Require safe vehicles

In high-income countries vehicle safety has improved dramatically, but low- and middle-income countries lag behind. A first step to allow for catch-up is to ensure that all vehicles meet a minimum set of safety standards to be driven legally. Many countries also require that vehicles are tested by inspectors at regular intervals to make sure that they continue to meet these standards. Motor vehicle standards cover requirements such as controls, displays, rear view mirrors, the order of gear-shifting and brake systems. Additionally, they cover headlamps, brake lights, indicators (turning signals), reversing lights, tyre and tyre rim standards, safety glass, seatbelts (and anchoring them correctly), noise and smoke/gas emissions.

Standards also go beyond what is required to make a vehicle safe to drive. For example, many countries have minimum standards of crashworthiness, including aspects such as how resistant the vehicle is to having its roof crushed, whether the side is able to resist side impact and the quality of the safety glass.

Crashworthiness programs – including the consumer-based NCAP – have helped drive the inclusion of more advanced safety features. Such safety features are varied. Airbags and their placement can range from only in the dashboard to the knee well, the door pillar and curtain airbags (an airbag that inflates and covers the side windows). Head protection comes in the form of soft materials in headrests and vehicle side pillars. Adjustable mirrors help the driver monitor what is happening and make it safer to change lanes if they are correctly adjusted. Anti-lock brakes can automatically prevent locking brakes and the resultant skidding in a braking emergency, while traction control is used to stop the wheels spinning or slipping if the driver applies too much power.

Electronic stability control works alongside anti-lock brakes and is designed to help the driver keep control of the vehicle (usually in emergency situations) to stop it spinning out of control. This technology in particular has been found to be very effective in reducing deaths, and will be compulsory in new vehicles in some countries in the near future.

Minimising vehicle defects is also important. Research in developed countries suggests that vehicle defects cause about 3-5% of crashes, and it is likely that the figures are much higher in low- and middle-income countries as the vehicle fleet is likely to be older and less well maintained [7]. This is especially true of heavy vehicles, which are used to move freight and passengers.

Although research in developed countries has not shown that regular vehicle inspections by trained authorities significantly reduces injury crashes, it is a useful tool when starting a nationwide program to improve road and vehicle safety, because it removes dangerous vehicles from the road (or allows time to repair them) and makes sure that the vehicles that are on the road have a suitable level of safe roadworthiness.

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iRAP Malaysia training course: Decade of Action for Road Safety

by Dr Kerry Armstrong (CARRS-Q), Rob McInerney (iRAP) and Dr Mark King (CARRS-Q)

Abstract

The International Road Assessment Program (iRAP) is a not-for-profit organisation that works in partnership with governments and non-government organisations in all parts of the world to make roads safe. The iRAP Malaysia pilot study on 3700km of road identified the potential to prevent 31,800 deaths and serious injuries over the next 20 years from proven engineering improvements. To help ensure the iRAP data and results are available to planners and engineers, iRAP, together with staff from the Centre for Accident Research and Road Safety – Queensland (CARRS-Q) and the Malaysian Institute of Road Safety Research (MIROS), developed a five-day iRAP training course that covers the background, theory and practical application of iRAP protocols, with a special focus on Malaysian case studies. Funding was provided by a competitive grant from the Australia-Malaysia Institute.

Introduction

The International Road Assessment Program (iRAP) is a not-for-profit organisation that works in partnership with

governments and non-government organisations in all parts of the world to assess high-risk roads and develop Safer Roads Investment Plans; provide training, technology and support that will build and sustain national, regional and local capability; and track road safety performance so that funding agencies can assess the benefits of their investments. Road Assessment Programs are now active in more than 50 countries throughout Europe, Asia, the Pacific, North and South America, and Africa.

During 2006-2007, iRAP assessed approximately 3700km of national roads throughout peninsular Malaysia in order to develop a star rating of the road network (1 star is least safe and 5 stars the safest) for cars, motorcyclists, pedestrians and cyclists. The program also identified road engineering improvements that are predicted to prevent 32,000 deaths and serious injuries on the roads surveyed over the next 20 years.

Due to the success of the program, the Malaysian Government committed to extending the iRAP survey to the rest of the Malaysian road network. To facilitate this work, it was deemed desirable to build a strong local Malaysian capability to deliver the project. iRAP worked together with staff from the Centre for Accident Research and Road Safety – Queensland (CARRS-Q) and the Malaysian Institute of Road Safety Research (MIROS) to develop a course curriculum that could directly train Malaysian road safety staff, in addition to forming part of a more comprehensive postgraduate qualification in the longer term.

The principal aim of the training program was to develop appropriate capacity-building and educational materials that could be used to train Malaysian road safety staff directly in the development, delivery and ongoing management of iRAP assessments within Malaysia. By addressing this aim, iRAP has contributed to building Malaysia's capacity to prevent road crashes. The iRAP Malaysia Pilot Study identified ways to save approximately one in every three fatalities on the roads through the systematic application of proven road safety engineering improvements across the country. The extension of the iRAP surveys to further parts of the Malaysian network has great potential to build local capability and achieve significant improvements in road safety.

The training program

The training material for the five-day program was developed from March to August 2010, in preparation for conducting the course in Kuala Lumpur, Malaysia, from 27 September to 1 October 2010. There were a number of essential objectives that needed to be met by those participating in the course. These included the ability to:

- understand the social, economic and human costs and impacts of road crashes
- identify the key causal factors involved in road crashes
- recognise the interplay amongst the components in the traffic network that underpin safe and unsafe road systems
- develop and apply the iRAP protocols of risk mapping, star rating and Safer Roads Investment Plans
- identify effective crash countermeasures, their social and economic benefits, and implementation needs
- identify resources that could be invested in local efforts to plan and implement crash countermeasures
- understand the critical importance of collaborative planning, implementation and evaluation
- understand the role of iRAP protocols within existing road safety strategies and action plans.

In addition, the course structure was set so that lectures and interactive sessions followed a logical sequence:

Day One: iRAP and the Decade of Action for Road Safety

- Global road safety and the Decade of Action
- The Safe System approach and managing energy
- Reconstructing crashes – how people die
- An overview of iRAP
- Panel discussion

Day Two: Risk Mapping

- Traffic and crash data in Malaysia
- How to produce Risk Maps
- Using Performance Tracking to identify the most improved roads
- Practical case study

Day Three: Star Ratings

- Road inspections and accreditation
- The inspection manual, rating and quality assurance processes
- The Star Rating formulae and risk factors
- Practical case study

Day Four: Safer Roads Investment Plans

- Estimating numbers of deaths and serious injuries
- Countermeasure triggers, hierarchy, optimization and costs
- Economic analysis including calculation of benefits, value of life and benefit cost ratios
- Practical case study

Day Five: Saving Lives[1]

- Positive use of iRAP Star Ratings and Risk Maps
- Implementing iRAP Safer Roads Investment Plans
- iRAP and the Decade of Action for Road Safety
- Presentation of course certificates

Participants

There were 38 participants from Malaysia, Central and South America, China, India and the UK. Those who participated were either road engineers, transport planners or policy makers. In addition, a number of high-level delegates from industry in Malaysia were present on the first day and took part in the presentations as well as the panel discussion at the end of the day.

Feedback and evaluation

Participants were asked to rate 18 course components from 1 (unsatisfactory) to 5 (very good). Twenty-seven participants responded, though not all components were rated. Overall, ratings were clustered around 4 (good) for all components.

Of the components related to course content and structure (nine items), all received an average rating above 4 (good). These items included "overview of course content", "overall structure of course", "relevance of case studies" and "applicability of course to work environment", as well as individual questions asking the participant to rate the content of each day.

The components related to course delivery (five items) were more variable. "Opportunities to ask questions", "use of audiovisual aids", "style of teaching" and "handouts provided" all rated above 4; however, "variety in teaching methods" received a rating less than 4.

The final four items related to logistical issues, with "the lecture room", "catering" and "timing of the course" receiving the lowest rating of all 18 items, well below the average rating of 4. "Frequency of breaks" was the only logistical item to rate above 4. The free text comments about the lecture room referred to the lack of facilities, i.e., there were more participants than PCs and desks, so some had to share.

Nineteen of the 27 participants supplied comments on their rating forms, while another four 'Confidential Feedback' sheets were submitted. There were numerous favourable comments about the presenters: their knowledge, enthusiasm and professionalism. There were a number of favourable comments about the content and other characteristics of the course, as well as suggestions for improvement.

There were several comments about the course being too ambitious, while comments about the case study exercises imply that it was the later part of the course that some participants found challenging. Conversely, other participants made favourable comments about the hands-on aspects of the course, which suggests that there was a significant degree of variation among participants in terms of prior knowledge and mathematical skills. Some participants expressed a desire for a more advanced and focused follow-up course.

There were suggestions about how to improve the course structure and delivery, mostly directed at increasing the variety in the presentations: mixing theory and practice throughout, breaking for group exercises (especially in the afternoon when people were sleepy), setting up some of the course as a computer game with the aim of saving lives (presumably through applying iRAP), etc.

The problem of insufficient PC access was addressed in two comments, which proposed that participants should bring their own notebooks (i.e., laptops/web-books) and be given DVDs containing all the data and presentations.

Conclusions

The planning, development and implementation of this five-day course can be considered successful in terms of the achievement of the stated aim and objectives. Thus, while further revision is required to tighten some of the issues that were raised as part of the evaluation, the overall program can be considered successful in terms of building the road safety capacity for Malaysia.

Notes

1. The final day was shortened to a half day for reasons related to religious observance and standard work practices in Malaysia.

Report on capacity-building workshops for road safety in Indonesia

by MJ King[1], BC Watson[1], D Brownlow[1], J Motha[2], E Robinson[3] and B Ernani[4]

[1]Centre for Accident Research and Road Safety – Queensland (CARRS-Q), Queensland University of Technology
[2]Department of Infrastructure and Transport
[3]Indonesia Transport Safety Assistance Package (ITSAP), Department of Infrastructure and Transport
[4]Directorate-General of Land Transport, Indonesia

Abstract

In addition to the established problem of road safety in developing countries such as Indonesia, the agencies responsible for road safety often lack personnel with professional training in road safety. In Indonesia this is compounded by a need for more effective collaboration between agencies. In 2009, CARRS-Q was commissioned under the Indonesia Transport Safety Assistance Package to provide professional training in road safety for middle-level officers in Jakarta, the province of Jawa Barat, and the cities of Bandung, Bogor and Sukabumi, aimed at developing action plans and fostering collaboration between agencies. This was achieved through a workshop, which was followed up by a second workshop with the same participants. The course was very well received, action plans were successfully prepared during the first workshop, and most had progressed well by the time of the second workshop. Good