UNIVERSITY OF THESSALY
SCHOOL OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING

PROGRAMME
DOCTORAL DISSERTATION EXAMINING COMMITTEE ASSEMBLY
of
IOANNIS ADAMOS
Dipl. Civil Engineer, University of Thessaly, 2004
M.Sc., University of Thessaly, 2006

Monday 31 October 2016, 14:30
Teleconference Room, School of Engineering, University of Thessaly

“Modeling the impact of road safety communication campaigns and training programs on driving behavior”

EXAMINING COMMITTEE
Ass. Prof. Eftihia Nathanail, University of Thessaly, Greece, Supervisor & Committee Chair

Prof. Nikolaos Eliou, University of Thessaly, Greece

Prof. Georgios Mintsis, Aristotle University of Thessaloniki, Greece

Prof. Konstantinos Gourgoulianis, University of Thessaly, Greece

Prof. George Yannis, National Technical University of Athens, Greece

Ass. Prof. Jens Schade, Dresden University of Technology, Germany

Dr. Sonja Forward, VTI Swedish Road and Transport Research Institute, Sweden
ABSTRACT

Driving under fatigue, which, among others, may cause falling asleep at the wheel, is a highly contributing factor in traffic accidents worldwide, quantified by an average proportion of 20% of total accidents that are fatigue related (MacLean et al., 2003) and a range of 16-23% of total accidents that are due to sleepiness (Horne & Reyner, 1995).

The present dissertation aims at developing an integrated framework, which facilitates the design of road safety interventions, i.e. communication campaigns and training programs, the evaluation of their effectiveness, the assessment of their impact on driving behavior, and the development of behavioral models for predicting drivers’ intentions and behavior towards safety. The framework is validated to a Greek road safety communication campaign and a training program targeting professional drivers of a leading company in building materials in Greece, both addressing an important safety issue thus, driver fatigue.

Implementing a coherent evaluation plan, self-reported data were collected through a face-to-face questionnaire survey, before, during and after the campaign realization and, before and after the training program. In addition, in the latter case, a naturalistic study took place, including data collected by trip recorders (Geographical Positioning System – GPS devices).

Evaluation results of both interventions showed a statistically significant increase in the proportion of drivers, who were aware of the causes and effects of fatigue while driving, and similar results were indicated when testing behavioral beliefs, risk comprehension, control beliefs, descriptive norms, behavioral intentions and past behavior. The main messages of the interventions reached the target audience, validated by the increase of the percentage of drivers self-reporting that they stop and rest for 15-20 minutes in the “after” period, compared to the period before the campaign and training program implementation. When assessing GPS data, results showed a slight improvement of drivers’ behavior after the training program realization. The comparison between self-reported and observed behavior pointed out a clear positive impact of the training program on drivers’ behavior according to the self-reported measurements, and a moderate impact, based on the GPS records.

Focusing on the development of behavioral models, in the case of the campaign, it was observed that the more constructs were added to the independent variables, the higher the values of the models’ predictability were. Specifically, the construct that mostly affected behavior was behavioral intention. In the case of the training program, when predicting behavior towards stopping and resting when tired, it was observed that the strongest statistically significant predictor was descriptive norms, while when, testing behavior towards following other solutions to fatigue than stopping and resting, findings revealed that the strongest predictor was behavioral beliefs.

It can be concluded that drivers’ behavioral changes do not directly reflect to actual driving compliance with safety standards. In order to define whether changes can actually be observed through objective measurements, i.e. by using GPS devices, consistency and repetitions are required, as well as long-term measurements. On the other hand, self-reported measurements seem to be more sensitive to behavioral changes. The advantages and disadvantages of the two methods are significant, and should be spherically assessed by researchers before implementing them to evaluate road safety interventions.
BIOGRAPHICAL SKETCH

1978 Born in Volos, Greece
2004 Diploma in Civil Engineering, University of Thessaly, Volos, Greece
2006 M.Sc. in Applied Engineering & Systems’ Simulation, University of Thessaly, Volos, Greece

PUBLICATIONS

Scientific journals


PUBLICATIONS

Conference proceedings with peer review


PUBLICATIONS

Conference proceedings with peer review


PUBLICATIONS

Conference proceedings with peer review


PUBLICATIONS

Conference proceedings with abstract peer review


PUBLICATIONS

Chapters in books


