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## *THE INVOLVEMENT OF TOURISTS IN ROAD TRAFFIC COLLISIONS IN CYPRUS*

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### **ABSTRACT**

Many tourists choose their destination based on the safety and level of security offered by the host country. According to the World Health Organization, road traffic collisions are the main cause of death of tourists while on holidays, as more than 50% of tourist deaths in the EU were due to road traffic collisions. Yet, no previous research has been carried out to tackle this phenomenon, at least for the case of Cyprus. An island whose economy is largely based on the tourism industry and a lot of effort is put in promoting it. Unlike previous work, this paper tries to measure for the first time the involvement of tourists in road traffic collisions in Cyprus and identify the main causes and factors related to them. Official police data is collected and analysed for the period 2010-2014, along with descriptive statistics illustrating the current situation. The findings of this research study are expected to raise awareness for stakeholders involved in the tourism industry, as well as in the national road safety strategy. Considering the limitations of the data used and lack of information kept in the police records, the results extracted by this study will provide a new framework and ultimately the basis for further research.

**Key Words:** Tourism, Traffic, Collisions, Cyprus

## **RATIONALE**

The welfare of tourists or visitors to a destination, received little attention until recently (Walker, 2004, p.5). Various issues relating to their personal safety and health are mainly marked by some high-risk events such as terrorist attacks, large-scale natural disasters and life threatening epidemics. Even though such events are catastrophic for nature and of great concern to society, the majority of travelers' health and personal safety are much more likely to be affected by either a disease or their involvement in a road traffic collision or even their victimization when a crime is committed.

In the European Union, road traffic collisions seem to be the main cause of death among tourists, accounting for more than 50% of all their deaths. Also, 20% of hospital admissions and 30% of visits to emergency departments are due to a road traffic collision (WHO, 2004, p.2).

The security level in a country is an important factor for choosing a tourist destination. Road safety is an important pillar in creating a sense of security to both its citizens and to those visiting for business or recreation, because it is associated with policies relating to employment, education, insurance, public health, justice, trade and foreign affairs (European Commission, 2010, p.4).

Tourism is a major revenue source for the global economy in general, especially for Cyprus, an island which in 2014, according to the Statistical Service of Cyprus (2015), was visited by a total of 2,441,231 tourists with a total income of about €2 million. It is not excessive to qualify tourism as the donor of the economy of Cyprus. Moreover, the development of tourism results in upgrading, modernization and creation of new services, infrastructure and roads.

The main objective of this paper work is to analyze the involvement of tourists in road traffic collisions in Cyprus, a phenomenon that can affect the already overworked economy and has a negative impact on tourism, which is the most important source of the island's income. Also, the fact that no similar work, scientific study or research has been performed in Cyprus in relation to the participation of tourists in road traffic collisions, was an important motivation for implementing this research study.

## **ROAD SAFETY**

Road safety is a serious social issue. Every day, millions of European Union citizens use the road network using a vehicle, a bicycle or even walking. In 2014, about 25,700 people died in road traffic collisions, while more than 200,000 people have returned home, with their lives change drastically as a consequence of their serious injuries. Any fatal or serious road traffic collision on the roads is a tragedy (Bulk, 2015, p.5).

In Cyprus, road traffic collisions are classified into four main categories: fatal, serious injuries, slight injuries and property damage collisions. Specifically in 2014, 45 people died in road traffic collisions, while 467 were seriously injured and 603 were slightly injured.

In relation to the victimization of tourists in general and their involvement in road traffic collisions, there is evidence that people during their holidays behave less rationally (Walker, 2004, p.38). Based on Tarlow (2000), this change in behavior lets the visitor open to risks which otherwise would have been avoidable. The belief of tourists that their destination is a more secure place than the place of their permanent residence, results in a more naive behavior in relation to the locals. Also, the unknown to them area, in combination with their request for higher levels of adventure, separates them from the locals. Tourists, while seeking for both physical and mental relaxation, do not maintain the usual social or ethical standards during their holidays, making them more vulnerable and unwary. Still, for many people to move away from the usual environment, letting them go from their restrictions and inhibitions, increases their risk of victimization (Tarlow, 2000, p.140-141).

Daily, global roads are hosting a very large number of users, such as motorists, pedestrians, cyclists and motorcyclists. The road use confronts thousands of people who differ from each other in character, way of thinking, mental and physical ability, gender, age, experience, education, race and country of residence (Sotiriadou et al., 2013, p.59). This diversity creates vulnerable road users including tourists, who visit a foreign country in unfamiliar surroundings and roads. Generally, in Europe, road traffic collisions are the leading cause of death among tourists, although this fact does not prove that it occurs to the same extent in all countries (WHO, 2004, p.2).

## **DRIVING BEHAVIOR**

There are several theories and manner models that try to explain the various factors that determine behaviors. These theories attempt to explain driving behavior by focusing on behavioral, environmental, psychological and social factors. For example, Forward (2009) concluded that the deliberate unlawful driving behavior compensates emotionally the offenders, who as a consequence do not accept the negatives of their behavior (Sotiriadou et al., 2013, p.62).

According to Sjoberg (2004), risk perception depends on the ideological, cultural and social values of the person. Driving in a foreign country with different culture and values, increases the risk of engaging a person in a road traffic collision. The driving behavior varies greatly from country to country. The results of a survey conducted in six countries: Greece, Great Britain, Turkey, Finland and the Netherlands have shown that there are very large differences in terms of what is

considered "safe driving behavior" among Western European countries and the Southern and Middle Eastern countries (Sotiriadou et al., 2013, p.64).

As noted in Turker et al. (2006), the survey results revealed significant differences between countries in relation to the safe driving skills and automatic mechanical skills. For example, a research conducted in Sweden and Turkey regarding the speed limit, showed differences in drivers' behavior (Warner et al., 2009, p.816-819). These differences were due to the different mentality of drivers, the perceived behavioral control, subjective norm, the intention and their behavior.

Also, as reported by Petridou et al. (1999), statistics regarding road traffic collisions in Greece show that during summer months, the number of collisions increases due to tourism and the many foreign vehicles driving in the country that period. Tourists are more prone to accidents due to the ignorance of the driving conditions in the country they are visiting.

Lifestyle in one country may also affect significantly the probability of engaging tourists in a road traffic collision. For example, based on the findings of Papadaki et al. (2008), the entertainment levels that a country offer, like the many party organized in conjunction with the vigil and excessive use of alcohol, significantly increase the chances to get involved in road traffic collisions. These possibilities are increased for tourists traveling abroad seeking for entertainment, pleasure and fun without limits.

#### **THE IMPACT OF ROAD TRAFFIC COLLISIONS ON TOURISM**

The social cost of the loss of any human life is incalculable and certainly beyond any economic impact, and seriously harms those who experience the loss of their own person. In conjunction with the financial part of the loss of a human life, fatal road collisions are considered worldwide as one of the biggest social and economic problems.

The calculation of socio-economic costs of road traffic collisions is very complex, because human life is not measured in money and the assessment criteria differ between countries. Both moral, cultural traditions and values in every country, and also political systems and forms of social organization, influence this assessment (Ntemogianni et al., 2012).

The economic cost of injuries from road traffic collisions is estimated at about 1% of the gross national product (GNP) in low-income countries, 1.5% in middle-income countries and 2% in high-income countries. The total economic cost of road collisions exceeds \$518 billion worldwide (WHO, 2004, p.5).

In the cost-benefit analyses on security issues, the European Union has set the cost of a human life to €1 million. The estimation of this value includes the productivity loss, although the material cost is only 9% of the total cost of a fatal road crash, 20% of a serious traffic collision and 40% of a collision with minor injuries. Studies in various countries have shown that the largest proportion of the total cost of road collisions is about the human cost and the productivity loss. They also show that there is no specific cost estimation method and the choice of the method to be used, depends on the facts and circumstances that exist in each country (Ntemogianni et. al., 2012).

An important factor in the decision for choosing a tourist destination is the standard of living of a country and the conditions prevailing at that time. In a global tourism survey conducted in 2013 by CNN, involving 70 countries, it was revealed that in relation to the tourist's trends in choosing their destination, the majority (67%) of tourists choose their destination based on the security level of the country. Therefore, the involvement of tourists in road traffic collisions in Cyprus and particularly the loss of life because of them, can be a deterrent factor for tourists wishing to visit the island. Thus, it can affect the already overworked economy, leading to adverse effects on the most important source of income of the island.

As Emilianidou (2013) states, the importance and great contribution of the tourism sector in Cyprus' economy, was emphasized even more from the effects of the economic crisis. Therefore, it is necessary to adopt both development measures in the tourism industry, as well as measures in the security field.

The economic impact in tourism is inversely related with road traffic collisions, since the reduction of financial resources will also lead to reduction in funds needed for road safety. Specifically, it will slow down the growth rate of infrastructure and the degree of maintenance and upgrading of the existing road network. This will affect the road network level and will reduce the road safety level, increasing the probability of road collisions to occur (Handanos et al., 2012, p.10).

In addition, the effects of the economic crisis and the reduction of financial resources are expected to adversely affect the degree of maintenance of motor vehicles and the purchase of new cars equipped with modern and efficient security systems. This will result in the release of more inefficient vehicles on the roads, increasing the risk of causing road traffic collisions (Handanos et al., 2012, p.10).

For completing this research study, descriptive statistics and analysis were used, as well as processing of quantitative data on road traffic collisions, focusing on tourists. In the system of the Cyprus Police, all road traffic collisions reported nationwide are included, thus for the purposes of this study only the incidents involving tourists have been considered. As Katsanos and Avouris (2008) report, descriptive statistics represent the main statistical method that simplify and

facilitate both the organization and presentation of the analysis results, for the purpose of easy understanding and exporting the right conclusions.

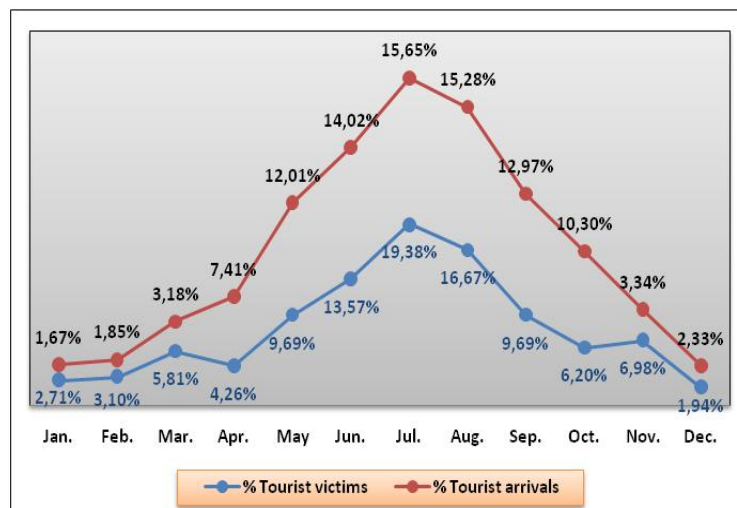
Also, for the analysis of the primary data from the Cyprus Police system, the SPSS software was used as the data have not received any previous treatment. Data analysis focuses on the involvement of tourists in road traffic collisions by month, hour, day, cause, province, age group, sex and country of origin. For the presentation of the analysis results, graphs and statistical tables have been used as they are useful tools for clearly demonstrating the important characteristics.

However, it is worth noting that some difficulties and problems encountered in the identification and evaluation of the data, since not all information concerning the involvement of tourists in road traffic collisions is kept in the records. Specifically, apart from the fatalities for which an additional and detailed data base is recorded, there is no information about the country of origin of tourists. Moreover, there are no reliable figures for several years in the past in order to draw safe conclusions and thus the present study was based on the analysis of the data related to the period 2010-2014. It is also important to mention that not all traffic collisions are reported to the police, especially if these are not so serious or if the involved parties manage to settle the damages by their own without involving the police, which is a more time consuming process.

Finally, data from various other European official sources is limited to general figures concerning the involvement of tourists in road traffic collisions with not detailed information. Thus, at this point, this issue under concern cannot be studied in more depth and compared to the current situation in the rest of Europe.

The analysis of the data that follows below, covers all road traffic collisions in which tourists were involved and occurred in Cyprus during the period 2010-2014. The analysis results show a clear picture of the phenomenon and can guide the relevant parties in their effort to improve road safety, and thus in the overall effort to make Cyprus a safe tourist destination.

Cyprus, an island with a population of less than a million, is an attractive tourist destination for millions of people. Based on the official statistics of the Statistical Service of Cyprus (2015), more than two millions of tourists arrive to the island every year, thus increasing the possibility of being involved in a road traffic collision. However, according to the results of this research study, the involvement of tourists in all road traffic collisions in Cyprus is estimated to be only 3.6%, thus answering the main question of this research regarding the level of their involvement in road traffic collisions. Specifically, the survey results suggest that during the period 2010-2014, 258 tourist victims were recorded in Cyprus, of which 6 dead, 124 seriously injured and 128 slightly injured. As shown in Figure 1, tourist arrivals in Cyprus increase during summer period, which seems to have a significant impact on tourists' involvement in road traffic collisions, as the corresponding number of tourist victims increase during the same months.



**Figure 1:** Tourists involved in road traffic collisions by month, 2010-2014

As explained by the Sotiriadou et al. (2013), in Greece the largest number of road traffic collisions is recorded during the summer months, a period during which many tourist cars are present.

According to this research study, the main causes of tourists' involvement in road traffic collisions in Cyprus for the period 2010-2014, is driving under the influence of alcohol with 15.89% and careless driving with 15.12%. Following is the failure to keep in left lane (9.69%), the right turn without attention (7.75%) and not keeping a safe distance (7.36%). The excessive use of alcohol by tourists is granted, especially when this is allowed by the host country's lifestyle and entertainment level. Based on the findings of Papadakaki et al. (2008), the entertainment levels offered by a country, the many parties that are organized in conjunction with the vigil and excessive use of alcohol, significantly increase the chances of being involved in road traffic collisions.

In Cyprus, driving on the left side of the road increases the possibility for tourists to get involved in road traffic collisions, because in most countries from which tourists arrive, people drive on the right side of the road. Therefore, the combination of both the unknown roads and unknown environment of a country together with the culture of the drivers, create a major risk factor for causing road traffic collisions (Wilks et al., 1999, p.5). Similar findings are suggested by the investigation of Petridou et. al. (1997) concerning the transition from driving on the left side of the road on the right side.

The analysis of the data reveals that drivers and passengers of cars and motorcycles, and pedestrians as well are the main categories of tourists involved in road traffic collisions in Cyprus

during 2010-2014. Specifically, vehicle occupants with 25.97%, pedestrians with 22.87% and motorcycle drivers with 22.09%, constitute the majority of tourist victims. Noteworthy is the fact that the involvement of tourists using a public transportation like buses and taxis is very low.

Furthermore, based on the findings of this paper, most tourists involved in road traffic collisions, belong to the age group of 20-31 years old, accounting for 33.72%, even though they constitute the smallest proportion of tourists arriving to the island with 22.29%. Additionally, the highest proportion of them (35.63%) concerned drivers of motorbikes and motorcycles. This result confirms the findings of other surveys stating that young people are "high risk group" in road traffic collisions. As mentioned by Kardara et al. (2009), several studies show that young drivers cover longer distances and therefore have increased chances of being involved in road crashes after consuming alcohol and drugs, showing an increased risk of their involvement in road collisions.

The majority of the tourists (50%) who lost their lives in road traffic collisions in Cyprus during the period 2010-2014, concerned people from Russia. In addition, as revealed by this research study, 60% of the causes of fatal road traffic collisions involving Russian tourists concerned careless and negligent driving. Conversely, the involvement of tourists from the United Kingdom, who account for about half of the total tourist arrivals (Statistical Office, 2015), in fatal road traffic collisions is much lower (20%). This is probably due to the fact that road traffic regulations in United Kingdom are the same as those applicable in Cyprus, since Cyprus that was a British colony, maintained most of these regulations even after the establishment of the Republic of Cyprus in 1960 (Neocleous, 2009, p.15). Also, a study in Greece showed that a significant role in causing road traffic collisions by foreigners is their maladjustment to both national roads and the Highway Code (Kardara et al., 2009, p.752).

As pointed out by this paper work, one of the major concerns of tourists when selecting a tourist destination is the level of personal security that a country provides, with a significant aspect the road safety in the country. The statistics of the World Health Organization simultaneously demonstrate the magnitude of the problem, as road traffic collisions are presented as the main cause of death for tourists.

Based on various studies reported in this project, tourists behave less rationally during their holidays. Their desire for physical and mental relaxation usually brings relaxation to the defense mechanisms of the human body, thus becoming more vulnerable with higher risk of involvement in road traffic collisions.

According to the World Health Organization (2004), the economic cost of road traffic collisions exceeds \$518 billion a year worldwide. In addition to the economic consequences that the decline of tourism can bring in a country due to road traffic collisions, the result can be a disaster for the



economy in general. This phenomenon is likely to occur in countries such as Cyprus, which is a very attractive tourist destination and its economy relies heavily on tourism.

For the first time a clear picture of the involvement of tourists in road traffic collisions in Cyprus is revealed, after processing the recorded data of the Cyprus Police for the period from 2010 to 2014. From the analysis results, it is evident that the involvement of tourists in road traffic collisions is very low. This result is very encouraging and could be used by the various stakeholders participating in the tourism industry to promote Cyprus as a safe tourist destination.

The main cause of road traffic collisions with tourists is the use of alcohol, which is justified by the lifestyle and the level of entertainment offered by the island. Important factor seems to be also the careless driving and the failure to comply with the left side of the road, due to the fact that in most of the tourists' countries of origin, driving is on the right side of the road as opposed to Cyprus. Similar results are revealed by surveys in other countries with tourists arriving from countries with opposite driving system.

Noteworthy is the fact that tourists of age 20 to 31 years old account to the higher engagement rate of tourists in road traffic collisions, even though this age group constitutes the lowest percentage of arrivals on the island. Young people are "high risk group" in road traffic collisions in general since they take risky decisions more easily than adults. This research work results show that the use of public transport and taxis by tourists of all age groups, is safer than the use of private means of transport in unknown for them roads.

Fatal road crashes are considered worldwide as one of the major socio-economic problems, as they are an important cause of death or permanent disability, making them crucial public health and development problems. The facts that tourism is a main revenue source for the global economy and that road traffic collisions are the leading cause of death of tourists, urge the need to take all necessary protective measures to prevent their possible involvement in road traffic collisions. Improving the level of road safety will result in significant advantages to Cyprus, particularly in the current period of economic crisis. The consolidation of a sense of security will bring numerous benefits, such as the possible increase in tourism, upgrading, modernization and creation of new services, infrastructure and road network.

Despite the importance of the matter, not many studies have been carried out worldwide, while for the case of Cyprus, these are believed to be the first findings. The results of this paper work can be the basis for further research and study, while the findings may help both to address the problem and to expand tourism in Cyprus.

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