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EVALUATION OF DRIVERS` BEHAVIORAL MISTAKES IN JORDAN

Prof. Mohammed Taleb Obaidat; Dr. Ghazi Al-Khateeb; Prof. Taiser Khedaywi; and Eng. Balkees Bannoura
Civil Engineering Department
Jordan University of science and Technology (JUST)
Irbid – Jordan
e-mail: mobaidat@just.edu.jo

ABSTRACT

Behavioral issues related to drivers along with geometric design mistakes and environmental condition problems are considered to be the major factors that contribute to traffic accidents and traffic safety issues. In fact, traffic safety issues are becoming a worldwide problem that contributes many casualties, fatalities and properties` damages.

This study will highlight the major mistakes that occur through drivers` behaviors; that found to be the vital contributing factors to accidents from the opinions and perspectives of drivers themselves. Moreover, it will present policies and guidelines to control their associated mistakes.

Drivers` mistakes included in this study were: speeding, sudden stopping, vehicles parking issues, violation of traffic systems, behavioral issues that violate traffic regulations, and wrong passing were reported through direct field observations and questionnaires distributed to drivers in order to report their opinions of the driving mistakes they did. These mistakes were statistically investigated and categorized in order to be prioritized into different types to facilitate the process of safety policy making matter, overcome problems associated with these behavioral mistakes, and introduce suggested solutions for their associated problems.

Key Words: Drivers' behaviors, speeding, and strategy to control traffic accidents.

Introduction

Driver's behavior has seen a resurgence of interest over the last few years, as it has increasingly become apparent that a detailed understanding of driving` behavior is essential to reduce the large number of crashes related to their mistakes. In fact, the large number of terrible accidents that careless drivers play the major role in occurrence of it becomes a worldwide problem need to be solved because of the large numbers of fatalities and casualties made. The relationship between drivers behavior and traffic safety could also be achieved through understanding of the drivers' behavioral related issues from the drivers themselves. This approach would highlight the major mistakes for traffic regulations that done by the drivers themselves in order to give an insight to their associated problems.

For example, Jordan accidents statistics showed that traffic crashes were the first cause of death and the human factor's share; that is represented by the drivers and their behavioral mistakes, reached up to 90% of the accident's responsibility. Further, statistics showed that more than 85% of the drivers' mistakes were due to speeding; i.e. about 77% of crashes causes were due to speeding. However, vehicles, road geometry, and environmental factors share of accidents' percentages didn't exceed a 10% (Jordan Traffic Institute Report 2006). Therefore, this paper mainly focused on the factors stand behind speeding since it's the vital drivers` behavioral issue that causes traffic accidents. Thus, the determination of the effect of possible highway safety improvement could be evaluated (Garber and Hoel 2002).

This study was attempting to investigate, quantify and rank the drivers` mistakes occurred due to drivers' behaviors in some selected roads in Jordan from the perspective of the drivers` themselves. Reasons stand behind violation of traffic regulations by the drivers, factors that influence drivers' decisions to perform these violations of traffic regulations, and assessment for hazardous behaviors were tickled through direct field surveys directed to the drivers themselves. The investigation was mainly dependent on the drivers' opinions.

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Literature Review

Traditionally, when crashes occur, they are usually considered as the sole responsibility of individual road users, despite the other factors that are beyond their control such as poor design of roads or vehicles. In addition, human behavior is governed not only by individual knowledge and skills, but also by the environment (Mackay 2001; and Chakraborty and Roy 2005).

The average number of traffic accidents fatalities for the last five years in Jordan was about 13 to 14 for every 10,000 vehicles. Moreover, there was about 300 casualties and 1100 traffic accidents for every 10,000 vehicles. According to the type of accident, the percentages of accidents were 90%, 6%, 3% and 1% respectively for vehicle to vehicle accidents (crashes), vehicle to pedestrian accidents (pedestrian accident), vehicle's flipping over accidents, and other types of accidents. However, the severity levels of these traffic accidents were 5%, 15%, and 80% respectively for death, high severity, and low severity accidents (Jordan Traffic Institute Report 2006).

The age group of less than 15 years old; i.e. school students, was the highest affected group among the fatalities or casualties due to traffic accidents. In fact, they represented about 65% of the fatalities and casualties. However, the percentages of casualties and fatalities were about 70% and 60% respectively for ages less than 30 years old, while for ages less than 12 years these associated percentages were 20% and 21%. Of course, these statistics are indicators to give importance and concern to youth and children as far as traffic accidents culture is concerned.

The most dangerous piece of information about traffic accidents in Jordan is its dramatic yearly increase that reached more than 18%. This is an indicator that traffic accidents percentages would be almost doubled within five or six years, which is an extremely difficult situation that will cause death cases more than earthquakes or any unannounced war. Moreover, buses and public transportation vehicles comprised the highest number of involvement in accidents.

Of course, these statistics showed relatively high and booming percentages for fatalities, casualties and number of accidents, especially if compared to a developed country like Sweden that launched vision zero traffic accidents strategy which would control traffic accidents and eliminate fatalities by the year 2020. Vision zero ultimate goal is no fatalities or severe injuries through road traffic crashes. Vision zero is a traffic safety policy, developed in Sweden in the late 1990s and based on four elements: ethics, responsibility, a philosophy of safety, and creating mechanisms for change. The Swedish parliament voted in 1997 to adopt this policy and since then several other countries have followed suit (World Report on Traffic Injury Prevention 2004).

After the realization of this serious problem in traffic accidents booming nowadays, Jordanian top officials and decision makers stand for making it as one of the urgent national priority in order to establish a new traffic accidents strategy, especially after the message sent by King Abdullah the II to the cabinet concerning this vital issue. The guidelines and highlights of the overcoming strategy might include (King Abdullah the II's letter to Prime Minister on Road Safety 2008):

1. Rehabilitating and proper training of drivers.
2. Enhancing the infrastructure, including the road and transportation networks to meet citizens' needs by making these facilities accessible to them.
3. Carrying out a comprehensive review and honest disclosure of traffic accidents, their causes and the necessity of finding a quick remedy for them.
4. Confronting the traffic accidents phenomenon in a serious, methodical way in order to rid our streets of the inflictors of treacherous death.
5. Changing the traffic culture.
6. Improving driving habits.
7. Revising of legislation concerned with regulating traffic.
8. Reconsidering drivers' education, rehabilitation and examination.
9. Mobilizing nationally against this phenomenon through official and civil society institutions, so that these accidents will be limited.
10. Launching of awareness campaigns through national media.
11. Relying on local communities, civil society institutions, and educational institutions, whether schools, universities, or governmental and private institutes, to start an awareness campaign in their curricula and teaching methods.
12. Fighting traffic accidents phenomenon by all means.
13. Finding a just mechanism for issuing traffic violation citations.
14. Directing the Directorate of General Public Security to apply the most up-to-date surveillance and follow-up technology that include the integration of computer vision, Geographic Information Systems (GIS), Global Positioning Systems (GPS) and surveillance cameras to assure just implementation and application of sound rules in writing traffic tickets.
15. Creating a legislative framework and a program that outlines a step-by-step approach to addressing this phenomenon and its causes.

Therefore, this paper will concentrate on the most important cause of traffic accidents; i.e. the drivers' behaviors. The paper will focus on drivers' opinions for their behavioral driving mistakes such as speeding as the most dangerous behavioral factor,

and other related risk factors influencing crash involvement due to driving behaviors. For example, the speed of motor vehicles is at the core of the road traffic accidents because it influences both crash risk and its consequence. Further, driving fatigue, hand-held mobile telephones, safety defects in existing roads, etc are considered as other important driving behavioral factors that directly cause traffic accidents.

Data Collection

In order to achieve the objectives of this paper, two questionnaires were designed and implemented on representative samples of drivers in order to take their opinions on their related driving behavioral issues. The first questionnaire, deals with drivers' behavioral mistakes, while, the second focuses on reasons stand behind speeding behavior. The sample size for the first questionnaire was 250 drivers, while the second questionnaire uses about 1541 drivers' opinions. The data was collected at Amman Great Municipality area as well as at Salt city during December 2007 and January 2008. It was meant to collect the data at roads that have black spots of accidents or hazardous locations. Example of these roads included main roads such as: Queen Rania street, Abu Nusayer main street, Ras El-ain, Mecca street, and Swuayleh main street in Amman as well as Al-Medan street at Salt; main intersections in Amman such as: Jamal Abdulnaser intersection, Sport city roundabout, and principal highways such as: Jordan street, and Amman-Salt main street. The roads were mixed of urban and rural roads, arterial and local roads, as well as principal highways and secondary roads.

Drivers' Behavioral Mistakes Survey

A specific questionnaire survey was implemented in order to take the opinions of the surveyed drivers. Table 1 shows the main characteristics of the interviewed drivers and their associated overtaking processes. These characteristics and overtaking processes included percentages of drivers` ages for different groups, genders, types of overtaken vehicles, overtaking speeds, hazardous situation of overtaking or passing, and violation of traffic signs.

It was meant to increase the sample size of the interviewed drivers with ages less than 30 years, because they are the drivers that contributed the most percentage of traffic accidents. The sample size was distributed to the ages of drivers that were compatible with their associated percentages of drivers` that contributed to traffic accidents. Gender percentages were also skewed toward male drivers that were compatible to their percentages among people having driving licenses.

The percentages of overtaken process of vehicles were also found to be about 38.4%, 48%, and 13.6% for drivers of passenger vehicles, trucks, and buses respectively. However, 70% of surveyed drivers said that they can control their speed while performing passing, while 21.6% of drivers said their driving while passing is dangerous.

Most of the surveyed drivers` also had historical habits of driving behaviors. In fact, 52.4% of them violated traffic signs once, 20.8% violated traffic signs twice, and 26.8% never violated traffic signs or traffic regulations.

Table 2 shows the repeated drivers' behavioral mistakes that commonly found in Jordan, while Table 3 shows the means and standard deviations statistics of the studied drivers' characteristics and behaviors mistakes. The percentages appear in

Table 2 show the outcome results found from the survey of drivers` questionnaire. These percentages were most likely compatible with the actual drivers' mistakes found at the police reports as shown in Table 4 (Jordan Traffic Institute Report 2006).

Table 1: Characteristics of Interviewed Drivers and Their Associated Overtaking Processes.

Ages (Years) Percentage	(18-30) 34%	(30-40) 24.4%	(40-50) 24%	> 50 17.6%
Gender	Male 58%		Female 42%	
Over-taken Vehicle	Truck 48%	Bus 13.6%	small passenger car 38.4%	
Over-taking Status	Hazardous 21.6%		Not hazardous 78.4%	
Controlling speed while over-taking	Yes 70.8%		No 29.2%	
Violation of traffic sign	Once 52.4%	twice or more 20.8%	Never 26.8%	

The followings were the most common repeated drivers' mistakes reported by the drivers themselves in Jordan:

1. Speeding while overtaking (categorized into low speed, high speed, or overtaking from right).
2. Lack of seat belt usage.
3. Talking mobiles while driving.
4. Stopping suddenly.
5. Don't obey traffic rules.
6. Eating, drinking, or smoking while driving.
7. Wrong parking (categorized into parking at allowable place, parking at main lanes, parking at entrance to another road, or double parking).
8. Performing zigzag overtaking.
9. Don't blink for turning.
10. Near consecution.
11. Violation of traffic direction, traffic signs or signals.
12. Performing wrong turning.

It is worthwhile mentioning here that these mistakes formed a common behavioral language among the drivers who violate traffic regulation in Jordan.

Table 2: Repeatability of Drivers' Behavioral Mistakes.

	Repeatability of Action	Always	Often	Some times	Few times	Rarely	Never	% Sum
1	Often overtaking	7.6%	24.8%	35.2%	20%	9.2%	3.2%	100%
2	Often overtaking with low speed	4.8%	7.6%	22%	22.8%	28.8%	14%	100%
3	Often overtaking with high speed	8%	24%	23.2%	21.2%	13.2%	10.4%	100%
4	Often overtaking from the right	2.4%	2.4%	16%	21.2%	29.6%	28.4%	100%
5	Often wearing the seat belt during driving	18.8%	18.4%	20.4%	19.6%	14%	8.8%	100%
6	Often talking through mobile during driving	5.2%	21.2%	27.6%	15.2%	17.6%	13.2%	100%
7	Often stopping Suddenly	2.8%	2.8%	12.4%	34.4%	27.2%	20.4%	100%
8	Often obeying different traffic signs	27.2%	45.6%	12.8%	9.6%	2%	2.8%	100%
9	Often eating and drinking while driving	2.8%	3.2%	10%	20.4%	29.2%	34.4%	100%
10	Often smoking while driving	14.8%	8%	7.2%	5.6%	5.6%	58.8%	100%
11	Often parking vehicles at allowable places	39.6%	44%	7.2%	5.6%	1.6%	2%	100%
12	Often stopping vehicles on main lane	1.6%	0%	3.2%	14%	34%	47.2%	100%
13	Often stopping vehicles in places form an entrance to another roads	1.6%	2%	1.6%	4.8%	22.8%	67.2%	100%
14	Often stopping vehicles double parking	2.4%	4.4%	27.6%	25.2%	24.4%	16%	100%
15	Often performing zigzag overtaking	3.2%	3.6%	8.4%	10.8%	20%	54%	100%
16	Often giving left-turning light blinking	58.4%	28.8%	4.4%	3.6%	2%	2.8%	100%
17	Often performing near consecution	6.4%	9.2%	18.8%	26.4%	24.8%	14.4%	100%
18	Often violation of traffic direction	0.8%	2%	2.8%	16%	26.4%	52%	100

Table 3: Statistical Variables of Drivers` Characteristics and Behavioral Mistakes.

	Statistical Variable	Average	Standard Deviation (σ)
1	Gender (1for male; and 2 for female)	1.42	0.49
2	Ages in years (1 for 18-30; 2 for 30-40; 3 for 40-50; and 4 for age > 50)	2.252	1.11
3	Often overtaking (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	3.08	1.19
4	Over taking with low speed (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	4.052	1.34
5	Overtaking with high speed (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	3.388	1.45
6	Overtaking from right (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	4.584	1.25
7	Wearing the seat belt during driving (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	3.18	1.57
8	Talking mobile during driving (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	3.584	1.46
9	Stop suddenly (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	4.416	1.19
10	Obeying different traffic signs (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	2.22	1.17
11	Eating and drinking while driving (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	4.732	1.27
12	Smoking during driving (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	4.556	1.96
13	Parking vehicles at allowable places (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	1.916	1.07
14	Stopping vehicles on main lanes (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	5.204	0.98
15	Stopping vehicles in places form an entrance to another roads (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	5.468	1.00
16	Stopping vehicles at double parking (1 for	4.128	1.24

	always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)		
17	Performing zigzag overtaking (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	5.028	1.35
18	Giving left-turning light blinking (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	1.704	1.15
19	Perform near consecution (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	3.972	1.40
20	Violation of traffic direction (1 for always; 2 for often; 3 for some times; 4 for few times; 5 for rarely; and 6 for never)	5.212	1.03
21	Often overtaking (1 for Trucks; 2 for Buses; and 3 for small passenger vehicles)	1.904	0.93
22	Overtaking situation (1 for hazardous; and 2 for not hazardous)	1.784	0.41
23	Controlling speed during overtaking (1 for Yes; and 2 for No)	1.292	0.45
24	Violation of traffic sign (1 for Once; 2 for Twice or more; and 3 for Never)	1.744	0.85

Table 4: Actual Drivers` Behavioral Mistakes for the Year 2006.

Behavioral Mistake	Wrong Direction	Wrong Overtaking	Exceeding Speed	Wrong Lane	Wrong Turning	Drunk Driver	Near following	Wrong Stop
%	0.3	0.9	1.9	13.2	0.9	0.2	17.4	0.5
Behavioral Mistake	Violation Traffic Signal	Violation Signs	No Traffic Yielding	No Pedestrian Yielding	Back Driving	No Driving Precautions	Driving License Violation	Others
%	0.8	3.0	13.8	1.8	8.4	21.9	0.2	15.1

Speeding Behavior Survey

Table 5 shows the reasons stand behind speeding habit among Jordanian drivers. Again, these were the drivers` responses to the field questionnaire (survey) for about 1541 drivers' responses of which 64% are male and the rest are female. Drivers summarized the ranking of reasons of speeding from higher to lower percentages as follows:

1. Having emergency work.
2. Late for work.
3. Habit of driving.
4. Existence of traffic jam.
5. Terrain type and grade of road.

6. Social culture.
7. Having low posted speed.
8. Wrong overtaking.
9. Lack of traffic culture.
10. Lack of enforcement.
11. Existence of intermediary culture.
12. Lack of efficient traffic law.
13. Type of vehicle and its efficiency that encourages speeding.
14. Driving while being drunk.

Table 5: Reasons Stand Behind Speeding.

Reason	Low posted speed	Emergency work	Late for work	Behavioral habit of drivers	No enforcement	Traffic jam	Type of vehicle	Drunk drivers
%	5.7	9.9	9.5	8.4	5.1	8.4	3.6	2.2
No.	88	152	147	129	78	130	55	34
Reason	Other drivers behavior	Wrong overtaking	Lack of traffic culture	No efficient traffic law	Intermediary	Social culture	Terrain type	Other
%	9.4	5.5	5.3	4.7	4.8	5.8	7.9	1.1
No.	145	84	81	72	74	89	121	17

Analysis of Results and Findings

Tables 1 through 5 show the potential of drivers' behavioral mistakes, their associated statistics, and speeding factors from the perspectives of drivers themselves, as well as the actual drivers' behavioral mistakes reported from police files.
Relying on average representative data for each studied factor for one standard deviation, the following observations could be withdrawn:

- 67.6% of drivers perform overtaking actions that raise the possibilities of making crashes.
- 34.4% of drivers overtake with low speed, while 55.2% of them overtake with high speed
- 20.8% of drivers perform overtaking from the right side which is extremely dangerous.
- 57.6% of drivers wear the seat belt which means about 43% of drivers are in dangerous situation in case of accident.
- 54% of drivers talk through mobile phones, which confuses and disturbs the drivers.
- 18% of drivers stop suddenly that makes a driver out of five in a risk.
- 85.6% obey different traffic signs, which means about 15% of them are violating traffic control devices.
- 16% of drivers are eating and drinking during driving.
- 30% of drivers are smoking during driving.
- 90.8% of drivers are parking at allowable places; however, about 10% don't obey parking regulations.
- 4.8% of drivers stop their vehicles on main lane that will decrease the capacity of the road and increases the possibility of accidents.

- 5.2% of drivers stop their vehicles in places form an entrance to another roads, which is dangerous and form black spots at entrances and exits of major roads.
- 34.4% of drivers stop their vehicles in double parking situation that reduce road capacity and make traffic jam.
- 15.2% of drivers perform zigzag overtaking which is an indicator of making terrible accidents.
- 91.6% of drivers are giving left-turn light blinking; however, about 8.4% don't blink while turning.
- 34.4% of drivers perform near consecution and car following that increase the possibility of accident involvement incase of sudden stopping for front vehicle.
- 5.6% of drivers are violating traffic direction, which is an indicator of high possibility of extremely dangerous traffic accident.
- 48 % of drivers are overtaking trucks, and 78.4% of drivers consider their overtaking are not hazardous.
- 70.8% of drivers can control their speed during overtaking, which is an indicator for involvement of about 30% of drivers in unplanned, unpleased or dangerous overtaking.
- 73.2% of drivers are violating traffic signs, which are indicators for law enforcement, not respecting of traffic law, and lack of culture of traffic safety.

The previous percentages and findings show clearly that about 30% to 40% of the surveyed sample of drivers performs behavioral driving mistakes. This high percentage gives an indication of heavily involvement and repeatability of drivers' behavioral mistakes that increase the possibility of traffic accidents occurrence.

Of course, each driving behavioral mistake requires its unique solution and remedial measures and control. But, the keys of these measures are proper and just enforcement, public awareness program, drivers' rehabilitation and training, as well as launching of new strategic plan for traffic safety.

However, reasons stand behind speeding are most likely due to driving habit and culture that encourage speeding due to intermediary culture, and lack of traffic culture as well as lack of enforcement and efficient traffic law.

The drivers' behaviors survey that was represented by Tables 1 and 2 showed that drivers don't obey traffic signs that much. Therefore, applying restrict enforcement plans would be beneficial in this domain. Moreover, most drivers perform near consecution of vehicles ahead of them. This would be controlled by awareness campaigns for drivers and increasing mobile roadway enforcement.

Moreover, the average, standard deviation, and range values of the studied drivers' behavioral factors could give clear indication about the influence and contributing effect for each factor.

Of course, reasons introduced by drivers such as being late or having emergency to give an excuse for there speeding would not be acceptable. However, sometimes there should be a compromise to increase the posted speed when drivers change their driving habit of driving at high speed.

Conclusions and Recommendations

The study involved drivers themselves in predicting the major behavioral driving mistakes that they are doing and suffering from through the implementation of two field surveys: one used to investigate drivers` behavioral mistakes from the perspective of drivers themselves; and the second studied drivers' speeding habit and reasons stand behind it.

The major findings of this study may include, but not limited to:

1. The most common drivers' behavioral mistakes include speeding, lack of seat belt usage, talking mobiles while driving, stopping suddenly, don't obey traffic rules, eating, drinking, or smoking while driving, wrong parking or turning, zigzag overtaking, don't blink for turning, near consecution, and violation of traffic direction and traffic signs or signals.
2. The rank of reasons stand behind speeding according to their importance was found to be: late to emergency work, habit of driving, existence of traffic jam, terrain type and grade of road, social culture, having low posted speed, wrong overtaking, lack of traffic culture, efficient traffic law and enforcement, existence of intermediary culture, type of vehicle and its efficiency that encourages speeding, and driving while being drunk.
3. Drivers admit that about 30% to 40% of them perform behavioral driving mistakes.
4. There is a need to adopt a new strategic plan for traffic safety that has clear targets, objectives, action plans, time frame, and accompanied legislations.
5. The results of drivers' survey were compatible with actual police reports concerning the causes of traffic accidents related to drivers' behaviors.

The following recommendations, policies, guidelines, and strategies would be implemented to improve roadway safety in Jordan based on the findings of this work as well as the comments we receive from the drivers that interviewed:

1. Control driver's behavior through:
    a. Increasing mobile road enforcement.
    b. Installing high technology surveillance stationary and moveable cameras to control driver's behavior.
    c. Providing improved signing, marking, and delineation.
    d. Increasing speed and other moving violations enforcement especially at black spots and hazardous locations.
    e. Improving work zone safety management practices.
    f. Not driving at fatigue or sleepiness.
    g. Banned the use of hand-held mobile telephones while driving.
    h. Furnish main roads with adequate illumination to enhance night visibility.
    i. Designing guidelines for traffic calming measures.
    j. Establishing a new traffic legislation that prevents the entire studied driver's behavior safety related issues.

k. Re-iterating the role of police friends and secrete patrolling of traffic.

2. Perform a pedestrian safety improvements that is based on:
    a. Starting a remedial national pedestrian awareness campaign and establish pedestrian safety as national priority.
    b. Improving pedestrian safety by providing engineering improvements to principal geometric design elements such as: sidewalks, overpasses or tunnels, widened and paved shoulders, curbs, neighborhood traffic control to limit speeding, raised islands, and auto-free shopping streets.
    c. Performing a friendly pedestrian environment.

3. Improve roadway and roadside safety through:
    a. Performing safety improvements to existing roads, and remedial action at high-risk crash sites.
    b. Performing safety audit procedure at various stages of a new project.
    c. Identifying and prioritizing the high-crash locations for corrective action.
    d. Redesigning of access control, intersections, pedestrian facilities, and alignments.
    e. Performing safety awareness in the planning and designing of new road networks.
    f. Separating motorized trucks and buses from passengers vehicles traveling in the same direction
    g. Designing guidelines for traffic calming measures.
    h. Incorporating safety features into land-use and transport planning.

4. Launch policy, legislation and enforcement plans through:
    a. Setting and enforcing appropriate speed limits.
    b. Establishing data collection systems designed to collect and analyze data for safety improvement.
    c. Enforcing legislation requiring the use of seat-belts, and prevent alcohol-impaired driving.
    d. Promoting safety for all.
    e. Providing efficient, safe and affordable public transport services, and encouraging walking and the use of bicycles.

5. Launch institutional traffic safety development that is based on:
    a. Making road safety a political priority.
    b. Developing of a multidisciplinary approach for road safety.
    c. Establishing a national strategy for traffic safety based on partnership between different institutes and sectors related to traffic safety issues.
    d. Establishing national road safety plans to achieve road safety targets.
    e. Creating budget for road safety and establishing the higher council of traffic safety.
    f. Appointing a lead agency for road safety.

6. Establish a partnership with civil society groups to assure:
    a. Demanding the provision of safety features.
    b. Encouraging enforcement of traffic safety laws and regulations.
    c. Identifying local safety problems.
    d. Behaving responsibly by abiding by the speed limit on roads, never driving drunk, wearing seat-belt, never using mobiles while driving, etc.
    e. Setting up mechanisms to promote road safety related issues.

7. Start a remedial action to change the image about old buses and public transportation facilities through:
    a. Changing and maintaining the old public transportation vehicles.
    b. Committing of drivers and owners of driving ethics.
    c. Lunching an awareness program specifically for public transportation drivers.
    d. Rehabilitating of public transportation drivers based on new standards.
    e. Increasing the financial penalties for violators of public transportation drivers.
    f. Designating a special lane for public transportation at roads of high capacity or principal ones.

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