

Analysis of the Role of Population Ageing on Crosstown Roads' Traffic Accidents Using Latent Class Clustering

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Abstract : The population aged 65 and over is projected to double in the coming decades. Due to this increase, driver population is expected to grow and in the near future, all countries will be faced with population aging of varying intensity and in unique time frames. This is the greatest challenge facing industrialized nations and due to this fact, the study of the relationships of dependency between population aging and road safety is becoming increasingly relevant. Although the deterioration of driving skills in the elderly has been analyzed in depth, to our knowledge few research studies have focused on the road infrastructure and the mobility of this particular group of users. In Spain, crosstown roads have one of the highest fatality rates. These rural routes have a higher percentage of elderly people who are more dependent on driving due to the absence or limitations of urban public transportation. Analysing road safety in these routes is very complex because of the variety of the features, the dispersion of the data and the complete lack of related literature. The objective of this paper is to identify key factors that cause traffic accidents. The individuals under study were the accidents with killed or seriously injured in Spanish crosstown roads during the period 2006-2015. Latent cluster analysis was applied as a preliminary tool for segmentation of accidents, considering population aging as the main input among other socioeconomic indicators. Subsequently, a linear regression analysis was carried out to estimate the degree of dependence between the accident rate and the variables that define each group. The results show that segmenting the data is very interesting and provides further information. Additionally, the results revealed the clear influence of the aging variable in the clusters obtained. Other variables related to infrastructure and mobility levels, such as the crosstown roads layout and the traffic intensity aimed to be one of the key factors in the causality of road accidents.

Keywords : cluster analysis, population ageing, rural roads, road safety

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