

University Rankings Report

Dataset Description

The dataset, `university_data.csv`, contains information on university rankings across various countries. It includes 100 entries with the following columns:

- **university_name**: Name of the university (object, 100 non-null)
- **country**: Country where the university is located (object, 100 non-null)
- **num_students**: Number of students (object, 97 non-null, with commas as thousand separators)
- **total_score**: Overall ranking score (float64, 100 non-null)
- **teaching**: Teaching quality score (float64, 100 non-null)
- **research**: Research quality score (float64, 100 non-null)
- **citations**: Citation impact score (float64, 100 non-null)

Shape: 100 rows, 7 columns

Missing Values:

- `num_students`: 3 missing values
- All other columns: 0 missing values

The `num_students` column is stored as a string with commas (e.g., "20,152") and requires conversion to numeric format for quantitative analysis.

Key Findings

1. Top 5 Universities by Total Score:

- Harvard University: 96.1
- California Institute of Technology: 96.0
- Massachusetts Institute of Technology: 95.6
- Stanford University: 94.3
- Princeton University: 94.2

These universities, all from the United States, dominate the top rankings based on total score.

2. Average Scores by Country:

Below is a summary of average scores for selected countries (full table available in the dataset analysis):

- United States of America: Total Score: 74.9, Teaching: 67.8, Research: 70.8, Citations: 85.8
- United Kingdom: Total Score: 79.7, Teaching: 74.9, Research: 77.9, Citations: 88.2

- Switzerland: Total Score: 81.5, Teaching: 78.5, Research: 84.0, Citations: 91.5
The UK and Switzerland show strong average performance, often surpassing the US in specific metrics like teaching and citations.
3. **Country with the Most Universities:**
- United States of America: 49 universities
The US accounts for nearly half of the universities in the dataset, indicating its significant presence in global higher education rankings.

Insights from Visualizations

1. Average Total Score by Country (Bar Plot)

[Insert Visualization: avg_total_score_by_country.png]

The bar plot illustrates the variation in average total scores across countries. Countries like Switzerland and the United Kingdom exhibit higher average scores, suggesting a concentration of high-quality institutions, while countries with fewer universities (e.g., China, Japan) show more variability. The United States, despite having the most universities, has a slightly lower average due to a broader range of performance levels.

2. Teaching vs Research Scores (Scatter Plot)

[Insert Visualization: teaching_vs_research.png]

The scatter plot reveals a strong positive correlation between teaching and research scores across universities. Top-performing institutions (e.g., Harvard, Stanford) cluster in the upper-right quadrant, indicating excellence in both areas. However, some universities excel in one metric over the other, suggesting diverse strengths. Country-specific patterns emerge, with US and UK universities widely distributed, reflecting varied institutional focuses.