

# Providing Vehicle Detection System to Avoid Road Accidents

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**Abstract** - The effect of low visibility on both crash occurrence and security is a major concern in the traffic security field. We found that the vehicle crashes in low visibility are more than the normal visible condition. Thus, there is a drastic need to evaluate low visibility countermeasures to improve driver security and performance under reduced visibility conditions. For this reason, the research team investigated the personage facet matter apposite to implementing a visibility system. Specifically, we designed driver simulator experiments to evaluate how drivers respond to low visibility warning strategies using an in-vehicle warning device. The repeated measures analysis of variance (ANOVA) models were employed to analyse the impacts of low visibility and haze countermeasures. It was established that the haze warning systems can significantly improve security. The systems can furthermore reduce drivers' throttle release time and make the braking process more smooth. Meanwhile, age effects were observed during the braking process. Old drivers are prone to have harder braking than other drivers.

meet the independence requirement of ANOVA. Thus, the repeated - measures ANOVA model is used in this analysis. Repeated - measures ANOVA is commonly used for repeated - measure designs; the repeated-measures facet is the within-subject facet. Meanwhile, Welch's ANOVA is an alternative to the classic ANOVA, which is employed to compare means even if the data violates the assumption of homogeneity of variances. In this research, the sample sizes of different age groups are not the same. Therefore, Welch's ANOVA is used to analyse the age effects. Moreover, multivariate analysis of variance (MANOVA) is an ANOVA that includes several dependent variables, which controls the Type I error rate. A MANOVA furthermore can consider inter - dependencies among the dependent variables, enhancing the power to detect significant differences between groups. In this research, MANOVA is employed for both the throttling releasing process and the braking process.

**Key Words:** Safety, low visibility, fog, vehicle, road.

## 1.2 SCOPE

## 1. INTRODUCTION

A low visibility roadway environment due to haze is one of the major traffic security concerns. It is known that in low visibility conditions, such as haze and smoke, crashes tend to be more severe than under normal clear condition. Thus, there is a drastic need to test and develop countermeasures to improve traffic security and driver performance under reduced visibility conditions. The research team studied the personage facet matter apposite to implementing a visibility system on highways. Specifically, we designe driver simulator experiment to evaluate how drivers respond to low visibility warning strategies using an vehicle warning device.

The present report summarises the activity undertaken to provide with information about research needs pertaining to optimising the roadway visibility system.

## 1.1 METHODOLOGY.

Study of variation has been largely engaged to study the polarity with arrange technique and their associated procedures when comparing samples with more than two groups. One of the assumptions when using ANOVA is that the observation should be independent from each other. Meanwhile, ANOVA furthermore assumes homoscedasticity of error variances.

During the experiment, each participant drove three different scenarios, and the sample in this research didn't

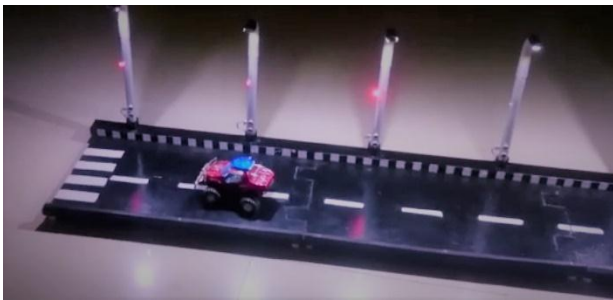
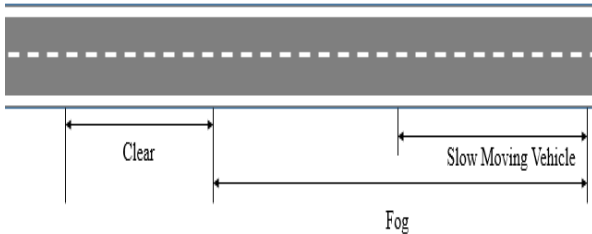
Through a focused review of the apposite recent literature, and through a working group meeting of researches and stakeholders about the road way visibility system held on August 19, 2003, the LRC obtained input from this stakeholder's about the potential benefits of visibility components. That input as well as additional input from stakeholder will help to provide with useful and valuable information about promising research avenues in the future. The findings of the literature review and of the roundtable meeting are in subsequent section of this report. The present report summarises the activity undertaken to provide with information about research needs pertaining to optimising the roadway visibility system.

## 2. DESIGN OF MODEL

After the study of all collected data from the different areas of different countries and all the reference we assume that the prototype related to the road security should be converted into the model form and we work on the prototype to make the model for this report. The model we design for the report of road security is depending on the different parameters of the actual situations related to the

speed of vehicles visibility to the driver, atmospheric conditions road width, height of the poles, distance between the poles, use of detecting sensors, etc.

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### 3. CONCLUSION

This research project conducted at UCF aimed to evaluate driver behaviour under haze conditions and how drivers respond to low-visibility warning strategies. Furthermore, the effects of different haze levels were investigated in this study. Two different haze levels were considered: 300 ft. and 100 ft. In addition, three types of warning strategies were included in the experiment. In total, six scenarios were designed and 48 participants were recruited for this experiment.

### ACKNOWLEDGEMENT

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