

TIME SERIES ANALYSIS OF CRIME DATA OF ANURADHAPURA DISTRICT, SRI LANKA

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The global incidence of crime has grown dramatically in recent decades. A similar condition prevails in Sri Lanka, and according to the crime statistics of Sri Lanka Police, about 55,000 crimes are reported annually. Among them, a considerable proportion is occupied by property-related crimes. This study focuses on analyzing property-related crimes that occurred in the Anuradhapura District in the North-Central Province of Sri Lanka. The monthly property crime data has been collected from the police records of Anuradhapura Police Station from January 2003 to December 2019. The data has been analyzed using two different statistical techniques: Box-Jenkins' Autoregressive Integrated Moving Average (ARIMA) procedure and the Exponential smoothing techniques (Holt's model and Holt-winters model). Moreover, Akaike Information Criterion, Bayesian Information Criterion, and Mean Square Error were considered to identify the best-fitting model. Results revealed that ARIMA (0, 1, 1) model has higher fitting and forecasting accuracy than Holt's model and Holt-winters model for the monthly property crime data. This study may be useful for the government, especially the police authority and policymakers, to analyze the crime status of the country, anticipate the increased risk, and make predictions accordingly. Further, it can be used to determine the effectiveness of current policies against criminal offences and make appropriate adjustments to create a safer environment for society and, ultimately, a safer country.

Keywords: ARIMA, Crimes, Exponential smoothing, Forecasting