UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

EVALUATING AND FORECASTING THE MORTALITY RATE USING LEE-CARTER MODEL: A MULTI-COUNTRY STUDY

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ABSTRACT

The study of mortality trends is essential for comprehending present demographic conditions and projecting future changes in mortality. The original Lee-Carter (LC) model is a basic model that can be used to examine mortality. The model is applied to five countries, namely Spain, Korea, Italy, the United States of America, and Belgium, in order to determine which country fits the LC model the best. Those countries' mortality data was obtained from the website “Human Mortality Database”. The focus of this study was to concentrate on using the LC model to forecast and estimate mortality rates in five countries based on female and male mortality. Aside from that, this study creates life tables and computes life expectancies based on expected death rates. The result shows that the forecast value for all five countries is not too far from the observed value. From this study, it can be concluded that for male and female population, the USA has the smallest value in life expectancy, indicating that the USA is a short-lived population. Apart from that, Italy had the lowest RMSE value for the male population, whereas Korea has the lowest value error, implying that an LC model is more accurate and best fit model compared to other countries. For the female population, MAE and MAPE are the lowest values for Korea while in the USA, RMSE and MSE are the lowest values and implies higher accuracy of a LC model. Average accuracy error shows that Korea has the best performance for male population while USA has the best performance for female population.