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Multicolinearity and indicator redundancy problem in world university rankings : an example using Times Higher Education World ranking 2013 - 2014 Data / Soh Kaycheng

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Abstract

World university ranking systems used the weight-and-sum approach to combined indicator scores into overall scores on which the universities are then ranked. This approach assumes that the indicators all independently contribute to the overall score in the specified proportions. In reality, this assumption is doubtful as the indicators tend to correlate with one another and some highly so. This causes the multicollinearity problem rendering some predictors redundant. At the same time, some indicators may contribute so little to the overall score and thus making them non-contributing. When overlapping and non-contributing indicators are retained, the overall score takes on a meaning very different from what it is originally intended to be. Using data for the top 101 universities of the Times Higher Education World University Ranking 2013-2014, these problems are demonstrated and a solution is suggested. This resulted in a new overall scores made up of only two of the six indicators, namely 'research' and 'citation'. The universities were then ranked on the basis of the new overall score and compared with the original. It was also noticed that some of the universities have had their

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original overall scores inflated by the non-contributing indicators and hence were over-ranked.

Implications for using the new overall and ranking are discussed. (HRK / Abstract übernommen)