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Buckle Up! A Nudge for Car Occupant Safety

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The seatbelt remains one of the most effective solutions in reducing vehicle occupants' injuries in road crashes. Nevertheless, achieving a high compliance rate in Malaysia, where the situation of not buckling up is glaringly evident among rear passengers, still poses a great challenge. On another note, despite manufacturers' countermeasure to introduce the Seatbelt Reminder (SBR) system, some users still find ways to flout the system by using fake clips.

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The automatic seatbelt in passenger car was introduced in the seventies, although such an invention can hardly be found today due to various disadvantages (Prakash et al., 2016). By watching a video uploaded by automotive website (jalopnik.com), titled "*This is why we don't miss automatic seatbelts*", one can possibly understand the hassle and unnecessary risks of using the automatic seatbelt (Figure 1) (Spinelli, 2011). Nevertheless, the word 'automatic' can sound so pleasant and promising to road safety advocates, since failure to buckle up in a moving vehicle literally remains the main enemy to car occupant safety (Abu Kassim et al., 2017). It is worth mentioning that occupants of five-star vehicles still face a high chance of being fatally injured if they are not protected by seatbelt, which is considered a Primary Restraint System (PRS) from the passive safety perspective. The airbags, on the other hand, are classified as secondary or Supplemental Restraint System (SRS).

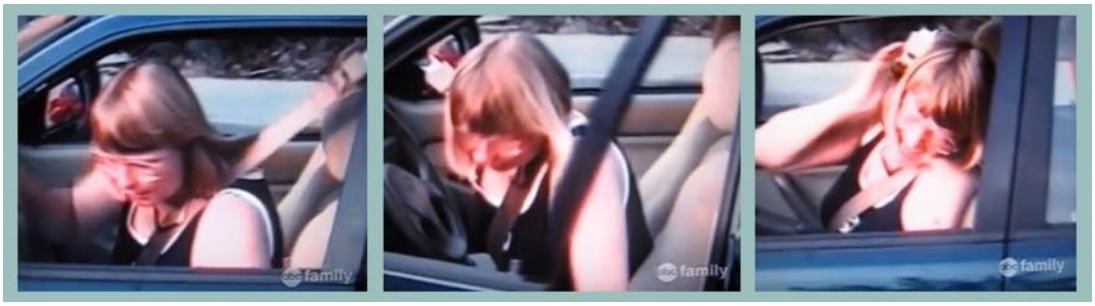

Figure 1: A woman's neck became entangled by the automatic belt as she closed the door (Spinelli, 2011)

In Malaysia's case, as shown in Figure 2, several observational studies found that the drivers' seatbelt wearing rate was always higher than the front occupants, though the figure has yet to reach the 90-percent mark (Mohd Jawi et al., 2016). What's more worrying is that the rear passengers' seatbelt compliance was identified to be under 10 percent as reported by a recent study (Ameer Batcha et al., 2015). It should also be noted that a sudden surge of compliance only occurred following the introduction of rear seatbelt law in early 2009. Since then, the situation has not changed for the better. What are the reasons behind such blatant disregard for the seatbelt? Why is wearing seatbelt deemed 'uncool' among some Malaysians? Is it because drivers normally face a hard time asking or convincing their passengers to wear seatbelts? Or perhaps the drivers are afraid to advise their superiors – who could be their parents, in-laws, or bosses – travelling with them. There has been no study up to such level of scrutiny, i.e. who was driving and who were the passengers, in the local context. Figure 3 shows two extremes of occupant safety behaviour while travelling. Illustrations on the left reveal the fake seatbelt clips to 'defy' the Seatbelt Reminder (SBR), while "buckling up instructions" on the plane are shown on the right. The former suggests that end users of passenger cars tend to do something that would compromise their safety. This contrasts with the latter, in which airline passengers tend to follow instructions given by flight attendants to buckle up while taxiing, taking-off, landing or during turbulence.

In its 2017-2020 rating scheme, ASEAN NCAP, which is the regional automobile safety rating program, has decided to reward manufacturers that equipped their vehicles with rear SBR. In fact, the inaugural rating scheme (2012-2016) had already listed frontal SBRs (a must for both front occupants) as one of the pre-requisites for 5-star rating in Adult Occupant Protection (AOP) scheme, whereby failure to comply with this requirement will limit the maximum achievement to 4-star AOP (Abu Kassim et al., 2017).

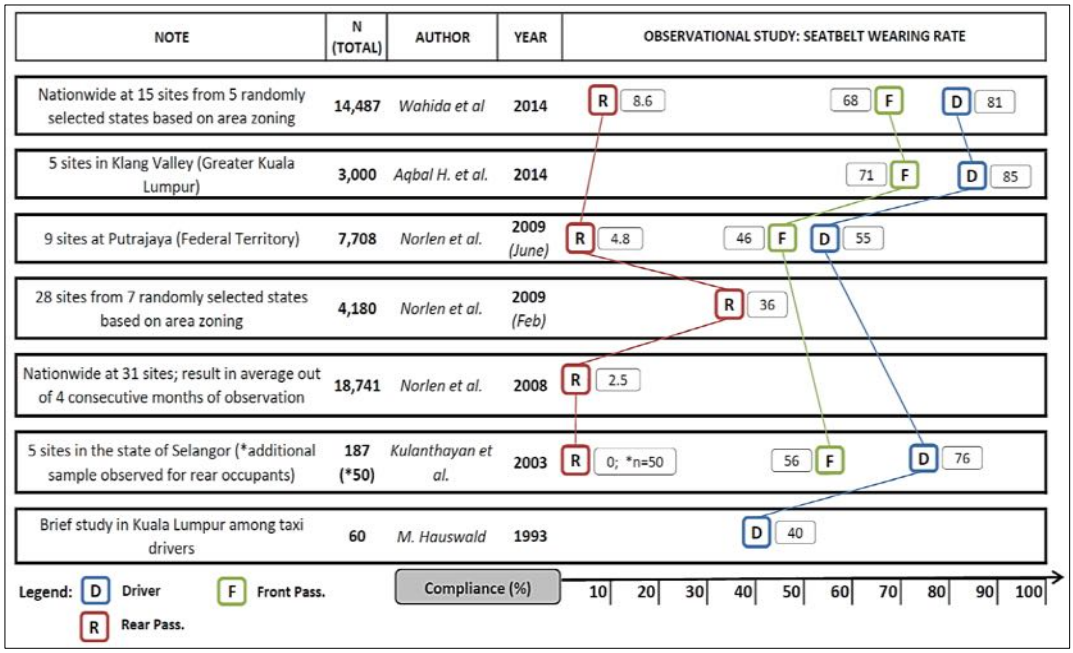

Figure 2: Compilation of selected observational studies regarding seatbelt wearing rate (Mohd Jawi et al., 2016)

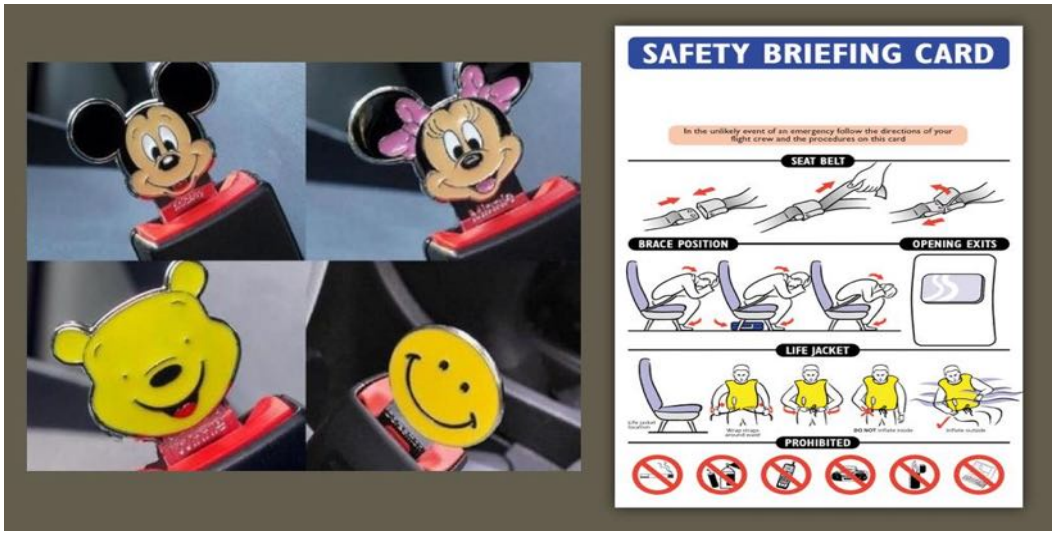

Figure 3: Two extremes of occupant safety behavior while travelling – fake seatbelt clip (left); and in-flight safety briefing card (right) (Source: Swadeology, 2013; Aimer, 2006)

Ideally, SBR acts as an 'internal enforcement' to overcome the issue of carelessness and forgetfulness among car occupants. The use of fake clip nevertheless significantly undermines SBR. A local study by the Malaysian Institute of Road Safety Research (MIROS) in 2013 found that cars with frontal SBR contributed to higher wearing rate compared to non-SBR cars (Ariffin et al., 2014). The study also revealed that the audio-visual SBR was more effective than the visual-only reminder in prompting occupants to buckle up, by virtue of the 'annoyance' factor.

Ferguson et al. (2007) in their study summarized the reasons why drivers failed to buckle up based on specific situations. Drivers were found not to use seatbelt when driving close to home (perceived as lower risk), merely forgetting to buckle up or in a rush. However, certain 'high risk' situations including adverse weather, long-distance travel or travelling on highways would motivate them to buckle up. Drivers in this group – dubbed as part-time users – are supposedly more responsive to SBR. They are the opposite of the more resolute non-users who will come up with somewhat irrelevant excuses for not buckling up, including seatbelt can be dangerous in the event of a crash, feeling of discomfort, or losing personal freedom.

In summary, while it is obvious that seatbelt is one of the most effective and inexpensive ways of reducing road deaths and injuries, the intended benefits of in-vehicle safety technology such as SBR to remind car occupants to buckle up will not be optimally achieved due to the complex human factor, including end users' attitudes.

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