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BEHAVIOR OF ROAD USERS IN GAZA, PALESTINE

Yahya Rushdi Sarraj

Department of Civil Engineering
The Islamic University of Gaza, PALESTINE
P. O Box 108, Gaza, Palestine
e-mail: ysarraj@mail.iugaza.edu

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Abstract This paper attempts to focus on the behavior of drivers and pedestrians on the roads of Gaza City, in Palestine. Before 1993 the traffic flow in Gaza was very small compared to its value at present. However, the general behavior of both drivers and pedestrians could not adapt with this fact. They are not used to the fact that traffic rules are there to be strictly followed, moreover both groups could not get rid of some bad habits. A questionnaire was randomly distributed to a sample of drivers and pedestrians in Gaza. Personal observations by the researcher

Assistant Prof. in Transport Planning and Engineering

with the aid of some photographs also helped to understand and assess the problem.

The paper also gives some recommendations on how to improve the situation and how to correct the behavior of drivers and pedestrians. It concludes by suggesting a public awareness program and strict enforcement of traffic laws in an attempt to improve the situation for the benefit of all road users and to reduce the potential for road accidents.

Keywords: Behavior, Drivers, Gaza, Palestine, Pedestrians, Public awareness, Questionnaire, Road users.

1. **Introduction**

This paper attempts to focus on the behavior of drivers and pedestrians on the roads of Gaza, in Palestine.

Driving on the roads of Gaza, one has to be very patient, too observant, extra cautious and extra careful. One has to be able to know his/her way without any sign for direction. One has also to negotiate the too many humps and bumps on the road, and has to guess the direction or maneuver that other drivers intend to make without giving any hint or signal. The driver has to be able to see a cyclist in the darkness of the night who is not using any light or even any reflector.

The driver has also to carefully watch for pedestrians who may cross the road at any time and from any place. In many cases pedestrians share the road with vehicles because many roads do not have a proper side walk for pedestrians, use. Walking on the roads of Gaza is not very pleasant, and pedestrian rights are usually not respected. The behavior of the drivers of animal driven carts is particularly dangerous.

The researcher tries, in this paper, to study the behavior of road users in the Gaza Strip in an attempt to get a better idea about the situation and to be able to understand the problem. This is expected to help in suggesting some solutions that may lead to improve the situation.

2. **BACKGROUND**

Gaza strip is a strip of land of a total area of about 366 km² and a population of more than a million. It located on the south west of Palestine at the shore of the Mediterranean Sea.

In May 1994, the Palestinian Liberation Organization, well known as the PLO, established the Palestinian Authority in the Gaza Strip and Jericho. The Authority is a result of the political agreements signed between Israel

and the PLO. These agreements were signed after lengthy and complicated negotiations.

This political change was accompanied by several changes in many fields. Transportation is one of the fields that has been greatly affected.

3. STATISTICS

3.1 Increase in car ownership

As a result of the dramatic political changes in the Gaza Strip, the traffic demand was greatly increased. This increase was mainly due to the sharp and sudden increase in car ownership, and to the introduction of a substantial number of Governmental vehicles including those used by the new Palestinian Police, Palestinian soldiers, and Presidential Guards.

Figure 1 shows the number of registered vehicles at the Transportation Authority in Gaza Strip from 1970 to 1999^{(1), (2)}.

The statistics show that there was a very sharp and sudden increase of more than 20% in the number of registered vehicles in the Gaza Strip between 1993 and 1994. In 1995 the increase in the number of registered vehicles was even greater, it was about 35%. This big increase caused a lot of traffic problems such as: congestion, more road accidents, parking problems, air and noise pollution .

It is noticed that the increase in the number of registered vehicles slowed down substantially after 1995 returning to a rate of change similar to that before 1987.

3.2 Traffic Flow

Before 1993 the traffic flow in Gaza was very small compared to its value at present.

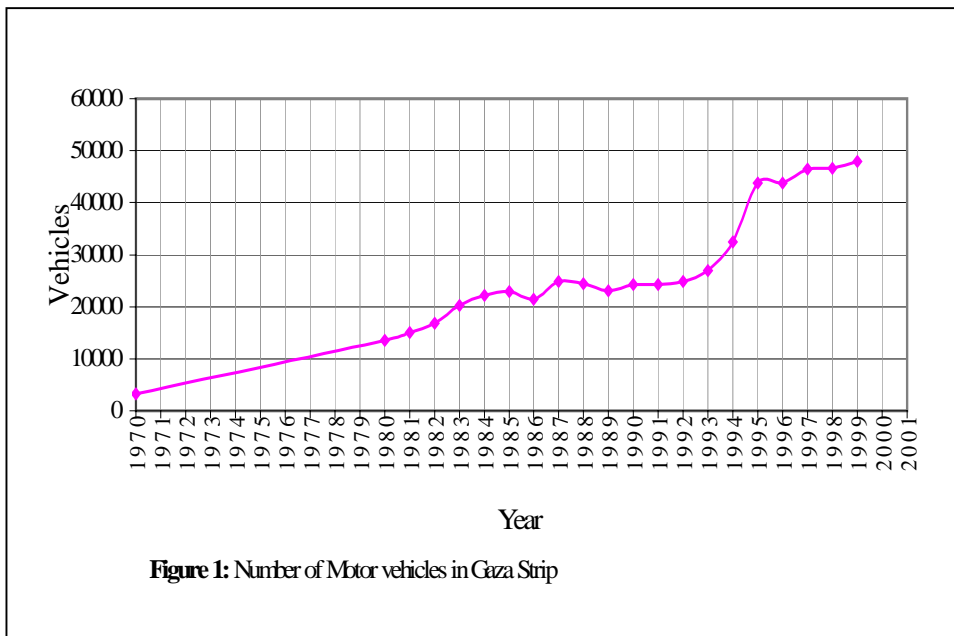
A very important factor that greatly influenced the increase in traffic demand is the end of the Palestinian Intifada (Intifada is civil resistance organized by Palestinians against the Israeli occupation. It started in December 1987 and seized in 1994). This has put an end to the many restrictions that were imposed on traffic movements such as curfews, street closures, and strikes,.

The increase in local traffic demand might also be related to the prevention of Palestinian vehicles and taxis by Israel from crossing the green line from Gaza to Israel. As a result, these vehicles operate inside the Gaza Strip increasing the demand for traffic movements.

3.3 Traffic Accidents

As a result of the great increase in traffic demand and in car ownership, the number of traffic accidents has also increased. Statistics show that the number of passenger injury accidents has increased from 599 in 1991 to 1721 in 1995 with an increase of more than 180%. This trend continues as the number of passenger injury accidents reached 1891 and 2204 in 1997 and 1999, respectively ^{(1), (2), (3)}. Figure 2 shows the number of road accidents and casualties in Gaza Strip between 1971 and 1999. It is believed that the recorded number of accidents does not reflect the real figures. Many road accidents are not recorded, because they either do not result in casualties, or they end with an agreement between the involved parties before reaching the police.

In addition, the police forces are not too keen to include all accidents in their records. It is very difficult to estimate the number of unrecorded accidents. However, it is believed that only one third of road accidents are currently being recorded. The records do not certainly include most of the damage only accidents. The researcher also believes that a substantial number of accidents that result in slight injuries are not currently being recorded.



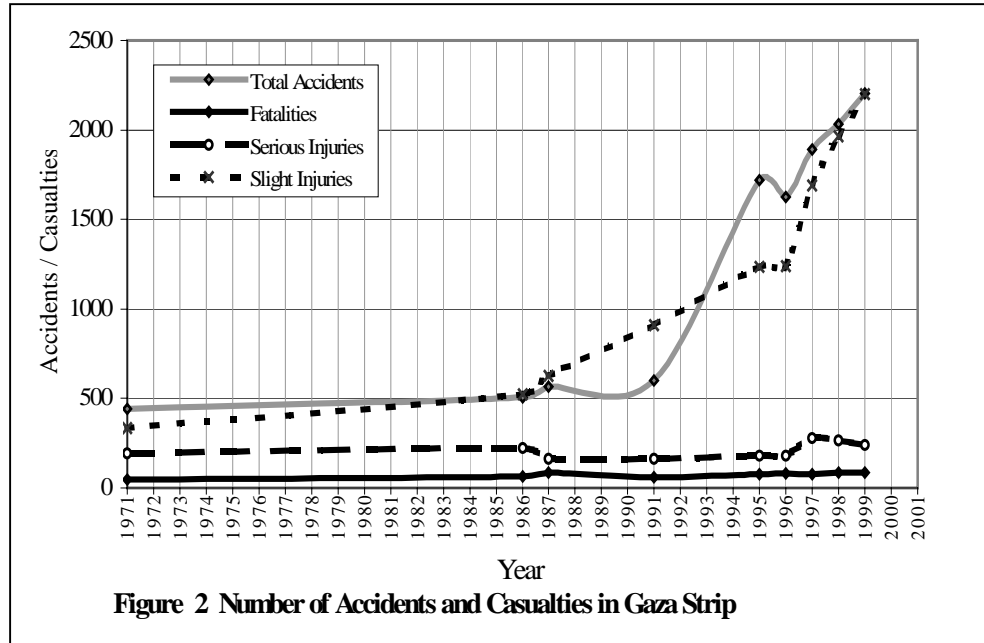


Figure 2 Number of Accidents and Casualties in Gaza Strip

Figures 1 and 2 are based on data obtained from references (1), (2) and (3).

4. Road Users Behavior

The general behavior of both drivers and pedestrians could not yet adapt with the new situation. Drivers and pedestrians were used to low volume of traffic, as well as less restrictions on movements and maneuvers. As the traffic demand and traffic flow have increased, new measures and new restrictions has been introduced. Hence, drivers and pedestrians are required to realize that traffic rules are there to be strictly followed, and that they have to get rid of some bad habits which they are used to.

In the following section the general behavior of road users is discussed depending on personal observations by the researcher, as well as the results of a questionnaire.

5. FIELD OBSERVATIONS

The researcher made several field observations about the behavior of road users in the Gaza Strip. He also suffers from the bad behavior of drivers and was subject to a road accident as a result to the failure of the driver of a car to comply with a stop sign at a road intersection. This section lists some of those field observations.

5.1 Wrong Maneuvers of overtaking

In Gaza Strip as in many countries of the world drivers must travel on the right hand side of the road, and hence any overtaking of a slower vehicle should be from the left hand side. However, driving on the roads of Gaza Strip, you will quickly notice that a substantial number of drivers will overtake other vehicles from the right side with no hesitation. This behavior could be very dangerous, and this means that other drivers must be always on alert in order to avoid road accidents. Some drivers do not hesitate to overtake other vehicles at a road intersection or even at a pedestrian crossing.

5.2 Use of Indicators

One of the basic driving rules is the use of indicators when turning left or right, or when stopping at the side of the road or when rejoining the traffic stream. However, drivers in Gaza are not too keen to use the indicators when doing any of the above mentioned maneuvers.

5.3 Over Speeding

Some drivers do not take any notice to the speed limit and race other drivers carelessly. They do not, sometimes, even care about pedestrians crossing the road. Over speeding is particularly dangerous on roads in heavily populated residential areas. What makes the problem worse is that some governmental and police vehicles do not observe the speed limit.

5.4 Pedestrian Crossings

Both drivers and pedestrians are, most likely, not very aware of the rules governing the use of zebra crossings. Drivers do not usually respect the pedestrians right to cross the road. Some drivers keep moving, sometimes with speed, even when they notice a number of pedestrians trying to cross the road. In some cases pedestrians are trapped unprotected in the middle of the road waiting for a suitable gap in the traffic stream to complete crossing the road.

5.5 Illegal Parking

Parking is becoming a problem after the sharp increase in car ownership in Gaza Strip. It is becoming a problem because there is no clear parking policy and no real enforcement of law. Illegal parking is very common, causing many problems regarding safety and traffic congestion. The following forms of illegal parking were noticed:

- Parking too close to road intersections.
- Parking on side walks.
- Parking on pedestrian crossings.
- Double parking and in some cases triple parking.

5.6 Road Intersections

Special attention must be given to the behavior of drivers and other road users at road intersections because of the importance of these intersections and because small mistakes could lead to fatal consequences and a lot of traffic congestion and delay. The following observations are examples of some behaviors that need to be modified:

- Approaching road intersections at high speed.
- At traffic signals, right turners whose movement is not controlled by the signals, do not usually give way to the traffic stream which is getting a green light.
- Little appreciation of the needs of pedestrians .
- Some drivers wait on the right hand lane to turn left and vice versa.
- At roundabout intersections, drivers seem to ignore that vehicles circulating at the roundabout should be given the right of way.
- Pedestrians are not aware in many cases when and where they should cross the road at intersections.
- If a main road is congested and the traffic queue is so long that it blocks a road intersection, drivers waiting at the minor road can hardly be given the chance to pass through the intersection even if they do not intend to join the main road.

5.7 Taxi Drivers

The behavior of taxi drivers is particularly important because they use the road more often and their mistakes cause in many cases frustration to other drivers and road users. The main concern of taxi drivers is to get as many passengers as possible. In doing so the following observations were noticed about their behavior:

- They do sudden maneuvers to the right or to the left without warning or using the indicators.
- They race each other to get more passengers.
- They stop too close to intersections for loading and unloading.
- They may suddenly stop to load or unload passengers with almost no warning.

5.8 Behavior of Pedestrians

Pedestrians were not used to a high traffic flow, and crossing the road or walking at the side. Due to the new changes, pedestrians need to be taught of how they should react to the new situation. The following are some of the pedestrians' behaviors that require modification:

- They cross the road anywhere.
- Some pedestrians cross the road at the middle of the intersection
- Some of them start crossing the road at a signalized intersection without consulting the traffic signals.

5.9 School Entrances

At school entrances too many little children go to and leave school during a very short period of time. Moreover, they are usually in a hurry. Schools in Gaza are highly populated. It is noticed that children rush to cross the road in groups. What makes things worse is the location of a school gate on a main road. Both drivers and children are not very aware of how they should behave at school entrances.

5.10 Use of Horns

Using the horn of the vehicle is very common in Gaza. It is used to warn others, to greet a friend or to attract the attention of a passenger by a taxi driver. Also it might be used to inform a person living on the third floor, for instance, that the taxi that he/she ordered has arrived or that his/her friend has come to pick him/her up. Some drivers use the horn very late at night. Drivers are not aware of the noise pollution they are causing, and that this behavior is no longer acceptable.

6. QUESTIONNAIRE

6.1 Objectives

A questionnaire is prepared by the author to get first hand information about the behavior of road users in Gaza Strip. The questionnaire is designed to investigate how road users see their own general attitude and behavior on roads as well as how they see the attitude and behavior of other road users.

6.2 Sample

A sample of about 200 road users is selected. The questionnaire was randomly distributed in Gaza Strip. Special care is made to make sure that

the sample covers a spectrum of ages, professions, and backgrounds. The author also makes sure that the sample contains a fair gender distribution.

6.3 Structure of the questionnaire

The questionnaire is divided into five parts. The first part contained general questions about the behavior of road users in Gaza Strip. These questions require to be answered by all. The questions are designed so that they indicate how the person thinks about the behavior of others on the road. The second part contains questions about the personal behavior of the person filling the questionnaire while walking on the roads of Gaza Strip. However, the third part is directed to those who own a vehicle or have one that they can drive. The questions in this section is designed to indicate how the drivers see their own behavior on the road. The fourth part asks the contributor to give his/her views or comments about things related to the behavior of road users that he/she believes they need to be either encouraged or prevented. The final part asks the contributor to fill in some personal details such as his/her profession, age, gender, place of residence and whether he/she has or can drive a vehicle.

6.4 Response

The researcher noticed that most people are very willing to cooperate in filling in the questionnaire form. Most of them spend some time to write down their views and comments in part four. They are very pleased to contribute and express their concern about the present situation and hope for a change in the behavior of road users.

6.5 Comments

Many participants in the questionnaire are very helpful and noted several comments about things that they would like to be encouraged as well as about things that they would like to be prevented. It is found useful to summarize these comments below.

Many participants want to see roads, side walks and pedestrian crossings better prepared and well maintained for both vehicles and pedestrians. They also want to see more traffic signals and more traffic signs installed. Public awareness programs in traffic laws for drivers and specially for taxis drivers as well as for traffic police and children are required by a great number of participants. Many participants asked for defining parking places in crowded areas and defining places that taxi drivers can use for loading and unloading passengers. They do not want to see taxi drivers

cease stopping illegally and sometimes dangerously to load and unload passengers. Respecting the right of pedestrians specially when crossing the road is one of the main issues that participants want to encourage. Some people want to encourage drivers to comply with traffic laws and suggest using a system that may motivate drivers to do that, by giving incentives for the best drivers. Great number of participants want the traffic police to firmly punish those who exceed speed limit. They also want the police to equally treat all drivers. Some people want to see special roads or special lanes for cycles and for animal driven carts.

Some people wanted the animal driven carts to be prevented from using the main streets. They also wanted to prevent shop owners and others from occupying the side walks and hence forcing pedestrians to walk on the road. They also wanted to prevent illegal overtaking of slower vehicles. Some even believed that special effort must be made to prevent police vehicles from breaking the traffic law in order to set a good example for drivers.

6.6 Results

After analyzing the questionnaire, the results are presented in Figures 3 to 9 and summarized below. Figure 3 shows that the majority of the participants in the questionnaire believe that, in general, drivers in Gaza Strip do not usually comply with the traffic law. It is interesting to note that no participants believe that drivers always follow traffic law. It is also shown that about 50% of participants believed that drivers rarely observe the speed limit. Similar results were found about the readiness of drivers to give way to others. Figure 4 shows that about 40% believe that drivers are rarely respectful for pedestrians rights. In addition to another 40% who believe that drivers, sometimes, respect the right of pedestrians. Similar results are also noted about the use of pedestrians of pedestrian crossings when they cross the road. Figure 5 shows that more than 70% believe that drivers do not usually park their vehicles legally and more than 60% said that drivers do not usually behave well at road intersections. The Figure also shows that a great number of participants (more than 70%) believe that taxi drivers do not usually follow traffic law and about 50% said that taxi drivers rarely stop legally to load or unload passengers. When asked about the behavior of cyclists and drivers of animal driven carts, about 50% believe that cyclists rarely comply with traffic law, in addition to another 30% who said that they, sometimes, comply with traffic law, as shown in Figure 6. The same Figure also shows that almost 90% believe that drivers of animal

driven carts rarely comply with traffic law. About 50% of participants believe that traffic police do not treat all drivers equally. However, more than 40% of them believe that traffic police often performs well in organizing the traffic flow, however, 30% believe that they sometimes do that, see Figure 7.

A substantial number of participants believe that pedestrians do not usually walk on the side walks and that they do not usually use pedestrian crossings to cross the road, as shown in Figure 4. However, when asked about themselves 75% believe that they either always or often try to cross the road at pedestrian crossings, and more than 85% of them believe that they try to use the side walks wherever possible, as shown in Figure 8.

Figure 9 shows that less than 5% of the participants believe that drivers always overtake their vehicles legally. However, when asked about their own behavior, more than 35% believe that they always overtake other slower vehicles legally.

When asked about their personal attitude towards pedestrians more than 35% believe that they always respect the rights of pedestrians, in addition to more than 15% who believe that they often do so, as shown in Figure 9. However, as mentioned earlier and shown in Figure 4, less than 5% of participants believe that other drivers always respect pedestrians rights and about 40% believe that drivers rarely do so.

7. CONCLUSIONS

This paper has shown that there is a common dissatisfaction of the general behavior of road users in Gaza Strip. Drivers do not generally comply with traffic laws and do not usually respond positively to the needs of other drivers. Illegal and dangerous maneuvers, over speeding and illegal parking are examples of dangerous behaviors that require modification. Taxi drivers are probably the ones who are in bad need of modifying their behavior on the road.

Cyclists and drivers of animal driven carts are, in general, not complying with traffic laws. Their behavior is very dangerous and most of the time they do not make themselves visible at night by not using head lamps or any kind of reflectors. They do not usually respect the traffic signals or the stop signs. Moreover, they simply drive on the opposite direction of the traffic flow without hesitation.

Pedestrians do not usually behave well on the road. On the other hand, their needs and safety are not usually respected by drivers. Pedestrians are not too keen to cross the road at pedestrian crossings. They cross the road

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randomly with scattered groups and in many cases they choose to cross the road in the middle of a busy road intersection. Drivers usually fail to give the right of pedestrians the right of crossings. In many cases pedestrians find themselves trapped in the middle of the road with no protection and little help or respect by drivers.

The Palestinian police has helped to improve the conditions on the roads of Gaza Strip. However, they have not yet managed to enforce the traffic law to an acceptable degree. The police is being seen as not equally treating all drivers. Therefore, driven de not the traffic law.

It is also noticed that most participants in the questionnaire believe that they usually follow or try to follow traffic laws. However, participants believe that others are those who usually break the traffic law. This is seen by the author as one of the important factors that contribute to the problem. It might indicate that people do not really know the traffic laws or that they can not see their own mistakes, and hence it is difficult for them to modify their own behavior.

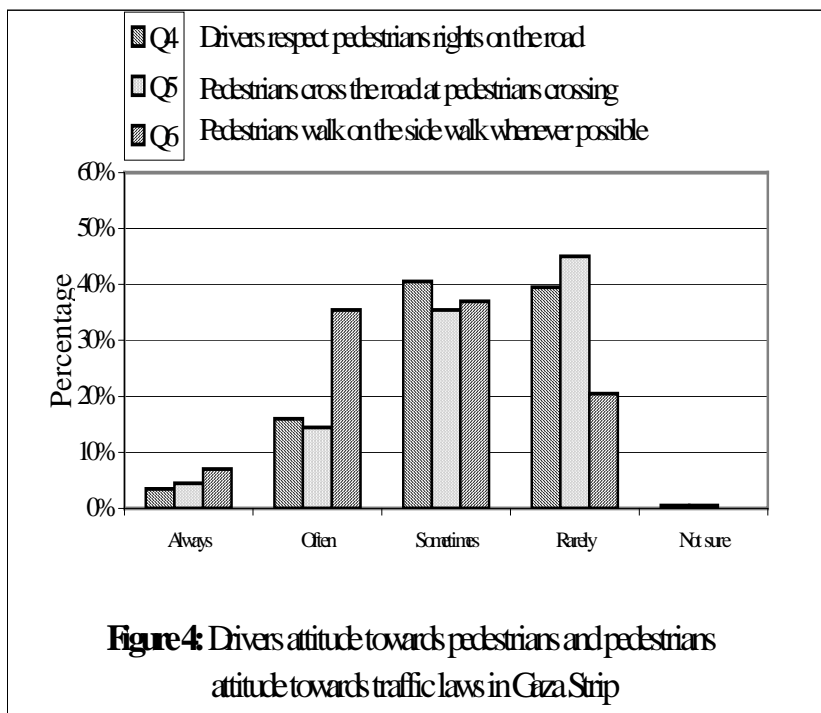
A public awareness campaign is suggested in order to help modifying the behavior of road users. This campaign should be mainly directed to drivers and pedestrians. The campaign should particularly target taxi drivers and school children.

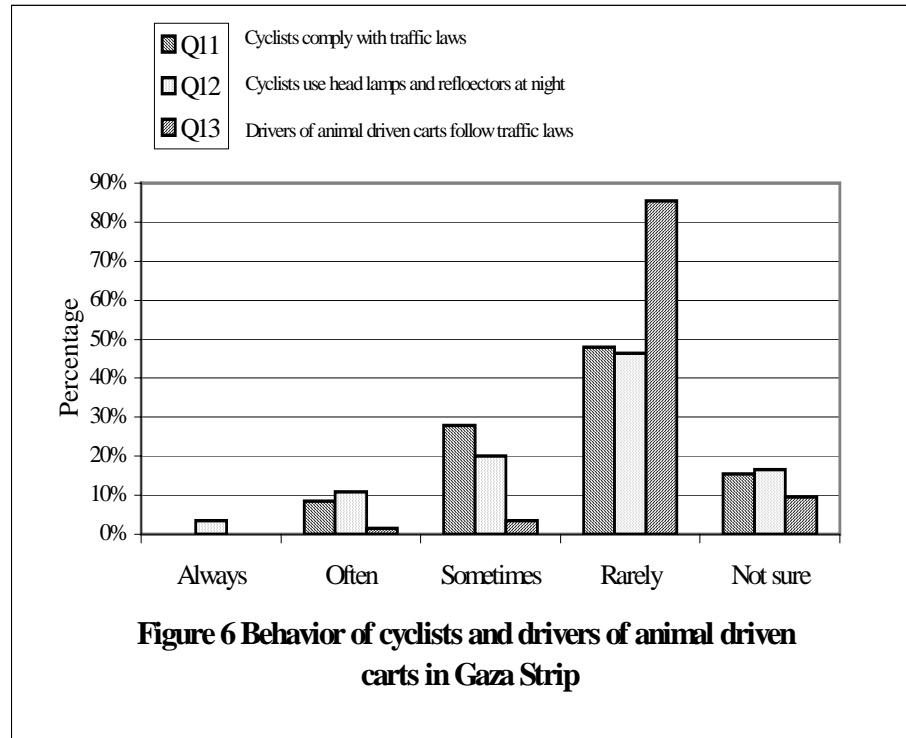
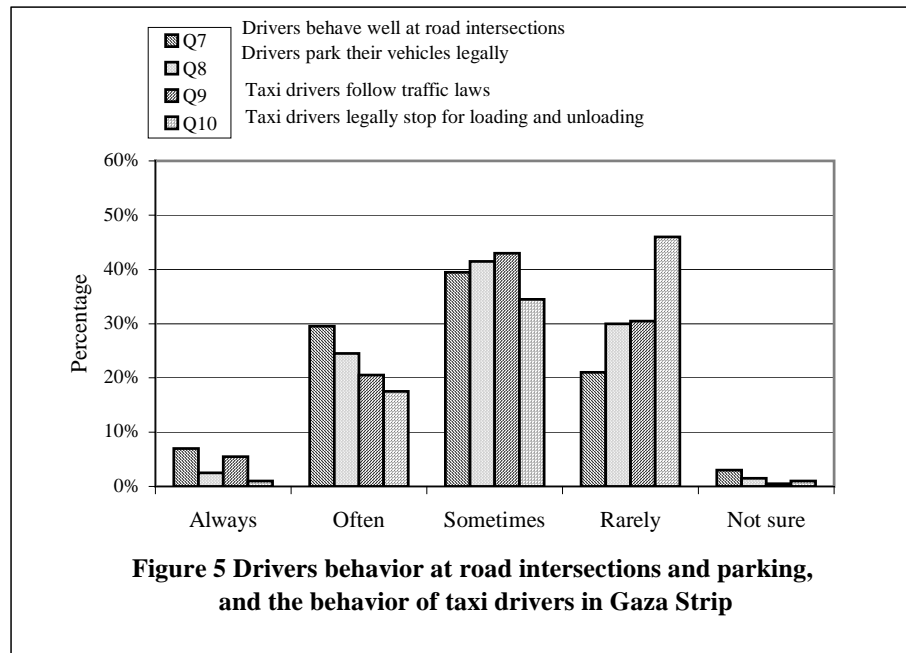
Further studies and observations are necessary to investigate the causes of these behaviors of road users in Gaza Strip. It is also necessary to start working on campaigns that aim to modify the behavior of road users.

ACKNOWLEDGMENTS

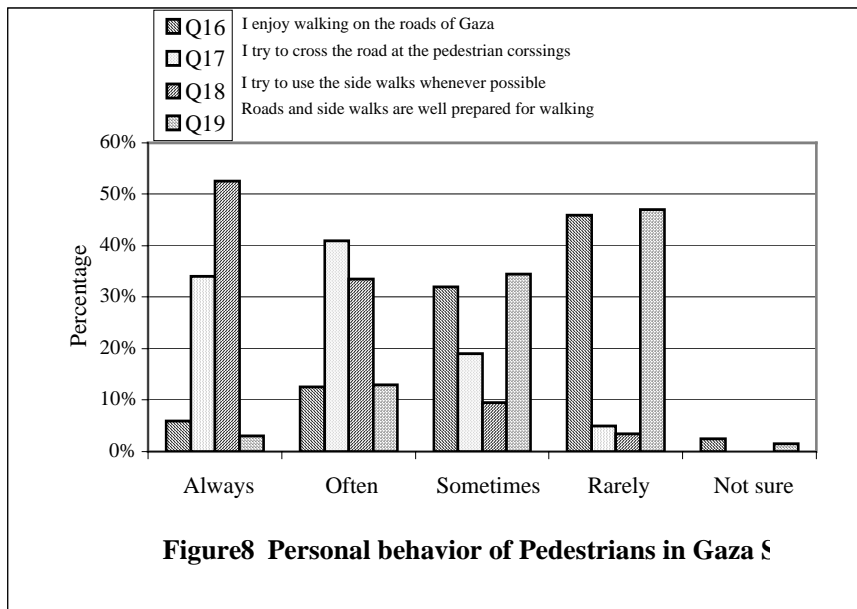
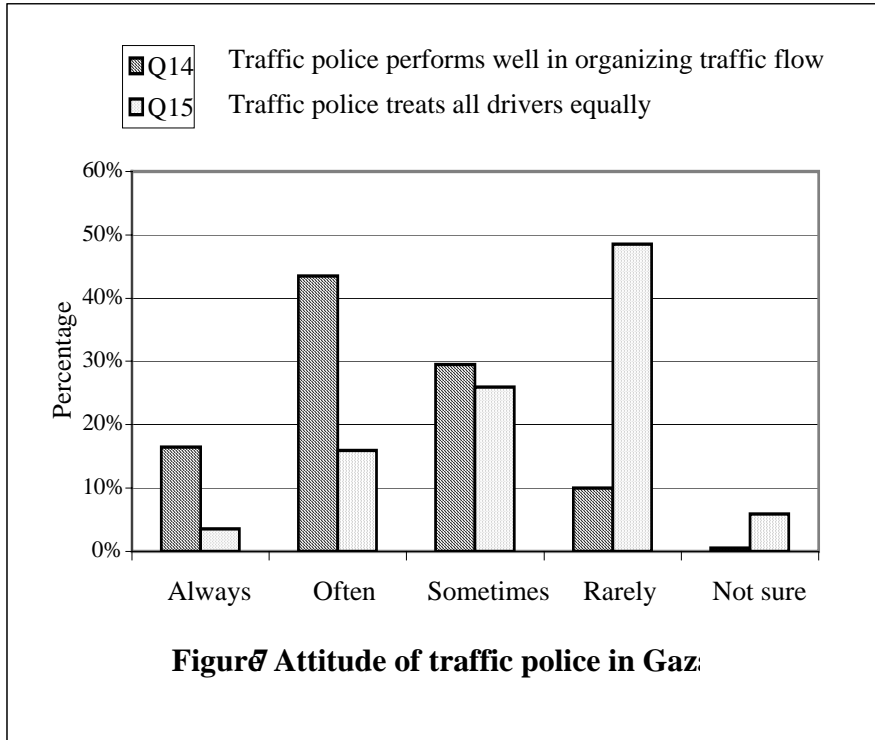
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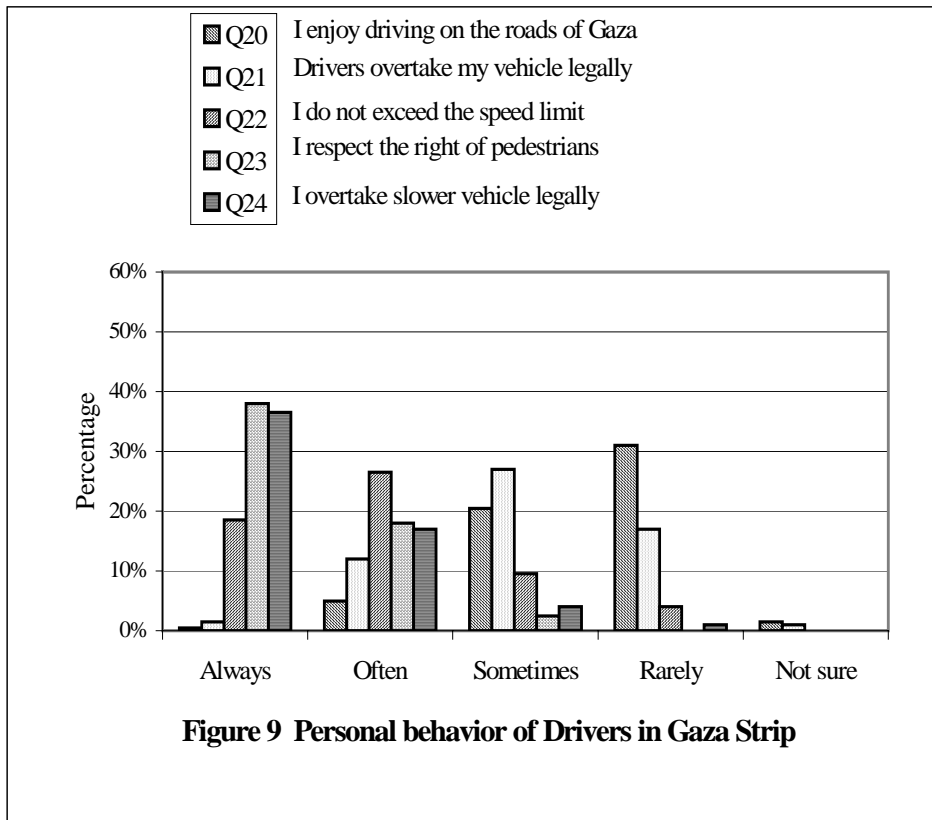
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