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Road Safety in Developing Countries

By

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INTRODUCTION

The problem of Road safety in most developing countries has already assumed alarming proportion. The number of fatalities in road accidents is now the second highest cause of death in these countries, trailing behind only Gastro-entritis. In recognition of the seriousness of the problem, the U.N. now considers the road accidents in the developing countries as one of the most serious health hazard and has mandated the World Health Organization to carry out research in the problem of road safety in the developing countries and suggest remedial measures.

1.2 According to the studies carried out by the Transport and Road Research Laboratory – U.K.[1], the total tangible cost of road accidents in most developing countries was of the order of 1% of their Gross National Product. The amount would increase by at least 30% if cost of pain, grief and suffering is also included. This is a very high cost by any standards and much more so for the most developing countries who can ill-afford to lose such a portion of their financial resources.

1.3 The problem of Road Safety in the developing countries has been growing largely due to lack of proper diagnosis of the problem. Hardly any research has been carried out in this vital field in the developing countries in the past. Little progress can be achieved in bringing the problem under control until the causes of the problem have been clearly identified. Since extensive research is a pre-requisite for proper diagnosis, the real causes of problem could not be detected.

1.4 Although research findings from the developing countries can provide some guidance, the road safety problems in the developing countries are markedly different from the developex countries. The proven road safety counter measures in the developed countries, may not be very effective in the developing countries. There is considerable evidence to this effect as far traffic signals, pedestrian crossings and other road signs and markings are concerned.

1.5 In order to get a clearer picture of road safety problems and its possible solutions, a Case Study of Pakistan is presented. In Pakistan, the problem of Road Safety was first investigated on scientific lines in 1974[2]. During the last sixteen years, the problem has been looked into from the point of view of road, vehicle, driver, enforcement, legislation, driver training, and host of other socio-economic factors. The results of the research carried out to-date are briefly described below.

2. ACCIDENT DEFINITION:

A road accident is defined as an error in Road-Vehicle-User System. As long as all the

three elements of this system operate smoothly, there would be no accident. Accident would occur only when anyone or more of these elements malfunction or fail to do their assigned task. The relative role of each of these in the accident problem in Pakistan is as follows.

THE ROAD:

Granted that roads in Pakistan are not par excellent. There are no motorways, etc. However, since the roads are built to cater for a given traffic demand, the studies clearly show that by and large, they are quite adequate for the existing traffic volumes[3]. As a matter of fact most of the intercity as well as intercity arterial roads, which suffer the highest accident rate, have capacity far in excess of the traffic demand. On most major road network free-flow conditions prevail and some of them are so much wider as compared to the traffic demand that they encourage un-disciplined behaviour with vehicle wandering all over the carriageway[4].

Quality of road construction in most developing countries is generally not very good and is frequently termed as the primary reason for high accident rate. But this also does not seem to be true because if this was the case, then three things must happen. Firstly, the roads built to the highest engineering standards in the country should be the safest roads. In fact, all such roads have much higher accident rate than others. Secondly, the roads with worst quality of road construction should have the highest accident rate, but generally they happen to be among the safest roads in the country. Thirdly, roads with poor quality of construction when improved should register a decline in accidents, while in fact all such roads, after their improvements, registered a very sharp increase in road accidents.

The roads in most developing countries also lack adequate road signs, signals and markings and it is considered as one of major reasons for acute road safety problem. The facts, however, point to the contrary. To determine the role of road signs, etc. in the road safety problem facing Pakistan, a survey was carried out at few locations in the twin cities of Rawalpindi-Islamabad. The locations selected were well engineered, with proper road marking and controlled by a very conspicuously placed Stop Sign. The 90-97 percent of the drivers of various types of vehicle i.e. buses, cars and motor cycles did not stop or even slow down[5].

When asked as to why they did not stop, the majority (85%) of the drivers responded that there was no stop sign installed at the intersection. When their attention was drawn to the fact that a stop sign was very conspicuously placed, the normal response was that "somebody must have erected the sign yesterday". This is especially important when

viewed in the light of the fact that the sign had been in that location for years and 96% of the drivers were very familiar with the area and had been going through the intersection on daily basis for years.

This can be explained by the fact that the road markings and signs are primarily needed to guide strangers in the traffic stream to their destination with speed and safety. To those familiar with the route, these signs and markings do not give any additional information that they already do not know. Unlike most developed countries, the traffic stream in Pakistan primarily consists of the individuals who are practically familiar with every inch of the road being travelled by them and hence they do not depend on any road signs to help them reach their destination. Therefore lack of traffic signs is not a very serious deficiency as far as road safety is concerned.

According to studies carried out by the author and others[6], it has been clearly established that at the most 5% (the comparable figure for the developed countries is 3%) accidents can be attributed to roads in Pakistan which is a very insignificant figure compared to other causes of the accidents. From the preceding, it is clear that the roads in Pakistan are generally adequate for the amount of traffic being carried by them and are unfairly blamed for the accident problem facing the country.

THE VEHICLE:

Since no vehicles are totally manufactured locally, therefore, most of the vehicles and their spare parts are imported at very high cost and hence difficult to maintain in tip top conditions. As a result, the vehicles in Pakistan are not always in very good mechanical condition. But that does not mean that all vehicles are so old and mechanically so defective that they should not be on the road. A survey of the age distribution and mechanical conditions of vehicles in the country gives very favourable results. Inspite of it, at the most 3.5% vehicles are allegedly involved in accidents due to mechanical failures[6] (the corresponding figure for the developed country is 2.5%). Although there is known tendency of putting the blame on mechanical fault such as brake, etc to escape prosecution, even it is too small a figure to have any significant effect on road accident remedial measures. It may also be very pertinent to point out that most often the vehicles involved in the ccidents are relatively new, rather quite new.

Another popular explanation for the high accident rate is presence of animal drawn or slow moving vehicles (3-5% average) in the traffic stream. If the assertion was true, then the roads closed to all kind of animal drawn vehicles, and there are quite a few, both intercity and intracity, should be the safest roads in the country, which they are not. In view of the preceding, it can be said that the majority of the accidents occuring in the country, cannot in any-way be blamed on the vehicles.

THE ROAD USER:

Since it has been established that the Road and Vehicles have very small share of the blame of the high accident rate, it automatically points towards the third element namely the road user as the real culprit. This is also borne out by the fact that the majority of the traffic problems and chaos in the developing countries can be directly attributed to the very high degree of traffic indiscipline exhibited by the road users. This clearly points to the fact that the greatest chance of overcoming the prevailing serious problem of highway safety in most developing countries lies in bringing the road-user under control.

CONTROL OF ROAD USER:

The research has revealed that there are two ways to bring the road user under control. One is education and the other is enforcement. Since nobody could be expected to obey any law/rule, unless he was informed about the existence of such a law/rule, every road user must, therefore, be informed of his rights and obligations on road. Unless this is done he cannot be held responsible for any action of his which is contravention of the law. The education, therefore, is most important. The enforcement comes into motion if any violation is committed.

EDUCATION:

The extent of knowledge of traffic safety rules on the part of the road users in Pakistan is very poor. According to a survey carried out in 1978[7], only 24% of the drivers knew correct answer to 20 most important and basic rules regarding right-of-way compared to a minimum of 95% desirable. In order to find out the root cause of such universal ignorance of even the basic traffic safety rules, the driver training and driver testing practices prevailing in the country were examined.

DRIVER TRAINING:

Driver training has two parts namely, teaching of driving skills and teaching of rules of the road. The driver training in Pakistan primarily comprises the former only. The entire emphasis is on how to enable the trainee to control the vehicle while on road. As regards the rules only very elementary rules such as "Drive on the left" and "Overtake on the right" are taught. As a result, drivers remain totally ignorant of most basic traffic safety rules[8].

DRIVER TESTING:

The driver testing was also examined in detail and it was found that the entire emphasis

of driver testing was again on driving skill. Virtually no attention was given to knowledge of the traffic safety. This quite clearly explains the reasons for universal ignorance of the rules on the part of the drivers.

10. ROLE OF DRIVER EDUCATION:

A great majority of people in Pakistan attribute the lower accident rate in the developed countries to the traffic safety education in their schools. However, the research has revealed that the belief is without much scientific foundation. It is now established that effect of education has been overstated beyond proportion and in fact the role of education in overcoming traffic safety problem is very limited. The research in U.S.A. U.K. and Japan has proved that the quality or even absence of traffic safety education in schools does not seem to have any effect what-so-ever on road user behaviour in later life[9]. Also contrary to the popular belief, except for Japan, in no other developed country of the world driver education is compulsorily taught in their schools. There is also wide variation in the quality of driver education in schools where it is taught, ranging from nominal to excellent. Nevertheless, in the developed countries of the world the level of the knowledge of traffic safety rules on the part of the driver is normally around 95-100% and 80% of the road users in these countries deive their knowledge of the traffic rules from Highway Code.

11. ENFORCEMENT:

A modern traffic police officer has varied responsibilities. Besides, issuing tickets to the erring drivers, he should be well-versed in the art of traffic control, should himself be an examplary driver, should be adept in the art of providing first-aid to the injured in an accident, should be able to investigate and analyse an accident methodically and systematically, and should be a skilful mechanic to provide necessary aid to the stranded drivers. Above all he should be firm, courteous, pleasant and well versed in the rules of the road. Unfortunately, traffic police in Pakistan is not properly and adequately equipped to carry out their assigned tasks. Neither are they imparted sufficient training in the art of traffic control nor do they enjoy adequate powers to carry out speedy enforcement, as is evident from the following.

11.1 *Educational Level:* The educational level, particularly at the lower levels, which are the king-pin of traffic enforcement, is very low. A large proportion of them is either uneducated or have very little education (primary). Majority of them are matriculates3. As a result, they are unable to have a good grasp of complex traffic problems. This is certainly not due to lack of availability of educated individuals in the country, as is proved by the fact that some of the officials at the lowest rung (Foot Constable) are graduates.

11.2 *Training:* No arrangements exist to equip the traffic police to properly discharge their duties by teaching them traffic law, enforcement techniques, accident investigation, proper driving, first-aid and traffic control, etc. As a result, the majority of the traffic staff are un-aware of even the basic of traffic enforcement. From among the lower ranks, only 2% of the Foot Constables (the lowest rung) and 39% of the Inspectors (the highest rung) knew how to drive a motor cycle[10]

11.3 *Powers:* The powers of traffic police at the lower levels to check traffic violations are severely restricted. They are not empowered to write ticket for any moving violations particularly to private car drivers. Since they have no power, the road users do not pay any attention to them. This was proved by a survey[3] carried out at four intersections generally manned by 3-4 members of a traffic staff at all times. The number of violations taking place at these intersections, under similar conditions of traffic volume, when these were fully manned and when the traffic staff was taken off, were noted. There was found to be no significant difference in the number of violations in the two cases:

Table-1
EFFECTIVENESS OF TRAFFIC POLICE
(Percent Violations)

SUPER MARKET		AABPARA		ZERO POINT		FAIZABAD	
Manned	Unmanned	Manned	Unmanned	Manned	Unmanned	Manned	Unmanned
26	21	28	22	9	10	17	12

11.4 *Deployment:* There are approximately 3,000 traffic police staff in the country. Out of these, majority are being confined to five major urban centres and only 100 are deployed on patrolling the intercity roads totalling 78,000 K.M. one person for 780 K.M. This is not only lopsided but also extremely inadequate as far rural roads are concerned where majority of the fatal accidents take place. In 1981, 27% of the total fatal accidents occurred on one intercity road[11]. As a result, the drivers on the intercity roads are totally free to do what they like. Also the traffic police particularly in the urban area is deployed for controlling traffic at junctions rather than for enforcement of traffic laws.

11.5 *Enforcement Emphasis:* Although overwhelming majority of fatal accidents takes place because of speeding and reckless driving and the extent of speeding and reckless driving, violations of one-way, stop sign, traffic signal, parking and other regulations is extremely wide spread, the total energies of the traffic police are expended in checking frivolous

matters such as "insufficient documents, overcharging, overloading, smoking vehicles and improper registration plates". Only 7-9% tickets are issued for serious moving violations.[3] This also includes drivers (40%) involved in accidents. The number of tickets, therefore. issued for genuine speeding and reckless driving offences is even smaller. Also the tickets are issued to public service vehicle drivers only and hardly any motor car driver is ever checked.

11.6 *Career Planning:* There is no systematic career pl nning for the traffic police personnel. The officials posted to traffic department have no previous traffic experience. The tenure is normally limited to two years at the maximum. Adopted policy has been calculated to prevent traffic specialization[12]. As a result, professionalism required for the job has not developed.

12. EFFECT OF ENFORCEMENT ON ROAD USER'S BEHAVIOUR:

There is now growing recognition of the important role played by enforcement in overcoming road safety problem, in the developing countries. Considerable evidence now is available to establish a very high co-relation between highway safety and effective law enforcement[1,13]. A study was carried out in the twin cities of Rawalpindi/Islamabad to gauge the response of road users to various enforcement emphasis[5]. A Comprehensive Enforcement Plan was devised and the entire traffic police force was divided into: (a) Speed Checking; (b) Beat Patrolling; (c) Point Duty. Each individual was permanently assigned a specific area/point and trained thoroughly for the particular job and asked to strictly enforce the law. The performance of each official was closely monitored to ensure strict compliance. The result of the survey indicating the conditions prevailing before and one month after the scheme was in force are described in the following paragraphs.

12.1 *Speed Violations:* Prior to the study, the extent of speed violations in and around the twin cities of Rawalpindi and Islamabad was very wide spread. The speed check carried out under the study resulted in significant reduction in operating speeds and the percentage of the drivers who violated the speed limits dropped by 95%.

12.2 *Turning Violations:* Before the study, hardly anybody paid any heed to road marking and other signs erected to regulate the traffic. All kinds of violations were committed while making a turn. The most of common violations was turning from the wrong lane i.e. right turn from the left lane and vice versa particularly on a dual carriageway in complete disregard of the law and also the lane markings. After the study, a significant decrease in turning violations was noticed as can be seen from the Summary of the results of the turning violations before and after the study at four selected intersections

as given in the fc llowing table:

Table-2
TURNING VIOLATIO'.S(PERCENT)

Sl. No.	Traffic Units	PERCENTAGE OF VIOLATIONS BEFORE	AFTER
1.	Buses	55	7
2.	Trucks	41	8
3.	Mini Buses	50	7
4.	Cars	28	5
5.	Taxis	48	11
6.	Motor Cycle	28	13
7.	Pedal Cycle	78	55

12.3 *One-Way Violations:* Before the study, violation of one-way regulation was a common feature in and around the study area. After the study a significant reduction was observed as is evident from one-way violations on one of the roads:

Table-3
ONE-WAY VIOLATIONS (Percent)

S. No.	Traffic Units	PERCENTAGE OF VIOLATIONS Before	After
1.	Buses	100	–
2.	Trucks	40	–
3.	Mini-Buses	39	–
4.	Taxis	43	5
5.	Cars	25	15
6.	Motor Cycles	50	10

12.4 *Stop Sign Violations:* Two locations were selected which were controlled by a ver conspicuously placed stop sign giving right-of-way to a major road carrying substantia amount of traffic. A number of serious accidents had also occurred on these location

The locations were closely monitored and the road users failing to observe the stop sign were checked/prosecuted.

12.5 Before the study, hardly anybody bothered to stop at these intersections while at the end of the study a significant improvement took place in observance of stop sign at both locations:

Table-4
OBSERVANCE OF STOP SIGN (Percent)

Sl. No.	Vehicle Type	Kashmir Highway at Zero Point		7th Avenue and Nazimuddin Road	
		Before	After	Before	After
1.	Buses	33	67	--	--
2.	Trucks	41	91	7	100
3.	Mini Buses	28	78	12	88
4.	Taxis	27	83	9	55
5.	Cars	37	89	24	74
6.	Motor Cycles	32	81	21	70

12.6 The figures indicated in before case are primarily those who slowed down, looked to the right and left and gave way to the traffic on the other road. Nobody stopped first and then looked.

CONCLUSION

The preceding fact quite clearly indicates that the key to the road traffic safety problems in the developing countries lies in Enforcement. An effective and intelligent enforcement of selective rules is the most economical method of overcoming the problem of traffic indiscipline and chaos which is the hall mark of the developing countries.

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