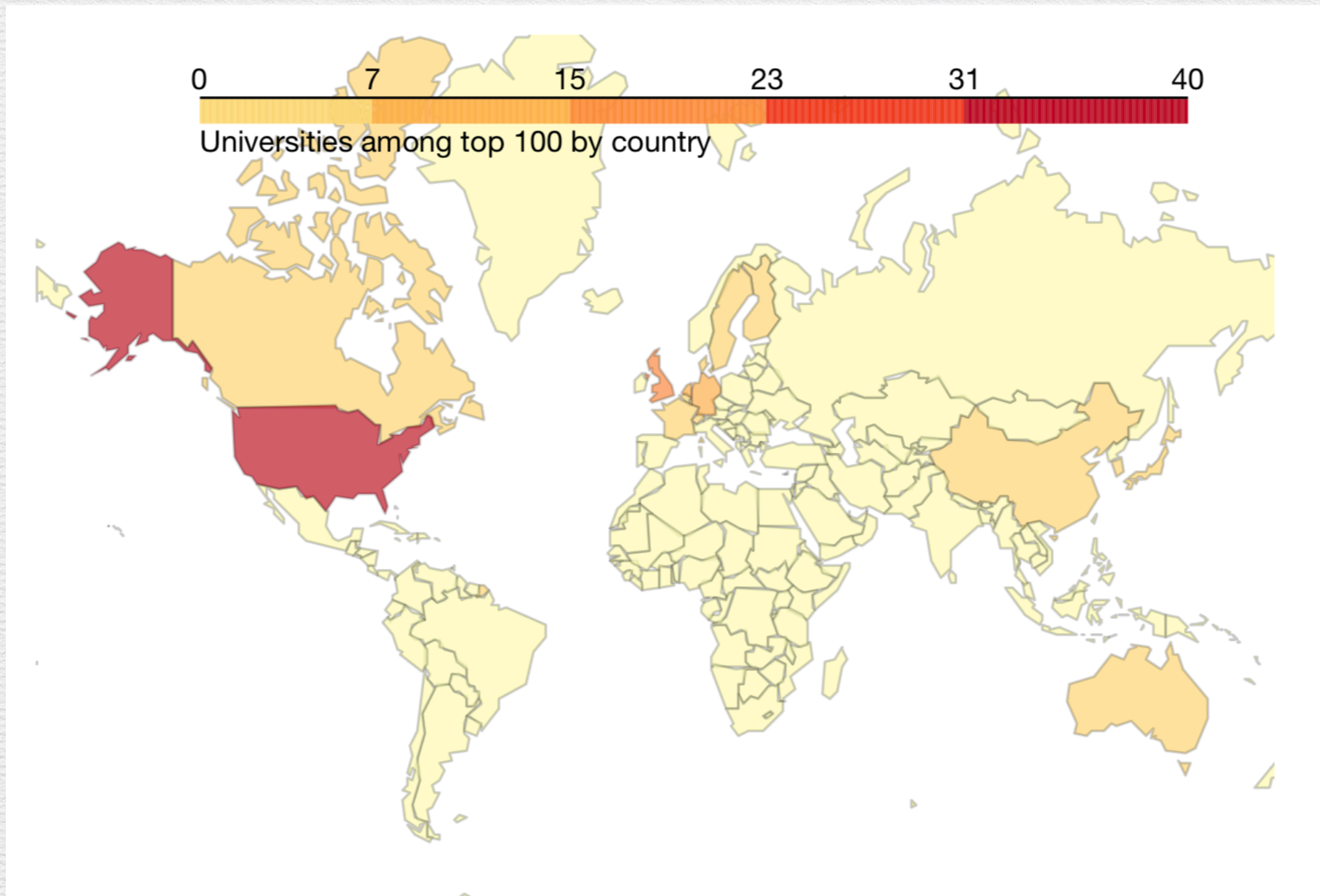# Assessing university performance worldwide

Gabriele Grasso
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Motivation

Source: Times Higher education ranking for the year 2016

Motivation

- Top universities belong to a small number of countries, mostly in the western world

- Is this an effect of the definition of the overall performance score?

- Would an alternative score definition bring more countries under the spotlight?
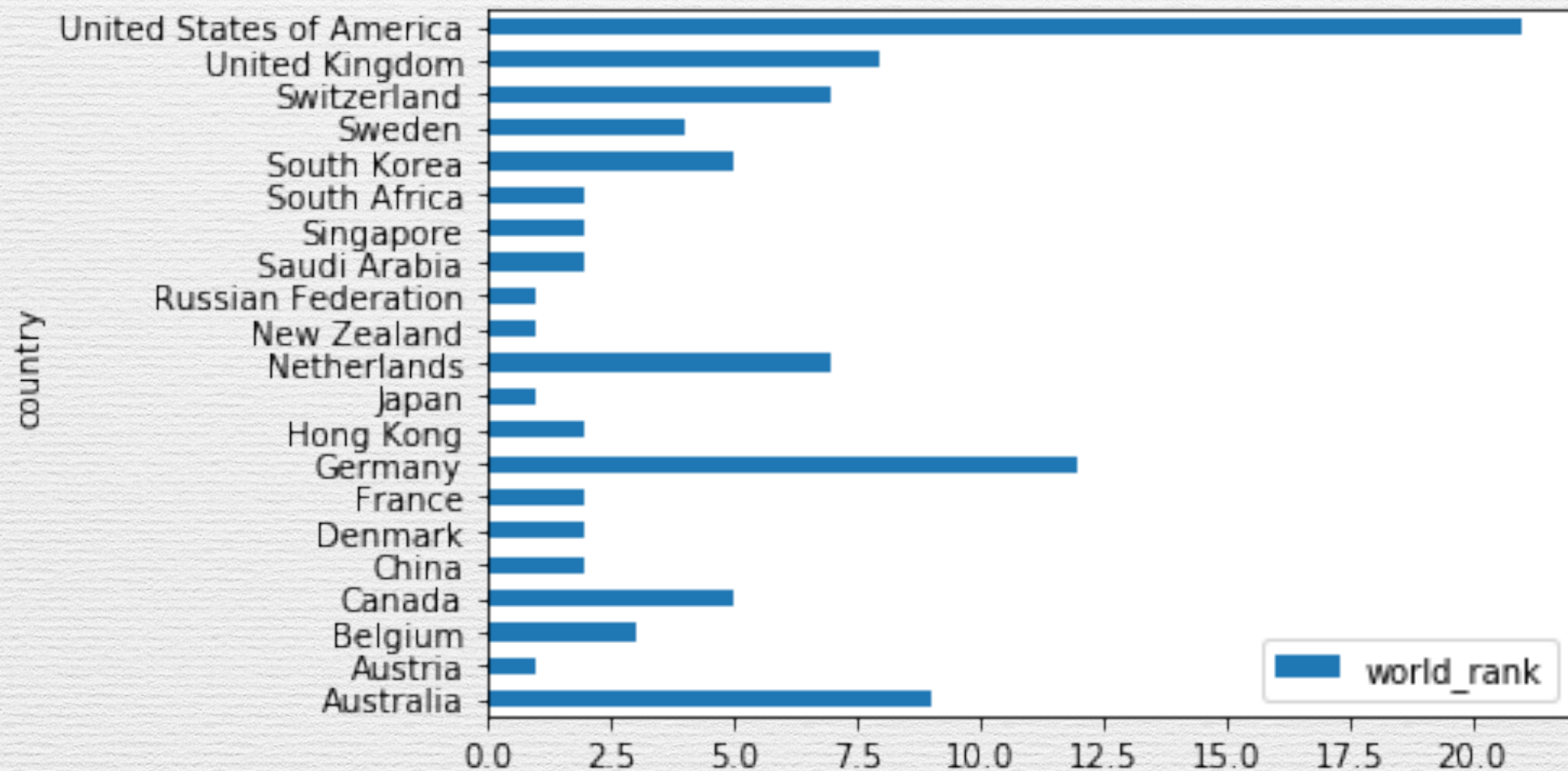
Times Higher Education total score

$$S = 0.3 * teaching + 0.275 * international + 0.3 * research + 0.1 * citations + 0.025 * income$$
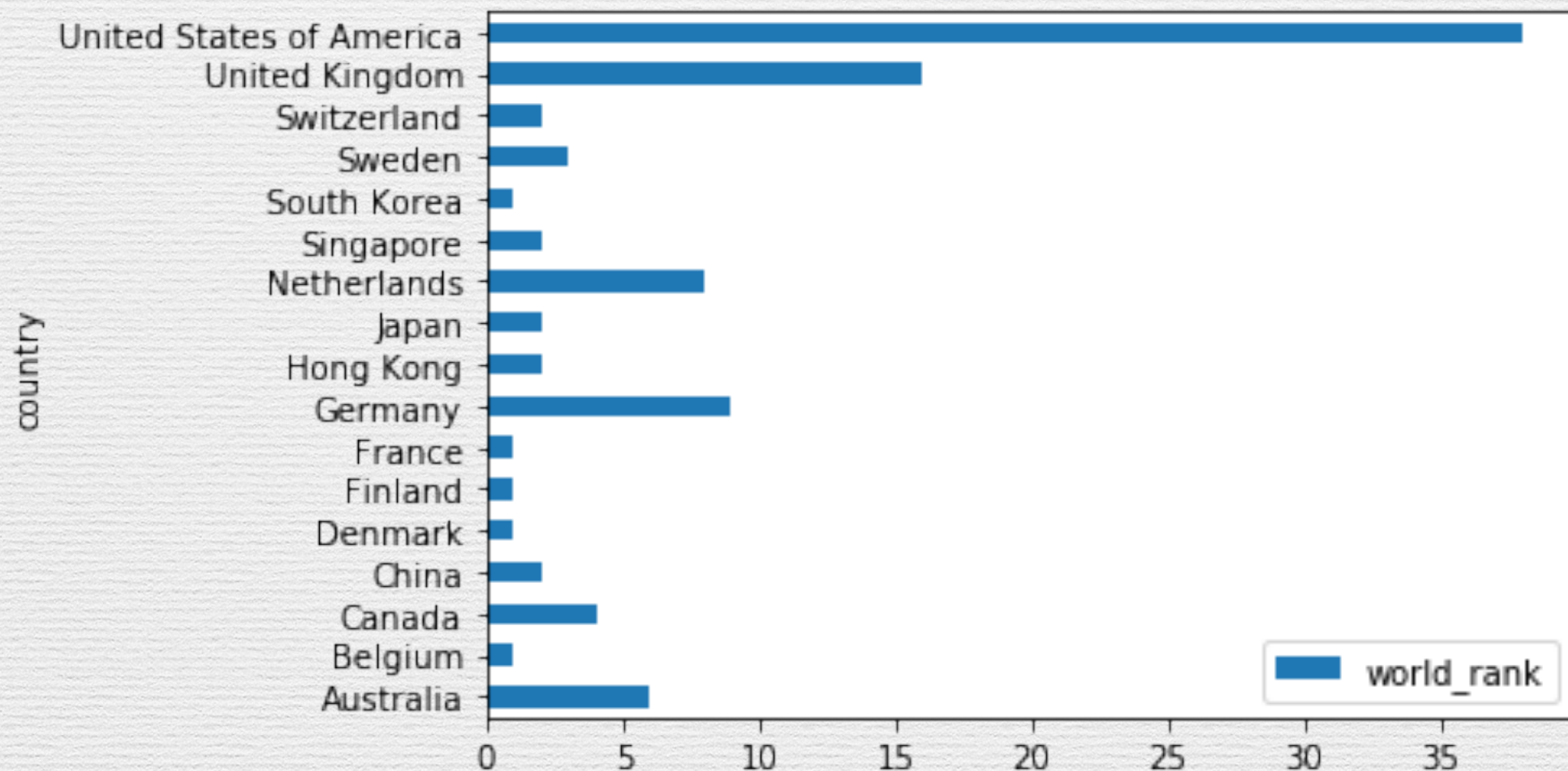
The ranking based on this score is dominated by universities from USA and the UK

Teaching-based score

$$S = 0.4 * teaching + 0.3 * international + 0.3 * income$$

More countries from across the globe enter the top 100 ranking
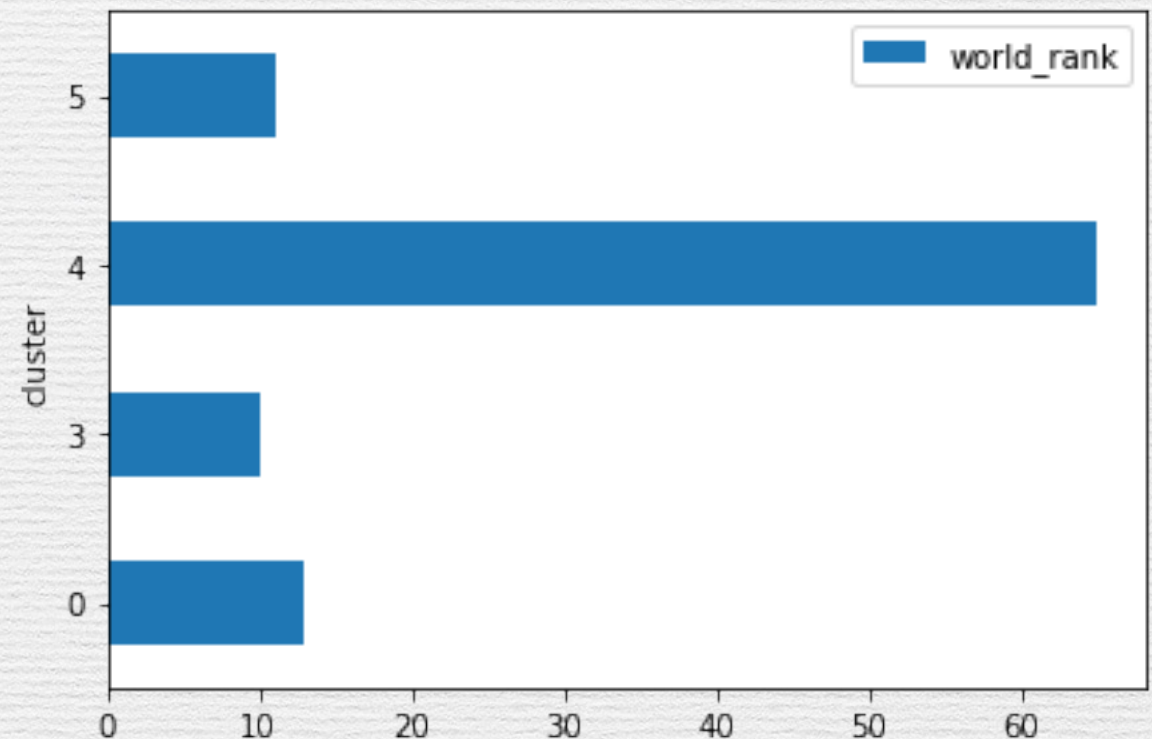
Clustering universities

- The KMeans machine-learning algorithm has been applied to the database

- Universities have been grouped in six clusters according to the similarity of various performance parameters

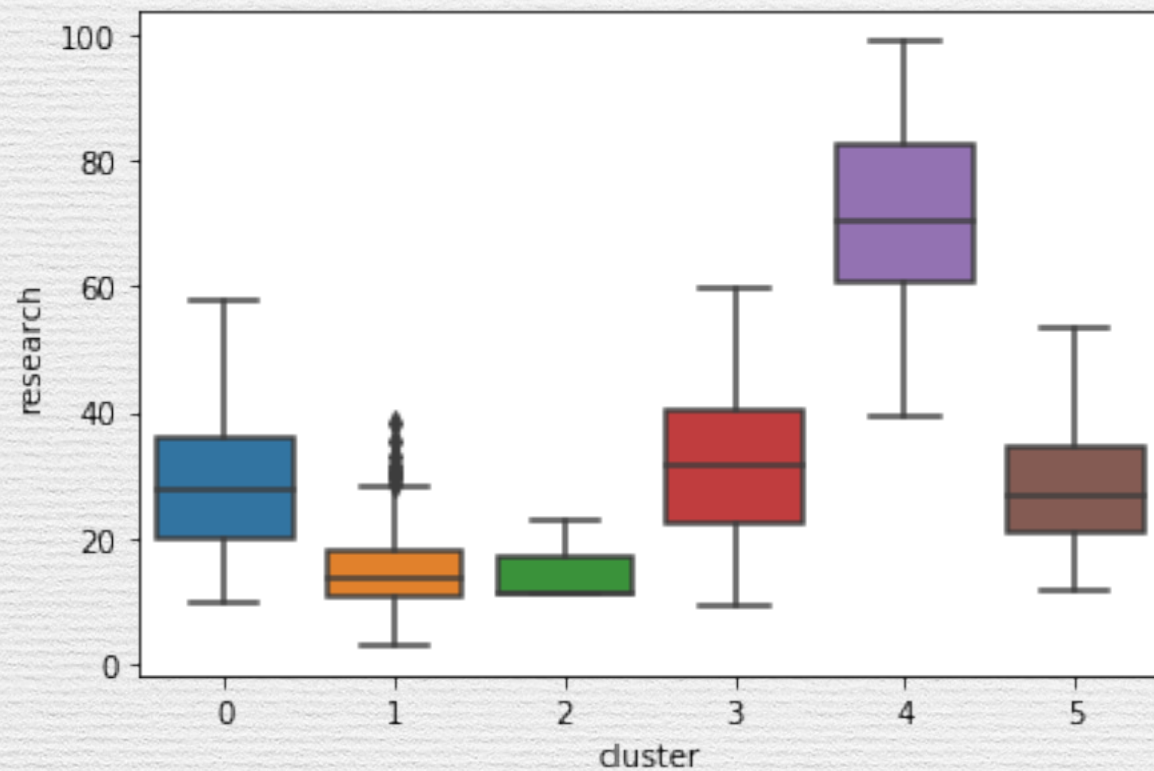# Distribution of top 100 universities by cluster

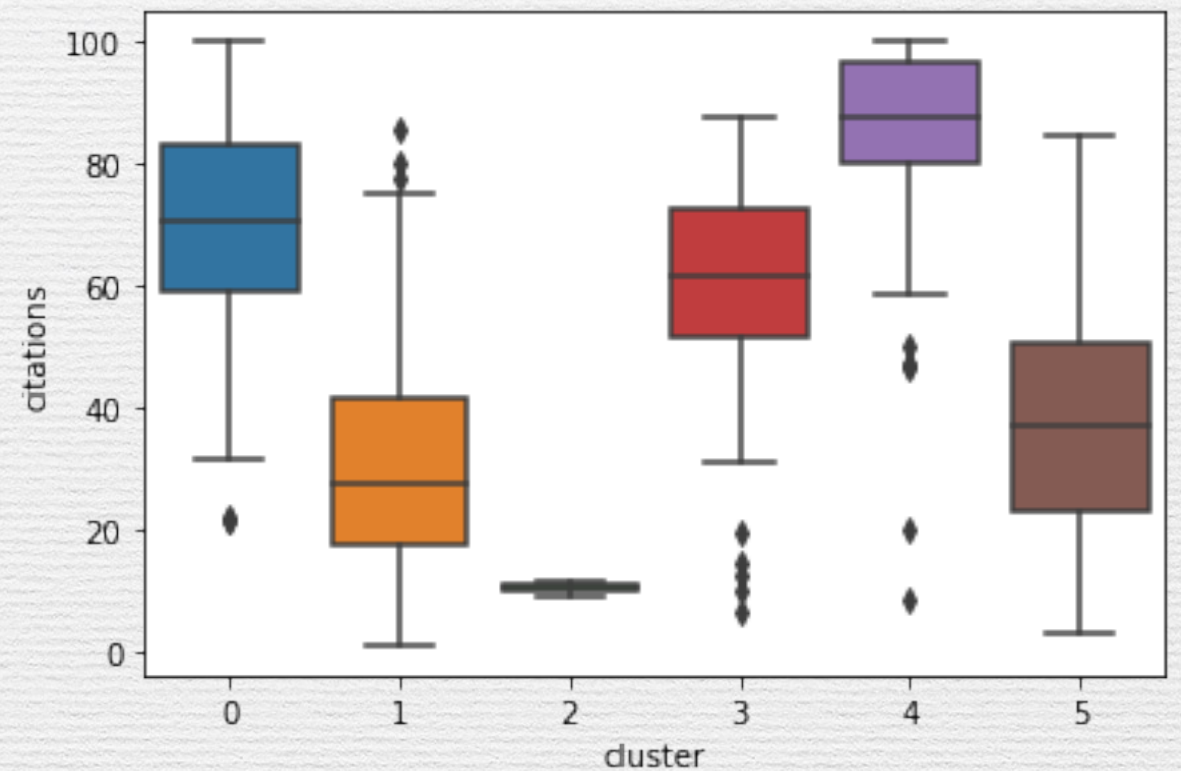### Original score
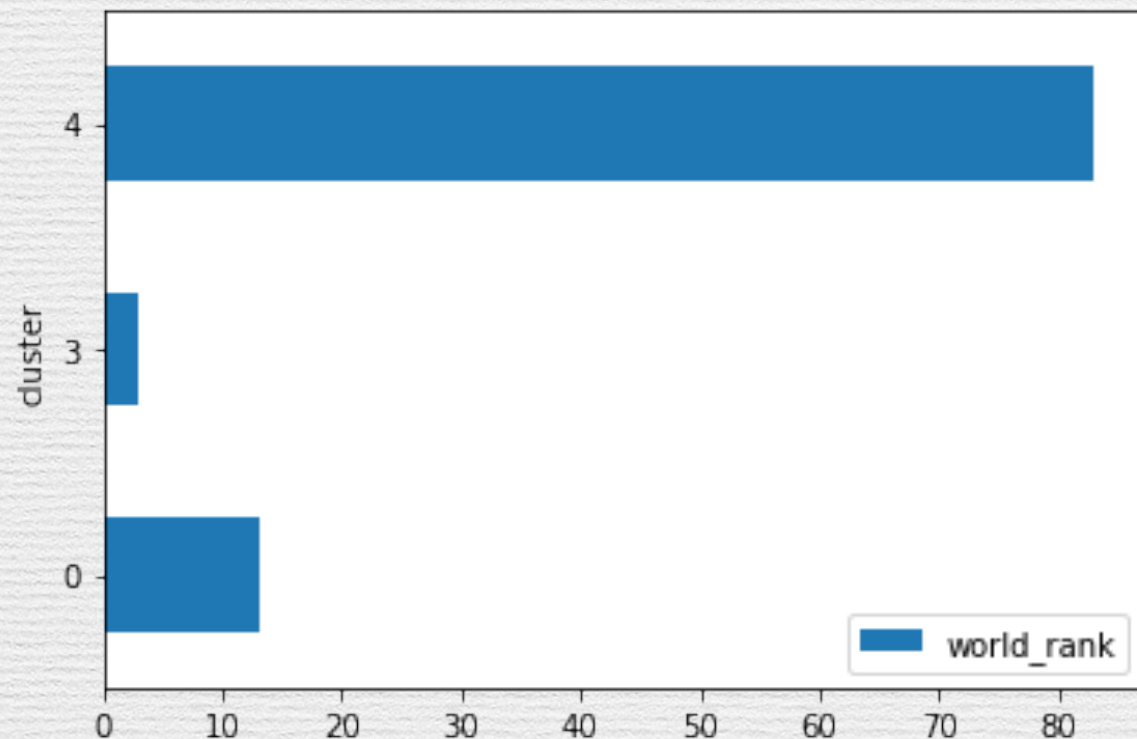
Teaching-based score

- Using the original total score, only clusters 0, 3 and 4 have universities among the top 100
- With the teaching-based score, cluster 5 is represented as well

Research and citations scores
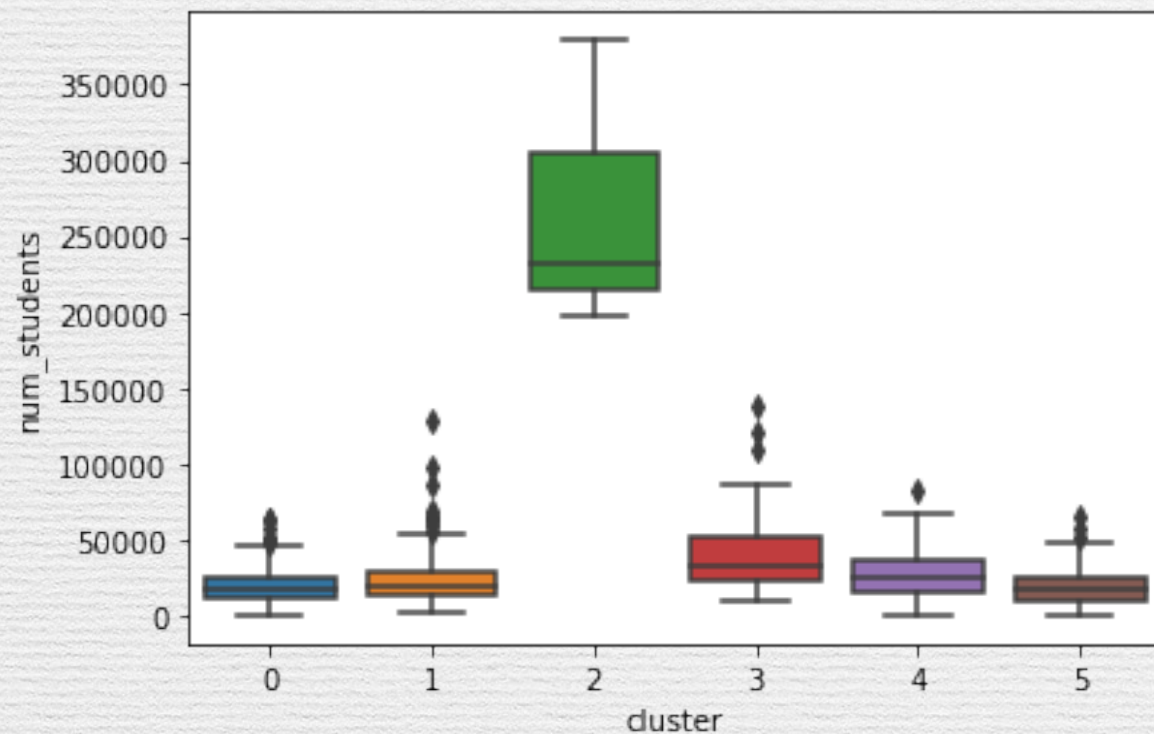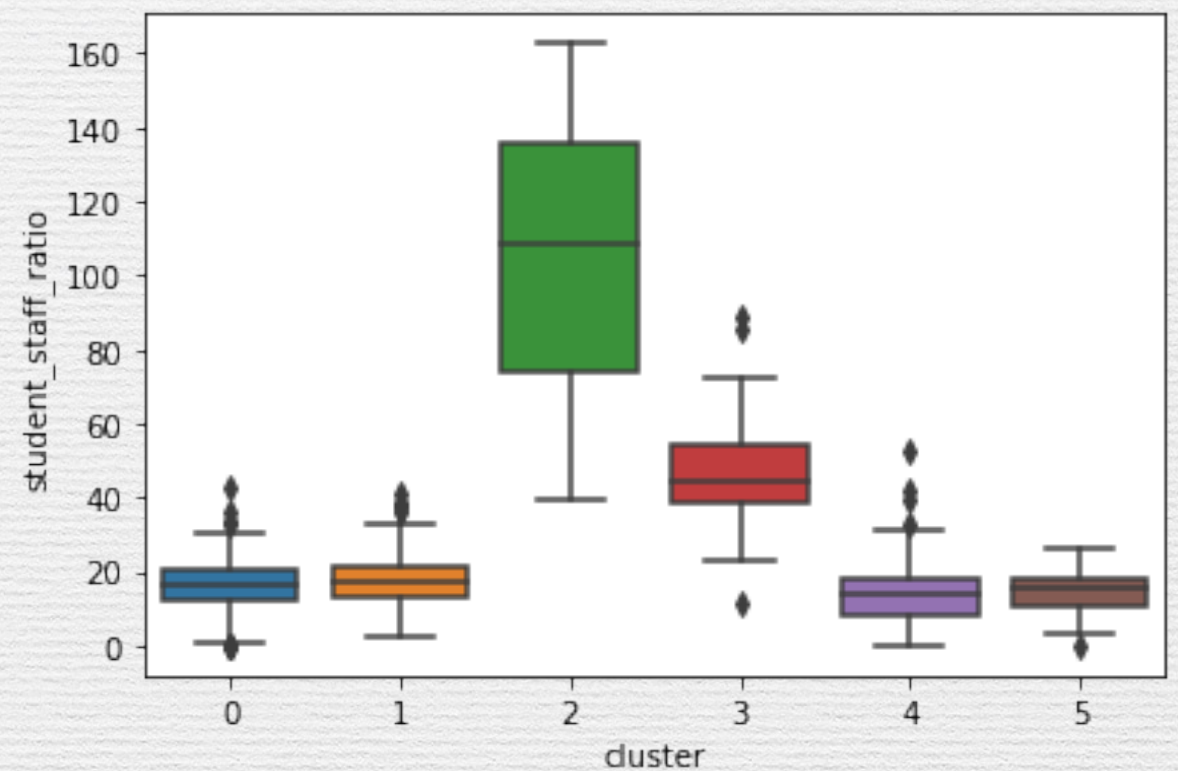

Research score

Citations score

The volume of research and the influence that it achieves through citations do not seem highly correlated

Number of students and students-to-staff ratio

Number of students

Students-to-staff ratio

Cluster 2 contains the universities with highest student population but also the highest student-to-staff ratio

Conclusions

- The number of universities by country in the top 100 changes if we change the weight attributed to the various performance indicators

- Research volume and citation scores are not always directly proportional

- Universities with higher number of students tend also to have a higher student-to-staff ratio