

**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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**Report submitted in partial fulfillment of the requirement  
for the degree of  
Bachelor of Science (Hons.) (Management Mathematics)  
College of Computing, Informatics & Mathematics**

**AUGUST 2023**

## **ACKNOWLEDGEMENTS**

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

First and foremost, we would like to praise and thank the Almighty God for giving us the strength and because of His blessing, we wouldn't have gone this far. This research cannot be completed without effort and cooperation from our group members, which consist of Nur Aimi Asyikin binti Muslim, Nadia Farhana binti Rahime and Eshshadieq Daniell Hayyqal Shah bin S Mazlan. We always work hard and smart to make the best assignment with our full commitment and responsibility.

Therefore, we would like to thank our supervisor, Puan Nurul Aityqah binti Yaacob, for her enthusiasm, patience, insightful comments, helpful information and unceasing ideas that have helped us at all times in our research. We also would like to acknowledge our lecturer Puan NurLina binti Abdullah, because without her guidance our study cannot be accomplished. She always gives us support and guidance on how to do our study and how to manage it properly which produces a good outcome. We also like to thank her for teaching us in this course. Plus, we would like to thank our family and friends for their understanding and support towards us for completing this report.

Last but not least, we would like to express our gratitude to Universiti Teknologi Mara (UiTM) Cawangan Negeri Sembilan (Seremban) for giving us an opportunity to learn something new to our life.

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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  $k(t)$  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  $k(t)$