



Thesis Abstract

Survival Analysis of Food Security in Asian Countries

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The study applied survival analysis in determining food security of Asian countries. The technique examined the effects of covariates on food insecurity among Asian countries in a period of 40 years starting 1961. The analysis was conducted to determine "warning signs" of food insecurity. Sources of data are the online databases of the United National Food and Agriculture Organization (FAO) and World Bank, which include detailed information on 32 Asian countries.

Findings revealed that 21 of 32 (65.62%) Asian countries experienced food insecurity. The stepwise Cox's regression was used to select which among the 24 independent covariates are deemed to be significant contributions to the model. Initial run of the SAS code found six covariates to be significant.

Based on the adopted model, at each time point, the countries in the West Asian region were found to be more likely to experience food insecurity compared to those countries in the other regions. The model also determined that the incidence of food security for East Asia countries is more likely than for in the other regions. It can also be seen that countries in the lower-middle income group are more likely to reach food insecurity level than those in the other groups. The analysis also shows that the high-income countries have high risk of exposure to food insecurity.

Since Cox regression analysis follows the basic assumption of proportionality, the adopted model was tested to find out if it meets this condition. Graphical method and formal test of this assumption was conducted. In the presence of ties, the ties-handling method of Breslow, Efron, Exact, and Discrete were compared with respect to Wald statistics, parameter estimate, the hazard ratio, and p-value.

The availability of the determined dataset permitted the assessment of food insecurity levels, i.e., low, medium, or high, which were useful in describing the nature of food insecurity conditions. The analysis determined the variables that play important roles in each stage of food insecurity condition of each country.