Publication and citation data varies greatly across disciplines

The QS World University Rankings methodology utilizes citation data primarily. Indicators and this measure continues to make up 30% of an institution’s possible score. For the first time we have introduced a methodology, detailed here, to correct for the bias at faculty level which favours institutions generating large volumes of citations in the life sciences in particular.

We therefore decided to introduce a system to correct this bias to citations, as well as a new METRIC: CATION.

### Weighted citations at 30% for each faculty area

- Before normalizing

  - Average citations per faculty: 12 citations per year, corrected: 10 citations per year

  This is where universities are assessed based on weighted citations in the life sciences.

  - Average research citations per faculty: 10 citations per year, corrected: 7 citations per year

  This is where universities are assessed based on weighted research citations in the life sciences.

- After normalizing

  - Average citations per faculty: 12 citations per year, corrected: 10 citations per year

  This is where universities are assessed based on weighted citations in the life sciences.

  - Average research citations per faculty: 10 citations per year, corrected: 7 citations per year

  This is where universities are assessed based on weighted research citations in the life sciences.

### Sliding scale weighted adjustments

We analyzed the research output of each country, using the RANKING OF PAPERS PER FACULTY AREA. We then experimented with several algorithms to normalize the paper per faculty area score, which we named the CATION.

**Countries are assigned a weight on a sliding scale based on the median. Those exceeding the global average are assigned the most weight in the faculty area.**

### Exceptions for specific institutions

To avoid penalizing the faculty area, we have introduced an exception for specific institutions.

**Corporate Sector to be penalized**

In the case of a high concentration of research in the corporate sector, the university is penalized in both the faculty area and the CATION. In this way, we do not adjust the citation score on a sliding scale because this is already being penalized in the other three areas and so it does not add any further disadvantages in the five areas.

### Final outcome

- No penalty

  - High concentration of research in the corporate sector

  - No further penalty

- Penalty

  - High concentration of research in the corporate sector

  - Penalty applied

  - Penalty applied

  - Penalty applied

The effect of this methodology change is less on institutions with a comprehensive range of subject provisions than those heavily focused on one subject. The measure was designed to ensure the diversity of the research is captured, to remove universities with a strong emphasis on transnational sciences that have the advantage of being in the top quartile.