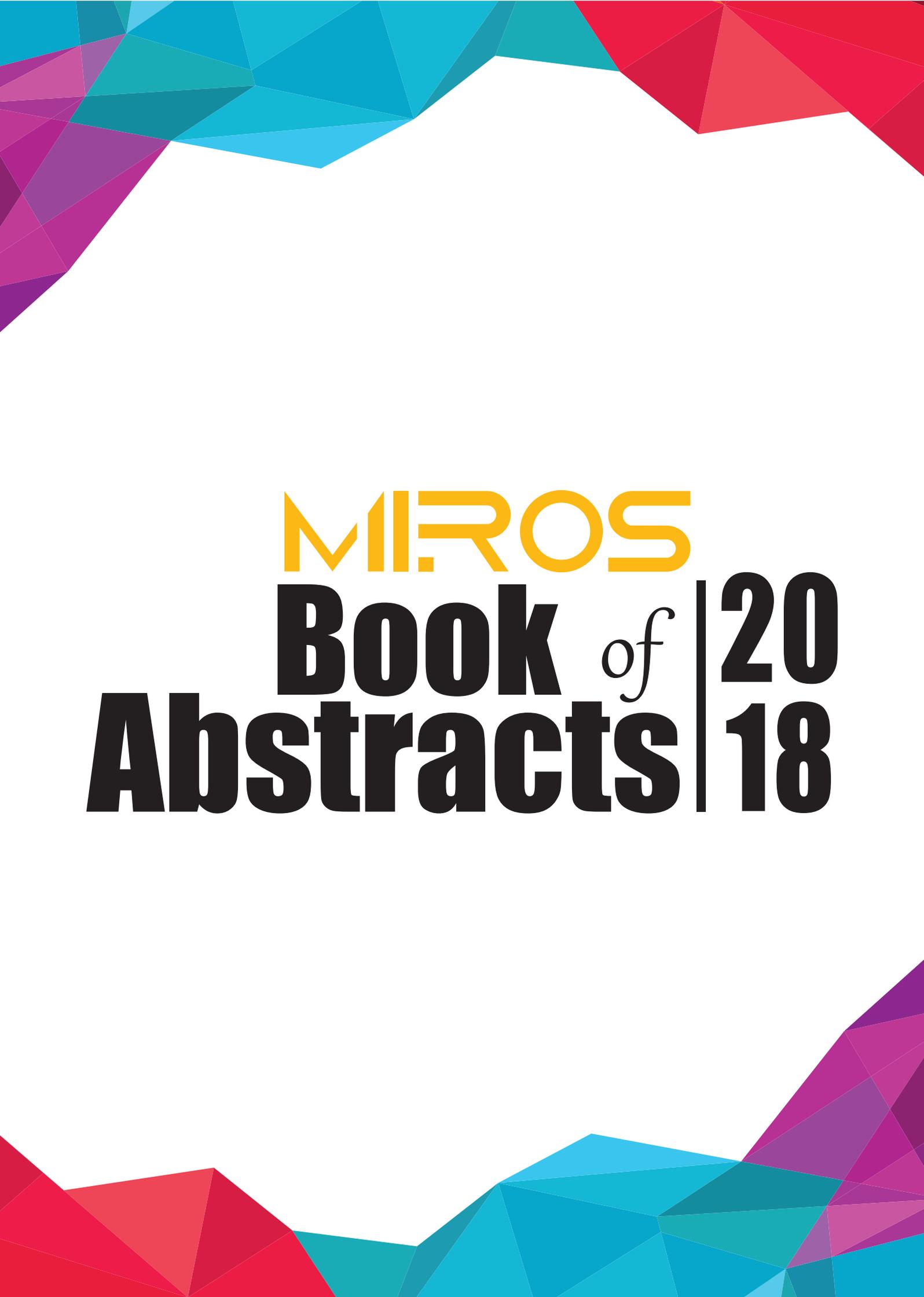


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Book of Abstracts 2018

This book compiles and lists the reports published by MIROS in 2018. The reports are fundamentally the outputs of the research projects and operational exercises carried out by the research centres at MIROS. The reports are generated and produced by the respective units under each Centre, and focus on their specific areas of expertise in the fields of road safety.

The reports are divided into several categories. All reports are available to the general public except those labelled restricted or confidential. The reports provide extensive insights into various issues related to road safety in general, and more specifically, road safety issues in Malaysia. Depending on the categories, the reports contain analyses, reviews and/or recommendations. Although the reports are official documents produced by MIROS, they are not binding on any other parties, whether mentioned in the reports or otherwise. The inputs from the reports are to be used only as references and as sources of information. Reference herein to any specific reports does not necessarily constitute or imply its endorsement, recommendation, or favouring by MIROS, the Ministry of Transport of Malaysia, or the Malaysian Government. Interested parties may contact MIROS to obtain the full report.



Malaysian Institute of Road Safety Research

Established on 3rd January 2007, MIROS is a one-stop centre for the generation and dissemination of road safety information through various media and a concerted training programme. MIROS carries out studies and evaluates current procedures on road safety to generate information that will form the core of its evidence-based intervention programmes to enhance road safety. This effort is also assisted through the establishment of networks and partnerships with more experienced international members of the road safety research field.

Ever since its inception, MIROS has produced a number of research publications on road safety. These reports published in 2016 are available in this book of abstracts.

VISION

To emerge as a world leader in road safety research

MISSION

To foster the science and arts of road safety interventions



MRR **MIROS Research Report**

MRRs are technical reports derived from research findings. The reports address objectives, methodologies, and results that lead to recommendations and conclusions.

Risk of Road Crashes at Three-legged Intersections

Author(s): Azzuhana Roslan, Hawa Mohd. Jamil, Nur Zarifah Harun, Rohayu Sarani, Sharifah Allyana Syed Mohamed Rahim

ISBN: 978-967-5967-90-0

Intersections are locations on the road network where user paths cross, increasing the risk of a crash. A high proportion of crashes occur at intersections despite the relatively short amount of time spent travelling through them. Identification of high-risk intersections is important so that improvements are targeted at preventing possible deaths and serious injuries and better able to fulfil the long-term vision of safer road journeys.

The main objective of this study was to identify at-risk intersections. This study also identified conflicts found at intersections. A simple way of identifying risk at intersections was to undertake a crash history search. Five (5) years of road crash data (2009-2013) were used to select the intersections of interest. However, it was difficult to obtain information on crashes at intersections due to the limited crash location information recorded.

For this study, traffic volume data were collected manually from 18 locations in the Malaysian states of Selangor and Negeri Sembilan. Sixteen of the 18 sites were 3-legged intersections and were of particular interest to this study. Other variables such as characteristics of each intersection were also noted on-site. These included phasing of the traffic lights, cycle times, intersection control type, area type, and number of legs. The traffic control type at each intersection was categorized as being signalised or unsignalised. The history of all vehicular collisions at the intersections was extracted from the data set mentioned above.

Traffic conflicts at the 18 intersections were noted and recorded. Of particular note is a confusing traffic signal found at Jalan Kim Chuan, Klang. Risk of road crashes identified in this study was based on per million vehicles approaching the intersection over a 5-year period. Risk per million vehicles entering unsignalised intersections (0.493) was higher than at signalised intersections (0.169).

With regard to phases, intersections with two (2) phases had a higher risk of crashes per million vehicles (0.246) compared to those with three (0.210) and four (0.085) phases. Cycle length is defined as the sum of all traffic phases. There were 0.219 crashes per million vehicles for short cycle intersections compared to those with long cycle lengths (0.130). On average, this study found 0.383 crashes per million vehicles that entered intersections in rural areas during the given five-year period whilst 0.182 crashes occurred at urban intersections.

MRR No. 244

The Impact of Waiting Time towards Pedestrian Crossing Behaviour at Signalised Intersection

Author(s): Nur Zarifah Harun, Azzuhana Roslan, Rizati Hamidun, Siti Zaharah Ishak, Akmalia Shabadin, Wong Shaw Voon

ISBN: 978-967-2078-28-9

A large number of pedestrians are getting killed in traffic accidents each year. As we know, pedestrian accidents are more severe than other types of accidents. A review of pedestrian crash data shows that most the crashes occur while the pedestrian was crossing the road. In spite the pedestrian facilities provided, crashes involving pedestrians still occur. The pattern of pedestrian behaviour when crossing the road is depending on various factors such as traffic conditions, location of signalized intersections and the phasing of traffic signals. All these factors are pedestrian exposure to risk in relation to pedestrian crossing behaviour.

The main objective of this study is to determine the impact of waiting time towards pedestrian crossing behaviour at signalised intersection. Besides that, this study was conducted to identify the factors that influence the behaviour of pedestrians while crossing the signalised intersection. In addition, this study will look at how these factors will affect the compliance of pedestrian towards pedestrian signals.

Observation study was conducted through video recording in order to observe the pedestrian waiting time and behaviour while crossing the intersection. Ten (10) signalised intersection located in Klang Valley area was selected to conduct this study. Data collection for each selected signalised intersection was conducted by digital video camera recording on weekdays during peak hours and off-peak hours. A total of 5,286 pedestrians were observed. Among the variables recorded from the observation are pedestrian gender, a way of crossing, age group, pedestrian waiting time before crossing the intersection, the volume of pedestrian and some other variables. Using data from the observation, pedestrian behaviour database has been established.

From the observation made, study shows that the variables such being male, female, different group of age, waiting time and the way of crossing affect the proportion of violations. In addition, a pedestrian can be categorised into two (2); pedestrian who will wait at the roadside before crossing; and a pedestrian who will immediately cross the intersection after arrived at the roadside. However, through the observations made, both of these situations involve pedestrians that comply and also failed to comply with pedestrian signals. Supposedly, the pedestrian has to wait for green man phase before crossing and that green man phase is related to traffic signal cycle length. But, the results show that most of the pedestrian did not follow the pedestrian signals. Therefore, it can be concluded that the traffic condition is one of the factors that influence the pedestrian behaviour in making decision before deciding to cross the intersection, not due to long waiting time during red-man phase.

Speed Study and Behaviour Observation of Motorcyclists along Malaysian Roads

Author(s): Muhammad Marizwan Abdul Manan, Ho Jen Sim, Syed Tajul Malik Syed Tajul Arif, Muhammad Ruhaizat Abdul Ghani, Siti Zaharah Ishak, Wong Shaw Voon

ISBN: 978-967-2078-31-9

This research uses data from observations of 8,277 motorcyclists at various types of roads of the road hierarchy in Malaysia in 2015, to investigate the effects of road characteristics, motorcyclists' riding behaviour, motorcyclists' and motorcycles' characteristics on the occurrence of riding with excessive speed. For data collection and analysis, new software, MECHROM was developed. The speed analysis shows that motorcyclists go faster than other vehicles along three-lane dual carriageway primary and four-lane dual carriageway collector roads. In general, 42.2% of the observed motorcycles exceed the speed limit while 28.6% of them go beyond the 85th percentile of the traffic speed. 80% of the motorcyclists only ride on the road shoulder on two dual carriageway roads with a paved shoulder, while on roads without a paved shoulder, more than 90% of motorcyclists were observed riding in the slow lane or near the edge of the road. Motorcyclists often ride in front of another vehicle (21.1% - 31.3%) regardless of the type of road. In determining the factors associated with motorcyclists riding with excessive speed, a mixed effect logistic regression model was produced, with three levels statistically significant random effect parameters. The fixed parameter factors are primary road, roads with no shoulder, motorcycles with engine capacity of more than 150 cc, not overloading motorcycle, bright motorcycles, male rider, wear helmet and shoes, riding in the middle of the lane or shoulder, lane splitting and weaving between vehicles. The random parameters show that the majority of variation in the outcomes occurs at Level 1, which is the riders (56.5%), while 12.2% for the type of motorcycle at Level 2, and 31.2% for the locations at Level 3. The variations indicated that the motorcyclist's characteristics and riding behaviours are still important and there more yet to be identified that are influencing the outcome of riding at excessive speed while the type of motorcycle clearly indicates that motorcyclists may ride with excessive speed regardless of the type of motorcycle.

MRR No. 247

Status Quo Kapasiti Latihan dan Ujian Pemanduan di Institut Memandu: Kajian Lembah Klang

Author(s): Nor Fadilah Mohd Soid, Noradrenalina Isah, Low Suet Fin, Wong Shaw Voon

Garis panduan berkaitan Latihan Kapasiti bagi Institut Memandu telah diperkenalkan oleh Jabatan Pengangkutan Jalan (JPJ) pada 07 Mei 2001. Garis panduan ini adalah selaras dengan pengisytiharan Arahan Jabatan Bil. 7/98 yang menyatakan pelaksanaan modul latihan minimum jam (16 jam) telah diperkenalkan untuk calon-calon baru bagi lesen memandu. Namun begitu, sehingga kini tiada semakan dijalankan untuk mengkaji kesesuaian dan keupayaan formula kapasiti semasa dan pelaksanaan KPP Baharu yang diperkenalkan pada 14 Julai 2014. Justeru, kajian semakan terhadap Garis Panduan Formula Kapasiti Latihan dan Ujian Pemanduan dilaksanakan bagi menganalisa kesesuaian dan mengenal pasti kerelevanan keperluan kapasiti latihan dan ujian pemanduan yang selaras dengan pelaksanaan KPP Baharu. Sampel kajian di Lembah Klang menunjukkan majoriti Institut Memandu (IM) mematuhi nisbah kapasiti latihan yang telah ditetapkan (tanpa mengambil kira musim kemuncak). Kajian ini diharap dapat membantu proses pemantauan yang dibuat oleh pihak JPJ dan kelancaran perkhidmatan mendapatkan lesen oleh pihak Institut Memandu.

MRR No. 248

Vehicle Age and Crash Severity

Author(s): Rohayu Sarani, Hizal Hanis Hashim, Akmalia Shabadin, Siti Zaharah Ishak, Wong Shaw Voon

The number of passenger vehicles involved in crashes has been on the rise, in line with the growth of passenger car in the market. More than 10 million cars registered in a year and 367,183 involved in road crashes in the year 2011. This report provides an overview of passenger vehicles scenarios based on vehicles age in Malaysia, analysis of the relations between vehicle age and crash severity in Malaysia and impact of vehicle made on crash severity. Vehicle data were obtained from the Road Transport Department for the year 2012 while crash data were obtained from the Royal Malaysian Police for the same period. Results from this study shows that 64% of the passenger vehicles on the road were aged between 1- 10 years old. Fatal crashes show that vehicles age group between 0-2 years old have the highest percentages as compared to other vehicle age group. However, when comparing the relative risk of fatal crashes between two (2) groups of vehicles aged 0-2 and vehicles aged 15-29, the group for vehicles aged 0-2 have a lower risk by 55%. Findings from this study show that although newer vehicles have high percentages in crashes as compared to older vehicles, the risk for fatal crashes is relatively higher for older vehicles.

Keywords: vehicle age, accident severity, age limit, passenger vehicle

MRR No. 249

Nationwide Roadside Observation of Safety Seatbelt Wearing Rate among Vehicle Occupants in Malaysia

Author(s): Wahida Ameer Batcha, Ilhamah Othman, Aziemah Azhar, Noor Kamaliah Alias, Mohamad Suffian Ahmad, Tan Choon Yeap

ISBN: 978-967-2078-30-2

Wearing safety seatbelts is one of the most effective ways to reduce road crash casualties among drivers and passengers involved in traffic accidents. The wearing of safety seatbelts by occupants of the front seat of a car has been mandatory in Malaysia since 1 April 1979 and is regulated by the Motor Vehicle (Safety Seatbelts) Rules, 1978. This regulation was amended making it mandatory for rear passengers to comply with seatbelt wearing as of 1 January 2009. Safety seatbelt wearing compliance is vital for assessing the effectiveness of safety seatbelt interventions. Thus, this study aimed to describe the patterns of seatbelt wearing among vehicle occupants in Malaysia. In order to achieve the intended objectives, roadside observations were conducted in fifteen locations (three on expressways, six on urban roads and six on rural roads). A sample of 14,487 respondents was identified during daytime hours from occupants of cars, window vans, multipurpose vehicles (MPV), sports utility vehicles (SUV), four-wheeled drives(4WD) and taxis. The results showed that drivers recorded the highest compliance rate of 81.7%, followed by front and rear passengers with compliance rates of 68.1% and 8.6%, respectively. Furthermore, the female front passengers' compliance rate was statistically significantly higher than that of the male. Safety seatbelt wearing rate was higher in urban areas than in rural area, irrespective of where the occupants were seated. Drivers of taxis, MPVs and SUVs were significantly more likely to wear safety seatbelts compared to drivers of other vehicle types. Similarly, front and rear passengers in MPVs and SUVs had higher rates of compliance than passengers in other types of vehicles. Vehicle type and location were significant factors for safety seatbelt wearing rates, regardless of where the occupants were seated. However, for front passengers, gender was also a significant factor. This study found a lower compliance rate for the wearing of safety seatbelts compared to the years 2009 and 2010. Additional efforts are required to increase the wearing rate such as intensifying education and advocacy relating to safety seatbelts, and along with it, publicized enforcement activities as well as continuous awareness programs for the public on the importance of wearing seatbelts.

MRR No. 250

Pattern of Passenger Car Tyre Distribution in Malaysia

Author(s): Ahmad Noor Syukri Zainal Abidin, Abraari Lafie Naiem Adnan, Fauziana Lamin, Mohd Rasid Osman, Wong Shaw Voon

ISBN: 978-967-2078-29-6

Issues surrounding the use of aged tyres are among the main concerns with regard to tyre safety, and vehicle safety as a whole. As a tyre ages, there is a loss of integrity in its rubber components due to various factors, particularly the manufacturing processes used and climate exposure. The changes in rubber components due to the ageing process affect a tyre's mechanical and chemical properties and could lead to an accident attributed to tyre failure. The main objectives of this study were to identify the effects of tyre age, approval marking, and climate exposure on the performance of aftermarket tyres. This study was organised into two (2) phases. Phase 1 involved conducting market surveillance to determine the distribution of after-sales passenger car tyres in Malaysia. The survey focused on the proportion of tyre marking, brands, and age of tyres available in the market. The survey was carried out using on-road-aged tyres at the highest vehicle registration density spots in Malaysia, namely Kuala Lumpur, Melaka, Negeri Sembilan, Perak, Putrajaya and Selangor. From the analyses performed, the mean age for on-road tyre age was 1.83-years. Mean age served as reference to conduct accelerated ageing tests during Phase 2 of this study. This study also revealed that the number of 'marked' tyres was higher than 'non-marked' tyres. Furthermore, the results showed that the nearside front tyres of passenger vehicles were the most commonly replaced which consequently had the lowest mean age compared to the other three (3) tyre positions. The selection of tyre manufacturers was based on the findings of Phase 1. The tyre samples selected represented the 'marked' and 'non-marked' groups of tyres that underwent accelerated ageing in Phase 2 of the project.

MRR No. 251

Age and Contributing Factors of Unlicensed Motorcycling Behaviour among School Students in Hulu Langat District

Author(s): Norainy Othman, Roziana Shahril, Kaviyarasu Yellapan, Noor Haizan Saidin, Amelia Hazreena Abdul Ghani, Low Suet Fin

This study was undertaken following the Road Accident Issues Meeting on 21 April 2016 organised by Bahagian Pengurusan Sekolah Harian (BPSH), Ministry of Education (MOE) Malaysia. BPSH reported that 117,268 (68%) of students who ride motorcycles to schools were unlicensed in first quarter 2016. A preliminary study through the quantitative approach in the form of surveys has been conducted in the district of Hulu Langat, Selangor involving eight (8) schools in September – October 2016 among 405 students. The objectives of the study were to identify the unlicensed students in secondary schools; the initial age of unlicensed riding experience, the reasons for frequent and infrequent riding behaviour; and examine the factors that contribute to the behaviour of unlicensed riding experience among the students. A questionnaire containing 15 items was developed from previous studies as the research instrument in order to achieve the objectives of the study. The findings show that majority of students (94.3%) had experience riding a motorcycle without license and 66.7% of them were unlicensed during the survey. More than half of students (60.3%) reported that they began to ride a motorcycle without a license at the age between 13 to 15 years old. For those who frequently ride, 'for convenience' was the most important reason they rode (47.1%) followed by 'easy to move' (25.9%). Five factors proved significantly ($p < 0.01$) associated to the behaviour of unlicensed riding among the students: age, gender, parental attitudes, the owner of the motorcycle, and the frequency of riding motorcycle six (6) months ago. In conclusion, these findings are consistent with the students' licensing data by BPSH and parental attitudes play an important role in this issue.

MRR No. 252

Development of Systematic Analysis of Centralised Road Safety Data System for Motorcycle (M-MoDS)

Author(s): Muhammad Ruhaizat Abd Ghani, Siti Zaharah Ishak, Muhammad Marizwan Abdul Manan, Akmalia Shabadin, Norfaizah Mohamad Khaidir

This report highlights the development of systematic analysis of centralised road safety data system for motorcycle which then called M-MoDS (MIROS Motorcycle Data System). The system will able to store and analyse various dataset were in MIROS repository.

MMoDS was developed using system development life-cycle (SDLC). The output of MMoDS contains three (3) modules which are dashboard, upload, and analytics. The dashboard is used to show brief information on all available data such as location, accident data, satisfaction survey, and road safety assessment data. Upload module is purposely used to import data into the system. Data that will import to the system must be matched with the data structure in the system. Lastly, the most important module is analytics. This is where in-depth analysis of each data from road safety assessment, accident data, and satisfaction survey will be shown. Pictures of deficiencies also available in this module.

MMoDS is important for researchers and any relevant parties to view information on motorcycle related data that available in MIROS repository.

Keywords: data repository, motorcycle lane, system development

MRR No. 254

Measuring Road Surface Deficiencies Utilising Motorcycle-Mounted App – System Development and Tests

Author(s): Muhammad Marizwan Abdul Manan, Muhammad Ruhaizat Abd Ghani, Nur Fazzilah
Mohamed Nordin, Hawa Mohamed Jamil, Hizal Hanis Hashim, Siti Zaharah Ishak, Wong Shaw Voon

ISBN: 978-967-2078-33-3

Motorcycles are the riskiest mode of travel in Malaysia, but on the other side of it, motorcycles are also very sensitive to the road condition and traffic environment. Thus, by taking advantage of this characteristic, mobile and web-based application software to analyse motorcycle motion data gathered from the mobile app and to map out hazardous road sections for motorcycles has been developed and tested. Fifteen motorcycle riders using the developed system, called ROCOM passed along a test route containing eight (8) obstacles to register road surface deficiencies such as bumps, cavities, potholes and a fixed object. The pilot test results showed that mounting the smartphone on the motorcycle handlebar with the ROCOM activated had the highest success rate of detecting the obstacles compared to the other ways of mounting the smartphone. Results from the test experiments indicated that ROCOM is able to detect various obstacles with the average of successful detection rate of 61.9%, while detection rate of 80% when passing through uneven road surfaces. However, further tests are needed for more accurate detection of the location of the surface deficiencies using high accuracy Global Positioning System data.

Keywords: road surface condition monitoring, mobile phone app, motorcycle

Awareness Automated Safety System (AwAS) for Red Light Running: After Four Years of Its Implementation

Author(s): Hawa Mohamed Jamil, Akmalia Shabadin, Muhammad Marizwan Abdul Manan, Siti Zaharah Ishak

ISBN: 978-967-2078-34-0

Automated Enforcement System (AES) namely Red Light Camera (RLC) is an intervention to curb red light running. It is defined as a technical recording device that is triggered automatically when a violation occurs, so that information of the offending driver is recorded, making it easier to identify the vehicle for the purpose to sanction owner or driver. Four intersections with a high rate of accidents were selected as observation sites. After four (4) years of implementation and the system has been renamed to AwAS (Awareness Automated Safety System), debates are still arising whether the installation is beneficial and whether they have improved safety or merely acted as a revenue generator to Malaysia, as some alleged from the start. Having those questions in mind, this study aims to evaluate whether AES is still effective in reducing red light running violations. With the reduction of red light running incidence, the likelihood of crashes to happen will also reduce.

In general, the study showed an overall reduction in violation rate two (2) years after installation with 2.16% as compared to before installation (4.29%) before being on the rise four (4) years after with 3.82%. Motorcycles held the position as the highest contributor in violation rate, whereas cars and other types of vehicles recorded almost similar violation rate. Perak stated higher violation rate than Kuala Lumpur before installation with 5.19% as compared to Kuala Lumpur with 3.71%; before switching to Kuala Lumpur is the higher violator for after two (2) years and after (4) four years. Drivers ran the red light more often during off-peak hours with 4.67% as compared to during peak hours with 3.91% for before installation, which then changed to more violations during peak hours (two (2) years after: 3.10% and four (4) years after: 5.30%) as compared to off-peak hours (two (2) years after: 1.40% and four (4) years after: 2.65%). As for the type of day, weekdays showed a higher violation rate with 4.30% before, 2.86% two (2) years after and 4.63% after four (4) years than weekends with 4.29% before, 1.40% two (2) years after and 2.80% after four (4) years.

Those issues mentioned in the 1st paragraph have led to revising the amount of fine and many unsettled summonses. This initiative has created an opportunity and attitude for drivers to ignore their summonses since previous traffic offenders that have to pay the full fine will feel unfair. This could explain the increase in violation trend starting from two (2) years after implementation.

MRR No. 256

Pelan Keselamatan Jalan Raya Malaysia 2014–2020: Laporan Status Pencapaian dan Cadangan Penambahbaikan

Author(s): Sharifah Allyana Syed Mohamed Rahim, Kak D-Wing, Noor Kamaliah Alias, Ahmad Azad Ab Rashid, Mohd Hafzi Md Isa, Mohd Rasid Osman, Siti Zaharah Ishak

ISBN: 978-967-2078-35-7

Pelan Keselamatan Jalan Raya Malaysia (PKJRM) 2014–2020 telah dilancarkan pada November 2014 oleh Kementerian Pengangkutan Malaysia sebagai usaha untuk mengurangkan jumlah kematian akibat kemalangan jalan raya. Pelan ini dirangka berdasarkan lima (5) tonggak strategik serta mempunyai enam (6) Hasil Akhir dan 10 Hasil Pertengahan. Selepas tiga (3) tahun pelaksanaan pelan ini, satu kajian telah dijalankan untuk mengukur hasil pencapaian pelan ini sehingga penghujung tahun 2017. Laporan ini dihasilkan bertujuan untuk melaporkan statistik keselamatan jalan raya bagi tahun 2014–2016, melaporkan status semasa pelaksanaan PKJRM 2014–2020 dan mencadangkan penambahbaikan pelan untuk tahun 2018–2020.

Bagi menghasilkan laporan ini serta memenuhi objektif yang ditetapkan, kerangka kerja telah dibangunkan. Antaranya adalah mengenal pasti pemegang taruh yang terlibat dan seterusnya membuat perjumpaan dengan pemegang taruh berkenaan bagi mendapatkan data-data yang berkaitan. Sejumlah tujuh (7) bengkel telah diadakan yang dihadiri pemegang taruh berkaitan bagi memuktamadkan data dan maklumat bagi tujuan pelaporan.

Fakta semasa berkaitan status kemalangan jalan raya menunjukkan bahawa kematian jalan raya pada tahun 2017 adalah sebanyak 6,740 kematian, jumlah ini meningkat sebanyak 0.98% berbanding kematian pada tahun 2014 iaitu sebanyak 6,674. Pengguna motosikal merupakan kumpulan utama yang mati akibat kemalangan jalan raya iaitu sebanyak 62.6% pada tahun 2014 dan ia terus meningkat menjadi 64.5% pada tahun 2017.

Status pencapaian setiap Hasil Pertengahan turut dilaporkan dalam laporan ini dengan menggunakan indikator yang dicadangkan. Indikator ini dibangunkan berdasarkan definisi yang telah ditetapkan bagi memudahkan pemahaman dan pelaporan. Hasil Pertengahan peningkatan kadar pemakaian topi keledar menunjukkan bahawa kadar pemakaian topi keledar semasa sehingga tahun 2017 adalah 88% berdasarkan kajian pemerhatian yang dijalankan. Hasil Pertengahan peningkatan kadar pemakaian tali keledar pula menunjukkan bahawa kadar pemakaian tali keledar bagi pemandu adalah 88.9%, 74.6% bagi penumpang hadapan dan hanya 6.8% bagi penumpang belakang berdasarkan kajian pemerhatian yang dijalankan pada tahun 2016. Bagi pencapaian sasaran pula kematian pada tahun 2016 telah berkurang sebanyak 21.6% berbanding dengan jumlah kematian yang diperolehi daripada model ARIMA.

Terdapat 34 program yang disenaraikan di dalam PKJRM 2014–2020 dan didapati hanya satu (1) program sahaja yang tidak dijalankan. Walau bagaimanapun tahap pelaksanaan program-program ini adalah berbeza. Program yang tidak dijalankan sehingga kini ialah program khidmat masyarakat bagi pesalah lalu lintas dan program ini dicadangkan agar digugurkan daripada pelan. Pencapaian Hasil Akhir berdasarkan tonggak strategik turut dilaporkan di dalam laporan ini berdasarkan indikator yang digunakan sebagai proksi bagi mengukur pencapaian Hasil Akhir berkenaan sehingga kini.

Berdasarkan status dan pencapaian semasa pelan ini serta maklum balas yang diperolehi daripada pemegang taruh, cadangan penambahbaikan telah dikemukakan di dalam laporan ini. Antaranya termasuklah pengenalan pelan tindakan, cadangan indikator dan penetapan target. Seterusnya dicadangkan juga pewujudan Jawatankuasa Pemantauan Pelan Tindakan yang mempunyai wakil di peringkat kebangsaan dan negeri bagi memastikan pelaksanaan pelan adalah berkesan dan tepat.

Comparative Study of Aftermarket Brake Discs in Malaysia

Author(s): Fauziana Lamin, Afiqah Omar, Norlen Mohamed, Mohd Rasid Osman

Automotive braking systems rely on friction to convert the kinetic energy of a moving vehicle to heat, bringing it to a halt. Similar to other automotive parts, it wears out with use and requires replacement. This study aimed to explore demand and price variation of aftermarket brake discs. Study results indicate a demand for brake disc replacement, reflected by the large number of brake discs being imported into the Malaysian aftermarket annually. Observation of the aftermarket shows that brake disc pricing depends on the supplier type i.e., workshop, spare part shop and service centre. Given its safety critical application, this study aimed to determine properties of the construction material of the brake disc i.e., grey cast iron, particularly from aftermarket samples. Micro-structural examination showed that grey cast iron morphology and all sample specimens had been through a good manufacturing process as it had a desirable graphite distribution. Average graphite flake length varied between specimens, with higher mechanical properties (including tensile strength, elongation to failure, hardness and heat storage capacity) estimated for the specimens with shorter flakes. In terms of price correlation, the shorter the graphite flakes observed, the higher the aftermarket brake disc price. This was probably due to the higher mechanical properties achieved. Meanwhile, elemental composition analysis classified the specimens as the sub-group 1 of grey cast iron, the sub-group with the highest hardness and tensile strength requirements. Nevertheless, a relatively large group of sample specimens did not meet the elemental requirement specified in the UN R90, especially in terms of silicon content. This was the case for both high and low priced brake discs. From this study, even though the higher aftermarket price could reflect higher grey cast iron properties, special attention should be given to the outliers as well as the non-compliance to elemental content. These findings suggest a thorough testing mechanism for the aftermarket brake discs, in order to monitor, verify and regulate this safety-critical component compliance to the established standard. Further research might explore the actual mechanical testing on the aftermarket brake disc and its performance assessment in the physical braking system.

MRR No. 258

Thermal Accelerated Ageing on After-Sales Passenger Car Tyres in Malaysia

Author(s): Ahmad Noor Syukri Zainal Abidin, Abraari Lafie Naiem Adnan, Fauziana Lamin, Ahmad Nazir Kamaruddin, Mohd Rasid Osman, Wong Shaw Voon, Mohd Ismail Rifdi Rizuan, Ngeow Yen Wan

ISBN: 978-967-2078-37-1

Issues surrounding the use of aged tyres are one of the major concerns with regard to tyre safety, and vehicle safety. As a tyre ages, the integrity of its rubber components declines due to various factors, especially the manufacturing processes used and climate exposure. The changes in rubber components resulting from the ageing process change the tyre's mechanical and chemical properties, which could lead to an accident attributed to tyre failure. The main objective of this study was to discover the effects of tyre age, approval markings, and climate exposure on the performance of aftermarket tyres.

There were two (2) phases to this study. Phase 1 involved conducting market surveillance. Phase 2 involved conducting accelerated ageing where 48 tyres from four tyre manufacturers were used as test samples for the 'marked' and 'non-marked' groups. The tyre samples went through an accelerated ageing process equivalent to 1.83 years and 5 years of weathering due to climate exposure. Tyres, with accelerated ageing and normal on-the-road age (8 and 10 years), were then tested under the Tyre Performance Test protocols specified in MS149:2008. Half the sample tyres were subjected to the accelerated ageing process using an accelerated ageing chamber to simulate the desired age. All tyres were tested in accordance to MS149:2008 and the results were compared by markings and age. The study results implied that age does affect the safety performance of passenger car tyres as there was a significant difference in performance between 'marked' and 'non-marked' after-sales passenger car tyres. This study verified that non-marked tyres possess sub-standard safety performance levels compared to 'marked' tyres. Since the Malaysian Government has already gazetted the mandatory standard on tyre markings for the Malaysian market, relevant authorities need to take responsibility for the effective and efficient enforcement of compliance with the standard. Compliance with the standard is crucial to the prevention of crashes involving tyre failure on the roads.

Moreover, the results from this study have also raised the need to review the current standards and incorporate ageing standards as additional requirements for after-sales tyres in order to cater to the rate of material degradation from climate exposure.

MRR No. 259

Sleep Quality and Crash Involvement among Private Car Drivers Plying Expressways in Peninsular Malaysia

Author(s): Aziemah Azhar, Noor Kamaliah Alias, Ilhamah Othman, Wahida Ameer Batcha, Mohamad Suffian Ahmad

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Sleep related problems have been extensively proven as the cause of road accidents. These sleep-related problems can be further broken down into several focal points such as driving with accumulated sleep debt, driving with a sleep-related condition, driving with normal sleep pattern, drivers' disposition to nodding off and driving after poor sleep quality. This study aims to describe the problem of sleep quality and its relationship with crash involvement using a cross sectional research design. Data collection was made by using a set of self-administered questionnaire including the Pittsburgh Sleep Quality Index (PSQI), Manchester Driver Behaviour Questionnaire (MDBQ) and several questions on demographic profiles and crash involvement characteristics. A total of 1,379 private car drivers were involved in this study. Among them, 48.9% were found to have poor sleep quality. In addition, the majority of respondents with poor sleep quality are male (58.8%) and below the age of 35 (56.6%). A logistic regression with backward LR method was carried out and it was found that age, smoking habit, insomnia, sleep duration, sleep disturbances, use of sleeping medications and daytime dysfunction contribute to poor sleep quality. In addition, the odd ratio of respondents with poor sleep quality to be involved in road crash was 1.691 higher compared to respondents with good sleep quality. In order to reduce the risk of getting involved in a poor sleep quality related crash, drivers must acknowledge the importance of having good sleep quality.

Keywords: sleep quality, crash, PSQI, private car drivers

MRR No. 261

Evaluation of the Revised Road Safety Education Modules for Primary Schools

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ISBN: 978-967-2078-39-5

Road Safety Education (RSE) embedded in the Bahasa Melayu (BM) subject has been implemented in stages in all primary and secondary schools in Malaysia since 2007. In 2015, a project of Review and Redevelopment of RSE Modules for Primary and Secondary schools was conducted by the Malaysian Institute of Road Safety Research (MIROS), and the revised RSE modules for primary schools was produced. Before the revised RSE modules are implemented to replace the existing RSE modules in primary schools nationwide, it is essential to evaluate the effectiveness of this revised RSE modules. This study used the Context, Input, Process and Knowledge (CIPP) evaluation model on 24 selected primary schools representing six (6) districts in Malaysia. These pilot schools had implemented the revised RSE modules since March 2017. The baseline study for the revised RSE modules on pilot primary schools was conducted at the end of 2016. The Research Report MRR No. 214 (2017) describes the baseline in terms of the readiness of schools and teachers, the students' road safety knowledge and behaviour, and the spillover effects from students to their parents. The baseline results reflected the current status of the existing RSE modules in primary schools used nationwide since 2007. The post-study conducted on the same respondents of the 24 pilot primary schools at the end of 2017 enables comparison with the baseline results to be done. It is used to elicit information on the effectiveness of the revised RSE modules.

The support and cooperation from the school administrations is an important feature of the contextual component for effective implementation of the modules. Some schools had initiatives in creating road safety features within the school compound. Even though some schools are adequately equipped with audio-video facilities for RSE activities, there are also schools facing a shortage of ICT facilities. Efforts should be put to enhance the electronic and ICT facilities in schools because it is a feature that is not only relevant for the implementation of the RSE modules but also the 21st-century education.

Most teachers agreed that the revised RSE teaching aids are useful for the delivery of the RSE activities. Some thought that the real teaching aids, such as helmet, safety vest, traffic signboards, etc. would attract student's attention better and enhance the teaching-learning process of the RSE modules. Only 25% of the schools have road safety clubs, but most clubs are not very active because of lack of ideas in activities. The agencies may support and encourage primary schools to set up an active school road safety club since this school environment is relevant to the RSE modules. Less than half of the schools have a Road Safety Corner within their school compounds. The school needs materials from agencies to display them at road safety corners. Less than 5% of schools organised road safety programs or activities throughout 2017. Agencies may draw out plans in organising road safety programs in primary schools. Only 17% of the pilot schools have traffic wardens. The relevant agencies may attempt to formulate a system to provide a traffic warden in every primary school even though it does not strongly influence the effective delivery of the RSE modules. Schools in rural areas may have lesser safety features. However, the road safety features around school compound generally exhibit an environment that is relatable to the revised RSE modules.

The input component of the modules involved the available resources in the school to achieve the objectives of the modules. The core resource towards the effectiveness of the RSE modules are the BM teachers. Taking into account that all the BM teachers had experienced teaching the existing RSE modules, their perceptions on issues pertaining to the implementation of the revised RSE modules reflects their comparison to the existing RSE modules. As for the teachers' knowledge related the revised RSE modules, generally, the BM teachers have good knowledge to deliver the revised RSE modules. This is expected since the BM teachers have been embedding RSE in BM subjects using the existing RSE modules which were implemented since 2007. As for the Buku Panduan Guru (BPG), teachers find it helpful to teach the revised RSE modules. The instructions given to teachers in the BPG should be made clearer for better understanding. The teachers rated themselves as near skilful in implementing the PdPc related to the revised RSE modules. Some teachers claimed that they do not have sufficient guidelines. In all, 87% of the teachers stated that they understand the revised RSE modules well. Teachers rated their confidence in teaching the revised RSE modules at an average score of 7.1 out of 10 (very confident) showing that the revised RSE modules blended with the teachers' previous experience in teaching the existing RSE modules in BM subjects. On their perception of the school facilities' supports in their teachings of the revised RSE modules, teachers quite agree that the teaching facilities such as computers, LCD, audio-visual systems do support the PnP of modules. On the matter, if the teaching aids are helpful in implementing the revised RSE modules, the teachers rated a mean score of 7.0 out of 10.0 (very helpful) inferring that the teaching aids are helpful but can be improved. In general, teachers' felt strongly that there should be RSE module training, and the support and assistance by MIROS/JKJR/PPD towards the implementation of the revised RSE modules are helpful.

Overall, the BM teachers perceived that the revised RSE modules are better than the existing RSE modules. The increased in the mean score from 7.19/10 (pre) to 7.79/10 (post) infers that after implementing the revised RSE module, the teacher's perception on the need and usefulness of the RSE program in primary schools has been enhanced.

As with process component of the revised RSE modules, in general, the teachers agreed that 30 minutes per week of the revised RSE module teaching is suitable for good implementation. There were also suggestions for RSE to be taught 1 hour every two (2) weeks to increase the contact time for more effective delivery of RSE modules. Most schools reported that all revised RSE module activities were completed on time for Year 1 to 5 only but not Year 6 due to focus on UPSR. The constraints in Year 6 may be addressed by reducing the module activities accordingly.

The product component consists of three (3) aspects, namely the road safety knowledge, the road safety behaviour, and the spillover effect from students to parents. As for the behaviour, the findings revealed that there is an increment on most of the positive road safety behaviour item during the post study. This result had proved the effectiveness of this module in strengthening the positive road safety behaviour among the students. Furthermore, the result reported that most of the students from Year 1 to Year 6 have good skills and basic knowledge on how to cross the road safely. These shown by the highest percentage for road safety behaviour recorded within the range of 70% to 80% which is related to road crossing behaviour.

It is apparent that there has been a steep increase in the score on road safety knowledge among Year 1 to Year 6 students. Considering the implementation of Revised RSE Modules in the school, it helps in contributing the increment score of road safety knowledge among students. Revised RSE Modules are equipped with teaching aids that help students to learn better and gain proper understanding on RSE. Apart from that, during the development of Revised RSE Modules, the crucial element of BM teaching is considered. Content in students' activity book is integrated with Dokumen Standard Kurikulum dan Pentaksiran (DSKP) to ease the process of teaching and learning. It also motivates teachers to use Revised RSE Modules during BM period.

Besides that, the study used Willingness to Pay (WTP) as the indication of the spillover effect from students on parents. These findings highlight that the highest increment of WTP mean are from pluralistic and consensual families. It can be seen that the boost of WTP mean for Year 1 to Year 6. As for Year 1, 2, 3, 5 and 6 students, the highest increment for WTP mean recorded by pluralistic families. The highest increment of WTP mean for Year 4 student comes from consensual families. However, the WTP mean for laissez-faire family were decreased for in Year 1 and Year 2 students in the post study. The WTP mean for the protective family were also decreased in Year 1 and Year 4 over the same periods.

Apart from that, the result also indicated that there is an increment in the percentage of parent-child road safety initiations discussion among Year 1 to Year 6 students compared to pre-study. The parent-child initiation discussion which includes the topic of safety equipment, road safety regulations were more extensive during post study compared to pre study. Spillover effect also increases by increasing the mean of WTP due to a broader scope of content in parent-child initiation discussion.

A positive change for all the components in the post study is expected as the modules have been revised due to the change of curriculum from the New Primary School Curriculum (KBSR) to Standard Based Curriculum for Primary Schools (KSSR). Besides that, the modules also have been amended in a few aspects, namely the themes, contents, activities, teaching aids and parents' involvement.

MRR No. 262

Assessment of Driver Distraction due to Rear-of-Taxi Advertising

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ISBN: 978-967-2078-42-5

Advertising has evolved from traditional print media and television to new forms including an online presence on social media, and on buildings. A new phenomenon is the use of advertising panels on road vehicles. Advertisements on moving vehicles, including Public Service Vehicles (PSV), have been used by marketers to reach targeted audiences. This medium is believed to have a greater impact compared to roadside advertisements. Recently, an advertiser proposed to install a panel on the back of a taxi to advertise. The Malaysian Institute of Road Safety Research (MIROS) was consulted by the relevant authority, the Road Transport Department, to come up with an informed decision on whether advertising panels could be installed on the back of taxis.

This study was carried out to determine the level of distraction, drivers would experience due to paying attention to such advertising panels on the back of taxis. To achieve this objective, firstly, the presence of driver distraction due to the advertising panels was measured. Next, changes to reaction times to potential road risks due to driver distraction were measured. Finally, the readability of advertisements was assessed taking into account font sizing, vehicle speeds, and distance. Driver distraction at a single point in time was measured for each respondent using animated videos and questionnaires. Each respondent viewed videos that consisted of different scenarios depending on presence of distraction, reaction time towards acknowledging presence of risks, and different levels of readability of the words in the advertisements.

The findings of this study showed that roadside advertisements and advertising panels on moving vehicles led to drivers being distracted. This distraction caused drivers to miss road signs that appeared concurrently with advertisements. The readability of advertisements was also crucial in reducing the distraction level among drivers. It was the amount of mental effort required to read and digest the information on the advertisements that caused drivers to miss vital road signs. The size of the font used or rear-of-taxi advertising should be determined based on the ability to read the sign at the highest speed at a safe travelling distance. Optimised readability of rear-of-taxi advertising would minimise distractions on the road.

MRR No. 263

Vehicle Crash Pulse Study for Child Restraint System (CRS) Evaluation

Author(s): Yahaya Ahmad, Khairil Anwar Abu Kassim, Mohd Hafzi Md. Isa Salina Mustaffa, Mohd Rasid Osman, Siti Zaharah Ishak

ISBN: 978-967-2078-47-0

Children transported in private vehicles are the first and second leading groups of casualties among children aged 1-4 years old (43.8%) and 5-9 years old (30.2%) respectively. Correctly installed child seats can help to reduce the risk of death by 71% for infants and by 54% for children ages 1 to 4. It also reduces the need for hospitalisation by 69% for children ages 4 and under.

Choosing the correct Child Restraint System (CRS) is also very important in order to provide maximum protection during a vehicle collision or harsh braking. In Malaysia, CRS is required to pass UN R44 certification (after the implementation of the regulation). However, the certification does not provide the detailed performance of the CRS to the customers. As such, there is a need to establish a programme similar to ASEAN NCAP in order to provide safety performance information for the consumers to consider and compare suitable CRS for their children. The pulse of the dynamic test shall be higher than the regulation requirements while ASEAN NCAP crash test should be the baseline in determining the sled pulse.

In this study, the accelerometer was installed on the floor of the rear passenger compartment to measure vehicle acceleration/deceleration at this point of location. The vehicle speed represents energy received by the rear occupants. ASEAN NCAP crash tests data were selected to represent new vehicle structure design and car marketed in ASEAN countries. The data were then used to determine the recommended sled pulse for the CRS dynamic test's new consumer programme.

For the analysis, the results from the Right Hand Side's (RHS) B-pillar were ignored in constructing new limit curve because it only focuses on the energy experienced by the rear seat. The upper limit peak is the same as the current UN ECE R44 at 28g. However, the lower limit peak was increased to 23g to reflect current design of the vehicle. The gradient of the curve and the duration were modified to reflect the results of the tests.

This research recommends that the rotation and pitching acceleration to be considered in drafting more representative pulse. However, it depends on the capability of the sled facility. In any offset collision, the car will rotate and pitch causing acceleration energy in these directions. On the other hand, these accelerations can be used during the development of the child restraint system. Although there might be a limitation in the physical test, the virtual test is more than capable.

MRR No. 264

Hazard Perception Test via Driving Simulator

Author(s): Nurulhana Borhan, Mohd Khairul Alhapiz Ibrahim, Ahmad Azad Ab Rashid, Mohd Firdaus Mohd Siam, Low Suet Fin, Siti Zaharah Ishak

ISBN: 978-967-2078-46-3

Hazard Perception Test (HPT) is one (1) of longstanding approach in many countries to assess individuals' competency before obtaining driving licenses. In Malaysia, however, HPT is yet to be part of the national licensing system. Previous hazard perception studies using Malaysian samples reported mixed findings on the effectivity of reaction time-based HPT (e.g. Lim, Sheppard & Crundall, 2013; Ab Rashid & Ibrahim, 2017). Unlike these studies that adopted computer-based HPT, current study employed a full-size cabin driving simulator to study hazard perception between two (2) groups of drivers: novice and experienced. Results from 28 (15 novices, 13 experienced) drivers indicated that novice drivers detected hazards faster than their experienced counterpart, even though both groups have the same performance of hazard recognition. Correlational analysis revealed that driving frequency might be a factor contributing to the difference of response time between these two (2) groups. Further analysis also indicates that different road environments contribute to different hazard perception performance. It is recommended that hazard perception test should be put as a part of the national licensing system and the potential of driving simulator as a HPT tool can be explore more.

MRR No.267

A Study on Vehicle Speeds at Intersection Approaches in Selangor

Author(s): Nusayba Megat Johari, Norfaizah Mohamad Khaidir, Azzuhana Roslan, Sharifah Allyana Syed Mohamed Rahim

ISBN: 978-967-2078-44-9

This report highlights factors associated with speed control of vehicles approaching intersections by identifying their speeds. This study aimed to recommend measures to road authorities to improve intersection safety.

The Hulu Langat district was used in the case study. Selected intersections had a variety of geometries and control types. The speeds of vehicles were recorded for two hours during the daytime off-peak period (10 am-12 pm) and two hours during the night-time off-peak period (9 pm–11 pm) at all intersections. A total of 102,658 speed readings were obtained throughout this study.

Variables hypothesised as related to the driving speed at intersection approaches included vehicle type, time of day, presence of warning signs, number of lanes, area type (i.e., residential, commercial and mixed-use), intersection control type, as well as intersection geometry. Statistical analysis was conducted to test the effect of these variables on the driving speed at intersection approaches.

The area type and number of lanes per direction had greater influence on driving speed at intersection approaches compared to the other tested variables. Residential areas recorded an average intersection approach speed higher than those for commercial and mixed-use areas. Intersection approaches with two lanes per direction had a higher mean speed compared to those with one or three lane approaches.

Of the total speed data collection, 18.5% showed speed violations, with car drivers accounting for 70% of these. The greatest proportion of speed violations occurred on roads with a lower speed limit (i.e., 60 km/h). Speed violations were more prevalent during the daytime than the night-time.



MCP MIROS Code of Practice

MCPs are reports that promote good practice on road safety and produced in the form of technical and practical guidelines. They lead to activities that required participation from other parties, and also be used as reference for standard operating procedures (SOPs) MCPs are reports that promote good practice on road safety and produced in the form of technical and practical guidelines. They lead to activities that required participation from other parties, and also be used as reference for standard operating procedures (SOPs).

MCP No. 193

Crash Investigation and Reconstruction Training Module Framework

Author(s): Mohd Amirudin Mohamad Radzi, Ahmad Noor Syukri Zainal Abidin, Kak D-Wing, Siti Atiqah Mohd Faudzi, Zarir Hafiz Zulkipli, Norlen Mohamed

ISBN: 978-967-2078-27-2

The Malaysian Institute of Road Safety Research (MIROS) is the leading agency in Malaysia conducting crash investigation and reconstruction. As the leading crash investigation agency in the country, MIROS plays an important role in developing and implementing training programs to expand and share its knowledge in the field to both local and international stakeholders. This document provides the framework for MIROS's Crash Investigation and Reconstruction Training Module. This module contains three different training levels, namely, basic, intermediate and advanced. The levels include both theoretical and practical perspectives to suit the requirements of the participants.

MCP No. 266

Standard Operating Procedure Road Safety Inspection

Author(s): Norfaizah Mohamad Khaidir, Nurulhuda Jamaluddin, Azzuhana Roslan, Nur Fazzilah Mohamed Nordin, Nusayba Megat Johari, Sharifah Allyana Syed Mohamed Rahim, Wong Shaw Voon

ISBN: 978-967-2078-43-2

This Standard Operating Procedure (SOP) presents step-by-step process applied when conducting Road Safety Assessment (RSA) project. The assessment methods are adopted from Road Safety Audit practice around the world with few modifications to suit the requirements for the Malaysian Institute of Road Safety Research (MIROS). This procedure also serves as a formal documentation to fulfil ISO 1900:2008 standards. The implementation of RSA project in MIROS must follow five (5) major steps as explained by parts in the SOP:

Part 2.1 is the project initiation and team assignment where criteria to embark on the assessment project is listed. This part also explains the selection of assessment team based on the established roster.

Part 2.2 proposes project preparation explaining the procedure required to be taken before going to site. This part is necessary to ensure that all the preparation is done, and a team is ready for the on-site assessment.

Part 2.3 explains in detail the steps involved during on-site data collection and analysis required for the assessment. This part serves as a guide for assessment team on the basic type of data and analysis that must be performed for the assessment project.

Part 2.4 points out steps to present data and analysis to relevant parties in the format of the report, presentation, summary, or other required formats. This includes the submission process of the report.

Part 2.5 entails the assessment follow up with road authority to complete the assessment project. The involvement of road authority is a mechanism to enable a complete loop in determining road safety deficiencies, identifying suitable countermeasures, and conveying to respected authorities for improvement actions in ensuring that the project is successful.

It is hoped that the implementation of this SOP in RSA project will enhance the quality of assessment and in turn, increase road safety.



MER

MIROS EVALUATION REPORT

MERs are report on evaluations of processes, products or programmes that are related to roads and road safety. The evaluations may be initiated internally, or upon request by external parties. Most of the reports are available for the general public, but those commissioned by external parties are generally restricted.

MER No. 253

Safety Star Grading Programme: Phase 1 Assessment

Author(s): Mohamad Suffian Ahmad, Tan Choon Yeap, Wahida Ameer Batcha, Ilhamah Othman, Noor Kamaliah Alias, Aziemah Azhar

This Safety Star Grading programme is a consumer-based programme aimed to provide the general public with knowledge and indicator on the safety performance of bus operators in making the best decision in choosing the safest transport by considering safety aspects. It also benefits the bus operators in improving their image, publicity, and reputation for marketing purposes as well as continuous improvement in managing the safety operations of the organisation in order to remain competitive. The implementation of the programme was started in 2013 and the first assessment was conducted among 11 bus operators who had volunteered to participate in the programme. For the briefing session, 32 companies from Peninsular Malaysia attended three briefing sessions according to their respective regions (Central, Southern and Eastern, and Northern); these briefings were held in MIROS. The purpose of the briefing was to introduce the programme and its assessment criteria, to highlight the benefit of participating as well as to encourage their participation in this programme. The assessment was conducted based on document verification, site inspection and observation, and face-to-face interviews of the staff and management team. The completion of Phase 1 assessment shows that three (3) out of 11 companies which participated voluntarily were awarded with safety star grading. The companies awarded were Sani Ekspres Sdn. Bhd. (4 star), Konsortium E-Mutiara Berhad (2 star) and Disitu Holdings Sdn. Bhd. (1 star). At this infant stage, the awareness in managing operational safety in transport activities, especially the bus operation, is a step further towards supporting road safety agenda in Malaysia. MIROS believes that the continuity of this programme would ultimately contribute to reducing road crashes and fatalities in our country.



MRSA

MIROS ROAD SAFETY ASSESSMENT

MRSAs are audit reports on roads in Malaysia. It is generally produced by the Road Safety Engineering and Environment Research Centre. They can be used as a reference and guidelines which can lead to other activities that promote road safety. Unless stated otherwise, these reports are “RESTRICTED” and not available to the general public.

MRSA No. 245 (TERHAD)

Road Safety Assessment: KM137.3 North-South Expressway E2

Author(s): Alvin Poi Wai Hoong, Syed Tajul Malik Syed Tajul Arif, Siti Zaharah Ishak

Road safety assessment was carried out at KM137.0-137.3 North-South Expressway (E2) following a fatal crash of an express bus on 24th December 2016. The bus was travelling from Johor Bahru when it lost control and ran off the road before hitting the wing wall of an underpass. Fourteen people including the driver were killed in the crash. MIROS had identified several safety problems that are related to the road environment which may have contributed to the high severity of the injury. The identified safety problems are steep embankment, the poor crash barrier end treatment, insufficient Length-of-Need (LON) of the barrier and inappropriate performance level of the barrier system. To reduce the likelihood of a crash, MIROS suggested that enforcement activity to be facilitated with the relevant authorities such as the Road Transport Department (JPJ) or the Royal Malaysian Police (PDRM) as the observed operating speed was found to be higher than the speed limit. In addition, the highway concessionaire should consider installing shoulder rumble strip to alert errant drivers who veer off the travel lane. Meanwhile, to reduce the severity of a crash, it is suggested that a continuous crash barrier system is provided starting from KM136.9 up to the crash site. The whole barrier system should conform to the TL-3 performance standard. In addition, it is suggested that to install barrier with TL-6 capability at a location with a high vertical drop to shield errant heavy vehicles from falling onto the embankment.

MRSA No. 260 (TERHAD)

Road Safety Assessment: Persiaran Saujana Puchong

Author(s): Nora Sheda Mohd Zulkiffli, Ho Jen Sim, Azzuhana Roslan, Alvin Poi Wai Hoong, Siti Zaharah Ishak

A road safety assessment was carried out pursuant to the complaint by the residents in Taman Saujana Puchong on the safety concern at Persiaran Saujana Puchong. The concern of the letter arose when the channelization into Jalan Persiaran Saujana Puchong was constructed to regulate the traffic into a petrol station, food stalls, Taman Saujana Puchong and other residents via Jalan Persiaran Saujana. According to the resident representative, the channelization is not feasible as it affects about 10,000 traffic volumes per day that would result in serious traffic congestion and increase the risk of accidents in the area.

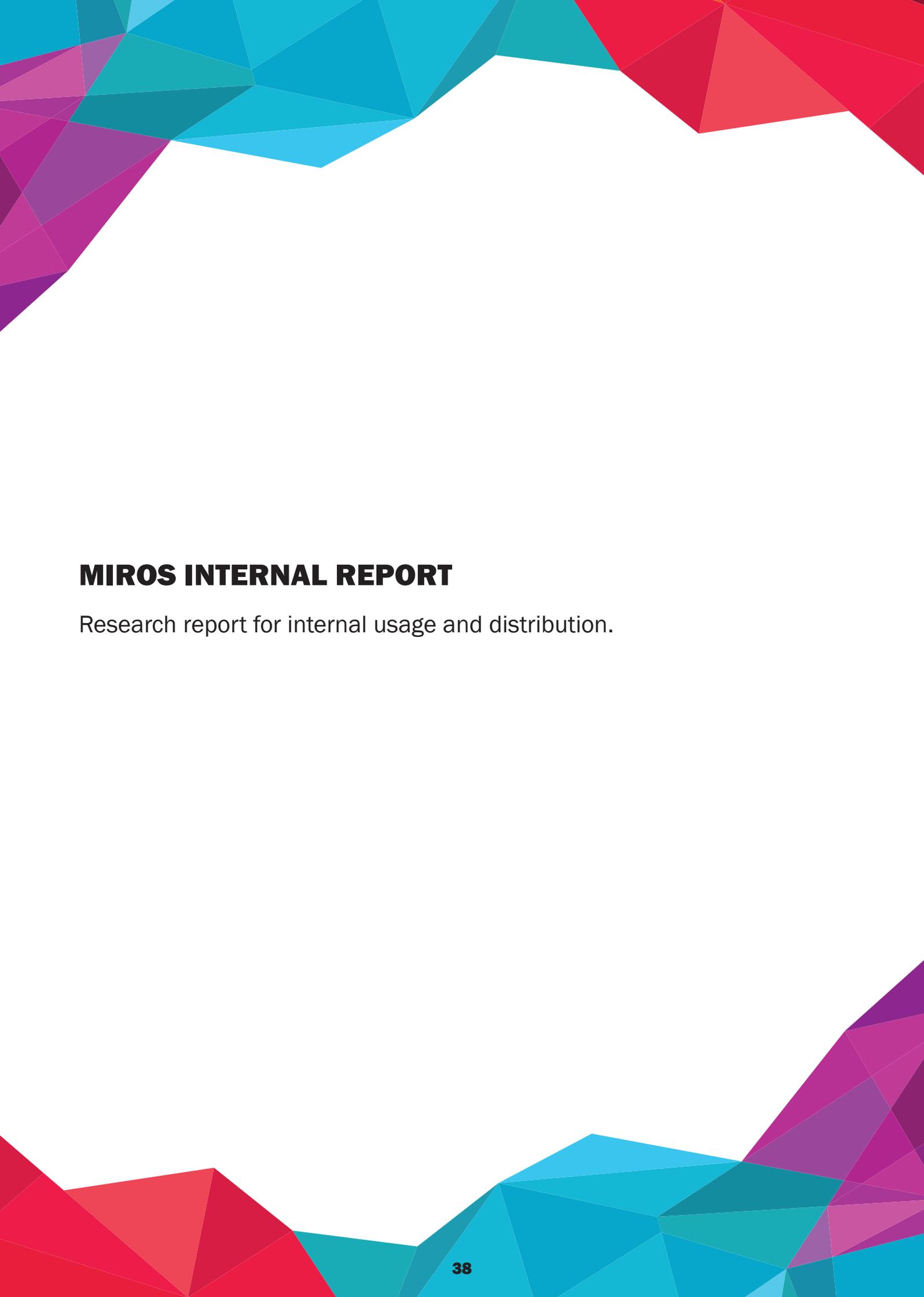
Spot speed data, traffic volumes, traffic interactions and best practices were highlighted during the site observation from 7.30 am to 9.30 am. Data collection was conducted at two points; channelizing entry after PETRONAS Station, namely as Location A and the junction of Persiaran Saujana Puchong and Lebuhraya Damansara Puchong, LDP namely as Location B.

Analysis of vehicle travel speeds indicates that the average travel speeds of the vehicles approaching the diversion was 52 km/h while in the channelized lane was about 49 km/h. During morning rush hour, it was recorded that a total of 465 vehicles diverts from the LDP into the channelized lane towards the housing areas while as high as 1488 vehicles entering LDP via Persiaran Saujana Puchong. The weaving movement was observed at Location A. However, the weaving length provided is adequate.

Risky manoeuvre observed on sites, such as sudden braking, the late entry of the vehicle to service road and late exit of the vehicle to main carriageway. Few unsafe interactions were observed at the junction where two left turnings were making turns at the same time into the LDP. The condition worsened when there was a through the vehicle. The safety problem can be mitigated by proposing hatching that channelizing two left turning movements to one at location B.

Best practices highlighted the main carriageway of LDP separated with service road can increase the road user safety due to different road hierarchy and design speed. To ensure through traffic to slow down their vehicle, the enhanced material of transverse bars was provided to alert inattentive drivers of potential danger, by causing a tactile vibration and audible rumbling transmitted through the wheels into the vehicle.

Observation of road condition within the perimeter of the assessment area proves that some improvements need to be carried out. It is ideal to implement all proposed countermeasures in order to prevent the current condition on-site from becoming more critical.



MIROS INTERNAL REPORT

Research report for internal usage and distribution.

MIROS Internal Report No. 265

A Guide on Categorising Schools According to Pedestrian Facilities

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The Road Safety Education (RSE) programme, which comes under the first Malaysian Road Safety Plan 2006–2010, comprises teaching modules for primary and secondary schools in Malaysia. RSE is a smart partnership initiative developed by an appointed consultant together with the Ministry of Education and the Ministry of Transport Malaysia where road safety education is embedded in the teaching of Bahasa Melayu subject.

In order to achieve the goals of the RSE programme, pedestrian facilities provided in school must be able to accommodate the needs of students and reduce the risk of road injuries. Emphasis on good practice must be given in the provision of pedestrian facilities around school areas, focusing on school children as the primary users. This guide is intended to help relevant quarters in identifying adequate pedestrian facilities through presentation of the categories of schools with respect to this matter.

This guide initiated by the Malaysian Institute of Road Safety Research (MIROS) and is jointly developed by various government agencies and Ministries that are directly or indirectly involved in the RSE programme in school, namely the Ministry of Education (MoE), the Ministry of Urban Wellbeing, Housing and Local Government (MUHLG), the Road Safety Department (RSD), Public Works Department (PWD), and the Putrajaya Corporation.

Such collaboration, therefore, forms the working group for this guide. The expertise and experience in these agencies has aided in the identification of key points in relation to pedestrian facilities near schools.

The categories of schools are developed using the science of ‘must have’ and ‘good to have’ for pedestrian facilities within the school zone. School areas are evaluated for presence of such facilities. Basic pedestrian facility which is a ‘must have’ is defined as the basic criteria which include pedestrian footpath, pedestrian crossing, traffic sign and marking and for primary schools, a traffic warden. Additional pedestrian facility in the school area can be treated as enhancements. The main objective of such facilities is to safely direct pedestrians in their travel.

Schools are placed into three (3) different categories, namely Red, Yellow and Green. Schools in the Red Category are unable to meet the minimum criteria. Those in the Yellow Category fulfil the minimum criteria for pedestrian facility while Green Category fulfil the basic criteria but with enhancements to the pedestrian facilities, thus contributing to a safer pedestrian environment. All schools should at least fulfil requirements for the Yellow Category.

This guide is produced based on the idea to improve and enhance pedestrian facilities around school areas to tally with the RSE programme implemented in schools. This guide will possibly accompany the Road Safety Education initiative as well as the School Traffic Warden Programme carried out in schools across Malaysia as a means to produce better road users and drivers of the future.

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Malaysia Road Safety Performance 2015: A Comparison between IRTAD Member Countries

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More than 70 organisations from 39 countries are currently members and observers of the International Road Traffic and Accident Database (IRTAD) representing a wide range of public and private organisations with a direct interest in road safety. Through IRTAD membership, Malaysia has access to global best practice for road safety data gathering techniques as well as statistical benchmarks from other IRTAD member and observer countries. Most member countries report common indices such as fatalities per 100,000 population, fatalities per 10,000 vehicles, and fatalities per billion vehicle kilometres-travelled (VKT). The figures reported in this report are from 2012. Malaysia recorded 3.1 fatalities per 10,000 registered vehicles. Although this was just below Korea's performance (2.5), top performing countries managed to achieve fatalities below 1.0. Malaysia also recorded 23.6 fatalities per 100,000 population, which ranks among other low performing countries. There were 13.4 fatalities per billion VKT, ranking Malaysia higher than the Czech Republic (15.7) and Korea (18.4). Malaysia has shown improvement in its indices for 2013, with 23.1 fatalities for 100,000 populations, a reduction by 4%, and 3.1 fatalities per 10,000 registered vehicles, a reduction by 6%. Caution should be exercised in interpreting these figures as they are only useful for comparing the performances of countries with similar levels of development and vehicle use. Well framed comparisons between the indices of the various countries nevertheless help to benchmark Malaysia's performance in terms of road safety and measures that can be initiated to reduce the number of road crashes.



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