

## A new mathematical evaluation of smoking problem based of algebraic statistical method

### ABSTRACT

Smoking problem is considered as one of the hot topics for many years. In spite of overpowering facts about the dangers, smoking is still a bad habit widely spread and socially accepted. Many people start smoking during their gymnasium period. The discovery of the dangers of smoking gave a warning sign of danger for individuals. There are different statistical methods used to analyze the dangers of smoking. In this study, we apply an algebraic statistical method to analyze and classify real data using Markov basis for the independent model on the contingency table. Results show that the Markov basis based classification is able to distinguish different date elements. Moreover, we check our proposed method via information theory by utilizing the Shannon formula to illustrate which one of these alternative tables is the best in term of independent.

**Keyword:** Markov basis; Contingency tables; Entropy