

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

Vahid Baradaran^{1,*}, Mahdieh Maddahi²

Received: 2021/03/01

Accepted: 2022/03/12

Abstract

Identifying the most important human factors affecting driving violations and the occurrence of high-risk behaviours in driving will help to develop effective and deterrent programs. The aim and contribution of this study was to identify individual, social and environmental factors affecting the incidence of traffic violations by drivers and measure their effectiveness. Through the review of literature, these factors have been identified under variables including cultural capital, demographic variables, individual attitudes (social responsibility and rule of law), lifestyle, environmental factors and citizenship. Studying the effects of variables such as lifestyle, citizenship belonging, social capital distinguishes this paper from others. To measure the effect of variables, a questionnaire was used in which a number of appropriate observed variables were designed for each identified factor. The questionnaires were randomly distributed in the drivers' community of Tehran (248 samples) and after examining the validity and reliability of the research tool, descriptive and inferential statistical analyses including structural equation analysis (partial least squares method) were used to test the research hypotheses. The results of the analysis show that citizenship, attitude, environmental factors and cultural capital have the greatest impact on the rate of traffic violations. Also, the rate of traffic violations in different groups of drivers with different demographic characteristics is different. Planning to improve the attitude and culture of drivers by emphasizing the citizenship factor is one of the ways to reduce the number of violations. The results of this study can help policymakers to design training and tests for reducing traffic violations.

Keywords: Traffic Violations, Personal Factors, Social Factors, Environmental Factors, High-risky Behaviour, Risky Driving

* Corresponding author. E-mail: v_baradaran@iau-tnb.ac.ir

¹ Department of Industrial Engineering, College of Engineering, Islamic Azad University, Tehran North Branch, Tehran, Iran.

² Department of Industrial Engineering, College of Engineering, Islamic Azad University, Tehran North Branch, Tehran, Iran.

1. Introduction

Traffic accidents, as the eighth global cause of death [World Health Organization, 2018], often cause irreparable material and non-material damage to societies and its severe social, cultural and economic effects severely affect human societies [Lucidi et al., 2019]. According to the World Health Organization (WHO) in 2016, about 1.35 million people worldwide lost their lives in traffic accidents. The share of developing countries is estimated at about 80% and developed countries at 7% [World Health Organization, 2018]. Accidents are also predicted to be the fifth leading cause of death in the world by 2030 [Pompili et al. 2012].

This is while traffic accidents with about 16 thousand people in 2016 [World Health Organization, 2018], is the second leading cause of death in Iran and on average in Iran for every ten thousand cars, 7.2 people die annually are lost in such incidents [Eini and Soori, 2015; Shirmohammadi et al., 2018]. In terms of traffic fatalities, Iran is one of the countries in the dangerous red zone in road driving and ranks fifth in the world [Aleemran and Aleemran, 2015]. Accident costs are estimated to be more than 7% of GDP [Mohammadzadeh Moghadam et al. 2018]. In addition to material damages, the adverse social and psychological consequences of accidents and casualties in Iran are very high and thought-provoking [Varvaei and Fattahi, 2016]. Also, the number of road accidents in Iran is twenty times higher than the global average and 2.5% of road accidents in the world occur in Iran. Therefore, the issue of safety on the roads and streets of Iran, like other developing countries, is one of the most important and vital issues.

Due to the significant damage caused by traffic accidents and the high volume of these accidents, the study of factors affecting the occurrence of traffic accidents and the development of effective programs to prevent their occurrence is one of the important global

and regional issues to strengthen public safety. Numerous studies have been conducted on the analysis of traffic accidents and the identification of factors and the development of ways to deal with this problem in the field of behavioral and statistical sciences. Factors such as the quality of transportation infrastructure, the quality of vehicles and human factors are among the most important factors influencing the occurrence of traffic accidents [Jiang et al. 2018; Hong et al. 2019]. Past research shows that among various factors, the share of human factors as the most important factor in accidents is estimated at 75% [Mihelj et al. 2018; Wang et al. 2018; Lucidi et al. 2019] and this amount has increased to about 94% in recent years [Akbari Chermahini et al. 2018; Nadimi et al. 2021]. Most previous research has examined the impact of road characteristics, environmental conditions such as weather and daytime weather, and vehicle breakdowns on accidents [Zhang et al. 2016]. However, due to the difficulty of collecting data on human and behavioral factors, such factors have been less studied [Hong et al. 2019]. However, in recent years, the trend of research in this field has been increasing [Lucidi et al. 2019].

Driving for humans is a complex activity in which cognition and decision-making operations must be performed simultaneously, or in other words, driving requires the rapid coordination of the driver's sensory, motor and cognitive abilities [Akbari Charmahini et al. 2018]. Therefore, various components may be effective in the driver's misunderstanding of the situation and incorrect decision based on it. Under these circumstances, drivers experience high-risk and unsafe behaviors such as aggressive, angry and vengeful, violent, and stressful driving [Scott-Parker et al. 2018]. The main causes of human errors in the occurrence of traffic accidents are: (1) inability to perform the desired actions to achieve certain goals or inability in the process of recognizing and making decisions; (2) Lapse include inattention, defects in information processing,

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

and forgetfulness [Reason et al. 1990]; (3) Violation of (and disregard for) traffic laws and regulations [af Wåhlberg et al. 2015; Khattak et al. 2002] include the driver's informed decision to disobey the rules; and (4) The driver's physical condition, such as age and gender [Chen and Zhang, 2016]. Research shows that most of the causes of traffic accidents (more than 60% of fatal accidents involving two-wheeled vehicles) are related to non-compliance with driver regulations and the risks of issues such as crossing red lights and non-compliance with speed limits on the streets, which are manifestations of drivers violating the law, are higher. [Zhang et al., 2016]. Therefore, paying attention to the issue of observing traffic rules and regulations is one of the most important approaches to increase safety in communities [du Plessis et al., 2020]. Because of the importance of this factor, many countries have used crime tools to manage and reduce traffic violations and ultimately reduce traffic accidents [Sagberg and Ingebrigtsen, 2018]. But identifying the factors affecting drivers 'non-compliance with rules and regulations will help to develop more effective and deterrent solutions and programs along with offenders' crimes to avoid dangerous traffic behaviors and reduce accidents [Holman and Popusoi, 2018]. Although the researches have been done on this subject in the past, but the affecting factors vary depending on the cultural, social, economic and geographical context of societies, its extent and type in different societies.

Non-observance of traffic laws is rooted in the socialization and institutionalization of social laws among citizens. Therefore, rooting out the causes of traffic violations in a metropolis such as Tehran, where a large number of vehicles are flowing through the roads, can be an effective step to reduce the problems of the intra-city transportation system. Undoubtedly, in spite of efficient laws and observance of traffic rules and regulations, some of the problems and difficulties in the intra-city transportation

system are eliminated. By observing efficient laws and institutionalizing the spirit of law among the people of the society, social order prevails in the society and this causes the survival and continuity of urban life and the development of the country.

The main purpose of this article is to identify the most important factors affecting the non-observance of laws by drivers in Iran. Measuring the impact of each of the potential factors on traffic violations and prioritizing the factors along with providing a suitable methodology for future research in this area is another goal of this study. The purpose of this paper is to identify factors such as cultural, social and psychological factors of drivers and environmental factors affecting drivers' disregard for traffic rules and their lawlessness based on a review of the relevant literature in the form of a comprehensive conceptual model. So, the main research question of the paper is, what are the factors affecting the non-observance of laws and regulations in the culture of Iranian drivers? Identifying the factors affecting traffic violations based on a comprehensive and in-depth review of the literature and adding factors such as life style, citizenship or social belonging, cultural capital to previous research models is the main contribution of this paper. The proposed model can be used to evaluate the effects of different factors and compare them in different cultures. Another contribution is measuring the impact of various factors on the occurrence of high-risk behaviors in Iranian drivers.

In the rest of this article, Section 2 first provides the literature review, research hypotheses, and conceptual model. Section 3 then introduces the research methodology. Section 4 discusses the model estimation results. Section 5 concludes this study together with discussions about future research.

2. Literature Review

2.1. Background

Izadi et al. (2021) studied the most important factors affecting traffic accidents based on the Drivers' Behavior Questionnaire (DBQ) and Emotionality Activity Sociability (EAS). The results indicated that there is a remarkable relationship between driving history and anger management. The drivers with more driving experience can manage their anger. Zolali et al. (2021) investigated the Iranian drivers' characteristics and the factors can affect the drivers' speed selection behavior. The drivers who selected speeds higher than the 85th percentile of speed experienced at least one accident. Tavakoli Kashani et al. (2021) showed the speed violations have a significant effect on road safety. They emphasized more attention to female and old drivers and their license type to reduce the rural crashes. Karimi et al. (2021) studied the personality impact on driving and crashes. Findings show that the behavior and performance of drivers can be related to their personality and individuals higher in neuroticism report more dangerous behavior.

Findik et al. (2020) investigated the role of individual values in explaining aggressive driving in samples from five countries differing in their status on aggressive driving and traffic safety. The results showed that values are related to aggressive driving (i.e., aggressive warnings, hostile aggression and revenge) of self and not to perceived aggressive behaviors of others. Stanojević et al. (2020) determined how lifestyle dimensions of male motorcyclists influence the risky behavior of motorcyclists and their involvement in traffic accidents. They showed that there is a significant correlation between lifestyle and risky behavior of the riders and their involvement in traffic accidents. Shareef et al. (2020) showed the impulsiveness of the drivers negatively correlate with the drivers' ages and positively correlate with number of crashes; while the driving aggressiveness significantly correlate with number of crashes and negatively with gender and age of the drivers. Nguyen-Phuoc et al.

(2020) studied the correlation between unhealthy lifestyle and risky riding behaviors among app-based motorcycle taxi riders in Vietnam. The statistical analysis in this research showed that riders who regularly smoked and drunk alcohol were more likely to engage in the risky behaviors of smoking while riding and drink riding. Abdi Kordani et al. (2020) showed that the driver's job has significant effects on their driving behavior.

Lucidi et al. (2019) developed a model for predicting the risk of traffic accidents based on the effect of drivers' personality and attitudes on high-risk behaviors in different age groups. In fact, they tried to examine the effect of the personality and attitudes of different age groups of drivers on high-risk behaviors, violations of traffic rules and regulations, and the occurrence of traffic accidents. They examined the personality of drivers from four perspectives: anxiety, excitement, nervousness and altruism in the Italian driving community. The results of their research showed that driver attitude has a direct and negative effect on violations in all age groups. Hong et al. (2019) investigated the effect of non-compliance with traffic laws and other human, road and vehicle factors on the probability of a truck accident on a highway in South Korea. The results of their research show that the physical condition of the driver along with psychological issues is effective in non-compliance with the rules and non-compliance with the rules has a direct impact on the occurrence of traffic accidents by trucks. Disassa and Kebu (2019) examined the effect of three dimensions of driver personality including nervousness (anger when observing other drivers' unusual behavior), altruism (driver's willingness to cooperate and respect for others) and injustice (reaction to unacceptable social behaviors) and the effect of use alcohol on the occurrence of dangerous traffic behavior in Ethiopia and confirmed the effect of the studied variables on non-compliance with traffic rules or display of dangerous driving behavior. Asadamraji et al.

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

(2019) examined the demographic and cognitive characteristics have an impact on driver perception.

Hussain and Shi (2019) examines the effects of sociodemographic characteristics, driving training, and driving license on aberrant driving behaviors of Pakistani drivers. They showed that driving training had a significant effect on self-willed violations/errors, whereas driving license showed a significant effect on distracted violations. In addition to examining the effect of variables such as age, gender, experience, and personality traits, Stanojević et al. (2020) examined the effect of drivers' lifestyles on the occurrence of dangerous behavior and violations of motorcyclists' rules and regulations. They measured the studied variables using a questionnaire and with statistical analysis showed that there is a high correlation between drivers' lifestyle and dangerous behavior of motorcycle riders. Holman and Popusoi (2018) studied the relationship between driver ethics and respect for traffic rules with the mediating role of driving style in the Romanian driving community. In fact, their main hypothesis is the effect of drivers' moral views on their choice of driving style and, consequently, the effect of driving style on repeated violations of the law. Statistical analysis of the questionnaires measuring the study variables showed that people who choose their driving style, including accurate, anxious, risky, nervous, etc., based on the desired moral attitude, more respect the rules. Akbari Charmahini et al. (2018) investigated the effect of the attention dimension of human cognition factor on the observance of traffic laws. They measured the mean variables of response time, standard deviation of response time and error rates in response as criteria of attention in a number of drivers in Iran and showed that the criteria of attention are different in people with different educations. They showed that men who do not violate pay more attention than those who have a history of transgression. Dumitru et al. (2018)

and Murphy et al. (2019) examined the effect of smartphones on delinquent driver behavior and showed that smartphones often distract drivers while driving and increase the number of accidents.

Shi et al. (2018) studied differences in demographic, behavioral, driving behaviors, driving attitudes, driving skills, and personality characteristics of drivers between two groups of problem drivers (frequent violations or more accidents) and safe drivers (fewer violations or accidents) in China. Results showed that age and frequency of driving were significantly correlated with their violations and accidents. The results suggested that attitude and driving skill were significant factors that influence penalty points and accidents of drivers in China. Atombo et al. (2017) also examined the factors influencing traffic violations in Ghana and showed that driver personality, economic status, marriage, gender, attitude, and interest in speed can potentially be influential. Yoh et al. (2017) examined the role of foreign driver characteristics in complying with traffic laws and accidents in Japan. Their analysis showed that the type of violation is different for drivers of different nationalities in this country. Therefore, they concluded that the nationality of the country also affects the type of violation and observance of the law. Hadadi Sanie et al. (2017) in a study identified aggression, control of emotions, prejudice and attention to emotional stimuli as the cause of high-risk drivers' behavior and showed that aggression is the most important cause of high-risk drivers' behavior (mistakes and violations of driving rules) in the city of Ahvaz. Zhang et al. (2017), in addition to demographic variables (gender and age), identified five personality traits of drivers as potentially influential factors in driving with dangerous behavior and showed that conscientiousness have a negative correlation with aggression and hostile revenge of drivers. Zhang et al. (2016) identified traffic violations as a growing and important problem in China. They identified cite factors affecting

traffic violations by emphasizing traffic light violations including human factors (such as gender, age, drunk driving, talking to passengers, etc.), vehicle specifications (such as vehicle size and type) road and route characteristics (such as road type and traffic condition) and environment (such as temperature and precipitation condition). The results of their research show that the type of road and road lighting in different age groups have different effects on compliance with the rules. Age and occupation have also been identified as two important factors.

A study of the research background shows that human factors and non-compliance with traffic laws as the most important cause of traffic accidents in recent years have been considered by many researchers. Due to cultural differences in different countries, the issue of factors affecting non-compliance with traffic laws in different countries and regions has been studied [Findick et al., 2020]. Using the results of research in this field in one country is not appropriate for other countries [Atembo et al., 2017]. Therefore, the necessity of conducting the present study in Iran becomes more apparent. Many previous studies have examined only limited aspects of factors such as personality variables, age, gender [Akbari Charmahini et al. 2018] and it is necessary to provide a comprehensive model that examines all potential factors. While a number of articles have studied in detail the specific type of offense or the offense committed in a particular location. In addition to examining the effects of variables that other similar studies have conducted on traffic violations, the effects of variables such as lifestyle, citizenship belonging, social capital in a comprehensive model have been studied.

2.2. Traffic Violations

Traffic violations or, according to some researchers, the occurrence of dangerous behaviors or aberrant driving behavior in driving can be considered as a subset of social deviations in which the rules and regulations of

traffic and driving by the driver of all types of vehicles, including cars, vehicles heavy, motorcycles, bicycles, etc. are violated. In addition to drivers, violations of the law by pedestrians are also considered as traffic violations [Zhang et al. 2016]. Traffic violations are divided into two categories; intentional offenses committed with the intent to harm or break the law are a form of sabotage and unintentional violations that unintentionally lead to violations of the law. The meaning of traffic violations in this article is the conscious and unintentional decision of the driver of the vehicles not to comply with the traffic rules and regulations. Exceeding the speed limit, passing a red light, forbidden entry, etc. are examples of traffic violations.

2.3. Research Conceptual Model

As shown in the review of the research background, a lot of research has been done on the role and impact of social and demographic factors (such as age and education) and human factors (such as personality and cognitive abilities) on non-compliance with traffic rules and regulations in communities with different cultures. In this research, the potential components affecting the rate of traffic violations and drivers' lack of attention to law enforcement are divided into individual, social and environmental factors. Individual factors include driver demographic variables such as age, education, income, marital status and occupation, which have been identified as potential factors in almost all similar studies. However, researchers such as Atembo et al. (2017), Holman and Popusoi (2018), Hussein and shi (2019), and Stanojević et al. (2020) have shown that drivers' demographic variables influence risky behaviors (Hypothesis 1). But there are various arguments that can be accepted about the effect of demographic variables on the rate of drivers' traffic violations. For example, the adventurous spirit of young people who do not have high driving experience, compared to drivers who are older and have more driving experience, can be a

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

reason for the difference in offenses between different age groups.

Another group of factors is a person's personality and attitude factors. Factors such as cultural capital, lifestyle, attitude and social belonging are among these factors. People with cultural differences exhibit different behaviors under the same circumstances. Therefore, culture can be considered as one of the effective factors on the occurrence of behavior. The cultural capital component is an approach to the representation of cultural phenomena that incorporates the intrinsic characteristics of these phenomena [Breinholt and Jæger, 2020]. Cultural capital is also one of the most influential social components in societies that plays a role in determining individual attitudes. Cultural capital can be considered as a comprehensive variable as a very heterogeneous and intangible asset to show cultural differences with different behaviors [Crociata et al. 2020]. From the perspective of culture, capital is defined to conceptualize cultural understanding and knowledge of the objects and ideologies [Korkeila and Hamari, 2020]. In one sentence, cultural capital is defined as an asset embodying cultural value [Throsby, 1999]. Individuals as possessing cultural capital if they have acquired competence in society's high-status culture [Mahar et al. 1990]. Cultural capital is defined as the cognition and perception of transcendent culture and the arts, having good taste and appropriate practices [Throsby, 1999]. In other words, cultural capital is a set of relationships, information, and privileges that an individual uses to maintain or acquire a social position. Zolifalifam and Aghaei (2014) showed that there is a significant relationship between cultural capital and social commitment, so that one of its dimensions is legalism and compliance with laws and regulations. Therefore, the difference in cultural assets of potential drivers can affect their compliance with traffic rules and regulations, which is

considered as a hypothesis in this study (Hypothesis 2).

Lifestyle is a more or less comprehensive and coherent set of behaviors and activities of an individual that not only meets his current needs, but is also a specific narrative that he chooses for his personal identity and integrates in front of others [Lubowiecki-Vikuk et al. 2021]. Demographic characteristics of a person alone do not reflect a person's lifestyle, but lifestyle is a set of habits, attitudes, tastes, moral standards, economic level, etc. that make a person way of living together [Furman et al, 2020]. In other words, lifestyle is an important criterion for a person's identity. Lifestyle has two dimensions, positive or negative, or in other words, healthy or dangerous. A healthy lifestyle is a set of choices that a person chooses according to his social status, and these choices are based on his structural and individual situation. Mikaeili et al. (2019) and Stanojević et al. (2020), Nguyen-Phuoc et al. (2020) showed that lifestyle is one of the most important and effective criteria for predicting people's tendency to high-risk driving behaviors. It seems that drivers with different lifestyles have different tendencies to perform high-risk driving behaviors and violations due to differences in habits, tastes and other factors that exist in the definition of lifestyle variables. Therefore, as a hypothesis (Hypothesis 3), the lifestyle of drivers is a factor affecting their disregard for traffic laws. Social belonging, a feeling of acceptance and membership in a group [Weaver et al. 2020]. Social belonging makes one feel closer to and more connected with other people or promotes the experience of having and enjoying positive social bonds [Shnabe et al. 2013]. A sense of citizenship or social belonging as a basic human need is a feeling that a person acquires as a result of interacting with others by living in a place and time shared with others. This sense underlies individual decisions about adjusting to a particular environment or matter. Social belonging makes one feel closer to and more connected with other people or promotes the

experience of having and enjoying positive social bonds [Shnabe et al. 2013]. This sense increases responsibility and social trust and leads to individual participation in society. There is a lot of evidence that this feeling reduces social anomalies and respect for others [Mobaraki and Salehi, 2012]. A sense of spatial belonging or belonging to a local community, which refers to an individual's attachment to society, increases mental health, sense of identity, and decreases deviant behaviors in society [Ní Laoire et al. 2010]. Therefore, if drivers' sense of belonging to the community in which they live increases, respect for other people in the community and, consequently, respect for traffic laws will also increase. The hypothesis of the relationship between a sense of citizenship and respect for the law is another hypothesis of this research (Hypothesis 4).

Attitude is one of the main and influential variables on the occurrence of a behavior by an individual [Omran et al., 2021]. Attitude towards behavior is defined as the degree of positive and negative evaluation of an individual from the outcome and performance of behavior [Han and Kim, 2010]. Attitude includes a person's behavioral beliefs and judgments about the effects and consequences of behavior choice. Behavioral beliefs refer to the estimation of the probability of achieving the expected results after performing the desired behavior, and the purpose of evaluating the consequences is to evaluate the individual of the possible consequences of a particular behavior. The effectiveness of an individual's attitude toward performing a behavior has been investigated in many similar studies and models of behavioral analysis factors such as Theory of Planned Behavior. Tang et al. (2020) studied the interactions between cyclists' traffic violations and the enforcement strategies. They found the attitudinal factors (perceived relative benefit, relative public image cost, and cyclists' attitude towards risk) can affect the enforcement strategy's impacts on reducing cyclists' traffic violations. Therefore, the

degree of individual beliefs about the consequences and consequences of drivers from violations can also be the reason for their disregard for laws and regulations. The hypothesis of the effect of attitude on driving violations is another hypothesis of this research (Hypothesis 5).

Another group of factors that can potentially affect compliance or non-compliance with laws and regulations are environmental factors. Environmental factors are a set of factors that exist in the environment and around humans and affect drivers' misconduct. Atmospheric conditions, behavior of other drivers, route and vehicle conditions are among the items that have been identified and studied in previous research as factors influencing high-risk behaviors of drivers [Atombo et al., 2017; Zhang et al., 2016]. Therefore, the hypothesis of the influence of the environment on the individual's decision to disobey traffic laws is another hypothesis of this study (Hypothesis 6), which is derived from the results of other similar studies.

Based on the above arguments, the research hypotheses are formulated as follows. These hypotheses are also shown in Figure 1 as a conceptual research model:

Hypothesis 1: Individual factors affect the occurrence of and violations of traffic rules and regulations.

Hypothesis 2: Cultural capital of drivers is an effective factor in their respect for compliance with traffic laws and regulations.

Hypothesis 3: Drivers' lifestyle is one of the factors influencing the occurrence of high-risk behaviors.

Hypothesis 4: The degree of citizenship of drivers is a factor affecting traffic violations.

Hypothesis 5: Drivers' attitudes are an effective factor in their driving violations.

Hypothesis 6: Environmental factors affect the rate of traffic violations.

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

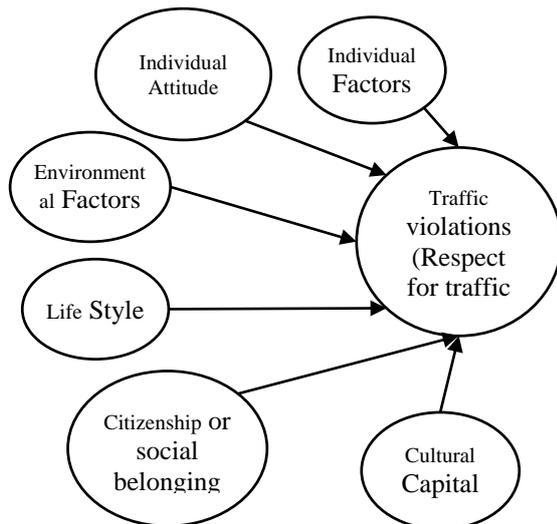


Figure 1. Conceptual Model

3. Method

3.1. Participants and Procedure

The present research is applied in terms of purpose and survey in terms of descriptive quantitative data collection method. The spatial scope of the statistical population of the study is limited to drivers in Tehran province in Iran. Also, the data collection period was from 2019-2020. The minimum sample size required for conducting the research was met with statistical relationships of 160 samples

$(0.25 \times (2Z_{0.25}) / 0.05 = 160)$. Sampling was random and the questionnaires were distributed manually and electronically on social networks. A total of 248 valid and usable questionnaires were collected from the distributed questionnaires.

3.2. Measures

Each of the components shown in Figure 1 is a latent or non-measurable variable. Latent variables are generally not directly measurable and must be measured by a set of observed variables. The questionnaire designed for this research consists of two parts. The first part includes the demographic variables of the respondents including age, education, gender, income, occupation, driving history, etc. The second part of the questionnaire includes the questions used in this study to measure the level of each of the latent variables. In Table 1, the observed variables of each of the latent variables are introduced. Except for questions 32, 36, and 37, the rest of the questions are evaluated on the Likert scale (1 to 5). For the excluded questions, different levels are considered, the answers to which can be converted to a range of one to five.

Table 1. Description of Variables

Latent Variable	Definition	Dimensions	Question	Symbol
Attitude	The degree of positive and negative evaluation of the individual of the outcome and performance of the behavior.	Social responsibility, rule of law	I believe in following the rules and regulations in driving.	Q ₁
			I feel remorse after being fined for traffic violations.	Q ₂
			Basically, I'm afraid of being fined for driving.	Q ₃
			People who obey the law are respected by others.	Q ₄
			Observance of the laws, regulations and rights of others leads to the excellence of society.	Q ₅
Cultural Capital	The set of relationships, information, and privileges that an individual uses to	Material and immaterial	I consider respect for the law as a sign of self-respect.	Q ₆
			I consider respect for the law as the cause of creating order, security and peace in the society.	Q ₇

Latent Variable	Definition	Dimensions	Question	Symbol
	maintain or acquire a social status.		I enjoy protecting the privacy of the law and trying to comply with it in a desirable way.	Q ₈
			I consider the observance of mutual rights of individuals as one of the most essential principles of social relations.	Q ₉
			I consider respecting the moral values and rights of others a skill of social interaction.	Q ₁₀
Individual personality	Characteristics of a person that regularly and permanently lead to the occurrence of certain behaviors by the person.	Anger, rage, stress, showing off	Basically, I'm not nervous while driving.	Q ₁₁
			While driving, if a driver offends me, I try to control my anger.	Q ₁₂
			By creating the rights of others, I create a relative peace for myself.	Q ₁₃
			I usually have stress while driving.	Q ₁₄
			I consider committing traffic violations such as speed as a sign of power and superiority over others.	Q ₁₅
Environmental	Environmental factors that encourage the driver to engage in risky behaviors.	Behavior of others, weather conditions, location	I generally do not pay attention to other drivers' behaviors while driving.	Q ₁₆
			On rainy and unfavorable days, I drive more carefully.	Q ₁₇
			I generally do not use high-traffic routes.	Q ₁₈
			In driving, I try to choose routes that have less control and supervision.	Q ₁₉
			I try to choose routes that reach the destination that are less risky.	Q ₂₀
Life Style	A way or style of living	Healthy and unhealthy lifestyle	I consider driving to be fun.	Q ₂₁
			I like driving.	Q ₂₂
			I consider it my religious duty to respect the rights of others while driving.	Q ₂₃
			I try to drive in calm and stress-free conditions.	Q ₂₄
			My family upbringing has affected the way I drive.	Q ₂₅
Citizenship	A sense of belonging to the community in which one lives.	Respect for citizenship rights	I consider the observance of citizenship rights as the basis of social life.	Q ₂₆
			I consider it my duty to try and participate in solving the problems of the city.	Q ₂₇
			I treat others the way I expect others to treat me.	Q ₂₈
			I consider the observance of citizenship rights while driving.	Q ₂₉

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

Latent Variable	Definition	Dimensions	Question	Symbol
Respect for traffic laws (rate of violations)	Observance of traffic rules and regulations and avoidance of high-risk traffic behaviors	Repetition of violations, disregard for laws, lawlessness	I consider the observance of citizenship rights as a promotion of my personality.	Q ₃₀
			During the years I drive, my driving violations are lower than others.	Q ₃₁
			On average, you are fined several times a month for violations.	Q ₃₂
			The number of my driving violation, or cases where I have not been fined, is low since I got my license.	Q ₃₃
			I usually pay attention to the signs and signs and follow them even if there is no supervision.	Q ₃₄
			I generally avoid speeding and overtaking.	Q ₃₅
			How much is your annual driving fine? How long has it been since your last driving violation?	Q ₃₆ Q ₃₇

3.3. Validity and Reliability

The validity of a measuring instrument is to ensure that the measuring instrument measures the desired characteristic to the desired extent. In this study, after preparing and designing the questionnaire, it was provided to a number of experts and academic experts to confirm its formal validity. The reliability of the questionnaire is to achieve the same results if a trait is measured with a questionnaire under the same conditions and at different times. One of the most common methods of measuring reliability is the calculation of Cronbach's alpha coefficient. In fact, this coefficient, which is between zero and one, measures the degree of internal correlation of questions (observed variables) of a latent component or variable. The calculation of this coefficient for some latent variables is less than optimal (more than 0.7).

Table 2. Reliability coefficients

Factor	Cronbach Alpha	Average Variance Extracted (AVE)
Attitude	0.682	0.531

Cultural Capital	0.734	0.672
Individual personality	0.801	0.749
Environmental	0.756	0.647
Life Style	0.832	0.754
Citizenship	0.754	0.623
Traffic violation	0.681	0.589

In order to ensure reliability, some questions of each structure that reduce the internal correlation of variables have been removed. In Table 2, the reliability coefficients are presented. The average variance extracted (AVE) is a measure of the amount of variance that is captured by a construct in relation to the amount of variance due to measurement error. The values higher than 0.5 indicate the validity of the structures.

3.4. Descriptive Analysis

53.1% of the sample were men. 58.1% of the respondents were married. 39.2% of respondents under the age of 30; 36.5%, in the age range of 30 to 40 years; 24.3% are over 40 years old. 7.4% of respondents with diploma and lower education; 26.3% have associate and bachelor's degrees and 33.8% have postgraduate education. 39.2% of the sample

studied employee job; 18.2% freelance; 14.2% of students; 12.2% housewife; 1/8 percent without a job; 3.4% had inner-city drivers and the rest had other occupations. Ownership is about 63% of private respondents. As it turns out; almost all sections of society are studied in the sample.

As presented in Table 1, three questions 32, 36 and 37 measure the violations of the drivers studied. More than 80% of the respondents have a driving history of more than 5 years and in the study sample there are people with all kinds of violations.

4. Data Analysis and Results

To test the research hypotheses and the conceptual model of the research (Figure 1) based on the collected data, partial least squares (PLS) approach, which is a variance-based path modeling technique that allows the hypotheses (the relationship between latent and observed variables) to be tested simultaneously, has been used. PLS is a statistical method that bears some relation to principal components regression and is used to find the fundamental relations between two groups of variables. The partial least squares approach is one of the structural equation approaches and a method for analyzing formative and reflective structures and is a comprehensive approach to test hypotheses about the relationships of observed and latent variables, especially when the number of markers of each factor is large and there is multiple alignment between them.

So, to examine the relationships between latent variables in figure 1, PLS approach is used. In designing the structural equation model of the present study, this approach has been used to estimate the loading factors and path coefficients. One of the strengths of the partial least squares method is its ability to analyze highly complex models and estimate the effect coefficients of variables even with limited sample sizes and abnormal distributions [Hair et al. 2017]. Therefore, due to the small size of the sample collected for this study and also the existence of latent variables in the model and the need to test the hypotheses and confirm the model, the partial least squares method is a suitable tool and is highly appropriate to the existing conditions.

In order to investigate the effect of different and effective components on the rate of traffic violations (conceptual model of research in Figure 1) and based on the measurement variables of each latent variable (Table 1) after removing the questions in the reliability assessment stage, the research path diagram according to Figure (2) designed. The path diagram shows the latent variables with a circle and the measurable variables of each factor with a square. The analysis of partial least squares based on the path diagram and the collected data for observed variables will measure the effect of latent variables on each other. In this study, SMART PLS2 software was used.

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

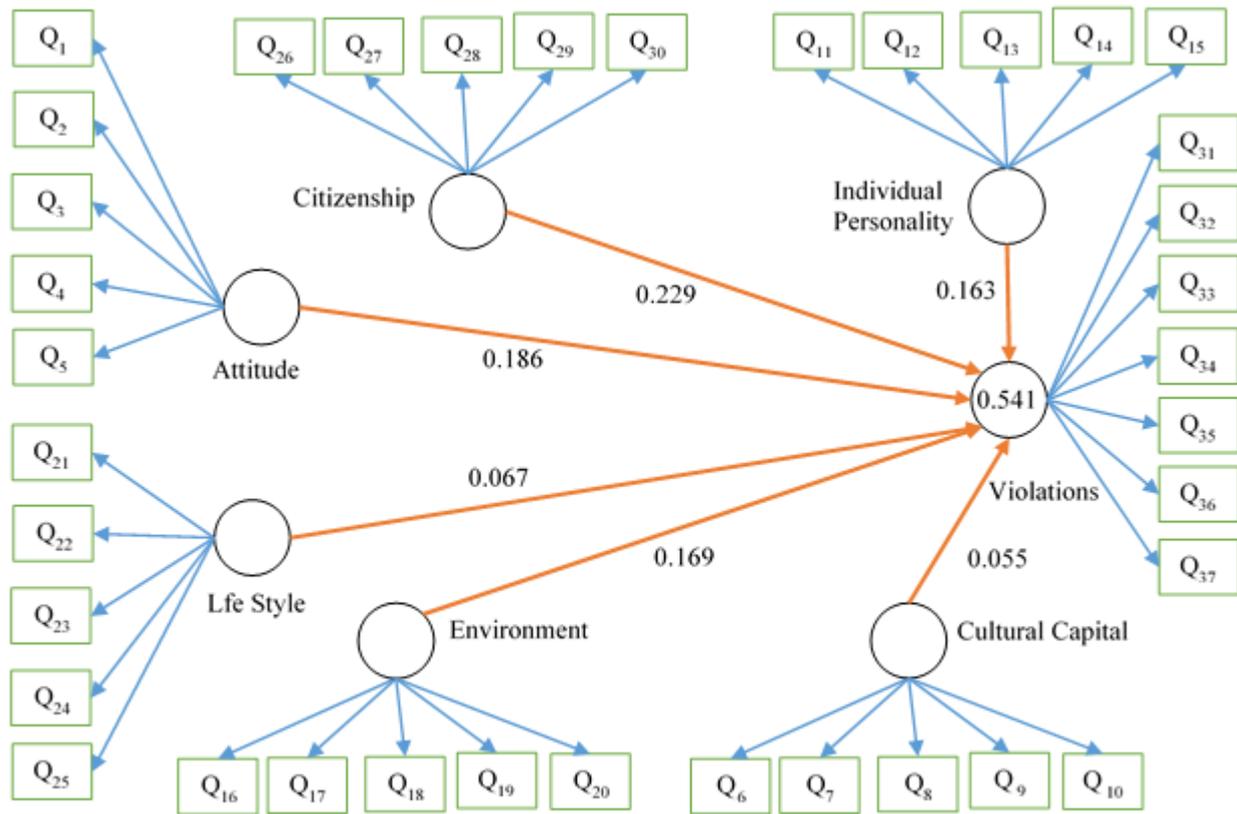


Figure 2. Path model

Figure 2 consists of two parts. The set of measurement models (models that determine the relationship between explicit and implicit variables) and the structural model (relationship between latent variables) are sub-models of the original model. A total of six latent variables are included in the model, for each latent variable a measurement model is considered and only one structural model is observed, which is the relationship between the latent variables. In fact, the structural model is the main model based on research hypotheses, while measurement models show how latent variables are measured. After implementing the partial least squares analysis algorithm, the model coefficients are shown according to Figure 2.

Segmental output analysis of structural models shows that all structures have the necessary validity and reliability. However, before the implementation of the statistical approach, the validity and reliability of the data collection

tool were confirmed. Before examining the relationships of latent variables in a structural model, it is necessary to ensure that the model fits the data or evaluates the Goodness of Fitness criteria.

One of the most widely used goodness of fitness of model in the partial least squares method is the coefficient of determination for dependent structures. As can be seen in Figure 2, the only latent variable of “driving violations” in the structural model of this research problem is the type of dependent structures. The coefficient of determination of the mentioned structure is estimated at 54.1%. A value higher than 33% indicates the average and acceptable suitability (goodness of fitness) of the proposed model on the collected data. In other words, about 55% of the changes in the variable of traffic violations are related to the variables considered in the conceptual model of the research. The rest of the changes are due to measurement errors and other variables not

considered in the model. Standardised Root Mean Residual (SRMR) is another indicator used to evaluate the goodness of the model fit. For the model of this research, the value of this index is estimated to be 0.079. The closer this index is to zero and less than 0.08, the greater the fit of the model.

Now that the fitness of the model and the validity and reliability of the measurement models have been confirmed, it is possible to comment on the relationships between the latent variables, which are the research hypotheses. Table 3 shows the path coefficients between the latent variables.

Table 3. Results of research hypotheses

Hypothesis	Estimation	Average	T-Value	P-Values	Result
Attitude → Driving Violations	0.186	0.203	1.97	0.05	Admission at 5% level
Life style→ Driving Violations	0.067	0.087	0.67	0.5	Rejected
Citizenship → Driving Violations	0.229	0.222	2.55	0.01	Admission at 5% level
Environment → Driving Violations	0.169	0.176	2.22	0.02	Admission at 5% level
Cultural Capital→ Driving Violations	0.055	0.104	1.73	0.04	Admission at 5% level
Individual Personality → Driving Violations	0.163	0.169	1.98	0.05	Admission at 5% level

As can be seen from the results of Table 3, there is a significant relationship between citizens' attitudes and the extent to which they do not pay attention to traffic laws. The more drivers' beliefs about the consequences of violations, the more they pay attention to the rules and regulations. This result is consistent with the results of the model of the theory of planned behavior, which considers the factor of each person's behavior as his attitude towards that behavior. Therefore, awareness and planning to raise citizens' awareness of the consequences of violations is effective in reducing risky behavior in driving. On the other hand, fining drivers and giving negative scores to offenders due to the strengthening of one's beliefs about the consequences of negative behavior in driving is one of the deterrents to violations. The results of Table 3 show that citizenship belongs effects on driving violations. The more a person feels about living and belonging to a community, the more he or she respects other members of the community and the more he or she obeys the laws of that community. Confirmation of the hypothesis of the effect of citizenship on the reduction of traffic violations

is consistent with the results of Mobaraki and Salehi (2012) research. As a solution, driver education and environmental advertising reduce traffic violations by emphasizing aspects of citizenship and strengthening the sense of citizenship in society. The results of this study, like other studies mentioned in the research background, show that the rate of traffic violations varies in different groups. Targeting trainings, fining offending drivers, creating a culture appropriate to different groups, and a more detailed study of identifying groups with similar traffic behaviors are some of the solutions derived from the hypothesis of the effect of personal characteristics on traffic violations.

Another factor influencing drivers' violations is environmental factors. Abnormal behavior in drivers is sometimes due to imitating others in driving. Conditions such as unfavorable weather conditions and a defective vehicle also affect driving violations. Identifying the different aspects of this factor and examining the more detailed impact of its sub-factors is suggested as future research. Also, the results of Table 3 show that the cultural capital of

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

drivers is effective on their traffic violations. As people's culture increases, their risk of engaging in dangerous driving behaviors decreases. Confirmation of this hypothesis also indicates the action of the executive bodies in the field of traffic to promote driver culture. The statistical results of this study show that the two variables of lifestyle and personality have less effect on violations than other variables. Failure to confirm the hypothesis of the effectiveness of these two variables does not mean that these two variables have no effect, but their effect is less identified than the others or the data collected in this study underestimated the effectiveness of these two variables.

5. Discussion

Ignorance of traffic rules leads to disorder and social problems and crises. Because the permanence and consistency of any society depends on maintaining the order and regulations of that society, and social order will not be possible without it. Enforcement of traffic rules and regulations as a targeted activity will be effective in controlling driving behaviors by preventing, encouraging and punishing the way traffic moves. The importance of this as a remedial plan in all countries has been clearly demonstrated and shows that the elimination of traffic violations has been effective in reducing the amount of damage caused by accidents by 20 to 25 percent. The aim of this study was to identify various individual, social and environmental factors and measure the contribution of each of these factors to non-compliance with traffic rules and regulations. In this article, a comprehensive review of the components affecting traffic violations has been performed and six variables of lifestyle, personality, demographic variables, citizenship belonging, individual attitude and environmental factors have been identified as potential variables affecting violations. A questionnaire designed to measure the effect of these variables on the

disabled variable (traffic violations). The results of statistical analysis of the data show that citizenship, attitude, environmental factors and cultural capital have the greatest impact on the rate of traffic violations. The results also show that the rate of traffic violations in different groups of drivers with different demographic characteristics is different. But the factors affecting the lifestyle and personality of the driver do not have a significant effect on traffic violations.

Based on the results of statistical analysis, the emphasis can be on strengthening the effective and well-known factors in this article on violations. Strengthening drivers' attitudes about the consequences of traffic accidents is a factor in reducing traffic violations in Tehran. This result is consistent with research Lucidi et al. (2019). The results of this study such as Ní Laoire et al. (2010) and Mobaraki and Salehi (2012) show that citizenship variable affects the traffic violations. Contrary to research Holman and Popusoi (2018), lifestyle does not have a significant effect on the violations. As Zhang et al. (2016) and Atombo et al. (2017) showed that the environment variable affects the traffic violations, the results of this study also show the impact of the environment on violations. Also, the individual personality and cultural capital are affecting on the response variable. The results of this research may be useful in educating and advertising programs. Developing training programs in the media and making them aware of the consequences of violating traffic laws will help strengthen drivers' attitudes. Providing training programs for drivers and publishing them on social media and networks with the aim of expressing the connection between citizenship and the consequences of not paying attention to the rules will help solve the mentioned problem. Because violations vary between different population groups, it is necessary to target driving instruction and driving license tests based on the type of violations in different groups. Of course, more accurate solutions in

this regard need to study the distribution of violations in different groups of drivers. The study of traffic behavior of people in different demographic groups and the study of the studied factors by type of violations (partial study) are among the proposed future researches. Access to data and opinions of a limited number of people in Tehran has limited the results of this study to a case study of this city, which is one of the limitations of this study.

6. References

- Abdi Kordani, A., Hassanpour, S. and lenjani, A. (2020). Do Different Jobs and People's Beliefs Affect Their Commitment to High-Risk Driving Behavior?, *International Journal of Transportation Engineering*, Vol. 8, No. 1, pp. 55-70. Doi: 10.22119/IJTE.2020.141244.1422.
- af Wählberg, A.E., Barraclough, P., and Freeman, J. (2015) "The driver behaviour questionnaire as accident predictor; a methodological re-meta-analysis", *Journal of Safety Research*, Vol. 55, pp. 185–212. Doi: 10.1016/j.jsr.2015.
- Akbari Chermahini, S., Stavrinou, D., Pope, C. N. and Behzadnia, A. (2018) "Relations between a laboratory-based sustained attention task and traffic violations in an Iranian sample of drivers", *Transportation Research Part F*, Vol. 58, pp. 177–183. Doi: 10.1016/j.trf.2018.06.007.
- Aleemran, R. and Aleemran S. A. (2015) "Study the long-run relationship between road accident and its influencing factors in Iran", *Rahvar Police Scientific Journal*, Vol. 12, pp. 33-55, (In Persian). http://talar.jrl.police.ir/article_11600_en.html.
- Asadamraji, M., Saffarzadeh, M., Ross, V., Borujerdi, A., Ferdosi T. and Sheikholeslami S. (2019). "A novel driver hazard perception sensitivity model based on drivers' characteristics: A simulator study", *Traffic Injury Prevention*, Vol. 20, No. 5, pp. 492-497, Doi: 10.1080/15389588.2019.1607971.
- Atombo, C., Wu, C., Tettehfiio, E. O. and Agbo, A. A. (2017) "Personality, socioeconomic status, attitude, intention and risky driving behavior", *Cogent Psychology*, Vol. 4, No. 1, pp. 1-20. Doi: 10.1080/23311908.2017.1376424.
- Breinholt, A. and Jæger, M. M. (2020) "How does cultural capital affect educational performance: Signals or skills?", *The British Journal of Psychology*, Vol. 71, No. 1, pp. 28-46. Doi.:10.1111/1468-4446.12711.
- Chen, C. and Zhang, J. (2016) "Exploring background risk factors for fatigue crashes involving truck drivers on regional roadway networks: a case control study in Jiangxi and Shaanxi, China", *SpringerPlus*, Vol. 5, No. 1, pp. 582. Doi: 10.1186/s40064-016-2261-y.
- Crociata, A., Odoardi, L., Agovino, M. and Sacco, P. L. (2020) "A missing link? Cultural capital as a source of human capital: evidence from Italian regional data", *The Annals of Regional Science*, Vol. 64, pp. 79-109. Doi: 10.1007%2Fs00168-019-00954-7.
- Disassa, A. and Kebu, H. (2019) "Psychosocial factors as predictors of risky driving behavior and accident involvement among drivers in Oromia Region. Ethiopia", *Heliyon*, Vol. 5, No. 6, Doi: 10.1016/j.heliyon.2019.e01876.
- du Plessis, S., Hartig, B., Jansen, A., and Siebrits, K. (2020). "Improving payment of traffic fines with financial incentives: discounts

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

- vs. penalties”, *Transportation Research Part F: Traffic Psychology and Behaviour*, Vol. 74, pp. 298-306. Doi: 10.1016/j.trf.2020.08.019.
- Dumitru, A.I.D., Gîrbacia, T., GabrielBoboc, R.G.B., Postelnicu, C.C. and Mogan, G.L. (2018) “Effects of smartphone based advanced driver assistance system on distracted driving behavior: A simulator study”, *Computers in human behavior*, Vol. 83, pp. 1-7. Doi: 10.1016/j.chb.2018.01.011.
- Eini, E. and Soori, H. (2015) “Estimating the cost of traffic accidents using the willingness to pay method”, *Rahvar Naja Police Applied Research Center, Research report 12*. (In Persian).
- Fındık, G., Kaçan, B., Solmazer, G., Ersan, Ö, Üzümcüoğlu Zihni, Y., Azık, D., Özkan, T., Lajunen, T., Öz, B., Pashkevich, A., Pashkevich, M., Danelli-Mylona, V., Georgogianni, D., Berisha Krasniqi, E., Krasniqi, M., Makris, E., Shubenkova, K. and Xheladini, G. (2020) “A comparison of the relationship between individual values and aggressive driving in five countries”, *Journal of Transportation Safety & Security*. (In Press). Doi: 10.1080/19439962.2020.1784341.
- Shi, J., Xiao, Y., Tao, L. and Atchley, P. (2018) “Factors causing aberrant driving behaviors: A model of problem drivers in China”, *Journal of Transportation Safety & Security*, Vol. 10, No. 4, pp. 288-302, Doi: 10.1080/19439962.2016.1263706.
- Furman A, Maison D and Sekścińska K. (2020) “Segmentation Based on Attitudes Toward Corporate Social Responsibility in Relation to Demographical Variables and Personal Values – Quantitative and Qualitative Study of Polish Consumers”, *Front. Psychol*,
- Vol. 11, pp. 450, Doi: 10.3389/fpsyg.2020.00450.
- Hadadi Sani, R., Tabibi, Z., Salehi Fadardi, J. and Stavrinou, D. (2017) “Aggression, emotional self-regulation, attentional bias, and cognitive inhibition predict risky driving behavior”, *Accident Analysis and prevention*, Vol. 109, pp. 78-88, Doi: 10.1016/j.aap.2017.10.006.
- Hair, J., Hult, G., Ringle, C. and Sarstedt, M. (2017) *Partial Least Squares Structural Equation Modeling (PLS-SEM), Second Edition*, Sage Publication.
- Han, H. and Kim, Y. (2010) “An investigation of green hotel customers’ decision formation: Developing an extended model of the theory of planned behavior”, *International Journal of Hospitality Management*, Vol. 29, No. 4, pp. 659–668. Doi: 10.1016/j.ijhm.2010.01.001.
- Holman, A. C. and Popusoi, S.A. (2018) “Ethical Predispositions to Violate or Obey Traffic Rules and the Mediating Role of Driving Styles”, *The Journal of Psychology*, Vo. 152, No. 5, pp. 257-275, Doi: 10.1080/00223980.2018.1447433
- Hong, J., Park, J., Lee, G. and Park, D. (2019) “Endogenous commercial driver’s traffic violations and freight truck-involved crashes on mainlines of expressway”, *Accident Analysis & Prevention*, Vol. 131, pp. 327-335, Doi: 10.1016/j.aap.2019.07.026.
- Hussain, M. and Shi, J. (2019) “Effects of proper driving training and driving license on aberrant driving behaviors of Pakistani drivers– A Proportional Odds approach”, *Journal of Transportation Safety & Security* (In Press), Doi: 10.1080/19439962.2019.1665601

- Izadi, A., Abgon, H. and Tagavi, M. (2021). "Study of the Relationship between the Characteristics of Taxi Drivers and Driving Experience", *International Journal of Transportation Engineering*, (In Press). Doi: 10.22119/IJTE.2021.256999.1546.
- Jiang, Y., Zhang, J., Wang, Y. and Wang, W. (2018) "Drivers' behavioral responses to driving risk diagnosis and real-time warning information provision on expressways: A smartphone app-based driving experiment", *Journal of Transportation Safety & Security*, Vol. 12, No. 3, pp. 329-357, Doi: 10.1080/19439962.2018.1483988.
- Karimi, S., Aghabayk, K., Abrari Vajari, M. and Stephens, A. (2021). "Aggressive Driving: Self-Reported Anger Expression and its Relationship with Driver Personality", *International Journal of Transportation Engineering*, Vol. 8, No. 3, pp. 299-316. Doi: 10.22119/IJTE.2021.254078.1541.
- Khattak, A.J., Schneider, R.J. and Targa, F. (2002) "Risk factors in large truck rollovers and injury severity: analysis of single-vehicle collisions. In 82nd Annual Meeting of the Transportation Research Board", <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.463.4047&rep=rep1&type=pdf>.
- Korkeila, H. and Hamari, J. (2020) "Avatar capital: The relationships between player orientation and their avatar's social, symbolic, economic and cultural capital", *Computers in Human Behavior*, Vol. 102, pp. 14-21. Doi: 10.1016/j.chb.2019.07.036.
- Lubowiecki-Vikuk, A., Dąbrowska, A. and Machnik, A. (2021) "Responsible consumer and lifestyle: Sustainability insights", *Sustainable Production and Consumption*, Vol. 25, pp. 91-101. Doi: 10.1016/j.spc.2020.08.007.
- Lucidi, F., Girelli, L., Chirico, A., Alivernini, F., Cozzolino, M., Violani, C. and Mallia, L. (2019) "Personality Traits and Attitudes Toward Traffic Safety Predict Risky Behavior Across Young, Adult, and Older Drivers", *Front. Psychol.*, Vol. 10, No. 536, pp. 1-11, Doi: 10.3389/fpsyg.2019.00536.
- Mahar C., Harker R. and Wilkes C. (1990) "The Basic Theoretical Position. In: Harker R., Mahar C., Wilkes C. (eds)" *An Introduction to the Work of Pierre Bourdieu*, Palgrave Macmillan, London. Doi:10.1007/978-1-349-21134-0_1.
- Mihelj, J., Kos, A. and Sedlar, U. (2018) "Implicit aggressive driving detection in social VANET", *Procedia Computer Science*, Vol. 129, pp. 348-352. Doi: 10.1016/j.procs.2018.03.086.
- Mikaeili, N. Esrafil h., Bashirpoor, S. (2019) "Designing and Exercising the Causal Model for Relation Between Islamic Lifestyle, Wisdom and Moral Intelligence with Tendency Towards High Risk Behavior: Mediating Role of Psychological Well-Being", *Culture in the Islamic University*, Vol. 9, No. 30, pp. 81-100., <https://www.sid.ir/en/journal/ViewPaper.aspx?ID=688216>.
- Mobaraki, M. and Salahi, S. (2014) "The Quality of Urban Services, Citizenship Commitment and Sense of Social Belonging", *Social Welfare Quarterly*, Vol. 13, No. 50, pp. 275-315 (In Persian). <http://refahj.uswr.ac.ir/article-1-1363-fa.html>
- Mohammadzadeh Moghaddam, A., Sadeghi, A., Jalili Qazizadeh, M., Farhad, H. and Barakchi, M. (2018) "Investigating the

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

- relationship between driver's ticket frequency and demographic, behavioral, and personal factors: Which drivers commit more offenses?", *Journal of Transportation Safety & Security*, Vol. 12, No. 2, pp. 225-244, Doi: 10.1080/19439962.2018.1477894
- Murphy, G., Gauld, C. and Lewis, I. (2020). "Predicting the monitoring/reading of communications on a smartphone among young drivers using an extended theory of planned behaviour", *Accident; Analysis and Prevention*, Vol. 16, pp. 105403. Doi: 10.1016/j.aap.2019.105403.
- Nadimi, N., Khalifeh, V., Khoshdel Sangdeh, A. and Mohammadian Amiri, A. (2021) "Evaluation of the effect of driving education and training programs on modification of driver's dangerous behaviors", *International Journal of Transportation Engineering*, (In Press). Doi: 10.22119/IJTE.2021.237613.1523.
- Nguyen-Phuoc, D. Q., Trespalacios, O.O., Nguyen, T., Su, D.N. (2020) "The effects of unhealthy lifestyle behaviours on risky riding behaviours – A study on app-based motorcycle taxi riders in Vietnam", *Journal of Transport & Health*, Vol. 16, Doi: 10.1016/j.jth.2019.100666.
- Ní Laoire, C., Carpena-Méndez, F., Tyrrell, N., White, A. and Besten, O. (2010) "Local belonging and 'geographies of emotions': Immigrant children's experience of their neighbourhoods in Paris and Berlin", *Childhood: A Global Journal of Child Research*, Vol. 17, No. 2, pp. 181-195, Doi: 10.1177/0907568210365649
- Omrani, H., Mamdoohi, A.R. and Farzin, I. (2020). "Taste variation of the elderly mode choice: The role of socio-economic, attitude and behavior factors", *International Journal of Transportation Engineering*, Vol. 8, No. 4, pp. 341-362. Doi: 10.22119/IJTE.2021.288100.1574.10.22119/IJTE.2021.140699.1418.
- Pompili, M., Serafini, G., Innamorati, M., Montebovi, F., Palermo, M., Campi, S., Stefani, H., Giordano, G., Telesforo, L., Amore, M. and Girardi, P. (2012) "Car accidents as a method of suicide: A comprehensive overview", *Forensic Science International*, Vol. 223, No. 1-3, pp. 1-9. Doi: 10.1016/j.forsciint.2012.04.012.
- Reason, J., Manstead, A., Stradling, S., Baxter, J., and Campbell, K. (1990) "Errors and violations on the roads: a real distinction?", *Ergonomics*, Vol. 33, pp. 1315-1332. Doi: 10.1080/00140139008925335.
- Sagberg, F., Ingebrigtsen, R. (2018) "Effects of a penalty point system on traffic violations", *Accident Analysis and Prevention*, Vol. 110, pp. 71-77. Doi: 10.1016/j.aap.2017.11.002.
- Scott-Parker, B., Jones, C.M., Rune, K. and Tucker, J. (2018) "A qualitative exploration of driving stress and driving discourtesy", *Accident Analysis and Prevention*, Vol. 118, pp. 38-53. Doi: 10.1016/j.aap.2018.03.009.
- Shareef, B. M., Karim, H. K., and Ahmed, H. U. (2020). "Effects of Traffic Violation and Demographic Characteristics on Traffic Safety in Sulaymaniyah City", *Sulaimani Journal for Engineering Sciences*, Vol. 7, No. 3, pp. 197-205. Doi: 10.17656/sjes.10142.
- Shirmohammadi, H., Hadadi, F., and Saeedian, M. (2019). "Clustering analysis of drivers based on behavioral characteristics regarding road safety", *International Journal of*

Civil Engineering, Vol. 17, No. 8, pp. 1327-1340. Doi: 10.1007/s40999-018-00390-2.

- Shnabe, N, Purdie-Vaughns, V., Cook, J.E., Garcia, J. and Cohen, G.L. (2013) "Demystifying Values-Affirmation Interventions: Writing about Social Belonging Is a Key to Buffering Against Identity Threat", *Personality and Social Psychology Bulletin*, Vol. 39, No. 5, pp. 663–676. Doi: 10.1177/0146167213480816.

- Stanojević, D., Stanojević, P., Jovanović, D. and Lipovac, K. (2020) "Impact of riders' lifestyle on their risky behavior and road traffic accident risk", *Journal of Transportation Safety & Security*, Vol. 12, No. 3, pp. 400-418, Doi: 10.1080/19439962.2018.1490367

- Tang, T., Guo, Y., Zhang, G., Wang, H., and Shi, Q. (2020). "Understanding the Interaction between Cyclists' Traffic Violations and Enforcement Strategies: An Evolutionary Game-Theoretic Analysis", *International Journal of Environmental Research and Public Health*, Vol. 17, No. 22, pp. 8457. Doi: 10.3390/ijerph17228457.

- Tavakoli Kashani, A., Nazari, N., Amirifar, S. and Afshar, A. (2021). Attitude to Speeding in Iran: Identifying Drivers Characteristics, *International Journal of Transportation Engineering*, (In Press). Doi: 10.22119/IJTE.2021.288100.1574.

- Tavakoli Kashani, A., Sokouni Ravasani, M. and Ayazi, E. (2016). "Analysis of Drivers' Behavior using Manchester Driver Behavior Questionnaire Based on Roadside Interview in Iran", *International Journal of Transportation Engineering*, Vol. 4, No. 1, pp. 61-74. Doi: 10.22119/IJTE.2016.33497.

- Throsby, D. (1999) "Cultural Capital, *Journal of Cultural Economics*", Vol. 23, pp. 3–12.

- Varvaei, A. and Fattahi, A. (2016) "The Situational crime Prevention in the law of Traffic Violation Passed in 1389". *Rahvar Police Scientific Journal*, Vol. 18, pp. 93-119. http://talar.jrl.police.ir/article_11648_en.html.

- Wang, Y., Qu, W., Ge, Y., Sun, X., and Zhang, K. (2018) "Effect of personality traits on driving style: Psychometric adaption of the multidimensional driving style inventory in a Chinese sampl", *PloS ONE*, Vol. 13, No. 9, pp. e0202126. Doi:10.1371/journal.pone.0202126.

- Weaver, J. P., DeCaro, M. S. and Ralston, P. A. (2020) "Limited Support for Use of a Social-Belonging Intervention with First-Year Engineering Students", *Journal for STEM Education Research*. (In Press). Doi: 10.1007/s41979-020-00041-z.

- World Health Organization [WHO] (2018) "Global status report on road safety 2018", Available at: https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/

- Yoh, K., Okamoto, T., Inoi, H. and Doi, K. (2017) "Comparative study on foreign drivers' characteristics using traffic violation and accident statistics in Japan", *IATSS Research*, Vol. 41, pp. 94–105, Doi: 10.1016/j.iatssr.2017.06.004.

- Zhang, G., Tan, Y. and Jou, R.C. (2016) "Factors influencing traffic signal violations by car drivers, cyclists, and pedestrians: A case study from Guangdong: China", *Transportation Research Part F: Traffic Psychology and Behaviour*, Vol. 42, No. 1, pp. 205-2016. Doi: 10.1016/j.trf.2016.08.001.

Key Levers for Modeling Traffic Violations: Lifestyle, Citizenship Belonging, Social Capital, and Individual Attitudes

- Zhang, H., Qu, W., Ge, Y., Sun, X. and Zhang, K. (2017) “Effect of personality traits, age and sex on aggressive driving: Psychometric adaptation of the Driver Aggression Indicators Scale in China”, *Accident Analysis and Prevention*, Vol. 103, pp. 29-36. Doi: 10.1016/j.aap.2017.03.016.

- Zolali, M., Mirbaha, B. and Saffarzadeh, A. (2021). “Drivers' speed choice behavior considering drivers' socio-demographic characteristics: A driving simulator study”, *International Journal of Transportation Engineering*, (In Press). Doi: 10.22119/IJTE.2021.283072.1566.

- Zolifalifam, J. and Aghaei, H. (2014) “Investigating Cultural Capital and Social Commitment among Tabriz Citizens”, *Iranian Journal of Social Problems*, Vol. 5, No. 1, pp. 77–112. (In Pressian) <https://www.sid.ir/en/journal/ViewPaper.aspx?ID=469048>.