Abstract

The method of linear regression models is an important topic in statistical analysis, when two or more explanatory variables are related to the regression relationship. A set of problems occurs in which a violation of one of the basic assumptions of the method of ordinary least squares leads to obtaining biased estimates , There are several methods suggested to address these problems, including the robust methods of regression analysis, that the ordinary least squares (OLS) method is sensitive to the presence of outlier values in the data as the break As the breakdown point is very low and leads to inaccuracy of the results for the estimated parameters, where the estimated features are characterized by inefficiency, therefore robust methods of least squares are used to address the problem of the presence of outliers values and leverage points in the data and other problems. In this research, a theoretical and practical comparison between the OLS method and the robust methods of estimating linear regression models (M estimators, MM estimators, and S estimators) was presented with a review of the most important methods of finding outliers values in the data weights functions that accompany the estimation process through The iterative weighted least squares method. As for the applied side, real data taken from the Central Statistical Organization for the statistical group for the year 2017 in Iraq which pertains to natural conditions has been analyzed in order to estimate a set of linear relationships in the usual way and robust methods and it has been proven that robust S estimators data provided us with the best model according to statistical standards using the program (Eviews 10).