

# A Fuzzy DEMATEL Analysis of Cultural Variables in Traffic Rules Violation

Reza Kiani Mavi, Center for Innovative Practice, School of Business and Law, Edith Cowan University, Joondalup, Australia

Navid Zarbakhshnia, Young Researchers and Elites Club, Department of Industrial Management, Faculty of Management and Accounting, Qazvin Branch, Islamic Azad University (IAU), Qazvin, Iran

Armin Khazraei, Department of Industrial Management, Faculty of Management and Accounting, Islamic Azad University, Qazvin Branch, Qazvin, Iran

## ABSTRACT

Traffic rules violation stems from numerous causes such as the lack of appropriate traffic rules training, non-institutionalization of respect to the rights of others especially pedestrians, and more importantly self-preference. There is a need for accidents prevention and deeper analysis of the multi-attributes which lead to unwanted accidents and lethal crashes resulting in death. Most of these elements are cultural variables. In this study, the cultural variables affecting traffic rules violation are investigated. From among many cultural variables, 6 most important factors were examined. For this aim, 10 traffic officers who have more than 10 years' experience and 10 citizens with master's degree and at least 6 years driving experience, participated in this research. For determining the cause and effect relations between them, fuzzy DEMATEL is applied. Findings show that unawareness of traffic rules has the greatest importance because it is the premier causal factor from one hand and on the other hand, it has the maximum relation with the other cultural variables.

## KEYWORDS

Cultural Elements, Driving, Fuzzy DEMATEL, Traffic Rules, Violation

## 1. INTRODUCTION

People show angry or aggressive behaviors behind the wheel for various reasons. As a potentially dangerous activity, driving requires interaction between strangers in streets where there is a poor medium available for communication (Joint, 1995). In fact, drivers usually find little chance to quietly explain their actions, questioning those of the other street users, negotiating with other drivers or seeking compromise (Parkinson, 2001). That is why drivers may get across ambiguous messages under traffic conditions. Moreover, rational decisions made behind the wheel are poorly supported by information from the surrounding environment, since drivers find it so easy to blame others and interpret their reactions as hostility which is contrary to truth of the matter (Fong et al., 2001; James and Nahl, 2000; Walters, 2000).

There are three frequently observed human failures behind the wheel, including traffic violations (speeding, drinking behind the wheel), traffic errors (poor eyesight or miscalculation), and mental

DOI: 10.4018/IJSDS.2017100103

lapses (absent-mindedness) (Stradling et al., 1991). Among these actions, traffic violations are the only factor statistically contributing to aggravated accident involvement (Parker et al., 1995).

The dangerous cases of driving behavior can be associated with poor car handling techniques or inadequate skills rather than personal intention to harm other street users. There is ample evidence suggesting that deliberate, aggressive driving is pretty rampant (Scott-Parker, 2009). In fact, aggressive driving style involves several behavioral manifestations, including verbal, physical or vehicular expressions (Deffenbacher et al., 2002).

Four decades ago, aggressive driving style was deemed a significant problem concerning traffic safety (Parry, 1968; Whitlock, 1971). Nonetheless, the issue of aggressive driving has only recently been recognized. Nowadays, this aberrant driving style is seen as a problem found everywhere around the world.

It has been demonstrated that the tendency to aggressive behaviors is a completely durable personality trait among drivers, which persists over time and can be found in a variety of situations (Berkowitz, 1993). Individuals showing aggressive behavior tend to perform similarly in other areas of their lives (Lajunen and Parker, 2001). Aside from that, behavior is to a large extent affected by biological variables such as gender and age (Foss, 2007). In fact, previous studies focusing on the demographic factors contributing to dangerous driving style have revealed that gender and age are linked to risky driving. More specifically, younger drivers tend to violate the traffic rules more frequently than older ones (Groeger and Brown, 1989; Parker et al., 1995). Furthermore, a number of researchers have demonstrated that younger male drivers exhibit a lower level of normative motivation to abide by traffic laws voluntarily (Yagil, 1998). Personal traits are not only linked to the rate of traffic accidents, but are also associated with the frequency of traffic violations. For instance, Shinar et al. (2001) reported that fastening the seat belt was positively correlated with the age and education level of drivers. In fact, drivers are more likely to lower their speed with age, while such tendency fades away at higher education and income levels. Fosgerau (2005) discovered that driving speed was negatively correlated with the driver's age, while positively correlated with income level. In this respect, social and cultural characteristics are major effective parameters involved in traffic safety regardless where the driver falls in terms of social class. Previous studies indicated that road-related conditions (quality, lighting, and weather) affect how severe traffic accidents occur (Hijar et al., 2000). Although weather conditions are crucial, they are barely within the control of policy-makers who make great efforts to curtail the risk of severe traffic accidents. Nevertheless, it is critical that planners and insurance companies carry out an impact assessment of weather conditions on traffic safety, mainly relying on the road safety record of drivers when setting the premium rates.

Aggressive behavior is a problem behind the wheel because drivers showing such behavior are conducive to car crashes and a precursor to actions escalating the risk of accidents (Mesken et al., 2007; Stephens and Groeger, 2011). Aggression is a parameter often mediated by situational (Lerner and Keltner, 2001) and cultural differences.

By the same token, culture can somewhat persist over time is mostly concerns aberrant driving style. Driver's personality trait and culture have so far been studied as two separate parameters. Compared to social cognitive constructs, culture is more relevant to traffic safety in low- and middle-income countries where traffic regulations are formulated and enforced poorly. In most low- and middle-income countries, the police officers are not adequately trained to handle traffic regulations. They usually lack the essential resources to enforce traffic laws (World Bank, 2002). Culture can be a critical parameter since lenient road traffic regulations and unwillingness to enforce such regulations may highlight the importance of informal and less rule-oriented psychological behaviors for making risky driving decisions. A number of studies have explored cultural differences among drivers. For example, Rakauskas et al. (2009) found that drivers in rural areas usually show riskier behavior than drivers based in urban areas.

In previous studies mentioned above, there is a general limitation in that they did not provide a clear definition of culture and how to operationalize it. This might have been due to that fact that

15 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the product's webpage:

[www.igi-global.com/article/a-fuzzy-dematel-analysis-of-cultural-variables-in-traffic-rules-violation/189235?camid=4v1](http://www.igi-global.com/article/a-fuzzy-dematel-analysis-of-cultural-variables-in-traffic-rules-violation/189235?camid=4v1)

This title is available in InfoSci-Journals, InfoSci-Journal Disciplines Business, Administration, and Management, InfoSci-Knowledge Discovery, Information Management, and Storage eJournal Collection, InfoSci-Management Science and Organizational Research eJournal Collection, InfoSci-Operations, Logistics, and Performance Assessment eJournal Collection, InfoSci-Select. Recommend this product to your librarian:

[www.igi-global.com/e-resources/library-recommendation/?id=2](http://www.igi-global.com/e-resources/library-recommendation/?id=2)

## Related Content

---

### Internet Banking Service Quality, Customer Satisfaction and Customer Loyalty: The Case of Vietnam

Pham Long and Phan Dien Vy (2016). *International Journal of Strategic Decision Sciences* (pp. 1-17).

[www.igi-global.com/article/internet-banking-service-quality-customer-satisfaction-and-customer-loyalty/149659?camid=4v1a](http://www.igi-global.com/article/internet-banking-service-quality-customer-satisfaction-and-customer-loyalty/149659?camid=4v1a)

### Critical Factors in the Development of Executive Systems-Leveraging the Dashboard Approach

Frederic Adam and Jean-Charles Pomeroy (2003). *Decision-Making Support Systems: Achievements and Challenges for the New Decade* (pp. 305-330).

[www.igi-global.com/chapter/critical-factors-development-executive-systems/8076?camid=4v1a](http://www.igi-global.com/chapter/critical-factors-development-executive-systems/8076?camid=4v1a)

## Metasystemic Re-Engineering: An Organizational Intervention

Osvaldo García de la Cerda and Renato Orellana Muermann (2008). *Encyclopedia of Decision Making and Decision Support Technologies* (pp. 612-617).

[www.igi-global.com/chapter/metasystemic-engineering-organizational-intervention/11301?camid=4v1a](http://www.igi-global.com/chapter/metasystemic-engineering-organizational-intervention/11301?camid=4v1a)

## A Case-Based-Reasoning System for Feature Selection and Diagnosing Asthma

Somayeh Akhavan Darabi and Babak Teimourpour (2017). *Handbook of Research on Data Science for Effective Healthcare Practice and Administration* (pp. 444-459).

[www.igi-global.com/chapter/a-case-based-reasoning-system-for-feature-selection-and-diagnosing-asthma/186951?camid=4v1a](http://www.igi-global.com/chapter/a-case-based-reasoning-system-for-feature-selection-and-diagnosing-asthma/186951?camid=4v1a)