

# Factors affecting driving anger, aggressive driving, and road accident proneness: An analysis based on partial least squares structural equation modeling (PLS-SEM) approach

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**ABSTRACT:** The road accident phenomenon had raised concern among road users and the transport authorities. In this respect, road users have accountability to reduce road accident proneness among themselves. Researches have demonstrated that interrelated factors may place a driver at a high risk of road accidents such that road accidents may be caused by the driver's behavior with a combination of other factors such as environment and vehicle factors. Drivers' behaviors such as driving anger and aggressive driving have been the main contributors to road accidents. The objective of this paper is to examine the relationship between driving anger and aggressive driving towards road accident proneness among Malaysian drivers. The results of structural equation modeling reveal that driving anger and aggressive driving had a significant relationship and large effect size on road accident proneness. This study is significant as the discussion of the present research provides important theoretical and practical implications, and valuable suggestions to reduce road accident proneness for road users.

**Keywords:** *Driving anger, aggressive driving, sustainable transportation*

## 1.0 INTRODUCTION

The phenomena of road accidents nowadays have reached an alarming level that leads to fatalities and loss of lives. In Malaysia, road accidents were still in large numbers, and the trend is increasing about 3% annually, especially cars are the vehicles most involved in road accidents [1, 2]. Driver's behavior such as driving anger and aggressive driving had contributed to the majority of road accidents worldwide [3,4].

## 2.0 LITERATURE REVIEW

Previous studies by [5, 6, 7, 8] presented clear evidence on the relationship between driving anger, aggressive driving, and road accident proneness. However, there were several gaps identified in the above researches. One of the gaps referred to the type of instruments used to measure the variables. For example, in the study done by [7], the measurement items for road accident proneness were assessed to have low internal consistency coefficients due to the adaptation from the original measurement that did not have a good enough reliability. Besides that, the second gap is regarding the insufficient number of predictors used in the previous studies. For instance, studies conducted by

[5, 7, 8] investigated the relationship of only sole predictors such as driving anger on drivers' road accident proneness. [9, 10] recommended that researchers integrating several other predictors and investigate their influence on road accident proneness for future studies to extend the knowledge regarding factors influencing road accident proneness. Thus, the present study utilized a measurement with high-level reliability and validity recommended by [10] to measure road accident proneness to close the research gaps. Next, this study integrates other predictors (e.g., aggressive driving) in a single framework to provide a piece of extensive knowledge regarding the relationship between these predictors and road accident proneness in the Malaysian context.

## 3.0 METHODOLOGY

This study applied the cross-sectional design with a self-administered questionnaire given to the drivers selected from 18 auto-services companies covering four states in Northern Malaysia. The random sampling procedure technique was applied to select 18 auto-service companies covering four states in Northern Malaysia. From 1200 questionnaires distributed, 631 responses received, giving a response rate of 52.6%.

## 4.0 ANALYSIS AND FINDINGS

The valid data of this study were analyzed using the partial least squares structural equation modeling (PLS-SEM) analysis [11]. Firstly, the measurement model was analyzed to ensure the constructs of driving anger, aggressive driving, and road accident proneness are fit. The indicator loadings analysis followed by the composite reliability of each construct was calculated to assess the internal consistency of the constructs. Convergent validity analysis to determine the average variance extracted (AVE) was examined to make sure the reliability of the items is acceptable. The AVE cut-off values for each item were set at 0.50. The convergent validity of each construct was analyzed using the traditional metric technique. Next, to examine the direction of each construct, the path modeling method was used with road accident proneness as the dependent variable, driving anger, and aggressive driving as the independent variables.

## 5.0 DISCUSSION

This study aimed to examine the relationship between driving anger and aggressive driving on road

accident proneness among a large sample of Malaysian licensed drivers. The first path coefficient indicated that driving anger has a positive effect on road accident proneness. This finding is consistent with previous studies [12, 13, 14]. The present study's results further explain that when a driver experiences angry feeling while driving, the driver may have lapses in concentration and causing minor losses of vehicular control that increases the tendency to be involved in road accidents.

The second path coefficient shows aggressive driving positively affects road accident proneness, consistent with previous studies [6, 15]. A possible clarification was drivers that practice aggressive driving such as tailgating, cutting in, and swerving in and out of traffic had experienced road accidents at least once with several outcomes (e.g., major, minor injuries, near misses, or traffic summons) [16].

## 6.0 CONCLUSION

Based on the findings, this study suggests potential intervention to reduce road accidents in Malaysia. This include public education such as innovative mass media campaigns that is suitable for all road users. These campaigns can reinforce safe driving behavior among car drivers by emphasizing the negative consequences of road accidents (e.g., major and minor injuries, permanent disability, and post-traumatic disorder).

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