

# EVALUATION AND PREDICTION OF HIGHER EDUCATION HEALTH STATUS BASED ON GREY RELATIONAL ANALYSIS AND TIME SERIES

Liu Fang (刘芳), Wang Jie (王杰), Zhou Lujie (周陆杰), Liu Hanlu (刘寒露)  
沈阳理工大学

**Abstract:** among the indicators for measuring global competitiveness, higher education health status is one of the main indicators. In order to measure and evaluate the health status of higher education in various countries, a higher education health evaluation system includes nine indicators from four aspects is proposed. These four aspects include cost, fairness, education quality and teacher level. The higher education health evaluation model is a fusion model with grey relational analysis method, entropy method, interpolation method and time series method. The experimental results show that the algorithm is stable and effective.

**Key words:** higher education health status, grey relational analysis method, entropy method, P-quantile method, time series, forecasting model.

In this paper, a grey relational analysis method is established to rank the development level of higher education in various countries. China is taken as the research object. The grey relational analysis method is applied to evaluate the health index of Chinese higher education. The P-quantile method is used to select the key indicators that can effectively enhance the development of higher education in China. On this basis, the measures to promote the development of Chinese higher education are proposed, and a model based on time series is established to predict the development of Chinese higher education health.

After the non-dimensional processing of various indicators data, the results after data visualization are shown in Fig.1.

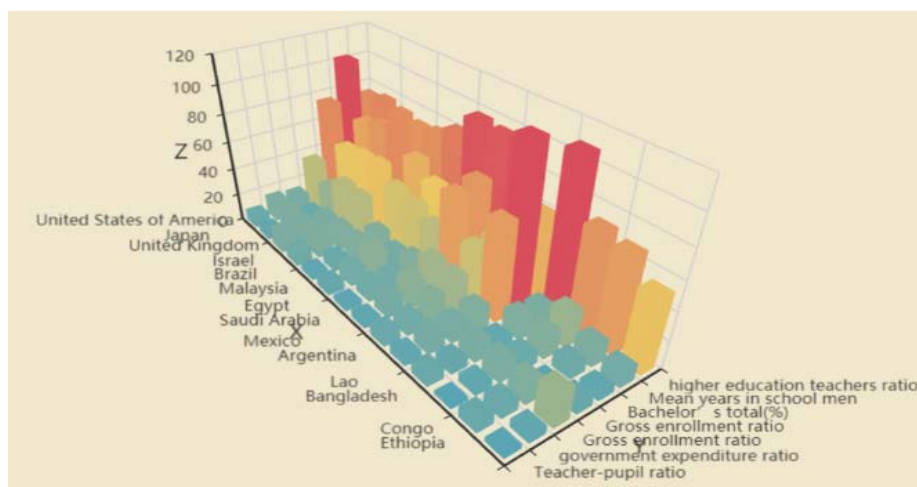


Fig. 1 – Data visualization for non-dimensional processing

Through the use of gray correlation analysis, we have got the health status scores and rankings of higher education in various countries.

Use the P-quantile method to select the three indicators with the lowest proportion and the largest weight. So our policy is to increase the proportion of these indicators.

Combining the above research results and relevant data on the development of higher education in China over the past ten years, a time series forecasting model is established. Our team predicts the health status scores of higher education for not implementing relevant policies and implementing relevant policies in the next three years, respectively.

By analyzing the data generated by the experimental results, we can see that our policy is effective in improving the level of China's higher education system. This model is also applicable to multiple countries, and the results are universal.