

Dynamics in Road Traffic Accident and Prospect of New Strategies for Developing Countries

Mohamed Omer ESMAEL¹, Kuniaki SASAKI² and Kazuo NISHII³

¹Research fellow, Institute for Transport Policy Studies

(3-18-19 Toranomon, Minato-ku, Tokyo 105-0001, Japan): E-mail: mohamed@jterc.or.jp

²Professor, Graduate School of Material and Env. Eng., University of Yamanashi

(4-4-37 Takeda, Kofu-city, 400-8510, Japan): E-mail: sasaki@yamanashi.ac.jp

³Professor, Faculty Of Information Science, Univeristy of Marketing and Dtribution

(3-1 Gakuen-Nishi-Machi, Nishi-ku Kobe, 651-2188, Japan):E-mail: Kazuo_Nishii@red.umds.ac.jp

1. Background

About 1.3 million lose their life and 20 to 50 million people sustain injuries due to traffic incidents every year in the world. If no effective measures are taken the road accident fatality is forecasted to double by 2030. This is mainly due to the increase in motorization and mobility as subsequence of the economic growth.

However, there are emerging issues like increase in motorcycle ownership, higher rate of motorization and poorer infrastructural development which may affect the transport system and at the same time the nature of the road safety in the developing countries. Malaysia, for example, has a fatality rate as high as five and six times of that of Japan. This fatality rate is already higher than the maximum rate that Japan ever recorded.

In general, the traffic safety polices in developing countries are pursuing the traditional intervention measures which focuses on human errors, and without clear long term vision. To set long term traffic accident polices the dynamics of the road accident, the trend and variation with their sources should be understood to effectively address it.

Therefore, it is important to grasp the trend of the developing countries with their features, to effectively address the safety issues in developing countries in the long term.

1.1 Objective

The objective of this research is to analyses the dynamics of road accident in the developing countries, compare the trend with that of the developed countries and grasp the difference with their sources. The ultimate objective of this research is to help developing countries to adopt strategic short and long term polices in their own unique context.

2. The trend in Asian developing countries

2.1 Total fatality and fatality rate trend

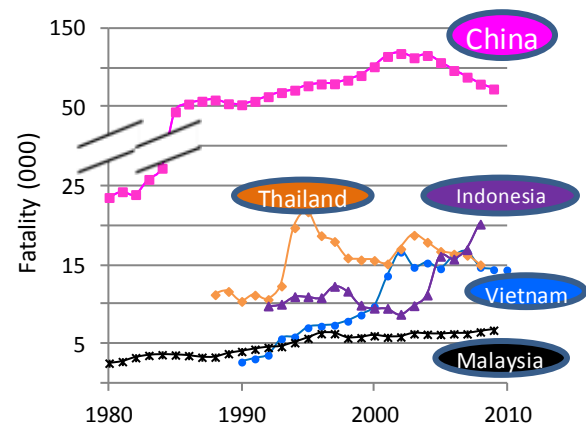


Figure 1. Total fatality trend

Though the fatality trend generally shows a growing trend, there is some variation (Figure 1). In mid 1990s, countries like Thailand, Malaysia and Indonesia shows a fall in the fatality after temporary peak. This is mainly due the 1990s Asian financial crisis. All the countries have since then passed this temporary peak after economic recovery except Thailand.

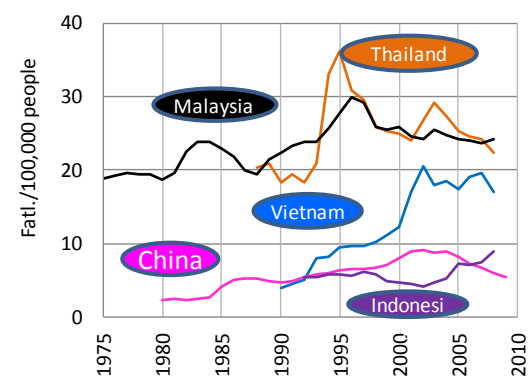


Figure 2. Fatality rate trend

Similar trend is basically observed for the fatality rate (Figure 2), as there is a decrease in id 1990s. However, unlike the fatality trend, the fatality rate trend has been decreasing in Malaysia. The fatality rate trend is high in Malaysia, Thailand and Taiwan in contrast to China where it's currently as low as a fourth these countries.

As the above trend is based on time series, it may be argued that the difference is just due to variation in the economic level. To clarify this, the trend of the fatality rate at the same economic level of the developing Asia is analyzed, and compared with that industrialized countries. As Figure 3 shows, differences exist not only between the developed and developing countries, but also among the developed countries.

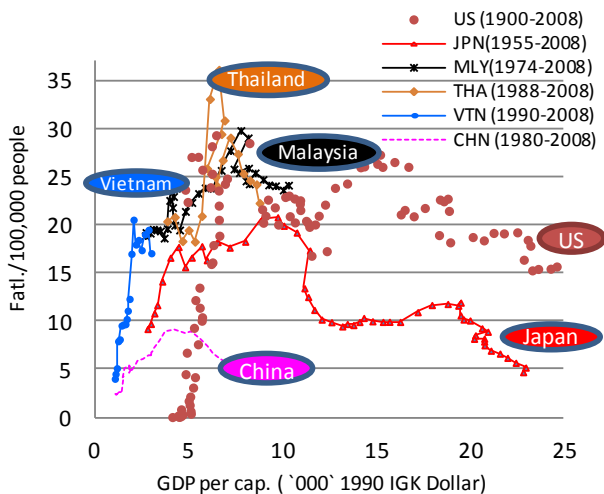


Figure 3. Fatality rate trend

2.2 Sources of variation of fatality rate trend

Road environment, vehicle safety and human factors are generally the three major factors intensively discussed in addressing road safety, beside the post crash measures.

Developed countries have, in general, set up national initiatives to implement the above safety measures, and safety-level (here defined as the Fatality *per Vehicle Kilometer travelled/VKT*) has significantly improved and converging (Figure 4). Thus, it doesn't account for the differences observed in Figure 3.

As discussed in section 2.1, US recently shows per capita fatality rate in US is about three times as high as that of Japan, even though they have similar fatality per vehicle distance travelled. This difference may mainly attribute to

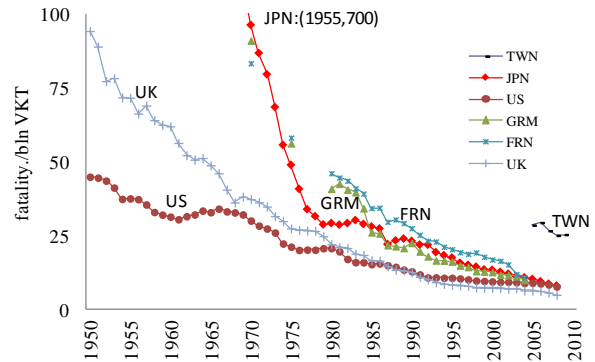


Figure 4. Fatality per Veh-Km travelled

the difference in the transport system. The per capita VKT of US is about three times as that of Japan, while on average each vehicle travels 51km/day in contrast to the 27km /day of Japan. These show how important the transport system achieved is for the traffic safety of a country in the long term.

This has a big implication for developing countries which still focus on traditional short term measures, often compromising in the long term goals. Transport system is mainly shaped at the developing stage, and many developed countries have missed this opportunity as it is difficult to change at a later stage, once it is stabilized. Moreover, many Asian developing countries are developing unprecedented transport system dominated by motorcycle, the most unsafe motorized vehicle. Though they are trying to addresses the risk through safety legislations (helmet law, ets), and traffic management it that couldn't prevent from making their transport system poorer than that of industrialized countries dominated by cars. This may lead to unprecedented safety situation, making the vision zero prospect for the developing Asia at far distance. Nevertheless, unlike the industrialized countries, developing countries have still the opportunity to develop safer transport system. However, that requires a change in the road safety management and philosophy and giving priority to long term objectives, and ensure that every measure introduced will not compromise in the long term goals.