

EDITORIAL

Vehicle Assessment Programs in Malaysia: From Safer Cars to Safer Motorcycles

Khairil Anwar Abu Kassim^{1,*}, Yahaya Ahmad¹ & Mohd Hafiz Johari¹

*Corresponding author: khairilanwar@miros.gov.my

¹Malaysian Institute of Road Safety Research, 43000 Kajang, Selangor, Malaysia

1. Background

Since its launch in 2007, the Malaysian Institute of Road Safety Research (MIROS) has pioneered various initiatives and programs in line with the goals of its establishment as enshrined in the MIROS Act 2012 (Act 748). Among the research institute's earliest efforts in improving road safety in Malaysia and across Southeast Asia include the implementation of programs towards safer vehicles. This effort then paved the way for the formation of the New Car Assessment Program for Southeast Asia (ASEAN NCAP) in 2011.

Today, most new passenger cars entering the ASEAN automotive market have achieved 4 and 5 star ratings set by ASEAN NCAP (Khairil Anwar et al., 2019) as a result of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant standards, consumer information schemes and incentives to accelerate the deployment of new technologies. This is truly ASEAN NCAP's proudest accomplishment.

However, the rate of road traffic deaths involving passenger car occupants in Southeast Asia was always lower than motorcyclists or powered two-wheeler (PTW) users. According to the Global Status Reports on Road Safety by the World Health Organization (WHO), the proportion of PTW user fatalities registered an increase from 23% to 28% of all road traffic deaths worldwide between 2013 and 2016.

In Malaysia, the percentage of road deaths among motorcycle users (62.7%) remains higher than any other road users and continues to be on the rise. For example, in 2016, motorcycle users registered a total of 4,485 deaths compared to 1,489 for car occupants. In 2015, motorcyclists recorded 4,203 deaths compared to 1,358 for car occupants (PDRM, 2017).

In addition, with the increasing number of newly registered motorcycles in Malaysia, Indonesia, Vietnam and Thailand where there is one motorcycle in use for every three persons (IMMA, 2019), immediate action is required to halt this trend.

Taking into account the success of ASEAN NCAP in Malaysia and across the Southeast Asian region, MIROS together with The Malaysia Automotive, Robotics and IoT Institute (MARii) have recently launched a new consumer program for safer motorcycles or the Malaysian Motorcycle Assessment Program (MyMAP).

This program will provide star rating so that users can select motorcycles with the best safety technologies on the local market. The program also is the first step in improving the safety features of new motorcycles and can help reduce the risk of accidents and injuries involving PTW users in Malaysia.

Based on the ratings, MyMAP will also help buyers reach the right decision before making a purchase by emphasizing the safety aspects of the motorcycle. The current paper aims to highlight some of the key considerations that have led to the establishment of MyMAP as well as the main thrusts of the program.

2. MyMAP Key Objectives

MyMAP's vision is to ensure safer mobility for all motorcycle users in Malaysia. Its mission, on the other hand, is to spearhead utilization of safety technology on motorcycles and enhance consumer awareness regarding riding safety (MIROS, 2021).

With the launch of MyMAP, Malaysia becomes one of the first countries in the region to adopt world class vehicle safety standards and regulations, as a signatory of the World Forum for Harmonization of Vehicle Regulations (WP.29). These standards and regulations are important pillars under the National Automotive Policy (NAP) as outlined by the Ministry of International Trade and Industry (MITI) and also MARii.

Among the key objectives of MyMAP is to encourage the safer design of motorcycle chassis and critical components including tyres, brakes, speed warning and speed control devices (MIROS, 2021). Furthermore, the program also aims to promote enhancement of rider visibility as the main element of motorcycle design. Such goals are in line with the NAP to promote the adoption of the latest technologies, R&D activity and emphasis on consumerism as the means to enhance road user safety and reduce road traffic deaths (MIROS, 2021).

Aside from the goals that have been mentioned above, it is also hoped that MyMAP will achieve the following objectives:

1. To give consumers an additional tool when choosing a motorcycle by providing insights on the safety aspects;
2. To stimulate safer motorcycles to enter the market; and
3. To reduce motorcycle users' crash and injury severity.

Further, in its capacity as the joint-leader of the first motorcycle assessment program in Southeast Asia, through MyMAP, MIROS aspires to:

1. Enhance motorcycle safety in Malaysia;
2. Show that an integrated approach is vital for improving motorcycle safety;
3. Promote key technologies which will elevate motorcycle safety level;
4. Encourage a healthy competition across the motorcycle industry to adopt the latest safety technologies; and
5. Support and contribute to the UN's Global Sustainable Development Goals.

Admittedly, continuous technological development will allow manufacturers to improve the safety performance of their vehicles while keeping them affordable. Technical features such as Combined Braking Systems (CBS), Anti-Lock Braking System (ABS) as well as Light Detection and Ranging (LiDAR) are becoming more common. ABS Technology, for instance, is able to adjust the brake pressure during an emergency to prevent wheel locking and help maintain the stability of the motorcycle. In certain situations, ABS can also help reduce the distance when braking.

In the first phase, MyMAP is implemented on a voluntary basis and it is limited to motorcycles with a capacity of 250cc and below. This is in line with the local motorcycling scenario where manufacturers are not yet ready to integrate Anti-Lock Braking System (ABS) on low-capacity motorcycles. However, Mforce Bike Holdings Sdn. Bhd. has taken a step ahead of other manufacturers by adopting the latest technology in an integrated manner. In the second phase, MyMAP aims to assess motorcycles over 250cc whereas in the final phase, all engine types and combination including ICE, hybrid and electric PTWs will be included in the assessment program.

3. MyMAP Implementation

The implementation of MyMAP toward providing a holistic assessment of motorcycle safety performance in Malaysia is based on four pillars as shown in the diagram below. They include:

1. Compliance to UN regulations;
2. Audit and analysis on conformity of production;
3. Assessment of safety features and new technology; and
4. Assessment of support program provided to consumers.

Through MyMAP, the tested motorcycles shall be awarded points according to four different components. Each component or pillar shall have different weightage contributing to the final rating of the tested model (MIROS, 2021). The evaluated pillars are shown in Figure 1.

PILLARS	POINTS
Compliance to UNECE Regulations	0.50
Conformity of Production	1.50
Safety Features	2.50
Support Programme	0.50
TOTAL	5.00

Figure 1: Point distribution for evaluated pillars.

At the end of the assessment of a certain motorcycle model, the MyMAP star rating shall be awarded according to a scale of 1 to 5 as illustrated in Table 1.

Table 1: MyMAP star rating

POINTS	STARS
4.50 - 5.00	★★★★★
3.75 - 4.49	★★★★
3.00 - 3.74	★★★
2.00 - 2.99	★★
1.25 - 1.99	★

MyMAP is carried out in parallel with the NAP as outlined by MITI and MARii. As such, the targets of the program include:

1. Brake Technology including Combined Braking System, Anti-Lock Braking System and Advanced Emergency Braking System;
2. Support Program including training and education, and personal protective equipment (PPE);

3. Rider Assistance Technology including Telematics, Advanced Driver-Assistance Systems (ADAS), battery safety and recycling; and
4. Vehicle Sensing and Cognition Technology including Light Detection and Ranging (LiDAR), Radar, Adaptive Cruise Control (ACC), Inertial Measurement Unit (IMU) Cybersecurity.

MyMAP also stresses the importance of addressing new technologies through WP.29 for the harmonization of vehicle technical regulations. It is also important to note that the use of appropriate PPE plays a significant role in the mitigation of severe injuries in the case of a crash involving a PTW user. Further, there are four steps involved in MyMAP procedure as shown in Figure 2.



Figure 2: MyMAP assessment procedure.

4. MyMAP Main Focus Under Safety Pillar

To date, the motorcycle industry has developed and introduced several braking technologies, improving the effectiveness of these devices and adjusting them to specific manoeuvres and needs. Advanced braking systems comprise different systems, technologies and approaches including Anti-Lock Braking System (ABS), Combined Brake Systems (CBS) and Advanced Emergency Braking System. Such systems can be fitted either individually or in combination (IMMA, 2019).

As studies from around the world have demonstrated, the majority of motorcycle accidents are caused by the driver of the other vehicle who ‘did not see’ the motorcycle rider. Och and Buche (2010), for example, emphasized the rider’s capabilities to see and be seen. To this end, conspicuity has been and is continuously being improved through advances in vehicle daytime and night-time lighting technologies while the PTW industry has also been involved in adapting such technologies for motorcycles to improve rider vision, visibility and the lighting signature of motorcycles (IMMA, 2019).

Furthermore, the additional or bonus features that come under MyMAP purview include Speed Limiter, Retro-reflective Material

Decal, Retro-reflective Tyre, Hazard Light, Motorcycle Stability Control, Adaptive Headlight, Tyre Pressure Monitoring System, Warning Indicator for Head and Taillights, Traction Control, and Blind Spot Technology.

While it is true that a lot has been outlined in MyMAP, the most vital effort for now is to encourage new motorcycles to be fitted with ABS as it is an important technology to ensure the safety of PTW users. At the same time, MIROS is positive that MyMAP will be successful. Hopefully, as in the case with passenger vehicle safety in the ASEAN region, motorcycle manufacturers will compete to produce the safest models where we can expect significant improvements in the coming two or three years.

5. Conclusion

Safety of PTW users is a growing concern in developing countries especially in Southeast Asia. Despite various countermeasures, the number of motorcyclist fatalities is on the rise and showing no sign of abating. The Malaysian Motorcycle Assessment Program (MyMAP) was therefore conceived based on MIROS's experience in launching both MyVAP and ASEAN NCAP. The latter has become a vital program to increase consumer awareness regarding safer passenger cars in the region. It is hoped that MyMAP will do the same by providing useful information to potential buyers regarding the safety feature of their motorcycle and eventually reduce road traffic crashes involving PTW users.

Through the newly launched assessment program, the SYM VF3i underbone motorcycle from Mforce Bike Holdings Sdn. Bhd. has been awarded 5-star rating. The rating recognizes the readiness and capability of local manufacturers in supporting the government's call to improve the level of PTW safety in Malaysia especially for the affordable motorcycle class. In line with such an effort, MIROS would like to extend an invitation to all motorcycle manufacturers who have yet to participate in MyMAP.

However, it should be noted that providing motorcycles with better safety features or technologies, or introducing a vehicle specific regulation, will not be enough without a solid and continued integrated policy with regard to rider behavior, training, advocacy campaigns as well as proper road infrastructure that MIROS will continue to champion.

References

- International Motorcycle Manufacturers Association [IMMA] (2019). Safer motorcycling: The global motorcycle industry's approach to road safety. Retrieved from http://immamotorcycles.org/sites/all/themes/business/media/20190516_IMMA_RSWP-FINAL_WEB.pdf
- Khairil Anwar A. K., Yahaya A., Zulhaidi M. J., & Siti Zaharah I. (2019). ASEAN NCAP's success and challenges in promoting safer vehicles in the ESCAP region. *Transport and Communications Bulletin for Asia and the Pacific, No. 89 "Improving Road Safety"*.
- MIROS (2021). *Malaysian Motorcycle Assessment Programme guidebook: A new consumer programme for safer motorcycles*. Kuala Lumpur: Malaysian Institute of Road Safety Research.
- Och, R., & Buche, T. (2010). Preparing riders to S.E.E. better: MSF tools for improving hazard perception. Irvine, California. Retrieved from https://www.msf-usa.org/downloads/MSF_Tools_for_Improving_Hazard_Perception.pdf

* Ir. Ts. Dr. Khairil Anwar Abu Kassim, (Adjunct Professor) is the Director-General of the Malaysian Institute of Road Safety Research (MIROS), a Statutory Body under the Ministry of Transport (MOT) Malaysia.