehicles observed using the highway were fitted with rear seatbelts and only 13% of the vehicles were without rear seatbelts (Figure 26). This is perhaps due to people paying greater attention to safety issues such as safety belts and keeping their cars in good condition to ensure a more comfortable long trip for all vehicle occupants.

Figure 27 shows seatbelt accessibility for a long trip. More than 79% of the vehicles observed had more seatbelts than passengers while 21% had more passengers than the number of seatbelts found in the vehicles.
With regard to the number of passenger cars that have 3 passengers and below, 95% of the cars have 3 passengers and below for rural school trip (Figure 28). A similar figure (95%) was observed for urban school trip (Figure 29). For long trip, the number of cars observed to have 3 passengers and below was 91% (Figure 30). Table 5 shows the summary of the survey analysis.
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Figure 29  Cumulative plot for number of passengers and rear seatbelts for an urban school trip

Figure 30  Cumulative plot for number of passengers and rear seatbelts for a long trip
It is also important to highlight that the number of passenger vehicles that have 1.5 to 2 seatbelts is quite high. From the cumulative graph, 78% of passenger vehicles observed have 1.5 to 2 rear seatbelts available. For urban area, 82% were observed to have 1.5 to 2 rear seatbelts. For long trips, the percent of passenger vehicles observed was high; 90% had 1.5 to 2 seatbelts. It is to be noted that the range of 1.5 to 2 seatbelts is used to represent any chances that the passenger vehicles have 2 seatbelts or more. This is because the cumulative plot is based on extrapolation of data (realistically there is no 1.5 seatbelt); hence it is safe to say that 1.5 to 2 seatbelts is a fairly good representative of passenger vehicles with 2 rear seatbelts or more.

Table 4 Summary of observational survey analysis

<table>
<thead>
<tr>
<th>Location</th>
<th>N (Vehicles)</th>
<th>Seatbelt availability</th>
<th>Seat accessibility</th>
<th>Percentile with 3 passengers or less</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Schools</td>
<td>1,002</td>
<td>75%</td>
<td>73%</td>
<td>95%</td>
</tr>
<tr>
<td>Rural Schools</td>
<td>892</td>
<td>64.20%</td>
<td>68%</td>
<td>95%</td>
</tr>
<tr>
<td>Long Distance Trips</td>
<td>3,100</td>
<td>89%</td>
<td>79%</td>
<td>91%</td>
</tr>
</tbody>
</table>
Recommendations

Based on the results obtained from the survey, MIROS recommends legislation of a rear seatbelt policy for this country. However, a number of issues need to be addressed prior to legislation. These are outlined below:

1. The survey data shows that 75% of passenger cars observed in urban schools, 64.20% for rural schools and 87% on long trips were fitted with 3 rear seatbelts. Though all percentages are higher than 50%, the percentage of rear seatbelt availability does not reach the threshold of 90%. However, for long trips, the percentage came very close, that is, 87%.

2. For rear seatbelt accessibility, the figures were 73% for urban schools, 68% for rural schools and 79% for long trips. Here too, the figures do not reach the expected value of 85%.

3. Nevertheless the percentile of 3 passengers and below in rear seat exceeds 90%; 95% for rural and urban schools and 91% for long trips. This means that there are very few instances of passenger vehicles carrying more than 3 passengers in rural and urban schools and on long trips.

4. 78% of passenger vehicles observed had 1.5 to 2 seatbelts available. For urban areas, 82% were observed to have 1.5 to 2 seatbelts. For long trips, the percent of passenger vehicles observed was high; 90% had 1.5 to 2 seatbelts.
Based on these results, we conclude that excessive passenger loading is not an issue. Almost 90% of the passenger vehicles carry only 3 passengers or less. If rear seatbelt use were to be legislated, only 10% of road users who carry additional passengers will have difficulty complying with the law. However, seat belt availability and accessibility still do not reach the expected values. Therefore MIROS recommends the following measures to address these issues:

1. Passenger vehicles that have no rear seatbelts but are able to be retrofitted with seatbelts should be given a grace period to do so.
2. Passenger vehicles that do have rear seatbelts should comply with the law.
3. Passenger vehicles that do not have rear seatbelts and are unable to be retrofitted with seatbelts be exempted.
Conclusion

This represents the first study conducted to evaluate and gauge the current scenario with regard to rear seatbelt use in Malaysia namely rear seatbelt availability and rear seatbelt accessibility. More importantly, the study clearly shows that most Malaysian cars are fitted with rear seatbelts and that most Malaysians have access to rear seatbelts. The study should provide the government with more information to better understand the rear seatbelt scenario in Malaysia before devising road safety strategies and policies. There is no doubt that further studies on rear seatbelt intervention can be the next step forward to study rear seatbelt effectiveness in reducing injury severity.
References


Research Report

An Assessment of Rear Seatbelt Availability and Accessibility in Malaysia - a Preliminary Study

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