

Evaluation of Academic Performance Oriented International University Ranking Systems Based on General Rankings and Criteria

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Need for ranking

- Use in daily life
 - Which hospital to choose for an operation, best students
- Need for comparing and making decision
 - Top ten research universities in Turkey, academic support

Ranking of universities

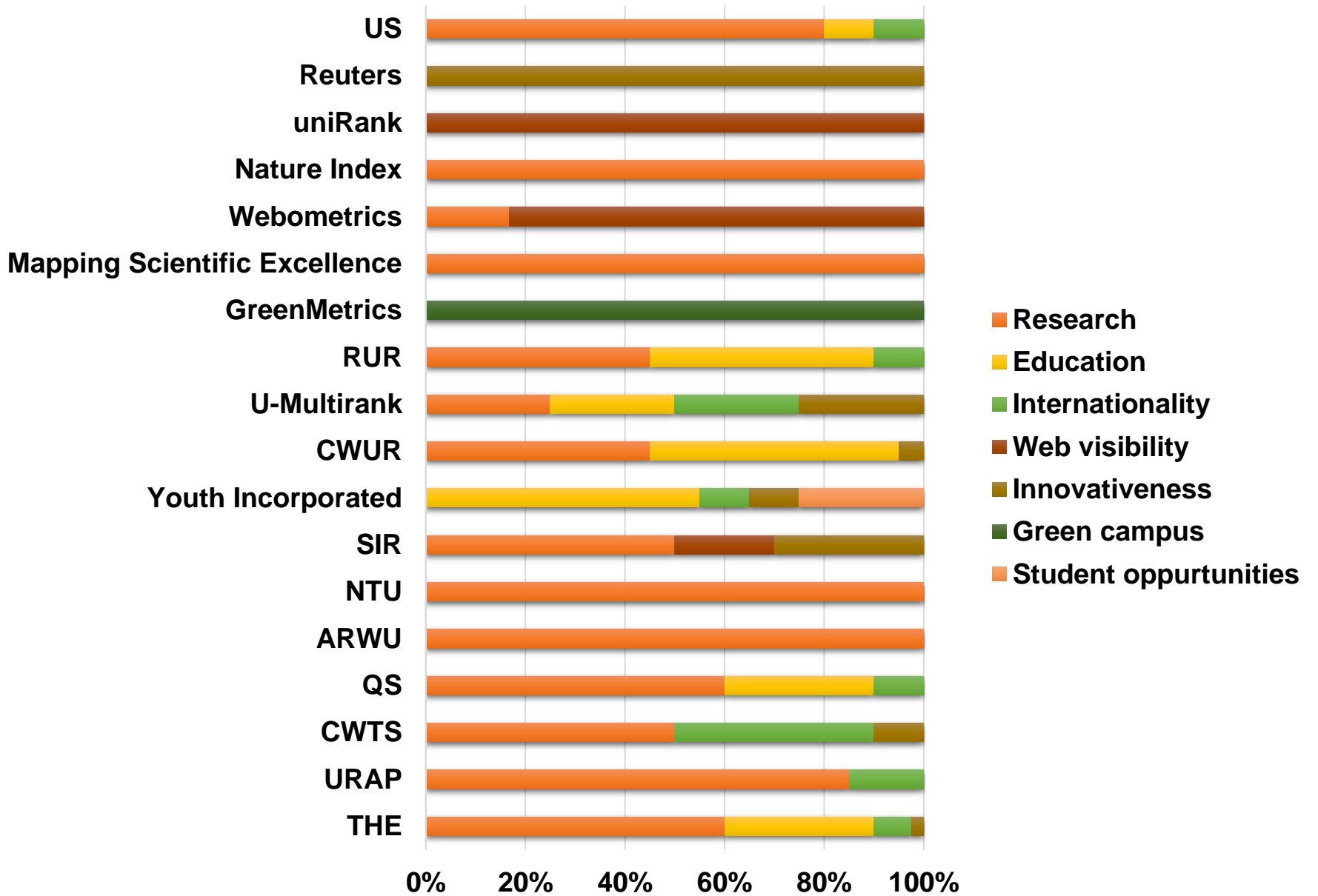
- Started nationally
 - 1983, US News & World Report Best Colleges
- First international university ranking
 - ARWU, 2003
- Why they appeared? – For which reasons we use them today?
- Number of international university ranking systems in 2017 is 18

Milestones (Internationally)

- IREG (2004, 2009), annual meetings, Berlin Principles (2006)
- ARWU annual meetings
- Higher Education in Europe, special issues by year of 2005
- OECD IMHE (2006)

Situation in Turkey

- URAP, 2010
- The Scientific and Technological Research Council of Turkey, The Supreme Council for Science and Technology , 2011
- Higher Education Council of Turkey, 2014
- University documents on academic promotion
- Hacettepe University, Congregation, April 2017



Problem

- Conception of rankings
- Importance given

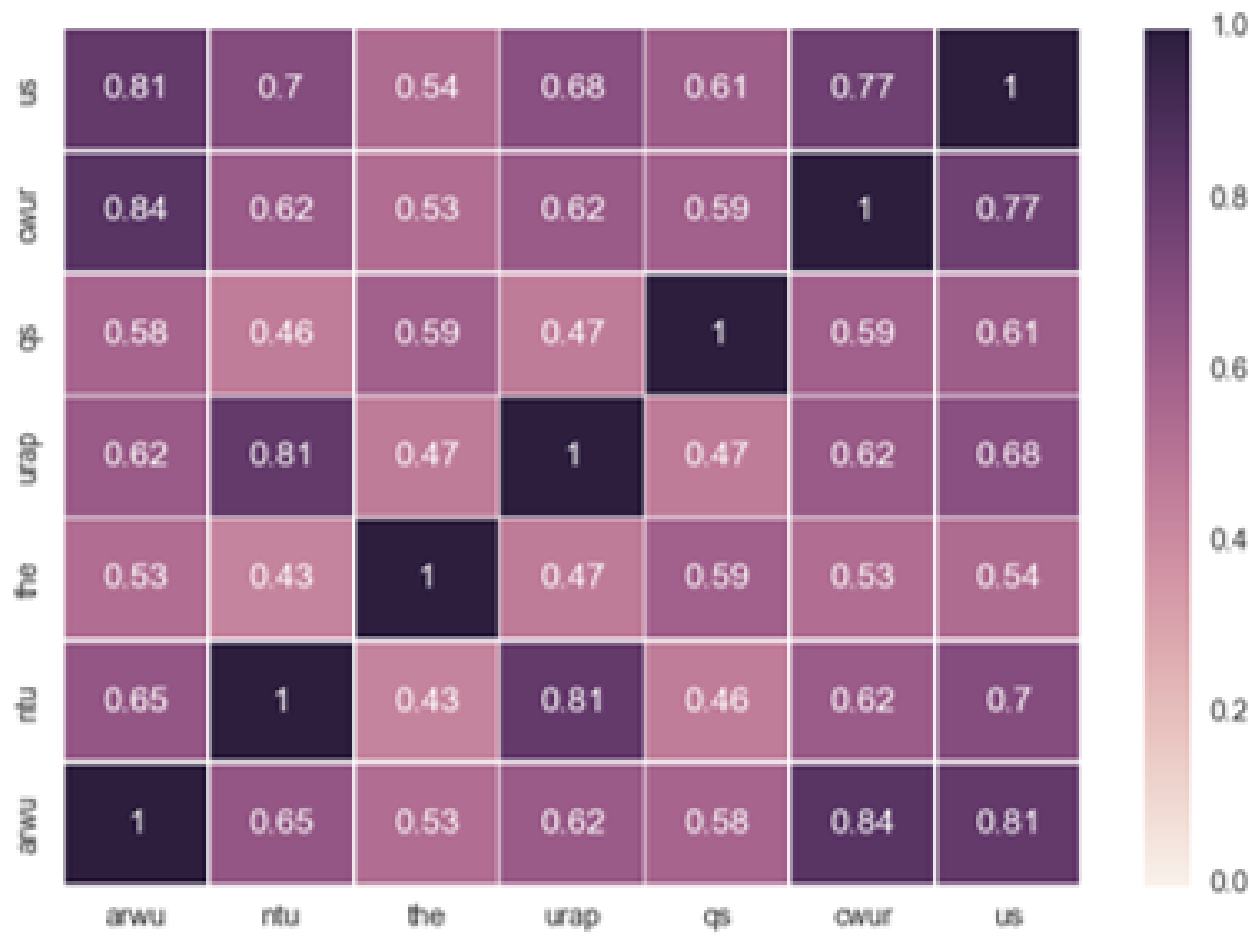
- Evaluation of overall ranking lists
- Effect of indicators, methodology, data source and weightings
- Correlation between indicators
- University-size-dependent indicators

Research and method

- Similarity of overall ranking lists
 - Similarity measures
 - Heat maps
- Change in the position of universities
 - Scatter plots
 - Scatter matrixes
- Similarity of indicators
 - Multidimensional scaling
 - Spearman correlation coefficients
 - Cosine similarity measure

Similarity of overall ranking lists

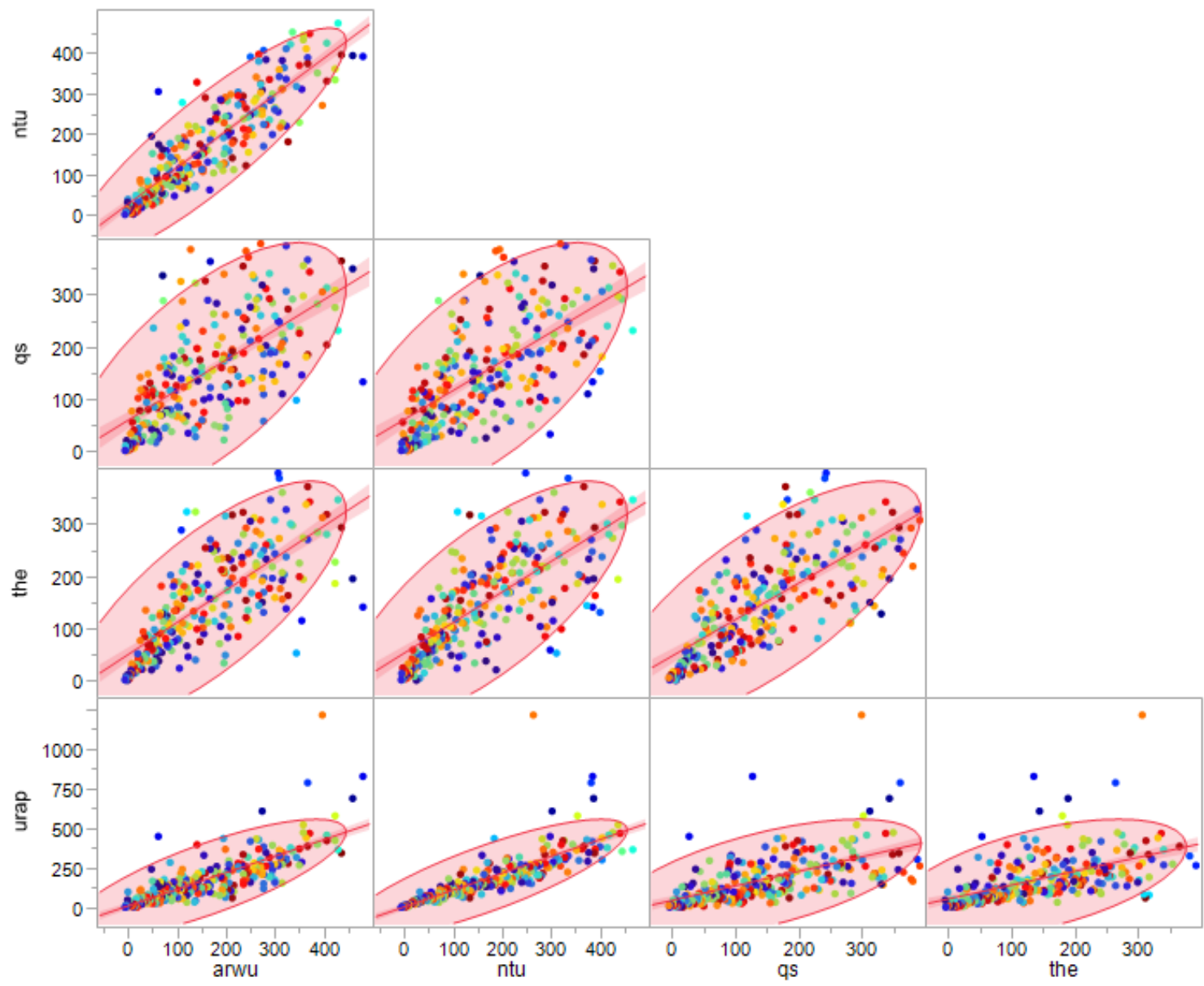
- Similarity for the same ranking system by years
 - High and very high similarities
 - Lowest for THE (0.65)
 - Lower similarity for the top 100
- Similarity of the rankings in a certain year
 - ARWU, NTU, URAP, CWUR, US
 - THE, QS
- Effect of indicators, methodology and data source

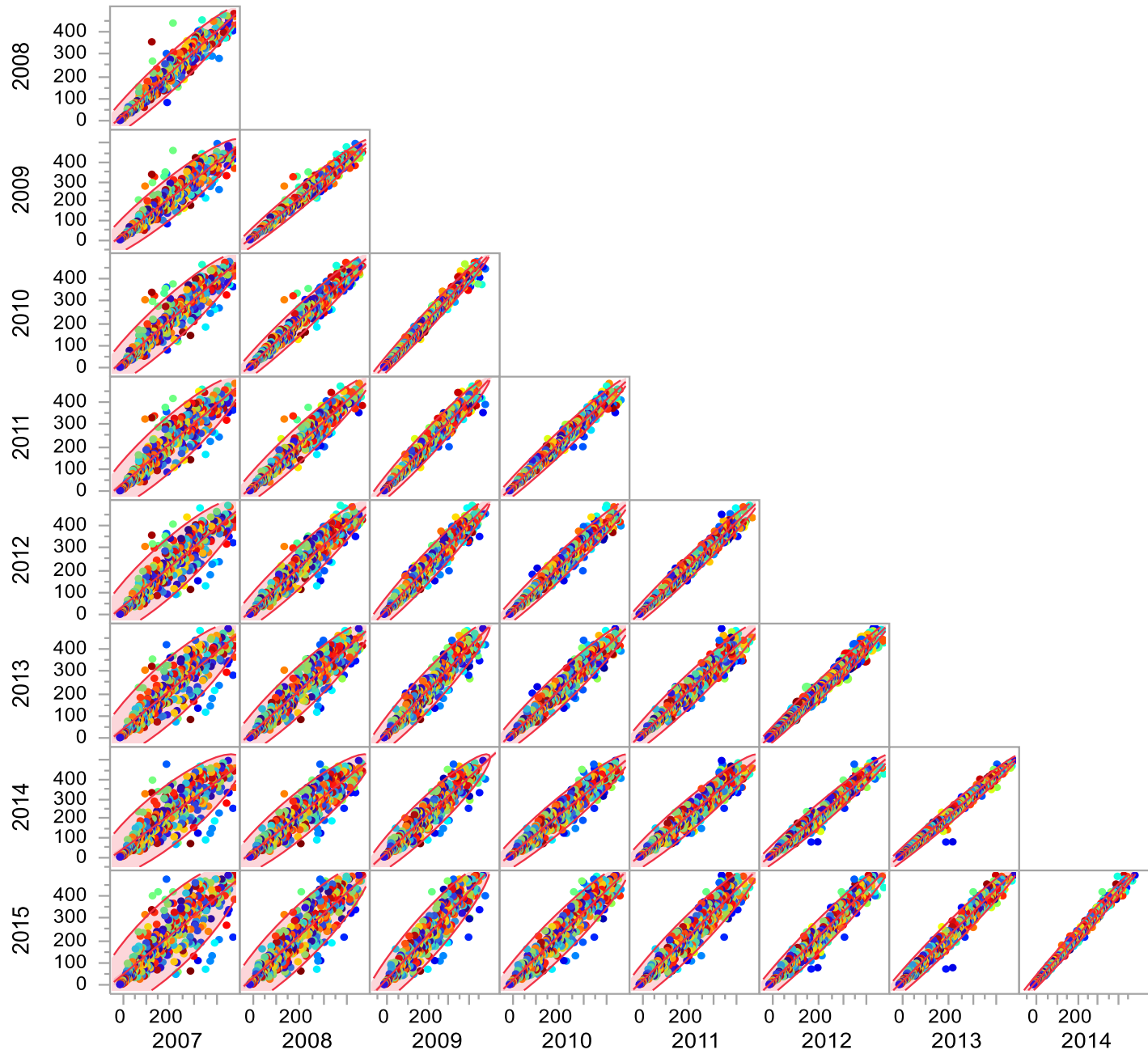




Change in position of universities

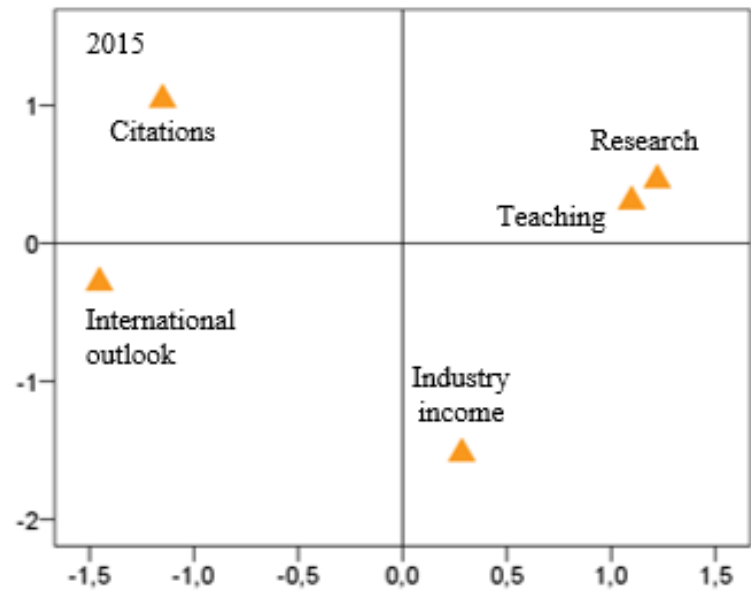
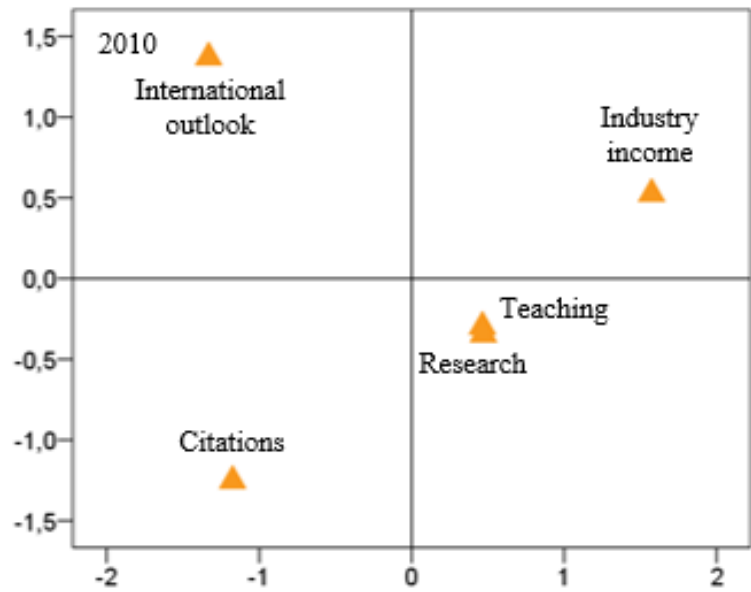
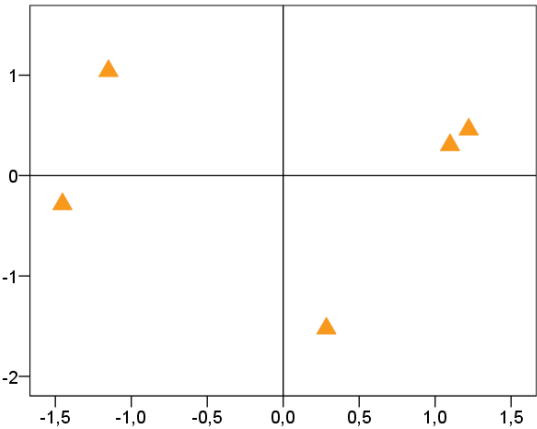
- Similarity for the same ranking system by years
 - The most abrupt changes in URAP (changes >1000 ranks)
 - THE 2010-2011 and 2014-2015 rankings
 - ARWU 2004-2007 and 2013-2015 rankings
 - NTU, 2007-2008; QS, 2014-2015; CWUR, 2013-2014
- Similarity of the rankings in a certain year
 - Important effect of THE, QS, URAP and CWUR for position change
- Effect of indicators, methodology and data source
- Changes in score – changes in ranks

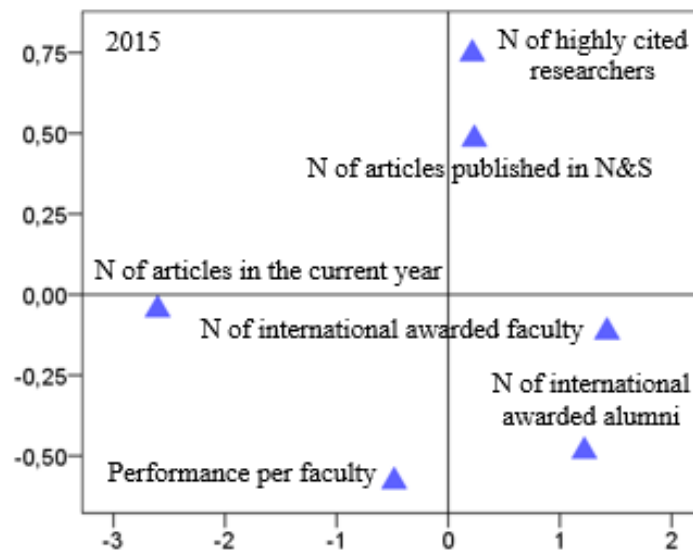
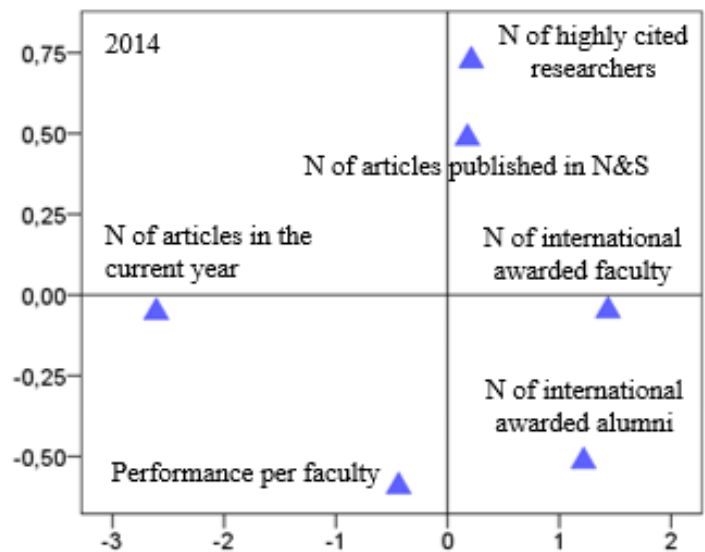
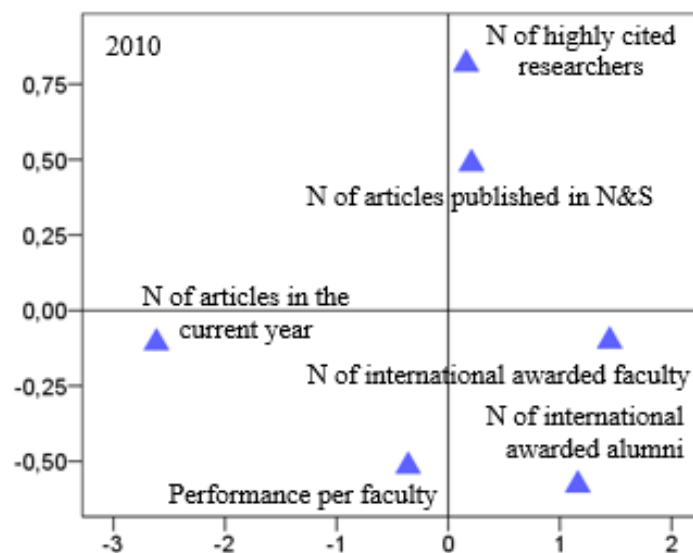
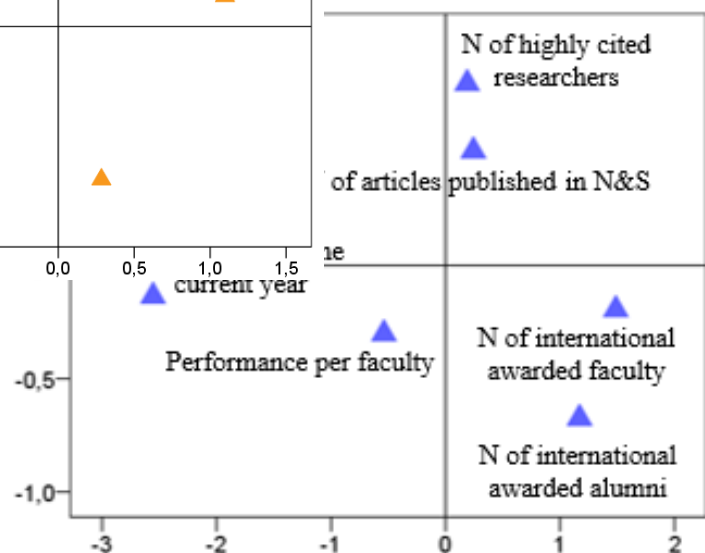
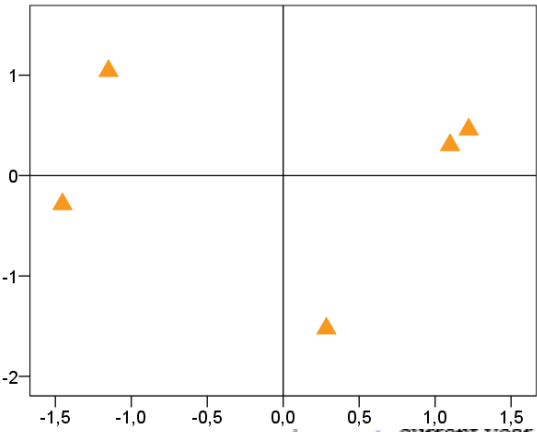




Similarity of indicators

- Similar indicator groups
- Ranking lists from the only one indicator from similar indicators groups are very similar to the existing ranking
 - Mainly for URAP, NTU and THE
 - Except QS
- University-size-dependent indicators effect ARWU and NTU, not effect URAP
- Problem of using very similar/correlated indicators in the same ranking





Added value (1)

- A few studies using similarity measures
- Number of international university rankings compared
- Number of universities compared
- Year limitation
- First use of heat maps for this aim
- Lower similarity values for the top 100
- Standardization of university names

Added value (2)

- Lack of comprehensive studies comparing the position of universities (generally for top 10, top 20)
- Comparing of fewer ranking systems
- Comparing of comparable ranking systems
- Different ranking systems from the commonly used/studied
- Visual presentation, interactive graphs

Added value (3)

- No studies for the correlated/similar indicators except ARWU
- Going beyond of determining similar/correlated indicators
- Cosine similarity values
- Multidimensional scaling

Last words ...

- What are the university rankings measure and how?
- University quality \neq Rank of the university
- Evaluating the rankings taking the definition of universities into consideration
- Using of university rankings for decision/policy making

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