UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

THE LEE-CARTER METHOD FOR ESTIMATING AND FORECASTING MORTALITY : AN APPLICATION FOR JAPAN, CANADA AND AUSTRALIA

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

Mortality is the total number of deaths caused by a given disease or condition. The key message from mortality studies is how they offer an overview of the health issues that exist right now, highlight enduring risk patterns in certain populations, and demonstrate trends in particular causes of death across time. This study will examine the efficacy of the Lee-Carter (LC) model in the context of mortality data from Japan, Canada and Australia. This research has compared between the parameter of adjusted $k(t)$ and non-adjusted $k(t)$. Adjusted $k(t)$ was refers to the mortality improvement factor after applying certain adjustment to the original LC model while non-adjusted $k(t)$ refers to mortality improvement factor obtained directly from the standard LC model without any additional adjustment. The data that have been discovered from the Human Mortality Database (HMD) for three countries are taken from 1950 to 2020 and ages from 0 to 110 years old. The present study experimentally the accuracy of the LC model about the mortality data between three countries has been chosen by evaluating the reliability of mortality data by measuring the error using LC model in modelling and forecasting. This study analyzes the life expectancy between two genders which are female and male also the total of the two genders. The findings of this study will show which genders' life expectancies are growing and it also will be able to find any systematic differences and similarities by contrasting the patterns of adjusted $k(t)$ and non-adjusted $k(t)$. The best selection of parameter for $k(t)$ will be shown to the lowest measuring error for all the countries. Hence, the output that will be appear was shown that Japan countries has the longer life expectancies and the smallest value of measuring error is from LC 2 which is non-adjusted $k(t)$