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Statistical Anatomy of Traffic Accidents in Northern Cyprus

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Abstract

In this study, statistical features of traffic accidents in Northern Cyprus (TRNC) especially for the last decade were examined. Such that, risk factors (causes) of traffic accident and their demographic reflections were identified by evaluating official statistics. The main findings of this study are these: Fast driving as the most important cause of traffic accidents; Straight road as the chief location of severe traffic accidents; Inverse relationship between the severe traffic accidents and driver's licenses period (experience); and Inverse relationship between the severe traffic accidents and the age of accused persons.

Keywords: Traffic Accidents, Northern Cyprus, Statistical Anatomy, Structural Development

Introduction

The main components of the system leading to road traffic crash are roads, the environment, vehicles and road users, and the possible events of their interaction. Within the framework of this system World Health Organization (WHO) specified the risks factors of road traffic injuries as Speeding, driving under the influence of alcohol and other psychoactive substances, Non-use of motorcycle helmets, seat-belts, and child restraints, Distracted driving, Unsafe road infrastructure and Unsafe vehicles (WHO, 2017). Determining the risk factors causing to road traffic crashes is crucial in identifying optimal interventions that can lessen the risks associated with those factors¹.

The brief literature related to risk factors and causes of road traffic injuries are summarized below:

¹ WHO, *Risk factors for road traffic injuries*; Road safety Training Manual Unit 2, Online Available:

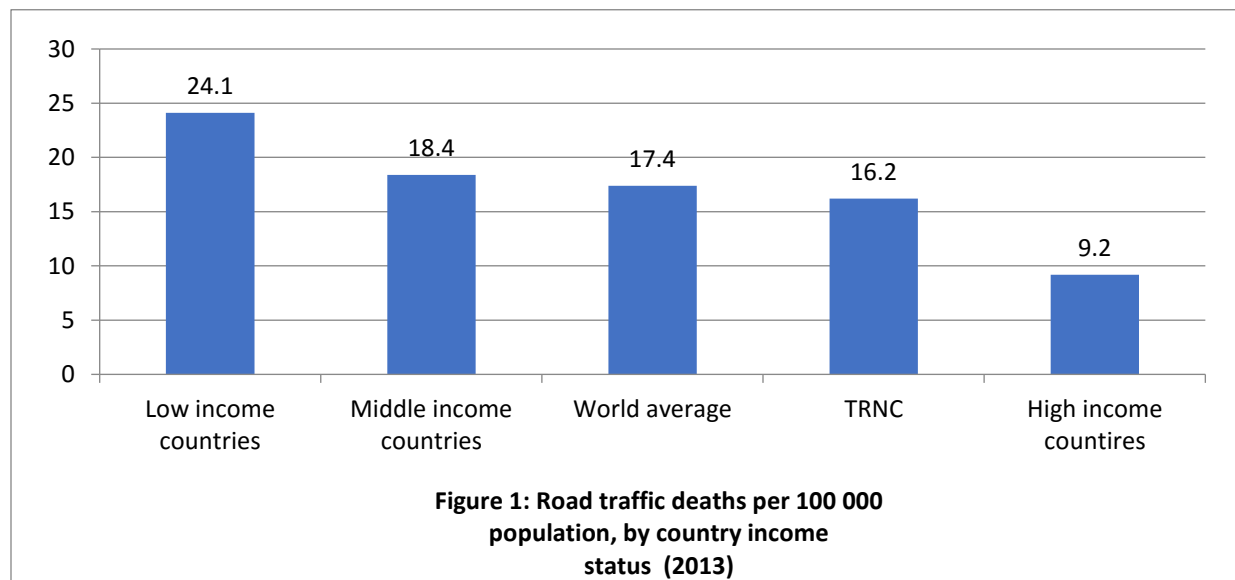
http://www.who.int/violence_injury_prevention/road_traffic/activities/roadsafety_training_manual_unit_2.pdf?ua=1, April 19, 2017

- According to Gebru (2017) numerous factors contributing to traffic accidents have been found to be mainly human factors (faulty road users), environmental factors and vehicle flaws.
 - The study of Çelik and Oktay (2014) determined that the following factors will increase the likelihood of fatal injury: drivers older than 65 years; Drivers in primary education; Single vehicle accidents; Accidents that occur on state roads, motorways or provincial roads; And the presence of pedestrian crossings.
 - Moafian *et al.* (2013) found that there was a significant relationship between the time of the accident, the length of the accident, the last cause of the accident, the driver error and the time from the accident to the accident and the driver's license.
 - Bahadorimonfared *et al.* (2013) recommended improving traffic laws, improving police controls, improving transport infrastructure, organizing training courses for drivers and providing the best health services
 - The study of Heydari *et al.* (2013) that aimed at determining the epidemiological characteristics of fatal traffic accidents in Fars province, Iran found significant associations between decedent's status (car driver, motorcycle driver or passenger, pedestrian or passenger) and interval between injury and death, light conditions at the scene of the accident, place of death, site of injury and cause of death.
 - The findings of Çelik and Senger (2014) revealed that the driver's age, clear weather, winter season, straight or slight road curve/bend, the driver's education and the purpose of the vehicle were the significant factors affecting road traffic accidents over the sample period.
 - In the study of Sutlovic *et al.* (2014) Alcohol has been reported to be one of the most important causes of traffic accidents in Split-Dalmatia. Unfortunately, changes in legislation related to the permitted blood alcohol concentration did not cause any reduction in losses between drivers under the influence of alcohol.
 - Mehmandar *et al.* (2014) revealed that the most important risk factors in road traffic accidents leading to deaths in Iran are age, university rank, female gender, winter season and accident duration.
 - Lankarani *et al.* (2014) found that sunrises, sunsets, dusty air, oily road surfaces and uphill / downhill shaking were dangerous environmental factors in traffic accidents.
 - Results of Heydari *et al.* (2013) indicate that time is an important factor contributing to road traffic deaths.
 - Osoro *et al.* (2015) reported that among the factors contributing to road traffic accidents were human errors (59.6%); Bad roads (19.5%); and Defective vehicles (29.9%). Moreover, precursor factors associated with RTAs include excessive speed, overload and loose policing.
- In this study the risk factors (causes) of traffic accident and their demographic reflections will be identified by evaluating official traffic accidents. The study will consist of road traffic mortality rates, injury rates, the chief responsibilities for traffic accidents, main causes of fatal traffic accidents, locations of fatal traffic accidents, driver's license status of the accused persons in fatal traffic accidents, age of the accused persons in fatal traffic accidents, and education of the accused persons in fatal traffic accidents. This study is expected to have valuable contribution in the field since no research is found concentrating on the statistical feature of traffic accidents in Northern Cyprus.

Statistics of Traffic Accidents in Northern Cyprus

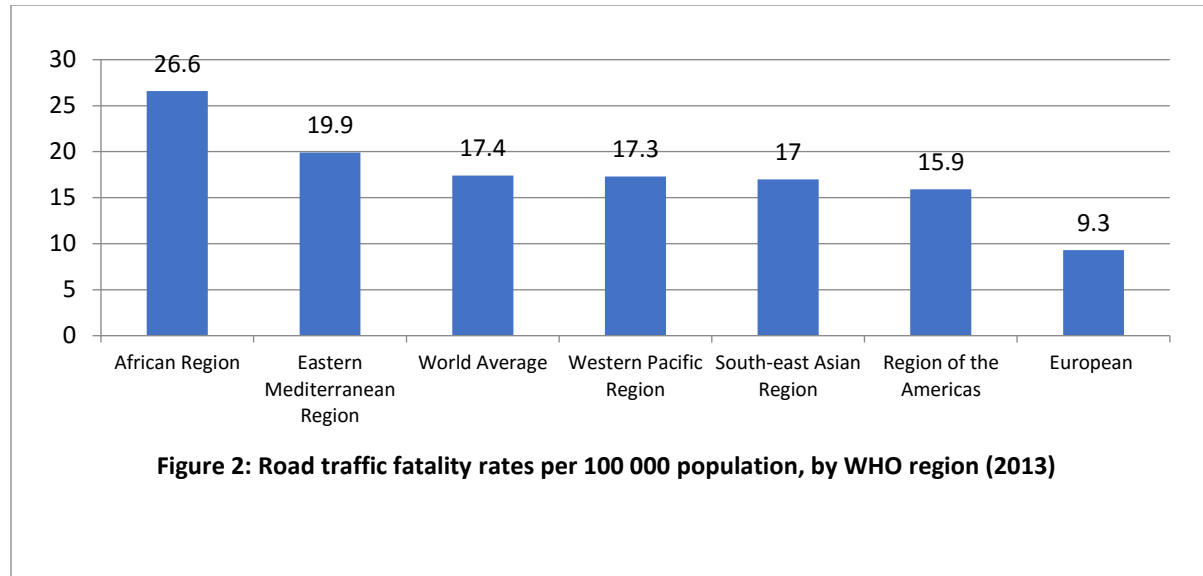
According to World Health Organization, low- and middle-income countries possess about 54% of the world's vehicles, while 90% of deaths resulting in traffic accidents occur in these countries (WHO, 2017). Parallel to this fact, "Global Status Report on Road Safety 2015" clearly explains the inverse relationship between deaths in traffic accidents and the income level of countries (WHO, 2015).

As shown in Figure 1, the highest mortality in traffic accidents per 100,000 population is in low-income countries (24,1) and the least death is in high-income countries (9,2.). In the TRNC, the number of deaths in traffic accidents was between middle-income countries and high-income countries. A total of 49 people died in traffic accidents in TRNC with a population of approximately 300,000 in 2013. This corresponds to about 16 persons per 100,000 populations.



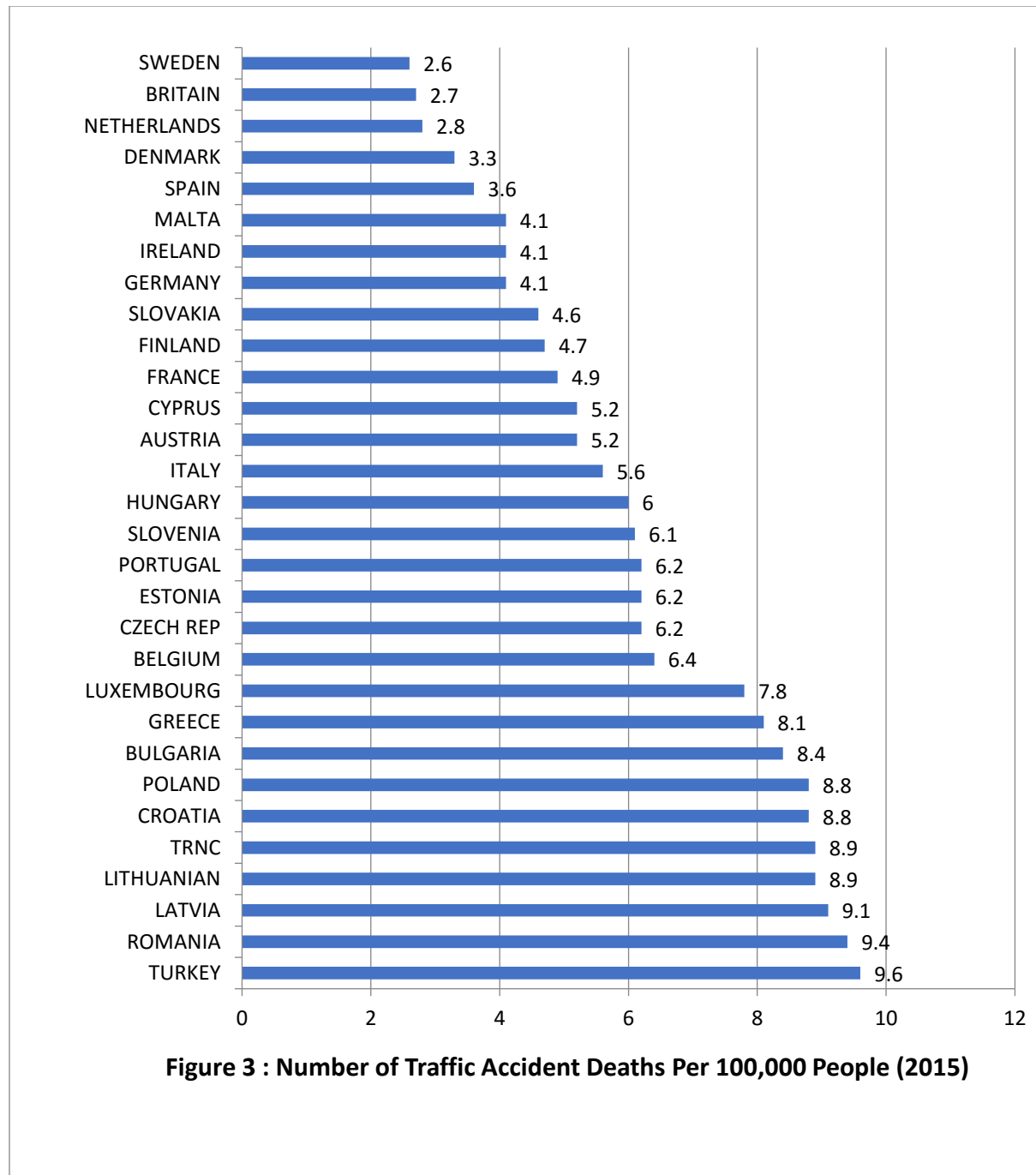
Source: WHO, 2015; TRNC State Planning Organization; TRNC Police Department

The similar pattern of death rates in traffic accidents that moves inversely with income status of countries is also observed when regions are categorized by WHO according to geography. The highest deaths in traffic accidents with 26.6 per 100,000 people were reported for Africa, While Europa experienced lowest rate of 9.3. (Figure 2).



Source: (WHO, 2015)

As can be understood above, TRNC is better than Africa in terms of traffic accidents, but it is in a position of backwardness when compared to Europe and high-income countries. When evaluated according to the data of 2015 TRNC is the fifth worst country in Europe among 30 countries in terms of deaths in traffic accidents. While improvement was observed compared to 2013, 8.9 deaths in traffic accidents per 100,000 people in 2015 made TRNC fifth worst European Country. Nevertheless, the presence of countries that managed to minimize traffic problems in Europe is remarkable. These countries consisting especially of Sweden, Britain and Netherlands became successful in reducing mortality rate in traffic accidents less than 3 per 100000 people (Figure 3).



Sources: 1- (Eurostat ,2017a; Eurostat ,2017b)

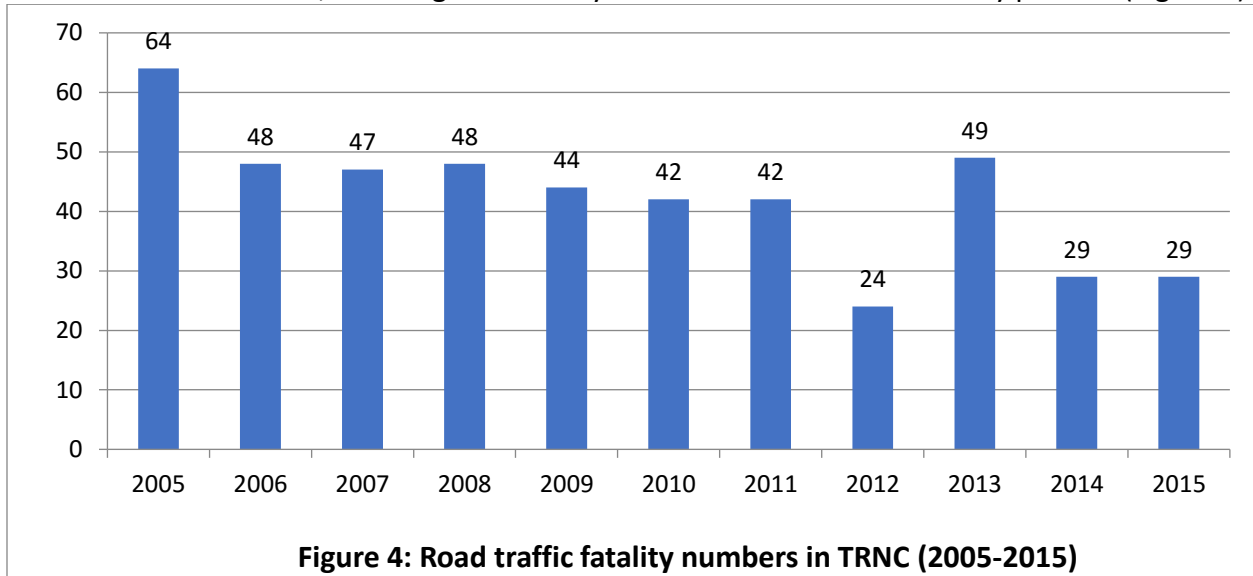
2- TRNC Police Department

3- (Department of Traffic Safety, 2016)

Although the traffic system in the TRNC is behind European and high-income countries, it cannot be denied that significant progress has been made especially in the last decade.

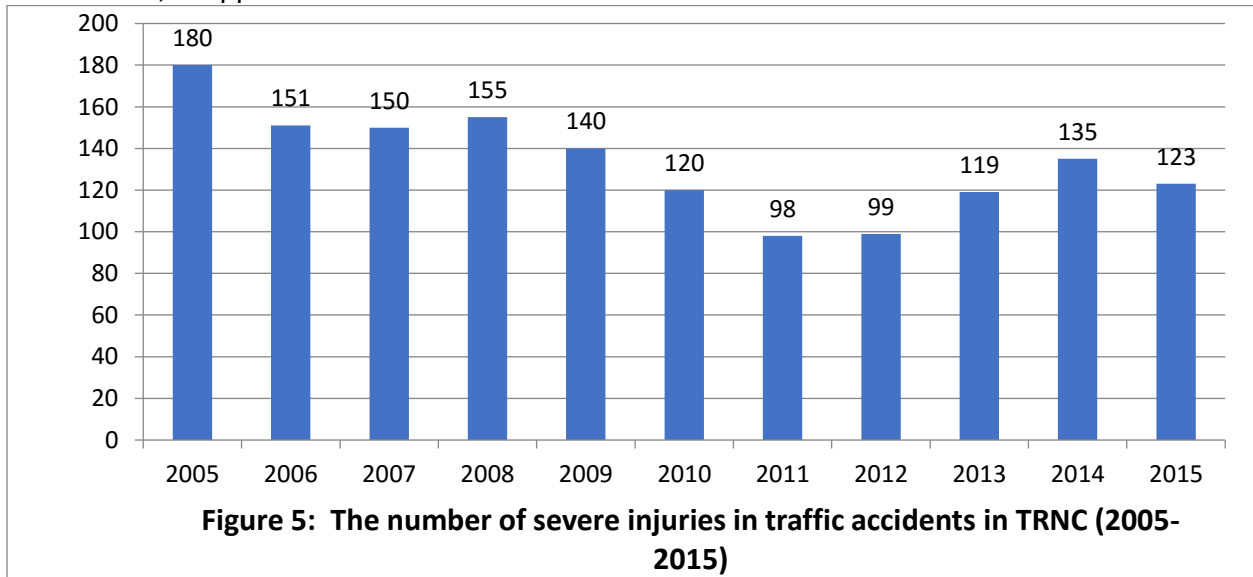
According to the data of the State Planning Organization, the population of the TRNC being 220289 in 2005 rose to 326158 in 2015. Considering factors such as the number of vehicles, the insufficient public transport, and increased traffic intensity the decline in the number of deaths

and serious injuries in traffic accidents within 10 years can be regarded as appreciable achievement. As a general trend, the number of deaths in traffic accidents in TRNC declined from 64 in 2005 to 29 in 2015, meaning that fatality rate decreased more than fifty percent (Figure 4).



Source: TRNC Police Department

Parallel to the fall in traffic accidents the number of severe injuries in traffic accidents also decreased as shown in Figure 5. Such that, the number of severe injuries in traffic accidents being 180 in 2005, dropped to 123 in 2015.



Source: TRNC Police Department

Who is The Chief Responsible for Traffic Accidents?

According to 419 accident report which resulted in death between 2005 and 2015, it was determined that 86.6% of those who were accused were men (Figure 6).

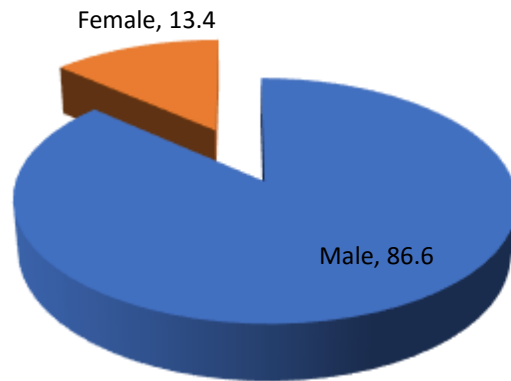


Figure 6: Gender of accused persons for fatal traffic accidents between 2005-2015 (%)

What are The Main Causes of Fatal Traffic Accidents?

According to the 400 accident reports that resulted in death between 2005 and 2015, the most important cause of traffic accidents is fast driving with 48,8%. This is followed by careless driving with 13.5%, not driving on the left with 11.8%, drunk driving at 11% and not stopping at the crossroads with 7.3% (Figure 7).

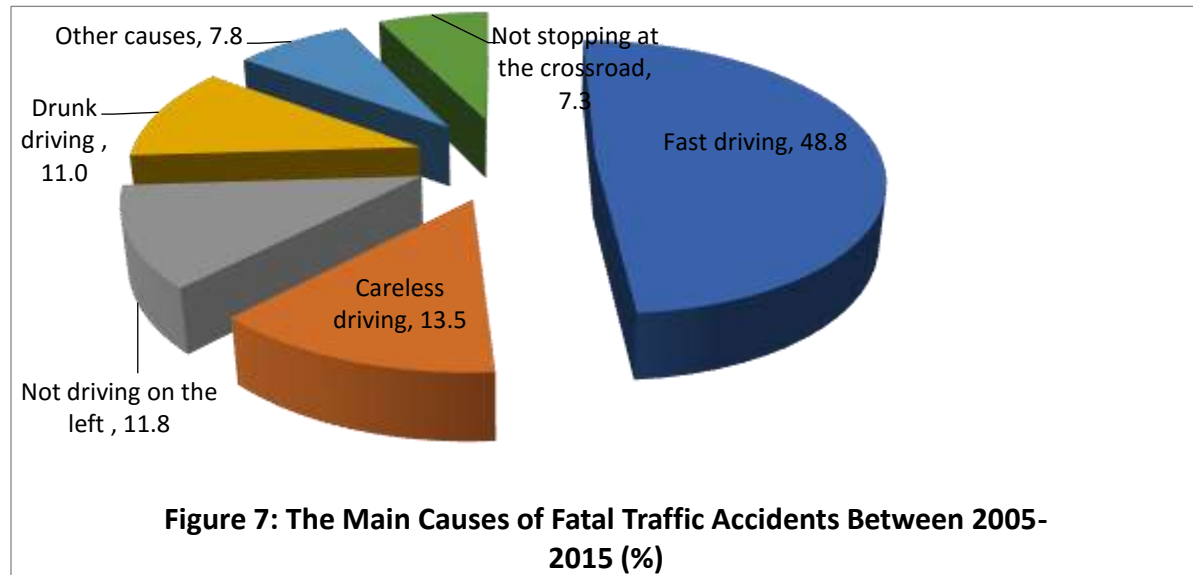


Figure 7: The Main Causes of Fatal Traffic Accidents Between 2005-2015 (%)

Where are the Locations of Fatal Traffic Accidents?

According to the 344 traffic accident reports that resulted in death between 2005 and 2015, 57 % of accidents took place on straight road. This is followed by corner on the road with 31,4 %, and 9,3 % with crossroads as shown in Figure 8.

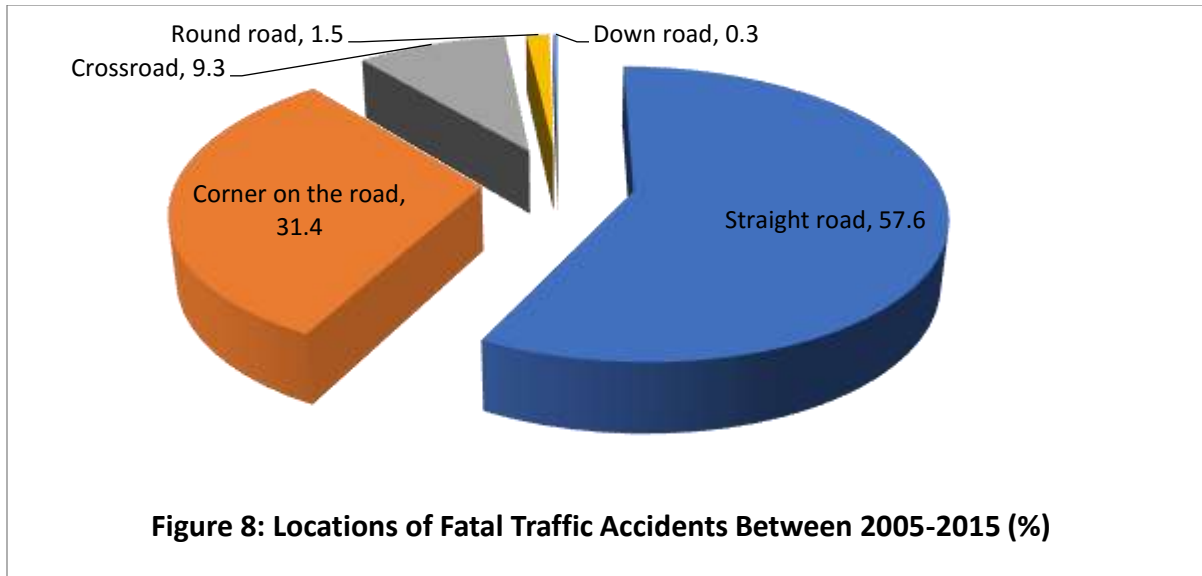


Figure 8: Locations of Fatal Traffic Accidents Between 2005-2015 (%)

What about the Driver's License Status of the Accused Persons in Fatal Traffic Accidents?

According to traffic accident reports that resulted in death between 2011 and 2015, the majority (35 %) of accused persons have between 1-5 year driver's licenses. This is followed by those having 6-10 year driver's licenses with 22,9 %. It is remarkable that the percentage of accused persons not having driver's licence is only 6.6 (Figure 9).

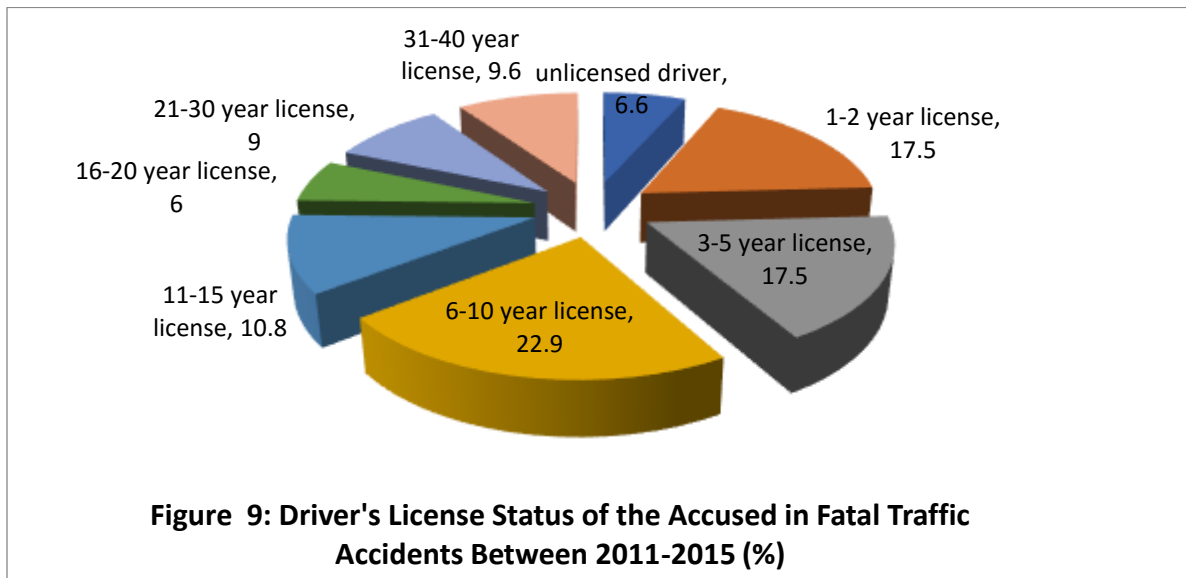


Figure 9: Driver's License Status of the Accused in Fatal Traffic Accidents Between 2011-2015 (%)

What about the Age of the Accused Persons in Fatal Traffic Accidents?

According to traffic accident reports that resulted in death between 2011 and 2015, the majority (27,5 %) of accused persons were within the age group of 18-25. This is followed by those having age group between 26-30 with 17 % and age group between 31-35 with 12,4 % (Figure 10).

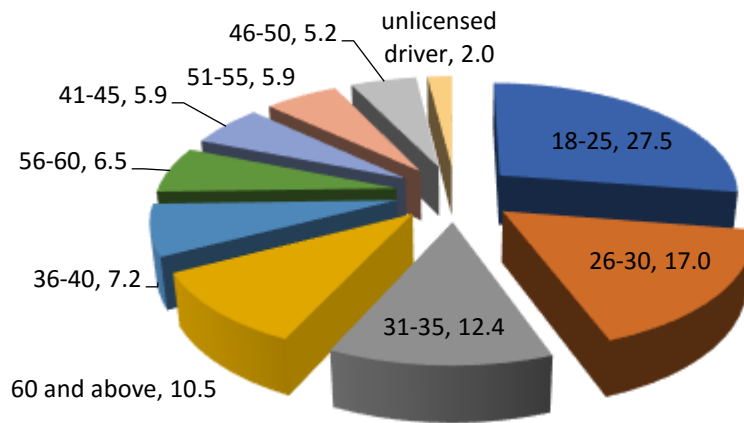


Figure 10 : Age of the Accused in Fatal Traffic Accidents Between 2011-2015

What about the Education of the Accused Persons in Fatal Traffic Accidents?

According to traffic accident reports that resulted in death between 2011 and 2015, the majority (51,7 %) of accused persons had the education of high school. This is followed by university education with 25,6 % and secondary school with 12,7 % (Figure 11).

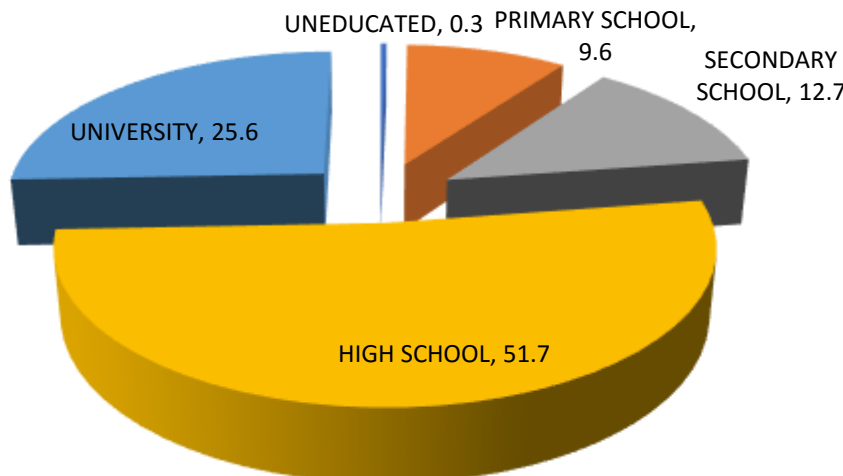


Figure 11: Education of the Accused Persons in Fatal Traffic Accidents Between 2011-2015

Conclusion

As a conclusive remarks, TRNC as an internationally unrecognized European country has a bad (less than the desired level) traffic structure compared to Europe even though it has succeeded a remarkable progress during the last decade. In this respect, the main causes and features of traffic accidents are expected to give important hints of traffic measures.

When statistically evaluated the main causes and their demographic features of severe traffic accidents in TRNC are as follows.

- The most important cause of traffic accidents is fast driving. However, main motives behind fast driving should be examined before taken measures of reducing speed.
- The location of severe traffic accidents are mainly straight road, corner on the road and crossroads respectively. This shows that the traffic infrastructure should be revised and re-planned.
- Inverse relationship has been observed between the severe traffic accidents and driver's licenses period (experience)
- Inverse relationship has also been observed between the severe traffic accidents and the age of accused persons. The age of accused persons can also be accepted as the experience of drivers similar to driver's licenses period.

As can be understood above TRNC should take urgent action to improve traffic. However, these measures need to be professionally and systematically planned and implemented. Such that, transportation master plan and traffic master plans should be prepared and professionally implemented as can be witnessed in modern/developed countries. Traffic measures should firstly take five risk factors of traffic into account and Indispensable elements of traffic which are roads, the environment, vehicles and road users, and the possible events of their interaction. In this context, modernization of vehicle and road quality, making traffic education more professional and institutionalized, more effective legislation and enforcement for preventing factors causing distraction and/or creating danger like speed, alcohol, belt, helmet and mobile phones should mainly constitute the elements of these traffic measures.

References

- Bahadorimonfared, A., Soori, H., Mehrabi, Y., Delpisheh, A., Esmaili, A., Salehi, M., & Bakhtiyari, M. (2013), "Trends of fatal road traffic injuries in Iran (2004–2011)", *PLoS one*, 8(5):e65198.
- Celik, A. K., & Oktay, E. (2014), "A multinomial logit analysis of risk factors influencing road traffic injury severities in the Erzurum and Kars Provinces of Turkey", *Accident Analysis & Prevention*, 72: 66-77.
- Çelik, A. K., & Senger, Ö. (2014), "Risk factors affecting fatal versus non-fatal road traffic accidents: the case of Kars province, Turkey", *International Journal for Traffic and Transport Engineering*, 4(3): 339-351.
- Department of Traffic Safety. (2015), *Traffic Accidents Summary Report 2014*, Republic of Turkey Department of Traffic Safety, Online Available: <http://www.kgm.gov.tr/SiteCollectionDocuments/KGMdocuments/Trafik/TrafikKazalariOzeti2014.pdf>; April 18, 2017. (In Turkish)
- Department of Traffic Safety. (2016), *Traffic Accidents Summary Report 2015*, Republic of Turkey Department of Traffic Safety, Online Available: <http://www.kgm.gov.tr/SiteCollectionDocuments/KGMdocuments/Trafik/TrafikKazalariOzeti2015.pdf>; April 18, 2017. (In Turkish)
- Eurostat. (2017a), *Total population, Candidate countries and potential candidates*, Online Available: <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&pcode=tgs00027&language=en> ; April 18, 2017.

- Eurostat. (2017b), *Population on 1 January by age group, sex and level of human development of the country of birth*, Online Available:
http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=migr_pop8ctb&lang=en;
April 18, 2017.
- Gebru, M. K. (2017), "Road traffic accident: Human security perspective", *International Journal of Peace and Development Studies*, 8(2): 15-24.
- Heydari, S. T., Hoseinzadeh, A., Ghaffarpasand, F., Hedjazi, A., Zarenezhad, M., Moafian, G., ... & Ahmadi, S. M. (2013), "Epidemiological characteristics of fatal traffic accidents in Fars province, Iran: a community-based survey", *Public health*, 127(8): 704-709.
- Heydari, S. T., Sarikhani, Y., Moafian, G., Aghabeigi, M. R., Mahmoodi, M., Ghaffarpasand, F., ... & Hoseinzadeh, A. (2013), "Time analysis of fatal traffic accidents in Fars Province of Iran", *Chinese journal of traumatology*, 16(2): 84-88.
- Lankarani, K. B., Heydari, S. T., Aghabeigi, M. R., Moafian, G., Hoseinzadeh, A., & Vossoughi, M. (2014), "The impact of environmental factors on traffic accidents in Iran", *Journal of injury and violence research*, 6(2):64.
- Moafian, G., Aghabeigi, M. R., Hoseinzadeh, A., Lankarani, K. B., Sarikhani, Y., & Heydari, S. T. (2013), "An epidemiologic survey of road traffic accidents in Iran: analysis of driver-related factors", *Chinese journal of traumatology*, 16(3): 140-144.
- Mehmandar, M., Soori, H., Amiri, M., Norouzrad, R., & Khabzkhooob, M. (2014), "Risk factors for fatal and nonfatal road crashes in iran". *Iranian Red Crescent medical journal*, 16(8):e10016-e10016.
- Sutlovic, D., Scepanovic, A., Bosnjak, M., Versic-Bratincevic, M., & Definis-Gojanovic, M. (2014), "The role of alcohol in road traffic accidents with fatal outcome: 10-year period in Croatia Split–Dalmatia County", *Traffic injury prevention*, 15(3): 222-227.
- Osoro, A. A., Ng'ang'a, Z., Yitambe, A. (2015), "An analysis of the incidence and causes of road traffic accident in Kisii, Central district, Kenya", *IOSR Journal Of Pharmacy*, 5,(9): 41-49
- WHO. (2015), *Global Status Report on Road Safety 2015*, World Health Organization, ISBN 978 92 4 156506 6,Italy.
- WHO. (2017), *Road traffic injuries*, Online Available:
<http://www.who.int/mediacentre/factsheets/fs358/en/>, May23, 2017.
- WHO. (2017). *Risk factors for road traffic injuries*; Road safety Training Manual Unit 2, Online Available:
http://www.who.int/violence_injury_prevention/road_traffic/activities/roadsafety_training_manual_unit_2.pdf?ua=1, April 19, 2017