Models of multivariate regression for labor accidents in different production sectors: Comparative study

Bonerge Pineda Lezama, Omar; Varela Izquierdo, Noel;Pérez Fernández, Damayse; Gómez Dorta, Rafael Luciano; Viloria, Amelec Jesus Silva; Romero Marín, Ligia Cielo

Abstract

The present article shows the results of an investigation carried out on the use of alternatives to carry out work accident studies in an objective manner in three production sectors that are of high risk: the electric power production sector, cement production and oil refining sector, so the main objective is focused on identifying the influential variables and the regression model that best explains the accident in each of these sectors and perform a comparative analysis between them. Among the techniques and tools used (data mining) are those related to multivariate statistics and generalized linear models and through the Akaike information criterion and Bayeciano criterion, it was possible to determine that the best regression model that explains the accident rate in two of the sectors studied is the negative binomial (cement and petroleum refining), while in the electric power sector, the best fit model resulted in Logistic Regression. In turn, for the three sectors in general, the variables that have the most significant impact are related to aspects such as: management commitment, occupational safety climate, safety training, psychosocial aspects and ergonomic sources, this result was corroborated by means of an accident analysis carried out in these three sectors.

keywords

Comparative study, Data mining techniques, Labor accident, Multivariate models, Production sectors