

Vehicle Safety Regulations & Ratings

MECHANICAL ENGINEERING TECHNICAL DIVISION

reported by



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On 24 July, 2018, Ir. Mohd Hafzi Md Isa was at Wisma IEM to talk about *Vehicle Safety Regulations & Ratings*. With over 10 years' experience in road safety and vehicle safety, Ir. Mohd Hafzi is head of Crash Safety Engineering, a unit under the Vehicle Safety & Biomechanics Research Centre, Malaysian Institute of Road Safety Research (MIROS). He holds various positions in technical committees and is a certified ASEAN NCAP Inspector.

Information from MIROS shows a daily average of 20 road deaths in the country! Our Road Safety Index per 100,000 population is at a staggering 22.6. In comparison, Sweden is only 2.65. The mode of transportation involved in the highest number of road accidents is motorcycles at 60%, followed by cars at 20%. The rest comprises pedestrian at less than 10% and other modes.

The owner of a vehicle is responsible for maintaining the vehicle in good condition and, most importantly, to drive it safely. Both factors are equally important to minimise the risk of vehicular crashes and human injuries.

All implemented counter measures in road safety must be treated as equally important though some may not serve the intended purposes. For instance, airbags can help reduce injury severity but in many studies, data shows that some vehicle occupants ignore seatbelts and this defeats the intended benefit of airbags. Since human factor can be tricky, other avenues to raise the bar in minimum safety standard of vehicles, can be achieved through Vehicle

General Road Accident Data in Malaysia (1997-2016)

Year	Registered Vehicles	Population	Road Crashes	Road Deaths	Serious Injury	Slight Injury	Index per 10,000 Vehicles	Index per 100,000 Population	Index per billion VKT
1997	8,550,469.00	21,465,600.00	215,632.00	6,302.00	14,105.00	36,167.00	7.37	29.10	33.57
1998	9,141,357.00	22,179,500.00	211,037.00	5,740.00	12,068.00	37,896.00	6.28	25.80	28.75
1999	9,929,951.00	22,711,900.00	223,166.00	5,794.00	10,366.00	36,777.00	5.83	25.50	26.79
2000	10,598,804.00	23,263,600.00	250,429.00	6,035.00	9,790.00	34,375.00	5.69	26.00	26.25
2001	11,302,545.00	23,795,300.00	265,175.00	5,849.00	8,680.00	35,944.00	5.17	25.10	23.93
2002	12,068,144.00	24,526,500.00	279,711.00	5,891.00	8,425.00	35,236.00	4.90	25.30	22.71
2003	12,819,248.00	25,048,300.00	298,653.00	6,286.00	9,040.00	37,415.00	4.90	25.10	22.77
2004	13,828,889.00	25,580,000.00	326,815.00	6,228.00	9,218.00	38,645.00	4.52	24.30	21.10
2005	15,026,660.00	26,130,000.00	328,264.00	6,200.00	9,395.00	31,417.00	4.18	23.70	19.58
2006	15,790,732.00	26,640,000.00	341,252.00	6,287.00	9,253.00	19,885.00	3.98	23.60	18.69
2007	16,813,943.00	27,170,000.00	363,319.00	6,282.00	9,273.00	18,444.00	3.74	23.10	17.60
2008	17,971,907.00	27,730,000.00	373,071.00	6,527.00	8,868.00	16,879.00	3.63	23.50	17.65
2009	19,016,782.00	28,310,000.00	397,330.00	6,745.00	8,849.00	15,823.00	3.55	23.80	17.27
2010	20,188,565.00	28,910,000.00	414,421.00	6,872.00	7,781.00	13,616.00	3.40	23.80	16.21
2011	21,401,269.00	29,000,000.00	449,040.00	6,877.00	6,328.00	12,365.00	3.21	23.70	14.68
2012	22,702,221.00	29,300,000.00	462,423.00	6,917.00	5,868.00	11,654.00	3.05	23.60	13.35
2013	23,819,256.00	29,947,600.00	477,204.00	6,915.00	4,597.00	8,388.00	2.90	23.10	12.19
2014	25,101,192.00	30,300,000.00	476,196.00	6,674.00	4,432.00	8,598.00	2.66	22.00	10.64
2015	26,301,952	31,190,000	489,606	6,706	4,120	7,432	2.55	21.5	9.6
2016	27,613,120	31,660,000 ^e	521,466 ^a	7,152 ^a	NA	NA	2.59	22.6	NA

e = estimated value from from Department of Statistics Malaysia

a = media statement

NA = Not available (The official figures are not available yet)

This factsheet summarises some facts and figures to highlight important statistics and accident characteristics involving motorcycles in Malaysia. For many years, motorcycle has been the most preferable, convenient and affordable mode of transport.

Road accidents statistic from MIROS

Type Approval (VTA) process and the New Car Assessment Programme (NCAP). Improved VTA and the introduction of NCAP are perhaps the new paradigm in the country's automotive layout, since previous efforts have merely focused on establishing and strengthening the car industry.

VEHICLE TYPE APPROVAL (VTA)

The VTA is granted when a product meets a minimum set of regulatory, technical and safety requirements. It is a homologation process to confirm that the production sample of a vehicle design complies with specified standards or UN Regulations before it can be registered in Malaysia. This

consists of Component Type Approval, product compliance (including System Approval) with specified standards or regulations (Malaysian Standards/UN Regulations) and General Requirements which are the requirements listed under Road Transport Act 1987, Environmental Quality Act 1974 and Road Transport Rules.

There are some 10 agencies involved in the VTA process: MOT, MOF, MITI, MOSTI, KPDNKK, JAS, KASTAM, Standards Malaysia, DOSH, SPAD, SIRIM, MIROS, PUSPAKOM and MAI. These agencies have a representative each in the National Committee for Type Approval & Homologation, chaired

Gazette Year	Number of UN Regulation	Department/Agencies Involved
1997	3	Department of Environment (D.O.E.)
2007	12	Ministry of Transport (MOT) and Road Transport Department (JPJ)
2010	4	
2011	35	
2012	1	
2013	23	
2016	22	
Total	100	

UN Regulations & Agencies involved

by the Director General of Road Transport.

The establishment of the VTA Committee is to ensure that every aspect of vehicle construction is in line with current implemented Acts, Rules and Regulations. It is noted that all the agencies are from the government and IEM has volunteered its expertise to contribute to the committee.

To get the VTA, a vehicle has to abide by 100 gazetted UN regulations. Apart from that, different types of vehicles are subjected to different UN regulations. For example, a motorcycle is subjected to 40 UN regulations, a coach bus is subjected to 55 and a light duty truck is subjected to 60.

NEW CAR ASSESSMENT PROGRAMME (NCAP)

There are 9 NCAPs around the world and ASEAN NCAP is the youngest of them all. The difference between NCAP and Regulations is that Regulations is a mandatory requirement that sets a minimum safety level for all vehicles on the road whereas NCAP is for consumer information and not applicable to all models and versions of cars sold.

NCAP also has a higher requirement than Regulations. For example, frontal impact test speed is 64km per hour (for Regulations, it is 56km per hour). You may be wondering why the speed test is so low. This number actually stems from research done for vehicle impacts. Humans cannot withstand an impact at 70km per hour and, in a normal collision, it rarely hits beyond that

as both vehicles will be travelling at different speeds.

Although one car may be moving at 120km per hour, the colliding car may be travelling at 80km per hour, which makes the impact speed at only approximately 40km per hour instead of 120km per hour. Of course, this will be different if the car is crashing into a concrete barrier. In the event of a collision, it is common for the driver to slam on the brakes and this will reduce the impact speed as well.

Prior to the ASEAN NCAP, we had the Malaysian Vehicle Assessment Programme (MyVAP) which conducted non-destructive assessment of vehicles by the use of secondary data from OEMs to assess the safety level. It focused primarily on Malaysian manufacturers to prepare the OEMs for the introduction of NCAP in the country. In June 2011, Malaysia proposed for NCAP in Malaysia to the Global NCAP during the NCAP Meeting. MIROS signed an MOU with Global NCAP in New Delhi in December 2011 and that was the beginning of ASEAN NCAP.

So why do we need the ASEAN NCAP when there are other existing NCAP around the world? This is due to quirks in the different markets. For example, European NCAP testing is designed for their populations which prioritise human-vehicle collision. For cars assessed in Europe, the emphasis is more on protection at the front of the car during a collision. This is because pedestrian traffic in Europe is higher than that in Malaysia. ASEAN NCAP focuses



Presenting a token of appreciation to Ir. Mohd Hafzi Md Isa (right)

more on motor-vehicle collision and as such, the rating obtained in a European NCAP may not be suitable for us. A 5-Star NCAP rating in Japan may only get 3-Star rating in ASEAN NCAP. Likewise, a 5-Star ASEAN NCAP rating may only achieve a 4-Star rating in Latin NCAP.

ASEAN NCAP has such a huge influence in the market that a 5-Star rating is very much sought after by car buyers. This has driven the industry to get the highest possible rating in order to appease the consumer. Car companies will usually boast the NCAP rating as part of their marketing strategies.

This has no less an impact in Malaysia where Proton and Perodua are involved as car manufacturers. One good example of how this has driven the car manufacturer to improve on safety can be seen in the production of Perodua MyVi. In 2013, MyVi obtained a 3-Star ASEAN NCAP rating. With improvements made by Perodua, it achieved a 4-Star rating in 2015 and two years later, with even more improvements and enhanced safety features, MyVi finally achieved a 5-Star rating in 2017. From this example, we can see improvements being made, year after year, to ensure that cars are above the standards set by Regulation and manufacturers striving for a 5-Star ASEAN NCAP rating.

Participants at the talk showed a lot of interest in the tests carried out by MIROS and ASEAN NCAP and there was close engagement between the participants and the speaker on the subject matter. IEM then presented Ir. Mohd Hafzi with a token of appreciation. ■