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Use of parametric lognormal equations to determine the value of statistical life through targeted public awareness campaigns

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ABSTRACT

Decision making for individuals and for society as a whole, is based on the assessment of available alternatives and selecting the best among them. For civil engineering projects, more specifically, the above process is carried out by conducting a cost-benefit analysis. Within the framework of a cost-benefit analysis, all the planned costs and the expected benefits are thoroughly analyzed. A key factor in the calculation of these benefits, is the quantification of goods that do not comply with the market rules (non- market rules), such as the benefits arising from the preservation of a human life. This calculation is defined as the Value of a Statistical Life (VoSL), which refers to the willingness to exchange a certain amount of money for a change in the probability of survival. Plenty of researches have investigated the VoSL all over the world, and its determination for our country is of great interest due to the economic situation that we are phasing. In terms of this thesis, the VoSL for Greece, from the perspective of road accidents, is estimated with the reference year of 2016. The above determination is achieved through a questionnaire survey approach where the Willingness To Pay (WTP) method is adopted. The originality of this research lies in the fact that the sample population was divided into two clusters; the first without exposure to any campaign while the second was exposed to a targeted road safety campaign before the completion of the questionnaire. The purpose of the above is to determine whether a video campaign affects the WTP and the VoSL respectively. Eventually, after the analysis of the collected sample with SPSS software and using parametric lognormal equations, the factors that affecting the WTP were identified and the mathematical model was structured. Given the WTP, the VoSL was afterwards determined, as well. Regarding the exposure of the second cluster to the video campaign, statistically differences among them and the first cluster have been derived for both the WTP and VoSL calculations. The exposure showed to have a great impact to the responders and led to values of WTP and VoSL approximately 1.6 and 1.4 times higher respectively. These findings are very useful for the society and the state in order to increase people's awareness of road safety issues and their willingness to pay for improvement of existing roads or construction of new ones.

KEYWORDS

Cost-benefit analysis, Willingness to Pay, Value of Statistical Life, Parametric lognormal equation, Individualized evaluation of road safety campaigns