

Clash of cultures in Greek traffic? What happens when a Southern European road safety culture is mixed with a Northern European road safety culture?

Tor-Olav Nævestad¹, Torkel Bjørnskau¹, Alexandra Laiou², Ross O. Phillips¹, & George Yannis²

¹ Institute of Transport Economics, Norway,
ton@toi.no, tbj@toi.no; rph@toi.no

²National Technical University of Athens, Greece
alaiou@central.ntua.gr, geyannis@central.ntua.gr

Abstract

Traffic accidents are the second most important cause of death for international tourists. In the present paper, this is related to differences in national road safety cultures (RSC). Previous research indicates that RSC, specified as shared expectations to other road users and perceptions of what is normal behaviour in traffic, continuously is (re)created through road user interaction in traffic settings. But what happens when road users from different RSCs interact? In the present paper, this process is examined focusing on the local driving population and international tourists on the Greek Island of Rhodes. The aims of the study are to examine: 1) To what extent do road safety cultures of international tourists and locals differ in Rhodes?, 2) Who is influenced by whom: Do the locals adapt their behaviour to the tourists, or is it the other way around?, 3) What are the (potential) safety outcomes of these processes?

Keywords: *Tourists, car drivers, motorcycle riders, road safety culture, Greece, Rhodes*

1. Introduction

1.1 Background and aims

Tourism has become a central part of the economy in many countries, and it now accounts for one tenth of Global Gross Domestic Product (GDP) (World Travel and Tourism Council 2019). Despite the positive consequences of tourism for destination countries and for the tourists themselves, there are also several negative consequences related to global tourism, e.g. environmental, developmental, increasing inequalities etc. One important side effect which has been given little attention by the tourist industry is road fatalities and injuries. This is the second most important (after drowning) cause of death for international tourists (Bellos et al 2019). It has been argued that unless the risk related to tourists' road fatalities and injuries is properly recognized and addressed, it is likely that the number of tourists killed and injured in traffic will continue to rise, because of increasing tourist arrivals and increasing vehicle ownership in tourist destination countries (Bellos et al 2019).

Recent research has indicated that tourists are at greater risk than the local population when travelling, although they may come from countries with safer driving styles and far lower road fatality levels than their tourist destination countries (Bellos et al 2019). The higher road accident risk of tourists is due to several factors. Driving in unfamiliar surroundings is in itself

a risk, because you do not know what to expect, and how to adapt your own driving to the conditions (Wilks et al 1999). Tourists have poor knowledge of the road network, they often lack understanding of local traffic rules and signs, and they may be disoriented, distracted and fatigued as they drive in unfamiliar conditions (Wilks et al 1999; Bellos et al 2019). Additionally, the risk of traffic accidents differs dramatically between countries, and popular tourist destinations often have a higher accident risk than the countries that most of the tourists come from (cf. ETSC 2018). This often means poorer road infrastructure, poorer police enforcement and a riskier road user behaviour.

Another important risk factor for international tourists concerns national road safety culture (RSC). The present paper focuses on international tourists on the Greek Island of Rhodes. Greece is among the top-10 global tourist destinations, and in 2017, Greece received as many as 27.2 million visitors (excluding data from cruise tourists). The tourists in Greece mainly come from Germany, the United Kingdom, France, Italy and Romania (SETE 2018). This involves high proportions of northern European tourist drivers on the local roads in Greece in the summer. Studies seem to indicate different national RSCs in northern European and southern European countries, which often are related to differences in accident risk (e.g. Özkan et al 2006; Warner et al 2011; Nævestad et al 2019a). National RSC can be defined as shared patterns of behaviour, shared norms prescribing certain road safety behaviours and thus, shared expectations regarding the behaviours of others. Thus, national RSC concerns descriptive norms, which refer to individuals' perceptions of what other people actually do, and which may influence behaviour by providing information about what is "normal" road safety behaviour in a country.

Based on the above-mentioned research, we can hypothesize that (northern European) tourists and the local drivers in southern European tourist destinations like Rhodes have different RSCs. This means that their road safety behaviours are different, and that their expectations to other road users differ. When foreign tourists and local drivers from different RSCs interact in traffic, it is not unreasonable to expect that misunderstandings, frustration and, perhaps, even conflicts could arise, as a consequence of different behaviours and expectations. Moreover, as RSC is hypothesized to influence road safety behaviour through our perception of "what is normal" in a community, it is not unreasonable to expect that international tourists driving in a foreign country may adapt their behaviours to the local setting (cf. "when in Rhodes"). This may involve riskier behaviour. On the other hand, we may also hypothesize, based on the same mechanism, that if the proportion of northern European tourist drivers reaches a critical mass in an area, it is rather the locals who adapt to the foreign drivers. This could lead to the development of a more northern European road safety culture in Rhodes than in other Greek areas with less tourists.

The aims of the present study are to examine: 1) To what extent do road safety cultures between international tourists and locals differ in Rhodes?, 2) Who is influenced by whom: Do the locals adapt their behaviour to the tourists, or is it the other way around?, 3) What are the (potential) safety outcomes of these processes?

1.2 Previous research

1.2.1 Road accident risk factors faced by international tourists

Comparisons of European accident statistics indicate that the risk of road fatalities differs substantially between European countries. In 2017, Norway, Sweden and the United Kingdom had the lowest road mortality rate in Europe with fewer than 28 road deaths per million inhabitants and the lowest number of deaths per kilometer (ETSC 2018). Greece had 69 road deaths per million inhabitants, which was well above the EU average of 50 (ETSC 2018). Although international tourists may come from countries with safer driving styles and far lower road fatality levels than their tourist destination countries, their road accident risk is generally higher than that of the local population. Yannis et al (2007) estimate and compare the accident risk of foreign and domestic passenger cars drivers in various road environments in Greece. Generally, the study shows that the accident risk of the foreign drivers was nearly twice that of Greek drivers. The general and presumably most important risk factor faced by international tourists is unfamiliarity with the road and the road environment, and lacking understanding of local traffic rules and signs (Wilks et al 1999). Thus, when driving in unfamiliar surroundings, tourists do not know what to expect, and how to adapt their driving to the conditions. This is likely to induce higher levels of disorientation, distraction and fatigue among tourist drivers compared to local drivers (Bellos et al 2019).

1.2.2 Differences in road safety culture between tourists and locals

There is little to none previous research examining whether road safety cultures (RSC) between international tourists and locals differ. There are, however, studies comparing RSC between countries. Nævestad et al (2019a) compares RSC in Norway and Greece, The study concludes that the Greek RSC was characterized by more aggression and violations than the Norwegian RSC which seemed to be characterized by a higher level of compliance and politeness. Comparing road safety behaviours among car drivers in Finland, Sweden, Turkey, and Greece, Warner et al (2011) found a higher prevalence of aggressive violations (e.g., become angered and indicate hostility, sound the horn to indicate annoyance) and ordinary violations (pull too far out of a junction) in Greece and Turkey than in Sweden and Finland. They also found a higher prevalence of over speeding in Sweden and Finland than the two other countries. Özkan et al (2006) compare road safety behaviours in six countries: Finland, Great Britain, Greece, Iran, the Netherlands, and Turkey. This study also found that Greek drivers reported to be more inclined to indicate their annoyance and hostility to other road users, while Northern European drivers were more likely to over speed.

There are few studies comparing the RSCs of local drivers and tourists in Greece. One of the exceptions is a study from 2018, sampling international tourists in Greece (N=1349). This study compares road safety behaviours, attitudes, views on driving culture, infrastructure and driving behaviours of other drivers (Bellos et al 2019). Tourist respondents were not sampled in Rhodes, but in other touristic areas in Greece. The respondents were from Germany, the UK, Italy, France and the United States. This study reports that one in five respondents reported that they had experienced a safety critical incident on the roads during their stay in Greece. The respondents were asked to answer the question “I often felt uncomfortable with the following driver behaviours in Greece”. The following factors received the highest proportions of respondents who agreed: 1) not staying in lanes (46%), 2) over speeding (45%), 3) dangerous overtaking (45%), 4) illegal parking (44%), 5) not respecting road signs/priority rules (43%), 6) not respecting pedestrians (41%), 7) red light violation (28%) 8) drunk driving (25%).

Overall, the study found that 60% of the tourists were dissatisfied with road safety conditions in Greece.

1.2.3. Who influences whom?

There is, as far as we know, few to none previous studies describing how members of different RSC adapt their behaviour to each other, in manners that may create new RSCs. We may at least conceive of four possible outcomes in our case: a) tourists influence the RSC of locals, thereby introducing a northern European RSC in Rhodes (the “touristification” hypothesis) b) locals influence the RSC of tourists, making them behave in less safe manners (the “when in Rhodes” hypothesis), c) RSCs may peacefully coexist without merging into one shared RSC (the “peaceful coexistence” hypothesis) and d) RSCs may coexist without merging into one shared RSC, but involve conflicts and misunderstandings (the “clash of cultures” hypothesis).

Based on previous research, we may hypothesize that one of the most important settings for the creation of RSCs is interaction between road users in traffic (Özkan et al 2006; Bjørnskau 2017; Nævestad et al 2019a). Important factors influencing this interaction are: 1) infrastructure, 2) enforcement, 3) the composition of road users, 4) training and 5) economic factors (Nævestad et al 2019a). Moreover, Nævestad et al (2019a) measure RSC as descriptive norms, which refers to individuals’ perceptions of what other people actually do (Cialdini et al 1990). RSC is hypothesized to influence road safety behaviours through “subtle social pressure” to behave in accordance with “what is normal”, or what other road users do. Thus, with high levels of tourists in an area, it is not unlikely to hypothesize that the tourists could influence the behaviour of local drivers and subsequently change their RSC.

When Greek drivers realize that tourists don’t accept similar small time gaps as the Greek, and that tourists more often stop on yellow lights, don’t expect cars to pass on the inside etc., they will probably adapt and change their own driving style, or at least differentiate their own behaviour depending on whether they interact with another local driver or a tourist in a rental car. The mechanism is straightforward learning through interaction, based on an evolutionary game theoretic approach which previously has been able to explain why certain patterns of interaction develop, are sustained or disappear (Bjørnskau 2017). This means that different types of behaviour return better outcomes depending on the types of road users (and the numbers of these types) with whom you interact. Given that northern Europeans behave less risky than Greek road users, one should over time expect the most touristic Greek islands to demonstrate a more northern European RSC than other Greek areas.

However, as RSC is hypothesized to influence road safety behaviours through “subtle social pressure” to behave in accordance with “what is normal”, or what other road users do, we could also hypothesize that the local drivers in Rhodes influence the behaviour and subsequently the RSC of the tourist drivers (cf. the “when in Rhodes” hypothesis). In accordance with this, the study of Bellos et al (2019) finds that a share of 41% of the respondents reported that they felt less inclined to follow traffic rules while driving in Greece. Additionally, about 13% reported that they had driven while drunk during their stay in Greece. Among the respondents under the age of 25, as many as 20% reported that they had been driving while drunk during their stay. Women and older drivers were less inclined to drive while drunk. It seems that the relatively high level of violations among the tourists was related to their perceived level of police enforcement, as 42% found that the presence of traffic police was insufficient to enforce

compliance. Among the five abovementioned factors, tourists' perceived level of police enforcement at the tourist destination seems to influence their road safety behaviours, perhaps in manners that make their behaviours more similar to the road safety behaviours of the local drivers than the behaviours of other drivers in their country.

1.2.4 Potential safety outcomes

As noted above, the road accident risk differs substantially between northern and southern European countries, and this is presumably also related to differences in national RSC. Thus, if tourists on Greek islands influence the RSC on Greek islands, we may perhaps assume a lower accident risk among the local drivers on these islands. Conversely, if the locals influence the road safety behaviours of tourists ("when in Rhodes"), we may expect a higher accident risk for tourist drivers. Additionally, it is neither unreasonable to expect that the RSCs of local drivers and tourists may coexist without influencing each other and merging into one RSC. After all, several RSC subcultures, comprised on motorcycle drivers, young drivers, risk taking drivers etc. coexist in all countries. Again, the study of Bellos et al (2019) has relevant results. Despite the above mentioned concerns related to driving behaviour in Greece, about 60% of the respondents in this study found it easy to adapt to local driving habits and culture. However, 17% of the respondents found it difficult to adapt to local driving habits. Women and younger drivers (<25 years) were overrepresented among those who found it difficult to adapt. Thus, it seems neither unreasonable to expect that differences in RSC also can lead to frustration and misunderstandings, conflicts and perhaps also accidents. RSC is defined as our expectations to other road users. Different expectations and views on what constitutes "normal behaviours" may lead to frustration and perhaps also dangerous misunderstandings.

2. Methods

The study was conducted within the research project "Safety culture in private and professional transport: examining its influence on behaviours and implications for interventions", undertaken by the Institute of Transport Economics of Norway (TOI) in cooperation with the National Technical University of Athens (NTUA) (cf. Nævestad et al 2019a,b).

Quantitative survey. The Greek car drivers (N=286) and motorcycle riders (N=193) were recruited through a marketing research company in Greece, which was under the scientific supervision of researchers from the NTUA. As recruitment was difficult, it was decided to approach candidates in person and further explain the scope of the survey. This helped eliminate their doubts and fears about confidentiality, and the use of the information they would provide. The car drivers and motorcycle riders in Greece were sampled in two different areas: the capital Athens and the island of Rhodes. The Norwegian car drivers (N=461) and the motorcycle riders (N=102) were sampled from the capital Oslo. These were recruited, as we assumed them to be representative of potential international tourists in Greece (we did not ask whether they had visited Greece). Car drivers were recruited through the Preference Database of the Norwegian Postal Service. Motorcycle riders were recruited through a motorcycle association. In an attempt to increase response rates, Norwegian respondents could participate in a draw for a present card of 2000 NOK, if they wanted to. The survey included questions on road user behaviours, primarily taken from the driver behaviour questionnaire (DBQ), e.g. aggressive driving behaviour, driving under the influence of alcohol, driving without the use of seat belt/helmet, over speeding. Both the survey to the car drivers and the motorcycle riders included

questions on background variables like age, experience as a driver, gender, kilometers driven with a car or motorcycle in the last two years, how often respondents drive/ride and what kind of car or motorcycle they drive/ride. The surveys also included nine questions measuring national RSC, operationalized as descriptive norms, referring to the road user behaviours that respondents expect from other drivers in their own country (cf. Section 3.2). Motorcycle riders in Rhodes were also asked questions about the driving of foreign tourists and the impact on their own driving in the touristic season. The full wording of the questions and answer alternatives are provided in section 3.3.

Qualitative interviews. A total of 30 Greek natives, were interviewed, with the sample consisting of 60% men and 40% women. Fifteen participants, were local car and motorcycle drivers in Athens and 15 were car and motorcycle drivers in Rhodes, ranging from 21 to 60 years of age. Interviewers used a semi - structured interview guide consisting of questions about road user behaviour, e.g. aggressive driving behaviour, driving under the influence of alcohol, driving without the use of seat belt/helmet, over speeding, the role of traffic police and state intervention, the role of the driving environment and the factors within it, influencing driving behavior, and the role and influence of tourists on driving behavior. In addition, 6 car drivers from Oslo were interviewed.

3. Results

3.1 Sample characteristics

Table 1 gives a distribution of drivers/riders in Athens, Rhodes and Oslo, indicating that the share of males is higher for the motorcycle riders, especially in Rhodes and in Oslo. The table also indicates that respondents from Oslo generally are older than the respondents from Athens and that the youngest respondents are from Rhodes. Chi-square tests indicate that the age and sex differences in the samples are significantly different at the 1%-level.

Table 1: Distribution of drivers/riders in Rhodes, Athens and Oslo. Proportion of males and age groups.

Groups	Number	Proportion	Males	<26	26-35	36-45	46-55	56+
MC Rhodes	74	7%	91%	20%	41%	28%	10%	1%
Car Rhodes	87	11%	62%	9%	21%	46%	21%	3%
MC Athens	119	8%	82%	10%	24%	25%	25%	15%
Car Athens	199	19%	65%	3%	24%	23%	32%	19%
MC Oslo	102	44%	59%	2%	10%	19%	39%	30%
Car Oslo	461	10%	97%	7%	27%	25%	17%	24%

3.2 How do road safety cultures between international tourists and locals differ in Rhodes?

The first aim of the study was to examine the extent to which road safety cultures between international tourists and locals differ in Rhodes. Motorcycle drivers and car drivers from the Norwegian capital Oslo were included in the study to provide a group to represent international tourists in Rhodes. Athens was included to provide a group to represent another Greek destination with a less visible influence of tourists in traffic. We used two indexes measuring

national RSC, based on previous research (Nævestad et al 2019a,b). The first index measures National RSC as Violations/aggression, and is comprised of 7 questions introduced with the following sentence: “When Driving in my Country, I Expect the Following Behaviour from Other Drivers:” 1) “That they sound their horn to indicate their annoyance to another road user”, 2) “That they become angered by a certain type of driver and indicate their hostility by whatever means they can”, 3) “That they overtake a slow driver on the inside”, 4) “That they drive when they suspect they might be over the legal blood alcohol limit”, 5) “That they drive without using a seatbelt”, 6) “That they disregard the speed limit on a motor way road” and 7) “That they disregard the speed limit on a residential road”. The second index measures National RSC as Compliance/politeness, and are comprised of two questions: 1) “That they are polite to other road users” and 2) That they respect and follow traffic rules. Five answer alternatives ranged between 1 (none-very few) and 5 (almost all/all).

Comparing scores on the National RSC: Violations/aggression index (min:7,max:49), we see that the score of respondents from Rhodes was 21.8, while it was 16.2 for respondents from Athens and 10.9 for respondents from Oslo. The corresponding scores on the National RSC: Compliance/politeness index (min:2, max: 14) was 5.8 (Rhodes), 6.7 (Athens) and 7.8 points (Oslo).

This indicates that drivers/riders in Rhodes expect a higher level of violations/aggression from other drivers/riders and less compliance/politeness, compared with drivers/riders from Athens and Oslo. The score of national RSC: Violations/aggression in Rhodes is twice that of Oslo. The scores of Athens are in a middle position between the two other areas. Post-hoc tests (Tukey) indicate that the three areas’ mean scores on both measures of RSC are significantly different at the 1% level. These results are in accordance with the qualitative interview data from the three areas. Greek drivers generally expected more violations from other drivers in their country than drivers from Oslo. Drivers from Oslo generally referred to several types of violations as exceptional or unusual events, these were perceived as more common and expected among Greek drivers. Interviews also indicated how road safety behaviours (e.g. not committing certain violations) were related to morality and identity.

3.3 Who is influenced by whom: Do locals adapt their behaviour to the tourists, or is it the other way around?

The second aim of the study was to examine who is influenced by whom, and whether the locals adapt their behaviour to the tourists, or whether it is the other way around. First, it is important to note that the scores for national RSC in the three areas do not support the “touristification” hypothesis, as we found that riders/drivers in Rhodes expect more road safety violations from other rider/drivers than rider/drivers in Athens. Thus, it does not seem that the northern European tourists have contributed to a more northern European RSC in Rhodes. The result is contrary to this.

As noted, motorcycle riders in Rhodes were asked about the driving of foreign tourists, and the impact on their own driving in the touristic season. The questions were introduced with the statement: “Now we would like to ask you some questions about your experiences with local car drivers in Rhodes versus foreign tourist drivers.” The questions were: “In your experience, do the car drivers (or motorbike riders) who are foreign tourists drive differently than the car drivers from Rhodes?”, “In your experience, do the motorbike-riders who are foreign tourists

drive differently than motorbike-riders from Rhodes?” “In your experience, do the car drivers (or motorcycle riders) from Rhodes drive differently in the tourist season(April-sept?) than the rest of the year?”, and “Do you ride your motorbike differently in the tourist season (April-sept?) than the rest of the year?”, Answer alternatives were: 1) “Much slower”, 2) “A bit slower”, 3) “no difference”, 4) “A bit faster”, 5) “Much faster”. Results are presented in Table 2.

Table 2: Motorcycle drivers' in Rhodes answers (n=74), concerning driving of local drivers and themselves

	Slower	No difference	Faster
Tourist car drivers	45%	45%	11%
Tourist motorcycle riders	42%	46%	12%
Local Car drivers (in the tourist season)	22%	62%	16%
Local motorcycle rider (in the tourist season)	26%	62%	12%
Myself (motorcycle rider) (in the tourist season)	34%	58%	8%

First, Table 2 generally indicates that between 42 and 45% of the motorcycle riders in Rhodes reported that the tourist drivers/riders drive slower, while about 45-46% answered that the speed of the tourists is not different from the local drivers. About a tenth of the respondents answered that the tourists drive faster, which could indicate that the tourists are a multifaceted group, and that some of them actually drive faster than the local drivers/riders. Second, when it comes to driving/riding of local drivers/riders in the tourist season, nearly two-thirds reported “no difference”. This indicates, in contrast to the touristification hypothesis, that the majority of local drivers/riders do not adapt their speed because of the tourists on the roads. About a fourth of the motorcycle riders, answered, however, that the local drivers/riders drive slower in the tourist season. This could indicate that the locals also are multifaceted when it comes to their responses to the tourists, and that only some of them adapt their driving behaviours to the tourist drivers. This conclusion is also supported by the fact that between 12% and 16% of the locals drive faster in the tourist season, according to the motorcycle rider respondents. Finally, Table 2 indicates that about a third of the motorcyclists in Rhodes reported that they drive slower in the tourist season themselves, while nearly 60% answered "no difference". Thus, generally, our results indicate that about 60% of the drivers/riders in Rhodes assert that they do not adapt their behaviours to tourist drivers/riders, while a third reports that they adapt their behaviour by slowing down.

In accordance with the second aim of the study, it is relevant to examine the characteristics of the local motorcycle riders who assert that they adapt to tourists by driving slower, and whether this adaption is related to road safety culture in Rhodes. In Table 3 we therefore show results from a hierarchical, logistic regression analysis, examining the variables predicting motorcyclists' in Rhodes adaptation to tourists by driving (much/a bit) slower. We made a dichotomous variable with riders who answered “no difference” (58%) and those who answered “much/a bit slower” (34%). The former was ascribed value 0, the second value 1. We used a logistic regression analysis, as the dependent variable is dichotomous. When interpreting the results, it is important to note that the analysis is based on a very small sample (N=68), with 25 respondents who reported to drive slower, and 43 who said that their behaviour did not differ in the tourist season on Rhodes.

Table 3: Logistic regression. Variables predicting motorcyclists' in Rhodes adaptation to tourists by driving (much/a bit) slower in the tourist season. Standardized beta coefficients.

Variables	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
Gender (Fem: 0, Male: 1,)	-.125	-.046	.191	-.551	-.711	-.257	-.218	-.216	-.229
Age group		-.260	-.307	-.371	-.424	-.444	-.137	-.131	-.146
Mileage			-.626*	-.571	-.278	-.296	-.190	-.188	-.177
Education				-.702	-.687	-.614	-.575	-.572	-.590
Observed Police Enforc.					.466*	.397	.121	.126	.129
Over speeding						-.161	-.143	-.147	-.135
Tourists drive slower							.993**	.989**	.981**
National RSC: Viol./Agg.								.004	.007
National RSC: Com./Pol									-.047
Nagelkerke R ²	.000	.018	.099	.143	.215	.241	.365	.365	.366

* p < 0.1, **p < 0.05, *** p < 0.01

The main result of the analysis in Table 3 is that the motorcycle riders' perceptions of whether tourist drive/ride slower is the only independent variable contributing significantly (at the 5% level) in Step 9. The relationship is positive, indicating that riders who perceive that tourists drive slower than the drivers/riders on Rhodes are more likely to drive slower in the tourist season. As expected, mileage also contributes significantly, but only in Step 3, indicating that the more kms you have driven in the past two years, the more you believe that the speed of tourists is the same as locals. Observed police enforcement also contributes significantly, in Step 5. This could also be related to mileage. Neither of the background variables gender, age or education contribute significantly. Neither does riders general speeding behaviour, which we assumed to be related to the potential adaptation of their speed to tourists. Finally, in accordance with our general conclusion that tourists do not seem to influence the RSC in Rhodes, there is no relationship between the RSC reported by the respondents and the riders' adaptation to tourists. The Nagelkerke R² value is .366, indicating that the model explains 37% of the variation in the dependent variable.

3.4 What are the safety outcomes?

3.4.1 Survey results

The motorcycle drivers in Rhodes who participated in the survey, were also invited to answer the question "Do you think that the car drivers who are foreign tourists drive differently than the car drivers from Rhodes in other ways? (e.g. more aggressively, or more polite)". The wording "in other ways", means other or in addition to "slower or faster", which the preceding survey questions referred to. Respondents who answered yes were asked to provide their explanation in a free text field: "Please explain how the car drivers who are foreign tourists drive differently". A total of 43 of the motorcycle drivers in Rhodes answered yes, and their answers were analyzed into seven categories. Some of the respondents wrote several keywords in the free-text field. Thus, the total number of comments provided were 49. The comments generally indicated that the respondents found the tourist drivers/riders more dangerous than the local population of drivers/riders, and they generally indicate frustration concerning the (different) behaviours of the tourists.

The most frequently mentioned answer was categorized as: “More careless/poorer drivers/more dangerous”. This was mentioned 18 times. Typical comments were: “they are careless and cause more crashes”, “fewer driving capabilities”.

The second most frequently mentioned answer was “Unfamiliar with roads/dangerous/slower”, which was mentioned 11 times. These answers were typically related to the fact that tourists are unfamiliar with the roads, the road infrastructure, signs etc. For that reason, the respondents asserted that the tourists are confused, make mistakes, like ignoring signs etc.

The third most frequently mentioned answer was “Different mentality/culture”, which was mentioned nine times. These answers typically stated that the tourists have a different mentality when driving in traffic, which for instance involves that they are more polite, that they are calmer, that they are more compliant with traffic rules. Typical answers in this category were: “They follow the highway code rules more”, “They are more polite, but they cause more accidents”.

The fourth most frequently mentioned answer was “Irresponsible/with maps/absent minded/slower”. This type of answer was provided four times and typical expressions were: “They drive so slowly that they finally become dangerous, Furthermore, they open maps while driving”. The fifth most frequently mentioned answer was “drive while drunk”, which was mentioned three times, and the sixth was “more aggressive”, which was mentioned two times. These two last categories, seem to indicate that tourists also comprise a multifaceted group; while the majority seem to drive slower, calmer, polite etc., but dangerously as they drive in unfamiliar settings and are absent minded, some tourists are also perceived as more aggressive, drunk drivers etc.

3.4.2 Interview results

Tourists are present in Greece all year around, but their presence is particularly pronounced and sensed during the summer (May to September). Generally, they are felt in Rhodes, and not so much in Athens, as, in Athens, it is harder to distinguish a tourist driver from a local one. All interviewees in Rhodes claimed that they see tourists every day during summer, but in Athens only three stated that they notice tourists in Athens only during summertime, approximately 1-2 per week. In Rhodes, the interviewees asserted that tourists have a great effect on the traffic and the driving behaviors of local drivers/riders in the summer season. First, they said that the high number of tourists increases traffic, and that the increased traffic also increases locals’ tension and heist on the road. Second, they also said that tourists cause accidents, because they “don’t know the roads”. It was also mentioned that tourists cause accidents, because they: “Bring with them their own driving culture which is not the same with ours”. When asked to provide examples of this, interviewees said, for instance, about the tourists that: “They will cross the pedestrian crossing, thinking that the cars will stop... but we never stop at pedestrian crossings”. This example indicates how national RSC, specified as a group members’ shared expectations to other drivers may cause misunderstandings when different national groups interact in traffic. Thus, when northern European pedestrians interact in traffic with Greek drivers, it seems that the former generally will expect that the latter stop for pedestrians, but as stated “they never do”. Therefore, in this setting both groups expect the other to yield in pedestrian crossings. This could clearly give rise to misunderstandings, conflicts and potentially also accidents. We could, however, expect both groups to learn from this interaction.

Interviewees said that generally, tourists (both car and motorcycle drivers) seem to drive extremely slow, make mistakes, but most significantly they “assume that we drive as they drive”. Again, we see that differences in national RSC has the potential to create misunderstandings, conflicts and potentially accidents, as it influences the expectations that tourists have to other road users. According to the interviewees in Rhodes, the tourists assume that their own national RSC also apply to the local drivers/riders in Rhodes. Finally, despite the fact that the interviewed local drivers/riders in Rhodes recognized the difficulties that tourists encounter in traffic, the locals said that they still do not change or adapt their driving behaviors to match the tourists. On the contrary, they become much more “aggressive” and “intense” due to the increased traffic.

Moreover, interviewees in Rhodes also mentioned an interesting phenomenon which occurs during the winter in Rhodes. They said that due to fewer tourists and smaller amounts of traffic in the winter in Rhodes, the “road entitlement” effect takes over, which means that drivers may ignore other drivers and the law. In this setting, local drivers/riders may take fewer precautionary measures while driving. Moreover, driving under the influence of alcohol may also occur. The winter “road entitlement” phenomenon is interesting, as it indicates that the local drivers to some extent adapt their behaviour in the tourist season.

4. Concluding discussion

4.1 How do road safety cultures between international tourists and locals differ in Rhodes?

The first aim of the study was to examine the extent to which road safety cultures between international tourists and locals differ in Rhodes. Survey results comparing RSC scores in these three areas indicate significantly different RSC between the local car drivers and motorcycle riders in Rhodes and respondents from Athens and respondents from Oslo, with higher level of aggression and violations in Rhodes. This was also indicated in the qualitative data. A potential weakness with our study design is the fact that the potential tourists were not recruited in Rhodes, but in Oslo. As these not necessarily were actual tourists in Rhodes in the past, but merely represent potential tourists, it can be argued that the perspective of actual tourists may be underrepresented. Nevertheless, we may assume that the Oslo respondents are representative of international tourists, who typically come from northern European countries. And as results are in accordance with previous research examining road safety behaviours and/or RSC between drivers from northern and southern European countries (cf. Özkan et al 2006; Warner et al 2011). Moreover, the free text answers and the interview answers indicate that local drivers and tourists have different RSCs, which are in accordance with the differences in RSC indicated in the survey.

4.2 Who is influenced by whom: Do locals adapt their behaviour to the tourists, or is it the other way around?

The second aim of the study was to examine who is influenced by whom, and whether the locals adapt their behaviour to the tourists, or whether it is the other way around. The different RSC scores for Rhodes, Athens and Oslo do not support the “touristification” hypothesis, meaning that the northern European tourists have contributed to a more northern European RSC in Rhodes. On the contrary, we found higher negative RSC scores in Rhodes than in Athens, indicating that riders/drivers in Rhodes expect more road safety violations in their community.

Additionally, riders on Rhodes reported that about 60% of the local drivers/riders do not drive slower in the tourist season. Interviewees in Rhodes also said that local drivers do not adapt their driving to tourists.

Turning to the second hypothesis, it is difficult to assess whether our results support the “when in Rhodes” hypothesis, which means that tourists adapt to the locals. On the one hand, about 45% of the respondents asserted that there is no difference between the speed of local drivers and tourists, while 45% of reported that the tourists drive slower than the local drivers/riders. The former result could indicate a certain level of tourist adaptation to local conditions. This is in accordance with previous research, which found that a share of 41% of the respondents reported that they felt less inclined to follow traffic rules while driving in Greece (Bellos et al 2019). Moreover, in accordance with our results, this research indicate that some categories of tourists are less inclined to adapt their road safety behaviours to the local RSC. This applies especially to older drivers and women. Moreover, this research also found tourists’ perceptions of enforcement to be an important factor, influencing the level of adaptation to local conditions. Thus, we may perhaps conclude that our results indicate some adaptation from both the tourists and the local drivers, but that our data neither support the touristification, nor the “when in Rhodes” hypothesis.

Finally, our study seems to indicate that driving behaviour and RSC perhaps is more flexible and situational than previously assumed. Our results indicate that some of the local drivers adapt their behaviour in the tourist season, while some tourists adapt their road safety behaviour while on vacation. This may provide insights on RSC change that could be utilized for RSC interventions. This should be examined further in future research. Moreover, previous research indicate that some groups are more easily susceptible to negative influence from more dangerous RSCs, especially the young tourists. Moreover, it seems that perceptions of the level of police enforcement in the destination country is an especially important influence on tourist behaviours. This is also an issue for future research.

4.3 What are the safety outcomes?

The third aim of the study was to examine potential safety outcomes of the different RSCs of the local drivers and the tourists. In line with our fourth hypothesis (“Clash of cultures”), our results primarily seem to indicate that the different RSCs of local drivers and tourists create a certain level of frustration and misunderstandings in traffic. Results from the free-texts and the interviews indicate frustration, misunderstandings and frustration among the local drives/riders in Rhodes, who asserted that tourists have a great effect on local drivers/riders in the summer season. They said that the high number of tourists increase traffic, and that the increased traffic also increases locals’ tension and heist on the road. They also asserted that tourists cause accidents, because “Bring with them their own driving culture which is not the same with ours”. When exemplifying this they said that: “They will cross the pedestrian crossing thinking that the cars will stop... but we never stop at pedestrian crosses”. This indicates how different RSC, specified as shared expectations to other road users may lead to misunderstandings, conflicts and potentially accidents, when locals and tourists interact in traffic. Finally, even though interviewed local drivers/riders in Rhodes recognized the challenges tourists are facing in traffic, the locals said that they still do not change or adapt their driving behaviors to match the tourists. On the contrary, they become much more “aggressive” and “intense” due to the increased traffic. Thus, it seems that our results mainly support the “clash of cultures”

hypothesis, which means that RSCs may coexist without merging into one shared RSC, but involve conflicts and misunderstandings.

5. Conclusion: To what extent can differences in RSC explain the higher road accident risk of international tourists?

We started the paper by underlining that traffic accidents are the second most important cause of death for international tourists, and that international tourists have a higher accident risk than local drivers, although the former come from countries with the highest road safety standards and presumably among the safest road safety cultures in the world. Both previous research and the present study seem to indicate that the higher accident risk of international tourists is due to the fact that they face several risk factors at the same time, which are related to the fact that they are foreign. They are unfamiliar with the road and the road networks, the signs and the infrastructure. Additionally, they are also foreign to the driving behaviours and the RSC of the local drivers. And, the RSC of the tourists is foreign to the local drivers/riders. Our results indicate that this leads to frustration, misunderstanding, conflicts and potentially also accidents among local drivers and tourists. We have also found that some tourists and some locals adapt their behaviours to the other group, but that the adaptations can be both positive and negative for road safety. Young tourists seem for instance to be more inclined to be influenced by the “when in Rhodes” mechanism. It seems that differences in national RSC is one of several factors, which in combination make it more challenging for tourists to drive in their touristic destinations, and that it increases the mental load, and it can lead to disorientation, distraction and fatigue. In this setting, the positive safety culture of the northern European drivers/riders is “insufficient” to make them safe in a foreign country. As one of the respondents remarked about the tourists: “They are more polite, but they cause more accidents”.

Acknowledgements

This research was funded by the Norwegian Research Council’s Transport 2025 program, Grant number 250298. The paper was originally submitted to the TRA2020 conference in Helsinki, but the conference was cancelled and only abstracts were published from this conference.

References

- Bjørnskau, T. (2017). The Zebra Crossing Game – Using game theory to explain a discrepancy between road user behaviour and traffic rules. *Safety Science*, 92, 298-301
- Cialdini, R. B., R. R. Reno and C.A. Kallgren, A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places, *Journal of Personality and Social*
- ETSC (2018) (European Transport Safety Council). RANKING EU PROGRESS ON ROAD SAFETY, 12th Road Safety Performance Index Report, June 2018. Available online: https://etsc.eu/wp-content/uploads/PIN_AR_2018_final.pdf
- Bellos, E., Yannis, G., Laiou, A., Folla, K., Nikolaou, D., Madas, M., Nathanail, D., Papakostopoulos, V., Efstathiadis, S., Milonogianni, E., Ward, A., MacLennan, E., Vibert, C., Papaioannou I. (2019) International Tourism and Road Safety in Greece, Country Report, Make Roads Safe Hellas (MRSH), Athens, Greece.

Nævestad, T.-O., Laiou, A., Phillips, R. O., Bjørnskau, T., & Yannis, G. (2019a). Safety culture among private and professional drivers in Norway and Greece: Examining the influence of national road safety culture. *Safety*, 5(2), 20. Special Issue: Social Safety and Security

Nævestad, T.-O., Phillips, R. O., Laiou, A., Bjørnskau, T., & Yannis, G. (2019b) Safety culture among bus drivers in Norway and Greece, *Transportation Research Part F* 64 (2019) 323–341

Özkan et al (2006) Cross-cultural differences in driving behaviours: A comparison of six countries, *Transp. Res. Part F*, Vol. 9 pp. 227-242

SETE Intelligence. (2018). Key figures of Greek Tourism. INSETE. Retrieved from: http://www.insete.gr/Portals/0/statistics/Key_figures_of_incoming_Tourism_2018.xlsx

Warner, H.W.; Özkan, T.; Lajunen, T.; Tzamalouka, G. Cross-cultural comparison of drivers' tendency to commit different aberrant driving behaviours. *Transp. Res. Part F* 2011, 14, 390–399.

Wilks, J., Watson, B., & Faulks, I.J. (1999) International tourists and road safety in Australia: Developing a national research and management

programme. *Tourism Management*, 20(5) 645-654

World Travel & Tourism Council (2018) *Travel & Tourism Economic Impact 2018*.

Yannis, G., J.Golias, E.Papadimitrou (2007) Accident risk of foreign drivers in various road environments, *Jour. of Saf. Res*, V. 38, pp 471-480