

Forecasting Age-Specific Mortality Rates and Life Expectancy at Births for Malaysian Sub-Populations

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Abstract : In this paper, we forecast age-specific Malaysian mortality rates and life expectancy at births by gender and ethnic groups including Malay, Chinese and Indian. Two mortality forecasting models are adopted the original Lee-Carter model and its recent modified version, the product ratio coherent model. While the first forecasts the mortality rates for each subpopulation independently, the latter accounts for the relationship between sub-populations. The evaluation of both models is performed using the out-of-sample forecast errors which are mean absolute percentage errors (MAPE) for mortality rates and mean forecast errors (MFE) for life expectancy at births. The best model is then used to perform the long-term forecasts up to the year 2030, the year when Malaysia is expected to become an aged nation. Results suggest that in terms of overall accuracy, the product ratio model performs better than the original Lee-Carter model. The association of lower mortality group (Chinese) in the subpopulation model can improve the forecasts of high mortality groups (Malay and Indian).

Keywords : coherent forecasts, life expectancy at births, Lee-Carter model, product-ratio model, mortality rates

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