

EXPLORING WORLD UNIVERSITY RANKINGS

36-315

Statistical Graphics and Visualization

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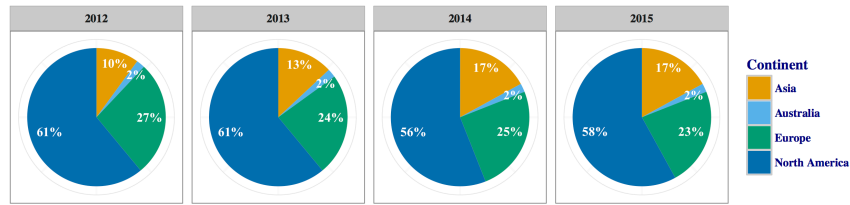
Overview of Dataset:

The following dataset contains information on the top 1000 global universities and university characteristics for years 2012 to 2015. There are in total 21 variables. We transformed continuous variables to create patents, factor, rank levels, employment levels and continents as categorical variables. We explore relationships between these predictor variables and the university rankings.

Conclusion and Future Work:

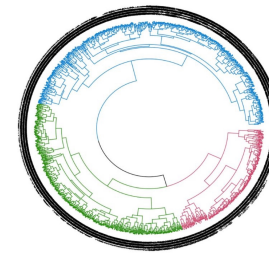
From our analysis, we can see Asian university proportions rising in the top 100 universities through 2012-2015 however there still exist some biases against university's from Asia and Europe in the top rankings. The better the quality of education, quality of faculty, employment level, the higher the global ranking. In the future, we might want to explore other ranking datasets and see if we have the same conclusions since the methodologies for gathering data are different.

Distribution of Top 100 Universities across Continents

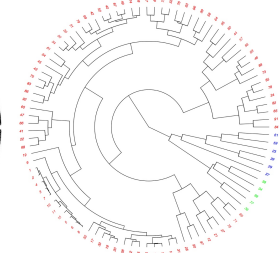


- More than half of top 100 universities around the world are in North America across the 4 years.
- Among four continents, Australia has the least number of universities ranking top 100.
- Asia has an increasing number of universities ranking top 100 from 2012 to 2015.

Dendrogram of 2000 University Rankings
Color By Cluster From 2012 to 2015

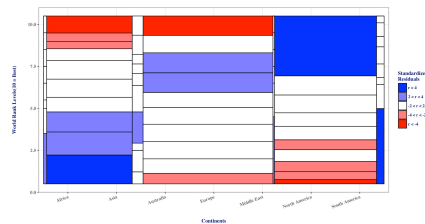


Dendrogram of Top 100 University Rankings
Color By Cluster in 2015



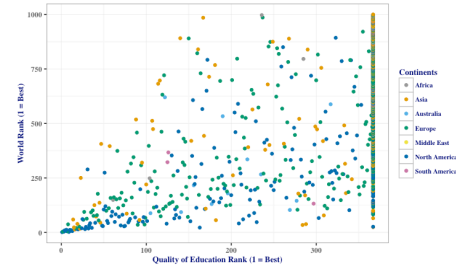
- We observe 3 clusters of data for 2000 universities from 2012 to 2015 [Left].
- We observe 3 clusters of data for top 100 universities in 2015 [Right].
- Notice: we labeled dendrogram leaves by World Rank.

Relationship Between World Rank Level and Continents of Universities



- Universities in Africa, Asia, Europe, Middle East and South America are more likely to have lower world rank levels (1-3).
- Universities in Europe and Australia are more likely to have middle to high world rank levels (4-8).
- Universities in North America are more likely to have the highest world rank level (9-10).

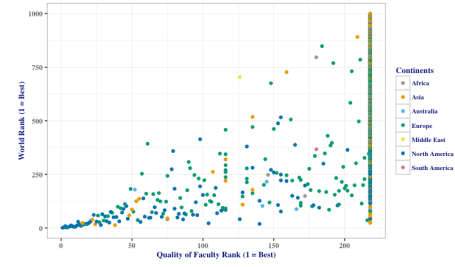
Scatterplot of World Rank vs. Quality of Education for Different Continents (2015)



Quality of education

- There is a strong correlation between quality of education and world rank with correlation of 0.6761.

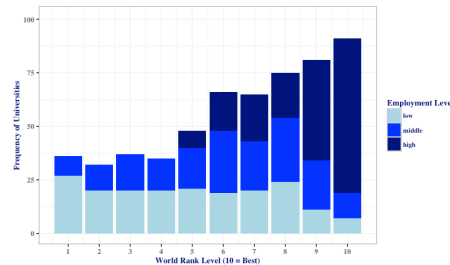
Scatterplot of World Rank vs. Quality of Faculty for Different Continents (2015)



Quality of faculty

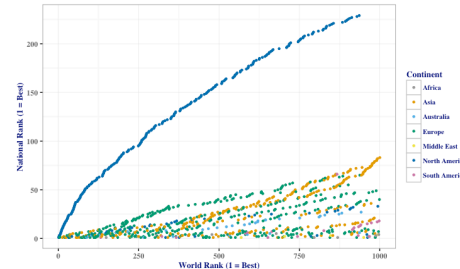
- There is a strong correlation between quality of education and world rank with correlation of 0.664.

Distribution of Universities World Rank Level by Employment Level (2015)



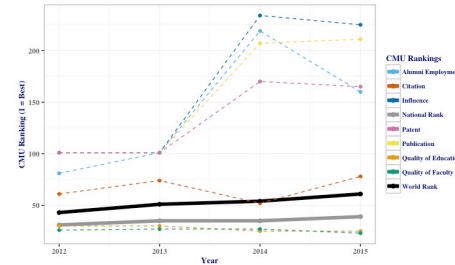
- Universities with higher World Rank Level have higher Employment Level.
- Universities with lower World Rank Level have lower Employment Level.
- Employment Level is closely related with World Ranking.

World Rank vs. National Rank of Universities by Continents (2015)



- World Ranks and National Ranks are positively correlated.
- The World Ranks of universities in North America have the smallest difference from the National Ranks.
- In other countries, National Ranks are much higher than World Ranks.

Time Series Plot of CMU Rankings



- World and national rankings of CMU decreased a little over the past 4 years.
- Rankings of education and faculty qualities increased a little over the past 4 years.
- There were great fluctuations in rankings of patents, publications, alumni employment, and influence of CMU over the past 4 years.