CAPSTONE PROJECT UNIVERSITY SUCCESS ANALYSIS

Overview

The objective of this project is to develop a comprehensive Power BI dashboard utilizing data from various university ranking systems, offering valuable insights into the global higher education landscape. The analysis will delve into university demographics, ranking criteria, trends over time, and performance metrics. The aim is to facilitate data-driven decision-making and enhance overall understanding of university rankings. The Power BI dashboard will provide insights into University Demographics & Distribution, University Ranking System Analysis, University Metrics and Performance, and Trends and Patterns. It will allow users to explore correlations between ranking criteria, demographic factors, and university performance. The dashboard will offer actionable recommendations for universities to improve their rankings, attract international students, and optimize resources.

In addition to the Power BI dashboard, the project includes an essential phase of Exploratory Data Analysis (EDA) using SQL queries. These queries are employed to extract and analyse the dataset, uncovering insights into factors influencing university rankings, changes over time, and correlations between different variables.

To effectively present the results of EDA, visualizations are prepared and organized in an Excel file. These visualizations, including charts, graphs, and tables, highlight key findings and patterns, providing stakeholders with a comprehensive overview of the project's insights alongside the Power BI dashboard.

Overall, the project aims to empower stakeholders in the education sector with actionable insights to enhance university performance, attract international students, and drive continuous improvement in the global higher education landscape.

Process

- ***Data Acquisition from GitHub:***

This stage includes collecting information for analysing university success from a specific university database. It involves gathering university ranking data from different ranking systems, as well as demographic information and performance metrics. Prioritizing data accessibility is crucial, then confirming its compatibility with selected analysis tools, such as SQL queries for exploring databases and Power BI for visualizing data. Finally, the data is downloaded in appropriate formats to seamlessly integrate with the analysis tools.

- ***Data Transformation:***

Data transformation is an essential part of a project that includes formatting and refining purchased datasets for valuable analysis. The methods consist of data filtering, where I choose pertinent rows and columns, and data aggregation, which permits us to group and summarize data. I also conduct data merging to unite various datasets using shared identifiers, and data partitioning to categorize data into groups according to particular conditions. Restructuring data with pivoting or melting allows us to modify its format to match analysis objectives. Converting categorical data to numerical form, normalizing numerical values, and filling in missing data are necessary measures to maintain data accuracy and importance. Creating new variables through feature engineering allows us to capture important patterns, while extracting relevant time-based information is achieved through parsing dates. These changes are crucial for getting the data ready for analysis at a later stage.

- ***Data Cleaning:***

Data cleaning is a crucial part of the data preparation process, with the goal of enhancing the quality and accuracy of data. During this stage, I focus on identifying different data anomalies and inconsistencies to guarantee the trustworthiness of the analysis. Data deduplication eliminates redundant data entries to prevent inaccuracies, while outlier treatment addresses and minimizes exceptional data points that could impact analysis. Noise reduction methods are used to smooth or filter data points that are noisy, which could potentially cause errors. Conversion of data type guarantees that data types are uniform and appropriate for the planned analysis. I support using whitespace and recognize the importance of paying attention to correct capitalization, removing unnecessary spaces, and checking for spelling errors to fix any typos. Key responsibilities in data cleaning include handling null and zero values, fixing inconsistent data, and rounding numerical data. Unnecessary or extraneous data is eliminated, and meaningful labels are assigned to codes in the code mapping process. Analysing statistics and evaluating linearity can assist in identifying anomalies and patterns.

- ***MECE Breakdown:***

Utilizing a MECE approach, the university success analysis project is organized into four unique stages, corresponding to particular data facets from the university repository. The stages consist of University Demographics & Distribution, Analysis of University Ranking System, University Metrics and Performance, and Trends and Patterns. Every stage has a specific role and adds to the overall objectives of the project without repeating or duplicating tasks. This method guarantees a systematic and organized advancement in data analysis, allowing smooth shifts between stages and enhancing understanding of factors contributing to university success.

- ***Connecting with Tools:***

SQL scripts are essential in projects as they allow us to extract and manipulate data directly from a relational database. It provides smooth connection to SQL databases, enabling us to enter SQL scripts and retrieve data.

To analyse data from CSV files, I take advantage of Power BI's strong data importing features. Power BI provides a simple and easy way to link with CSV files. I import CSV data by indicating the file location and ensuring alignment with analysis objectives. By utilizing this link, I can conveniently control, convert, and display information within Power BI without any hassle, making the data preparation process easier.

- ***Exploratory Data Analysis:***

Conducting thorough data examination is vital in the analysis project of university achievements. Starting from the EDA process, SQL queries are used to tackle particular problem statements utilizing data from the university repository. SQL provides strong features for extracting, transforming, and aggregating data, allowing for thorough initial analysis. Utilizing SQL to investigate inquiries regarding university demographics, ranking criteria, and performance metrics. Excel's charting and graphing functions work with SQL analysis to create helpful visuals such as bar charts and line graphs. These visuals effectively provide insights, helping stakeholders comprehend the data better. Using SQL for data analysis along with Excel for visualization creates a dynamic and interactive method for Exploratory Data Analysis (EDA), allowing for in-depth exploration of factors contributing to university success.

- ***Power BI Dashboard Analysis:***

In the project analysing success in university, Power BI is utilized as a strong tool for generating interactive and insightful visualizations that

transform raw data into meaningful representations. This step includes using different visualization methods like Bar/Column charts, Pie charts, Area charts, Line charts, and matrix charts to display important findings from the EDA phase. The incorporation of Power BI visualizations allows for the development of dynamic dashboards specifically designed to tackle issues discovered in EDA. Dynamic dashboards are created based on these visualizations for University Demographics & Distribution, University Ranking System Analysis, University Metrics and Performance, and Trends and Pattern analysis. These dashboards offer practical suggestions and valuable information easily available to those involved, allowing for well-informed choices for achieving success in the university environment.

- ***Detailed Documentation:***

Compile a detailed report that meticulously documents the entire project lifecycle. Include sections on data collection, transformation, problem statement formulation, tools integration, Power BI solutions, EDA insights, and PowerPoint visualizations.

Objectives

The primary objective of this project is to conduct a comprehensive analysis of university performance, focusing on multiple dimensions such as academic quality, student demographics, faculty qualifications, research output, and resource allocation. The goal is to derive actionable insights that can guide strategic planning, enhance academic and research excellence, improve student outcomes, and strengthen global competitiveness. This analysis aims to support informed decision-making for university administrators, policymakers, and other stakeholders, ultimately contributing to the overall success and impact of higher education institutions.

Specific Objectives:

1. ***Strategic Planning and Decision-Making:***
    - *Develop a data-driven framework to support strategic planning and resource allocation.*
    - *Identify strengths and weaknesses to prioritize improvements in specific areas such as research facilities, student services, and international collaborations.*
    - *Establish long-term goals and benchmarks based on historical performance and future projections.*
2. ***Enhancing Academic Quality:***
    - *Refine the curriculum to better meet student needs and industry demands, ensuring programs remain relevant and rigorous.*
    - *Highlight areas for faculty development, encouraging investment in professional development programs, research opportunities, and collaborative projects.*
    - *Attract and retain high-quality faculty to maintain academic excellence.*
3. ***Improving Student Outcomes:***
    - *Identify factors contributing to student retention, graduation rates, and overall success.*

- *Implement support services such as academic advising, tutoring, and career counselling to improve student outcomes.*
- *Foster a more inclusive and diverse learning environment by understanding the composition of the student body and developing policies and programs to support diverse student populations.*

4. ***Boosting Research and Innovation:***
   - *Evaluate research output to identify leading research areas and faculty.*
   - *Allocate resources to high-impact research projects and foster interdisciplinary collaborations.*
   - *Drive the commercialization of research findings by understanding the university's innovation ecosystem and establishing innovation hubs, technology transfer offices, and incubators.*
5. ***Enhancing Global Competitiveness:***
   - *Improve positions in global university rankings by focusing on factors such as academic reputation, faculty quality, and research impact.*
   - *Attract international students, faculty, and research partners by enhancing the university's global footprint.*
   - *Form strategic global partnerships and collaborations by identifying areas of strength and potential growth.*
6. ***Effective Resource Allocation and Financial Planning:***
   - *Understand where resources are most effectively utilized to ensure efficient use of financial, human, and physical resources.*
   - *Identify cost-saving opportunities and areas requiring increased investment.*
   - *Support fundraising and grant applications by demonstrating success through data-driven analysis.*
7. ***Community and Societal Impact:***
   - *Analyse the economic and social impact of universities on local and regional development.*

- *Tailor community engagement and outreach programs to better serve local needs and contribute to societal well-being.*
- *Influence public policy through research and expertise, shaping policies that benefit society based on evidence-based success analysis.*

By achieving these objectives, the project will provide a holistic view of university performance, enabling continuous improvement and long-term success. This comprehensive analysis will not only benefit the institutions themselves but also contribute to the broader goals of education, research, and societal development.

Significance

Analysing the success of universities is vital for understanding and enhancing their performance, reputation, and societal impact. This analysis involves examining metrics such as academic performance, student demographics, faculty qualifications, research output, and resource allocation. The insights gained are significant for various stakeholders, including university administrators, policymakers, students, faculty, and the broader community.

For strategic planning and decision-making, success analysis enables universities to make data-driven decisions, prioritize resource allocation, and develop long-term strategic plans. It helps identify strengths and weaknesses, allowing for targeted improvements in areas such as research facilities, student services, and international collaborations. This informed decision-making supports universities in setting realistic goals and benchmarks based on historical performance and future projections.

Enhancing academic quality is another crucial aspect. By analysing academic performance metrics, universities can refine their curriculum to better meet student needs and industry demands, ensuring programs remain relevant and rigorous. Success analysis also highlights areas for faculty development, encouraging investment in professional development programs, research opportunities, and collaborative projects, which are essential for maintaining academic excellence.

Improving student outcomes is a key focus of university success analysis. By examining student demographics and outcomes, universities can identify factors contributing to retention, graduation rates, and overall success. This allows for the implementation of support services such as academic advising, tutoring, and career counselling. Additionally, understanding the composition of the student body helps foster a more inclusive and diverse learning environment, with policies and programs developed to support diverse student populations.

Boosting research and innovation is significantly impacted by success analysis. Evaluating research output helps identify leading research areas and faculty, enabling universities to allocate resources to high-impact projects and foster interdisciplinary collaborations. Understanding the university's innovation ecosystem aids in driving the commercialization of research findings, supporting entrepreneurial activities through innovation hubs, technology transfer offices, and incubators.

Enhancing global competitiveness is another important outcome of success analysis. It contributes to improving positions in global university rankings, which influence academic reputation, faculty quality, and research impact. Higher rankings attract international students, faculty, and research partners, while identifying areas of strength and potential growth helps form strategic global partnerships and collaborations.

Effective resource allocation and financial planning benefit from detailed success analysis. It helps universities understand where resources are most effectively utilized, leading to more efficient use of financial, human, and physical resources. Identifying cost-saving opportunities and areas requiring increased investment supports efficient resource use. Demonstrating success through data-driven analysis also aids in fundraising and securing grants, as potential donors and funding agencies are more likely to invest in successful institutions.

Finally, understanding the success of universities has a significant impact on the community and society. Universities play a crucial role in local and regional development, and analysing their success helps understand their economic and social impact on the community. This allows universities to tailor community engagement and outreach programs to better serve local needs and contribute to societal well-being. Additionally, successful universities often influence public policy through research and expertise, shaping policies that benefit society through evidence-based success analysis.

In summary, the comprehensive analysis of universities' success drives continuous improvement and long-term achievement. It benefits institutions and contributes to broader educational, research, and societal goals, ensuring universities can fulfill their mission effectively and sustainably.

Data Dictionary

Table: ***Country***

- Fields:

  - country_id: Unique identifier for each country.

  - country_name: Name of the country.

Table: ***University***

- Fields:

  - university_id: Unique identifier for each university.

  - university_name: Name of the university.

  - country_id: Foreign key referencing the country_id field in the Country table.

Table: ***Ranking system***

- Fields:

  - ranking_system_id: Unique identifier for each ranking system.

  - ranking_system_name: Name of the ranking system.

Table: ***Ranking criteria***

- Fields:

  - ranking_criteria_id: Unique identifier for each ranking criteria.

  - ranking_criteria_name: Name of the ranking criteria.

  - ranking_system_id: Foreign key referencing the ranking_system_id field in the Ranking system table.

Table: ***University_year***

- Fields:

  - university_year_id: Unique identifier for each university year.

  - university_id: Foreign key referencing the university_id field in the University table.

  - number_of_students: Number of students in the university for a specific year.

  - female_population: Population of female students in the university for a specific year.

  - international_population: Population of international students in the university for a specific year.

  - student_to_staff_ratio: Ratio of students to staff members in the university for a specific year.

Table: ***University_ranking_year***

- Fields:

  - university_ranking_year_id: Unique identifier for each university ranking year.

  - ranking_criteria_id: Foreign key referencing the ranking_criteria_id field in the Ranking criteria table.

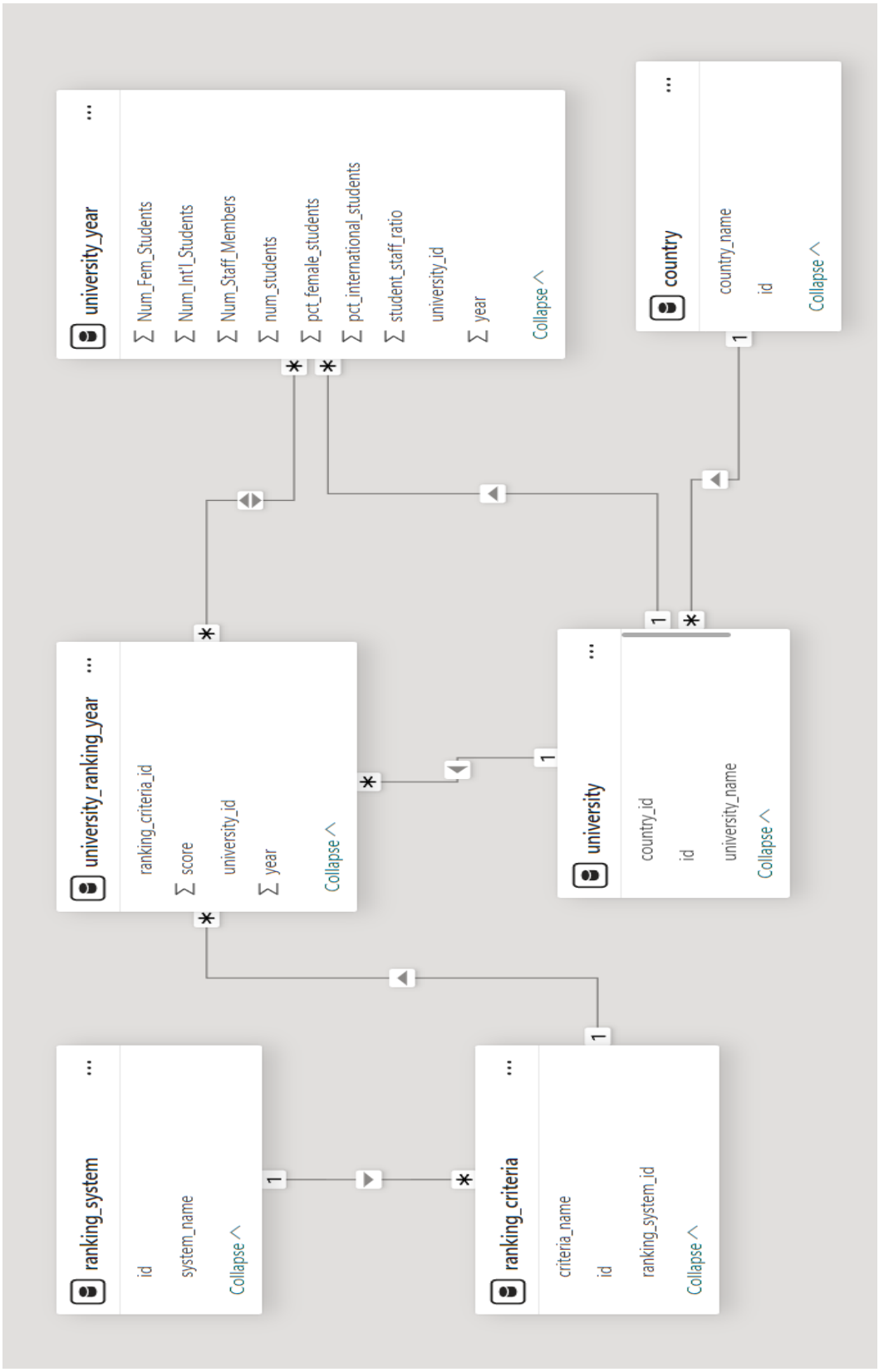
  - university_id: Foreign key referencing the university_id field in the University table.

  - score: Score of the university for a specific ranking criteria and year.

  - year: Year of scoring for the university.

The data dictionary provides a comprehensive overview of the tables and their respective fields in the dataset. It outlines the relationships between the tables, allowing for a better understanding of the data structure and facilitating the design and implementation of the Power BI Dashboard.

ER Diagram


university_year
Num_Fem_Students
Num_Int'l_Students
Num_Staff_Members
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pct_international_students
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MECE Breakdown

Demography Analysis:

- *Number of universities in each country.*
- *Distribution of International & Female students across different countries.*
- *Country with the highest number of female students enrolled in universities.*
- *Distribution of universities across different countries.*
- *University Ranking by country.*

University Analysis:

- *Number of universities ranked by each ranking system.*
- *Score for universities according to each ranking system.*
- *Trend in university rankings over the years according to each system.*
- *Impact of the ranking system on a university international student enrolment.*
- *Correlation between university's ranking and its student-staff ratio.*
- *Correlation between university ranking score & percent of female students.*
- *Correlation between university ranking score & student-staff ratio over the years.*

Ranking Analysis:

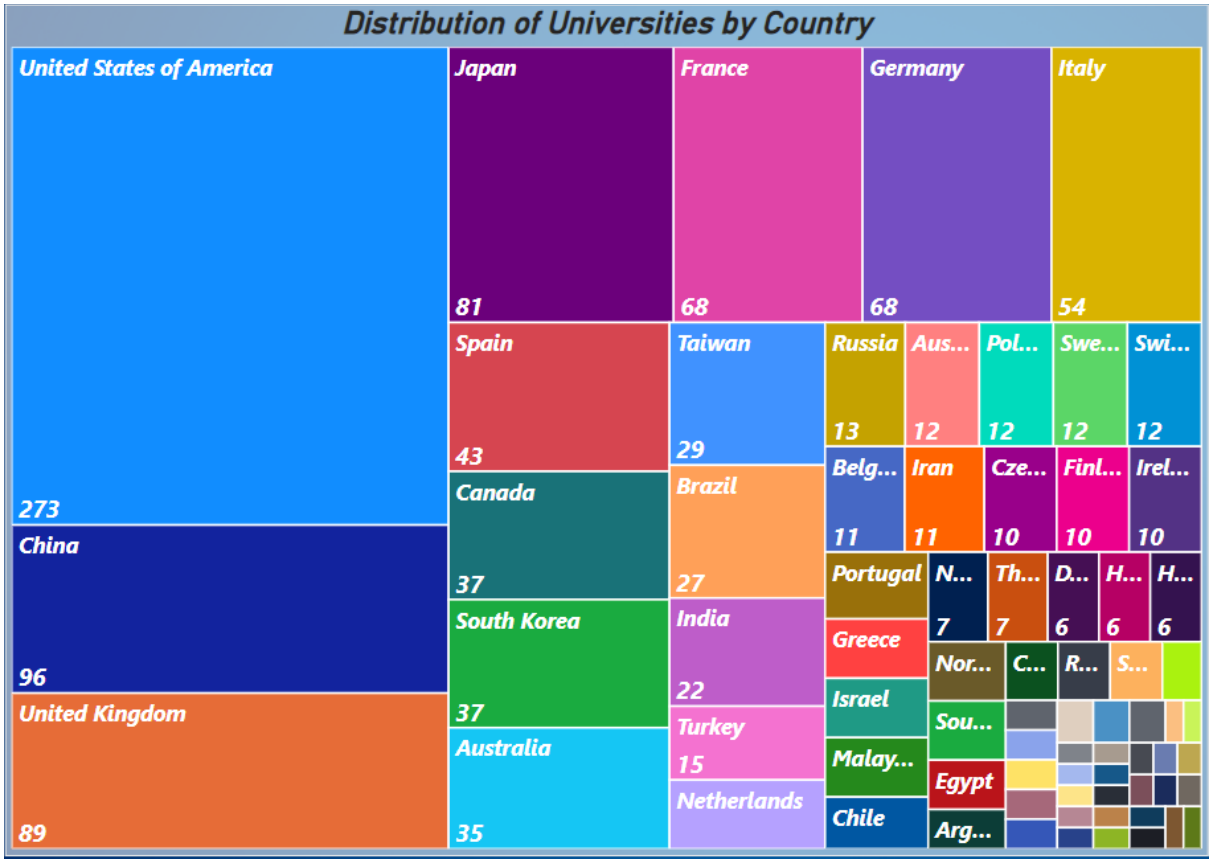
- *Most important criteria considered by ranking systems.*
- *University Distribution by Ranking System.*
- *University Score & Student Staff Ratio by ranking System.*
- *Distribution of International & Female students by Ranking System.*
- *Impact of Female Student percentage on Ranking.*

Trends Analysis:

- *Trends in the number of universities over the years.*
- *Trends in University Student Staff Ratio over the years.*
- *Trend in Male, Female & Total Students over years.*
- *Trends in the ranking score of universities over the years.*
- *Relationship between university ranking score & student staff ratio over time.*

POWER BI PROBLEM STATEMENTS

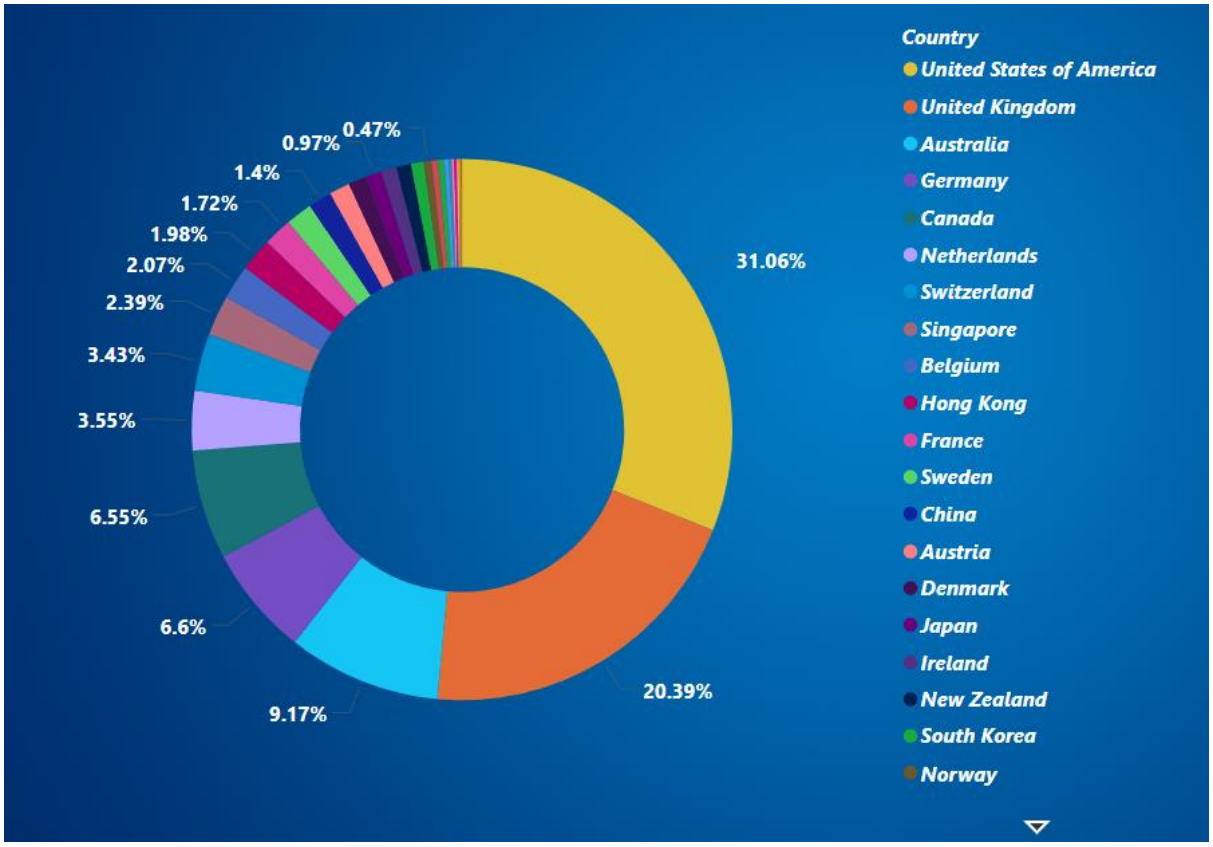
- *How many universities are there in each country?*



INSIGHT:

The visualization illustrates a global distribution of universities with a strong concentration in the United States, followed by significant representations from China, the United Kingdom, and other countries. It highlights the diversity and geographical spread of higher education institutions, emphasizing the contributions of various countries to the global academic environment. The data can be used to understand regional strengths in higher education and to identify potential areas for collaboration and investment in the global educational landscape.

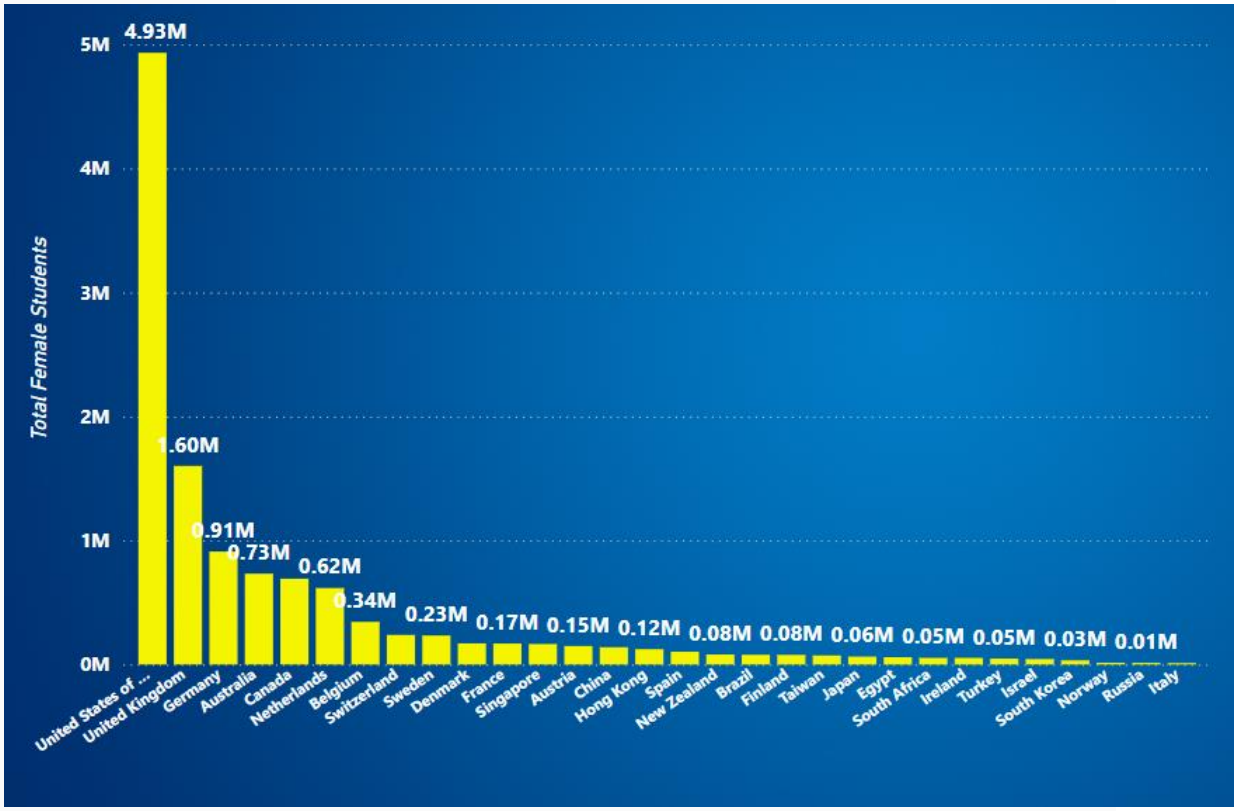
- *What is the distribution of international students across different countries?*



INSIGHT:

The donut chart reveals that a substantial proportion of universities are located in the United States and the United Kingdom, with these two countries alone making up over half of the total universities. Australia, Germany, and Canada also have notable shares, indicating their strong positions in global higher education. The rest of the countries have smaller, yet diverse, representations, showcasing the widespread geographical distribution of universities but also highlighting the concentration in a few key nations. This distribution can be useful for understanding global educational trends and for targeting policies or initiatives aimed at improving or collaborating with higher education institutions.

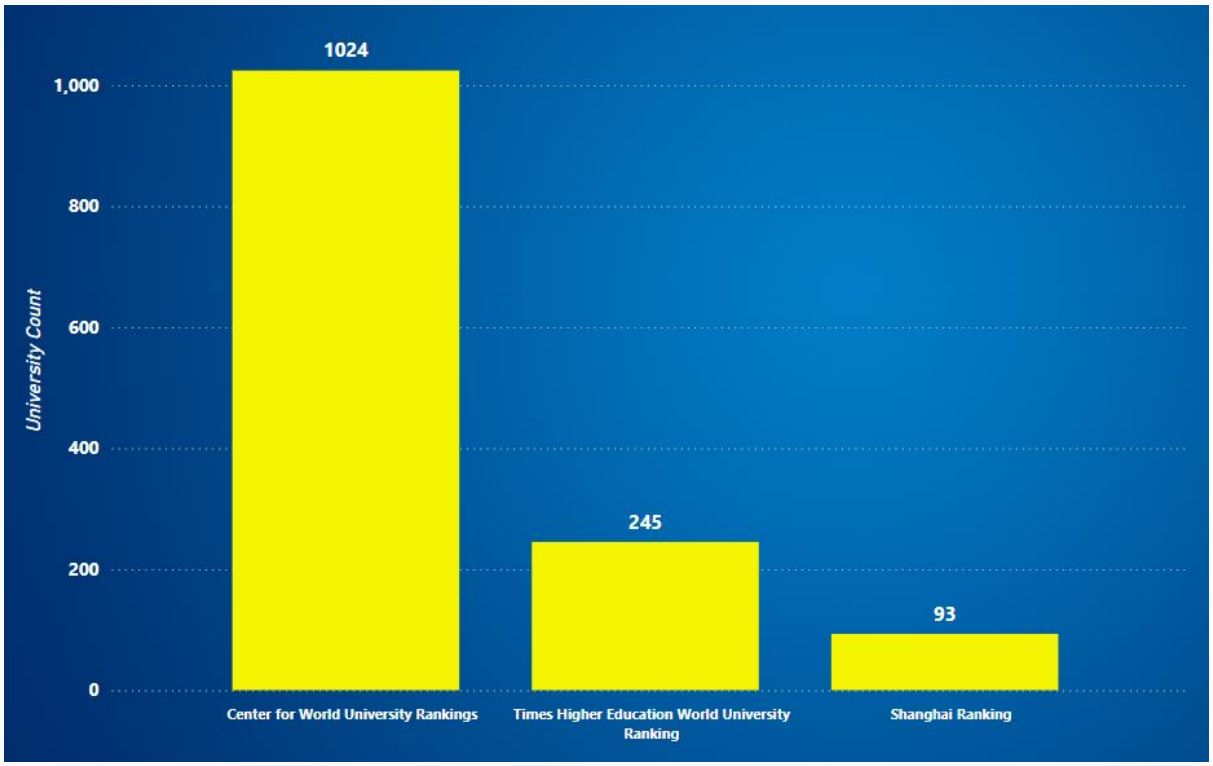
- *Which country has the highest number of female students enrolled in universities?*



INSIGHT:

The bar chart reveals a stark contrast in the number of female students across different countries, with the United States leading by a significant margin. The United Kingdom, Australia, and Germany also have substantial numbers, reflecting their strong emphasis on female education. Other countries show a more moderate to lower representation, which might indicate varying levels of female enrolment and access to higher education. This distribution can help identify regions where female educational participation is high and others where it may need further encouragement and support.

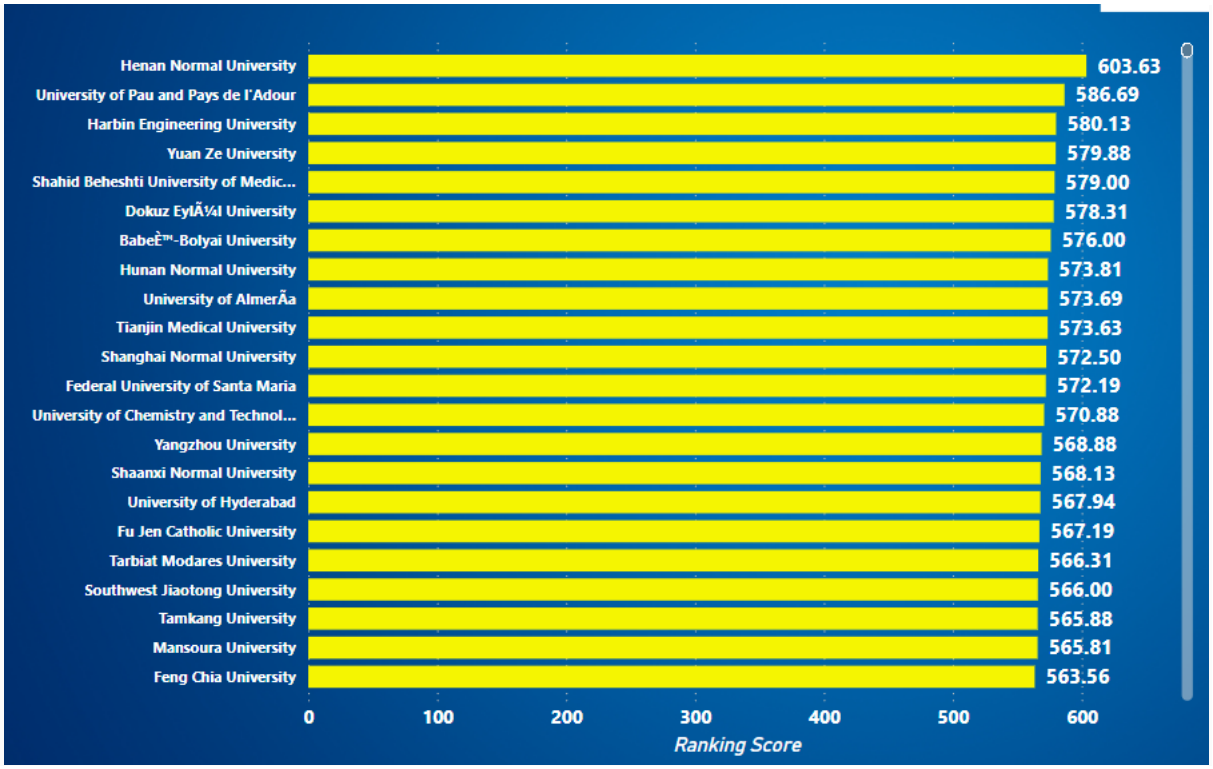
- *How many universities are ranked by each ranking system?*



INSIGHT:

The bar chart reveals a significant disparity in the number of universities included across three global university ranking systems: the Centre for World University Rankings (CWUR), Times Higher Education World University Ranking (THE), and the Shanghai Ranking (Academic Ranking of World Universities, ARWU). The CWUR features an extensive list, encompassing 1024 universities, which is considerably higher compared to the 245 universities included by THE and the 93 universities listed by the Shanghai Ranking. This substantial difference suggests that CWUR might employ less stringent criteria or a broader approach in ranking institutions globally.

- *What is the average score for universities according to each ranking system?*



INSIGHT:

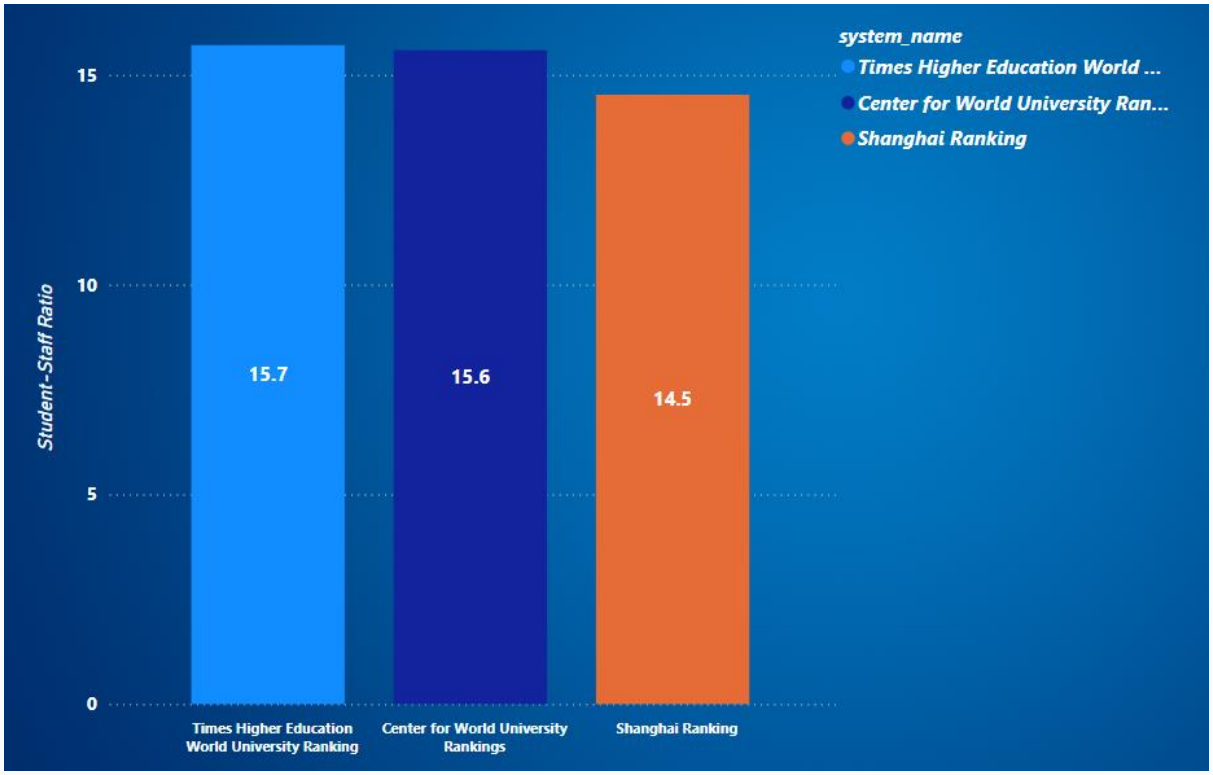
The bar chart displays the ranking scores of various universities, highlighting their relative positions based on the assigned scores. Henan Normal University leads with a score of 603.63, significantly higher than the other institutions listed. The University of Pau and Pays de l'Adour follows with 586.69, while Harbin Engineering University and Yuan Ze University also score above 579.

The chart reveals a gradual decrease in scores as one moves down the list, with Feng Chia University at the bottom with a score of 563.56. The scores of the universities are closely clustered, indicating a narrow range of differences among them. This suggests that while Henan Normal University holds a notable lead, the other universities are relatively close in terms of ranking scores.

The universities listed include a mix of institutions from different countries, reflecting a diverse representation in the ranking. This diversity underscores the global nature of the ranking system, which evaluates and

scores universities from various regions, including China, Taiwan, Iran, Romania, and France, among others.

- *How does the ranking system affect a university's student-staff ratio?*

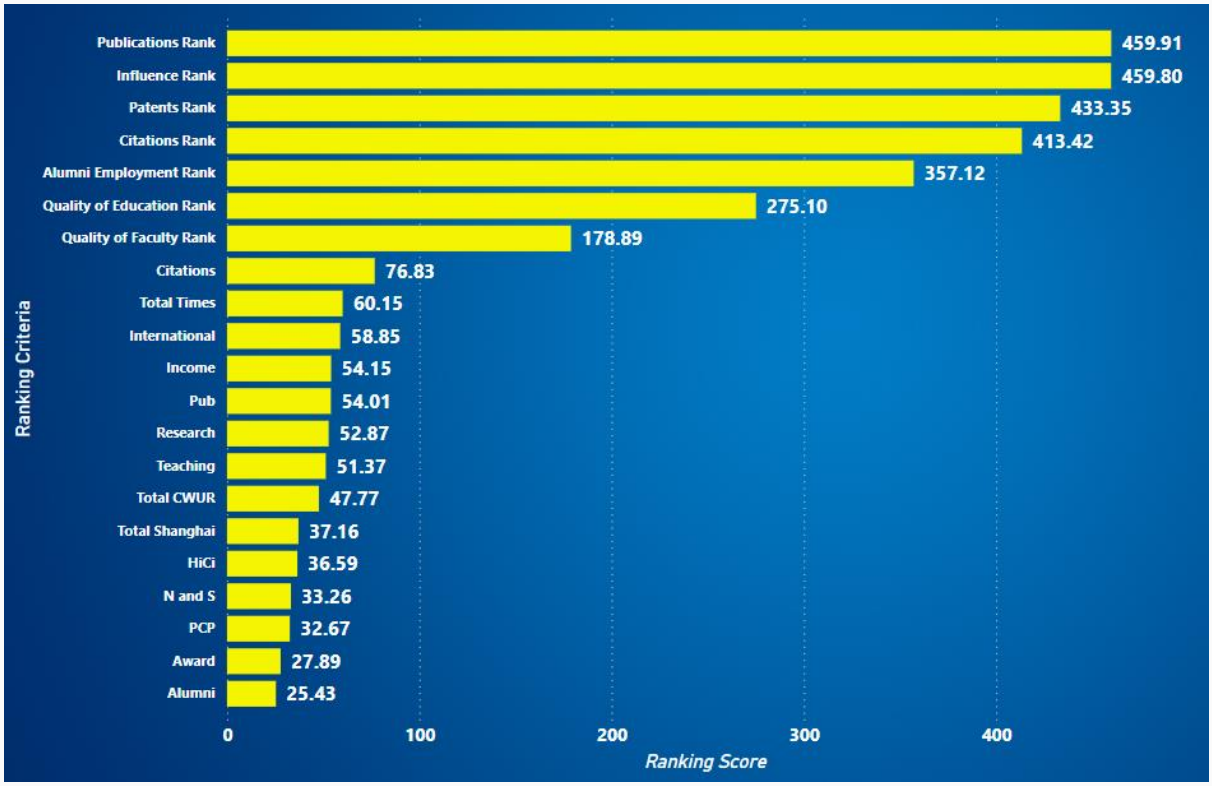


INSIGHT:

The bar chart presents a comparison of the student-staff ratios across three major university ranking systems: Times Higher Education World University Ranking (THE), Centre for World University Rankings (CWUR), and Shanghai Ranking (ARWU). The data indicates that the Shanghai Ranking reports the lowest student-staff ratio at 14.5, suggesting a smaller number of students per staff member, which can be indicative of more personalized attention and potentially better educational outcomes.

In contrast, the Times Higher Education World University Ranking shows the highest student-staff ratio at 15.7, closely followed by the Centre for World University Rankings with a ratio of 15.6. The slight difference between THE and CWUR suggests that their listed universities have a relatively similar student-staff dynamic, which is marginally higher than that of the Shanghai Ranking.

- *What are the most important criteria considered by ranking systems?*

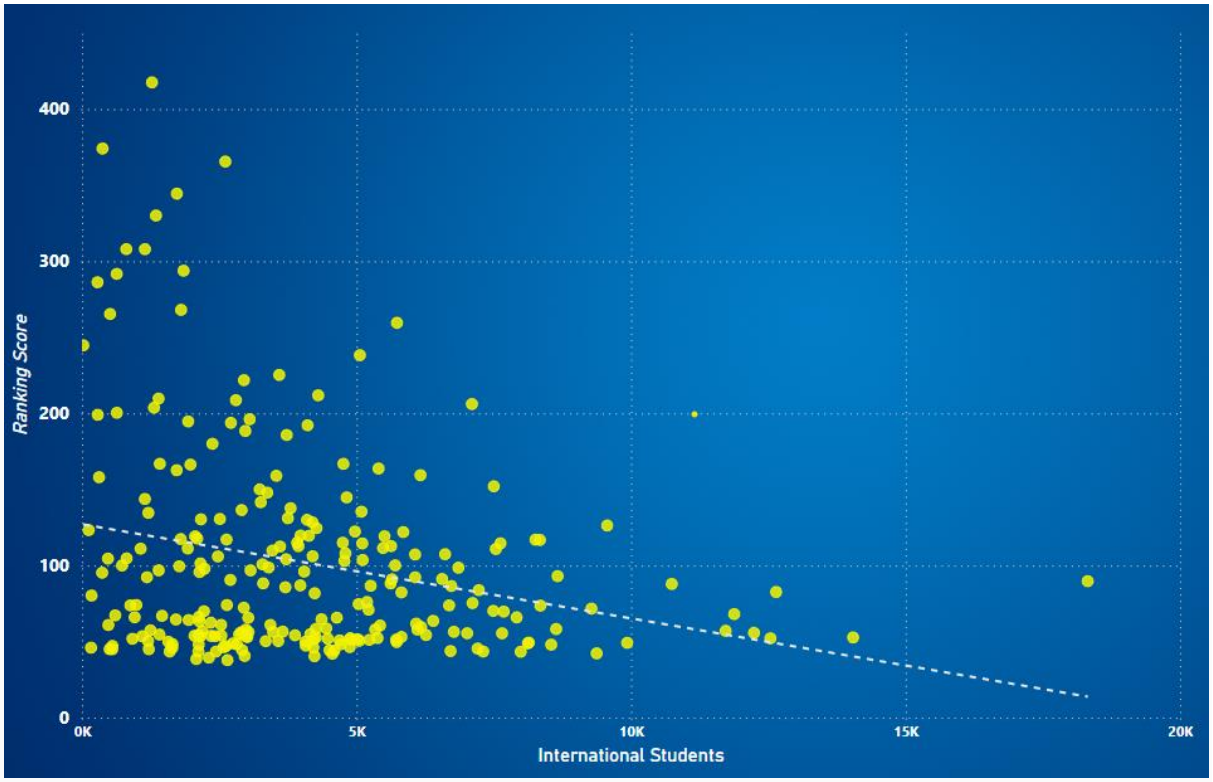


INSIGHT:

One key takeaway is the ability to identify potential specializations. Universities likely excel in certain areas. If you know what you want to study, look for institutions consistently ranking high in that specific criteria. Conversely, universities ranking well across most criteria might be ideal for those seeking a well-rounded education.

The chart can also reveal trade-offs. A top research university might have a lower student satisfaction ranking due to a demanding environment. This helps you prioritize what's most important in your university experience.

- *Is there a correlation between a university's score and the number of international students?*

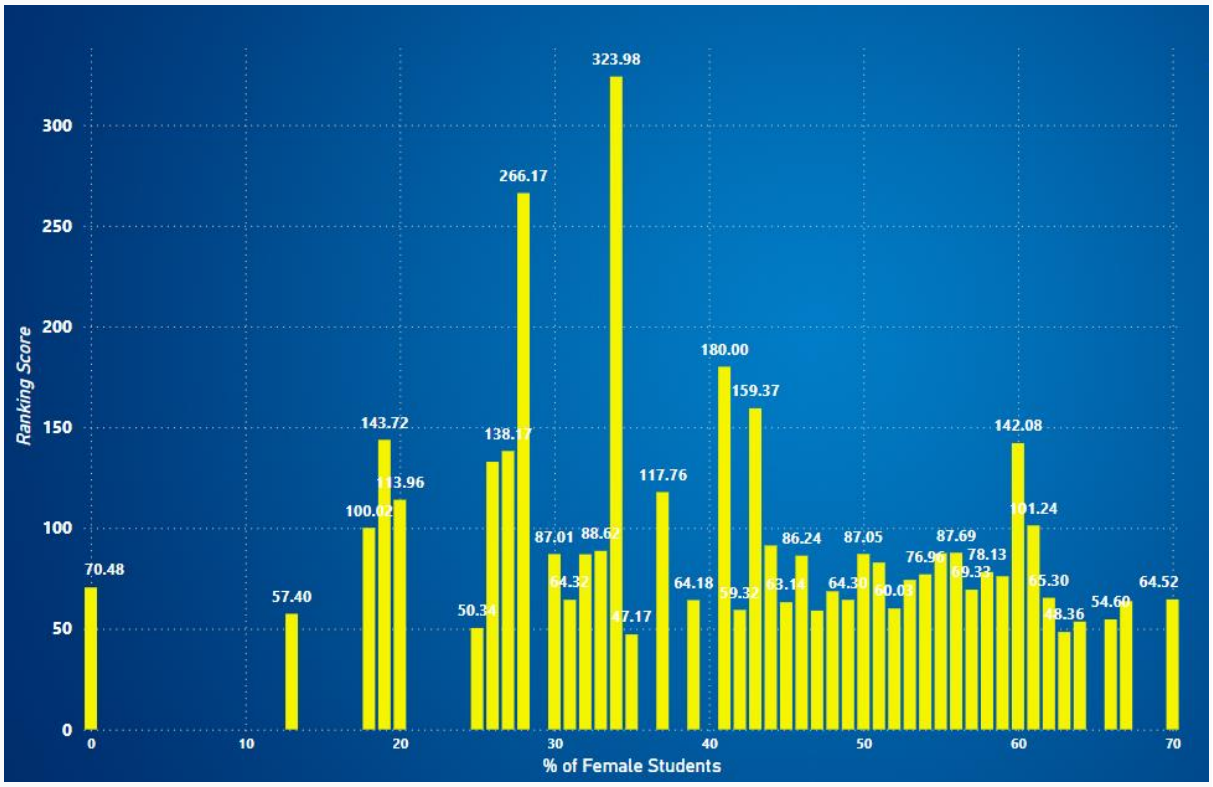


INSIGHT:

The scatter plot reveals an intriguing relationship between the number of international students and ranking scores for educational institutions, likely universities. A clear negative correlation emerges, suggesting that as institutions enrol more international students, their ranking scores tend to decrease. However, this relationship is not uniform across the dataset. The majority of institutions cluster in the lower left quadrant, indicating that many have fewer than 5,000 international students and ranking scores below 200. Interestingly, the plot also showcases several outliers – institutions with exceptionally high-ranking scores despite having relatively few international students. These outliers hint at the complexity of factors influencing rankings beyond just international student enrolment. As we move right on the chart, we observe that the spread of ranking scores narrows, implying that institutions with larger international student populations tend to have more consistent, albeit generally lower, ranking scores. Overall, this visualization underscores that while there's a general trend linking higher international student numbers to lower ranking

scores, the relationship is nuanced and likely influenced by numerous other factors not captured in this two-dimensional representation.

- *How does the percentage of female students impact a university's ranking?*

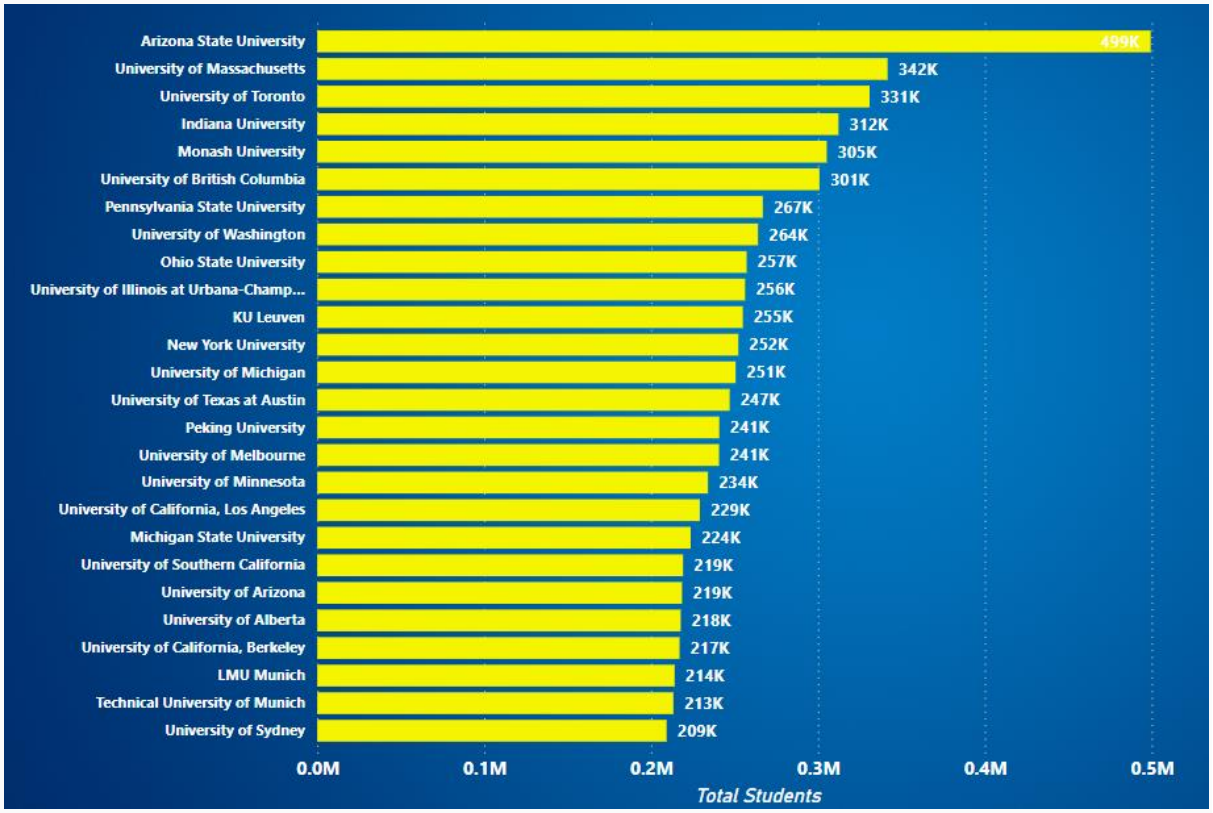


INSIGHT:

This bar chart illustrates the relationship between the percentage of female students and ranking scores across various institutions, likely educational establishments. The data presents a complex and non-linear relationship between gender diversity and institutional rankings. Notably, there are significant spikes in ranking scores at certain percentages of female enrolment, particularly around the 30-40% range, where we see the highest-ranking score of 323.98 at approximately 35% female students. Another prominent peak occurs at about 28% female students, with a ranking score of 266.17. Interestingly, the chart reveals that institutions with gender parity or a higher percentage of female students (50% and above) generally have lower ranking scores, mostly falling below 100. This trend suggests that having a more balanced or female-dominated student body does not necessarily correlate with higher institutional rankings. The data also shows considerable variability in ranking scores across different percentages of female enrolment,

indicating that other factors likely play significant roles in determining an institution's ranking beyond gender composition alone.

- *Which university has the highest number of students?*



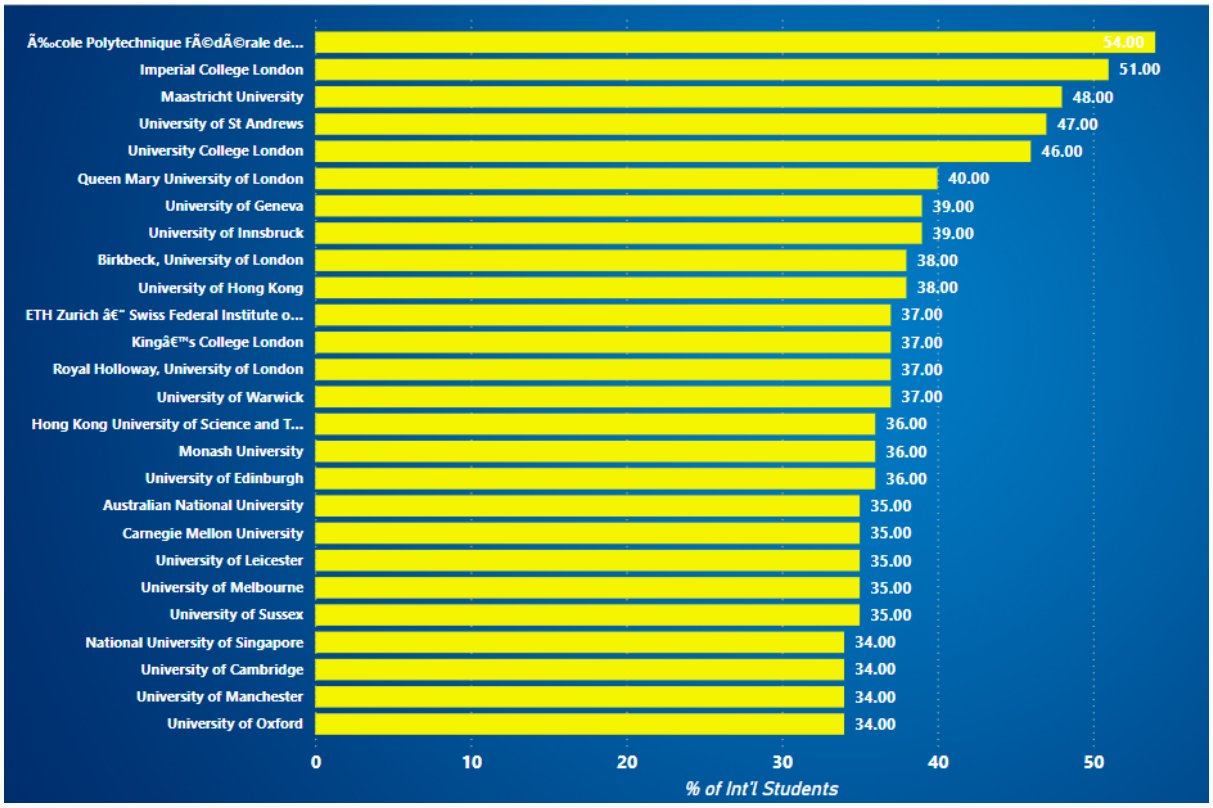
INSIGHT:

This bar chart presents a comparison of total student populations across various prominent universities worldwide. Arizona State University stands out as the clear leader, boasting an impressive 347,000 students, significantly outpacing its peers. Following closely are the University of Massachusetts and the University of Toronto, with 342,000 and 331,000 students respectively, forming a top tier of mega-universities. The data reveals a notable presence of North American institutions, particularly from the United States, dominating the upper ranks of student population. However, the list also includes several international universities, such as Monash University and the University of British Columbia, highlighting the global nature of large-scale higher education.

Interestingly, the chart shows a gradual decrease in student numbers as we move down the list, with most universities falling within the 200,000 to 300,000 student range. This pattern suggests a certain threshold or

optimal size for large universities, possibly balancing factors such as resources, infrastructure, and educational quality.

- *How does the percentage of international students vary across different universities?*

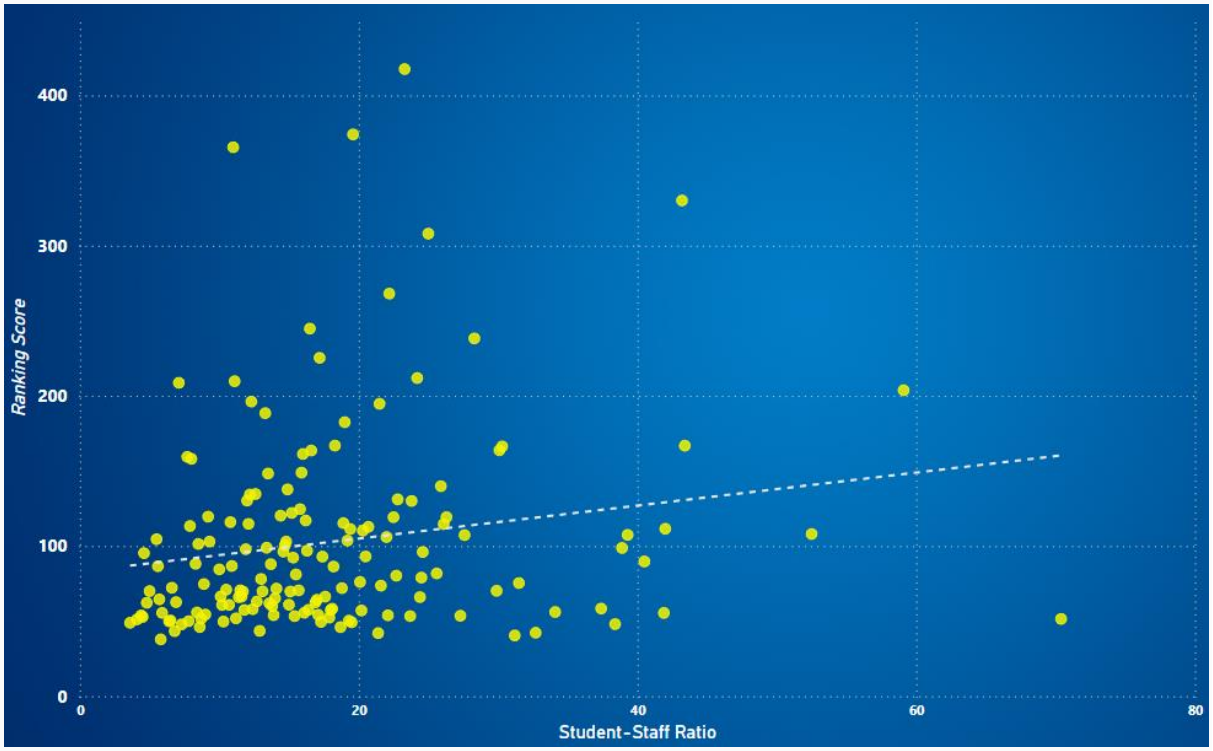


INSIGHT:

This bar chart illustrates the percentage of international students across various prestigious universities worldwide, offering intriguing insights into global higher education trends. École Polytechnique Fédérale de Lausanne leads the pack with an impressive 55% international student population, closely followed by Imperial College London at 51%. This high proportion of international students at top institutions underscores the increasingly global nature of elite education. The data reveals a strong representation of UK universities, with institutions like the University of St Andrews, University College London, and several University of London colleges featuring prominently in the top ranks. This suggests that UK higher education continues to be highly attractive to international students, possibly due to factors such as English-language instruction, academic reputation, and cultural appeal. Interestingly, the chart also includes universities from continental Europe, Asia, and Australia, indicating that the appeal of international education extends beyond traditional

Anglophone countries. Universities like Maastricht University, ETH Zurich, and the National University of Singapore showcase the diverse geographical spread of institutions attracting significant international student populations.

- *Is there a correlation between a university's ranking and its student-staff ratio?*

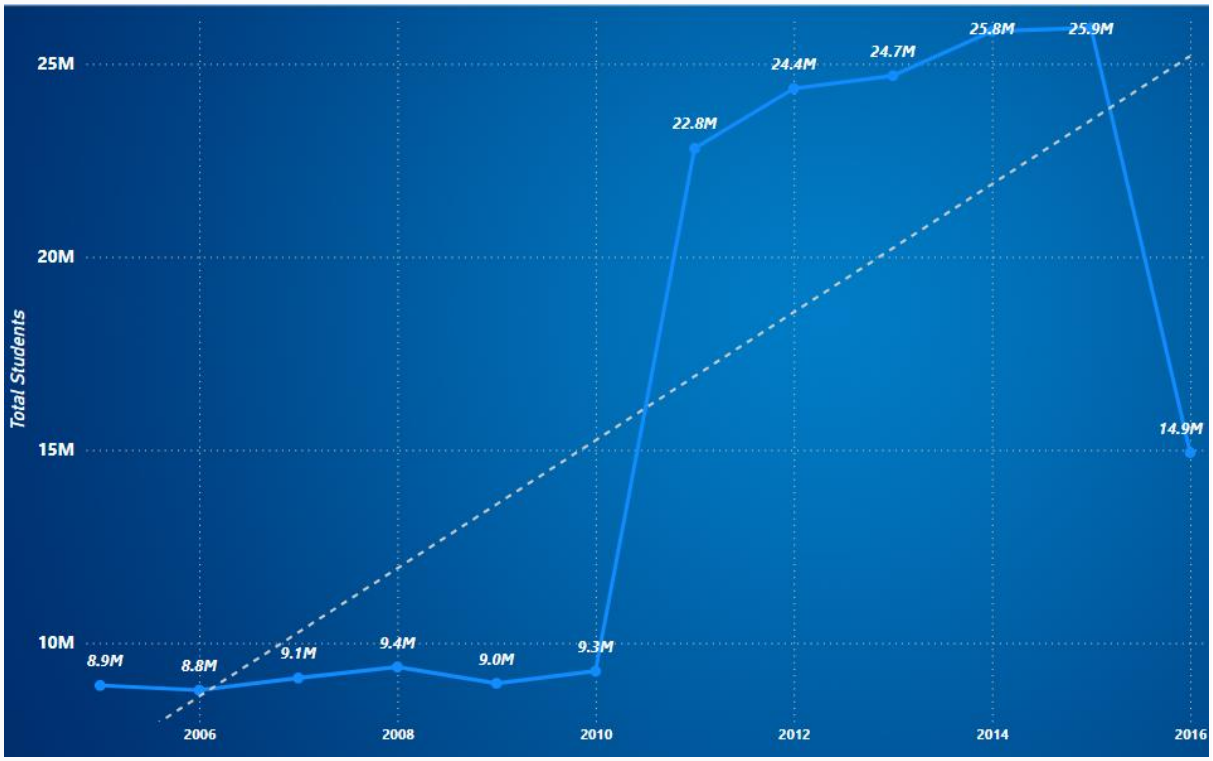


INSIGHT:

This scatter plot illustrates the relationship between student-staff ratios and ranking scores for what appear to be educational institutions, likely universities. The x-axis represents the student-staff ratio, while the y-axis shows the ranking score. The plot reveals several interesting patterns and insights about the interplay between these two factors in educational settings. The data points are widely dispersed, indicating a complex relationship between student-staff ratios and ranking scores. There's a slight positive correlation, as shown by the gently upward-sloping trend line, suggesting that higher student-staff ratios are associated with marginally higher-ranking scores. However, this relationship is weak, and the wide scatter of points indicates that many other factors likely influence an institution's ranking.

Most institutions cluster in the lower left quadrant of the graph, with student-staff ratios between 0 and 20, and ranking scores below 200. This concentration suggests that many institutions maintain relatively low student-staff ratios, possibly to ensure more personalized attention and higher quality of education.

- *How does the number of students in universities change over time?*



INSIGHT:

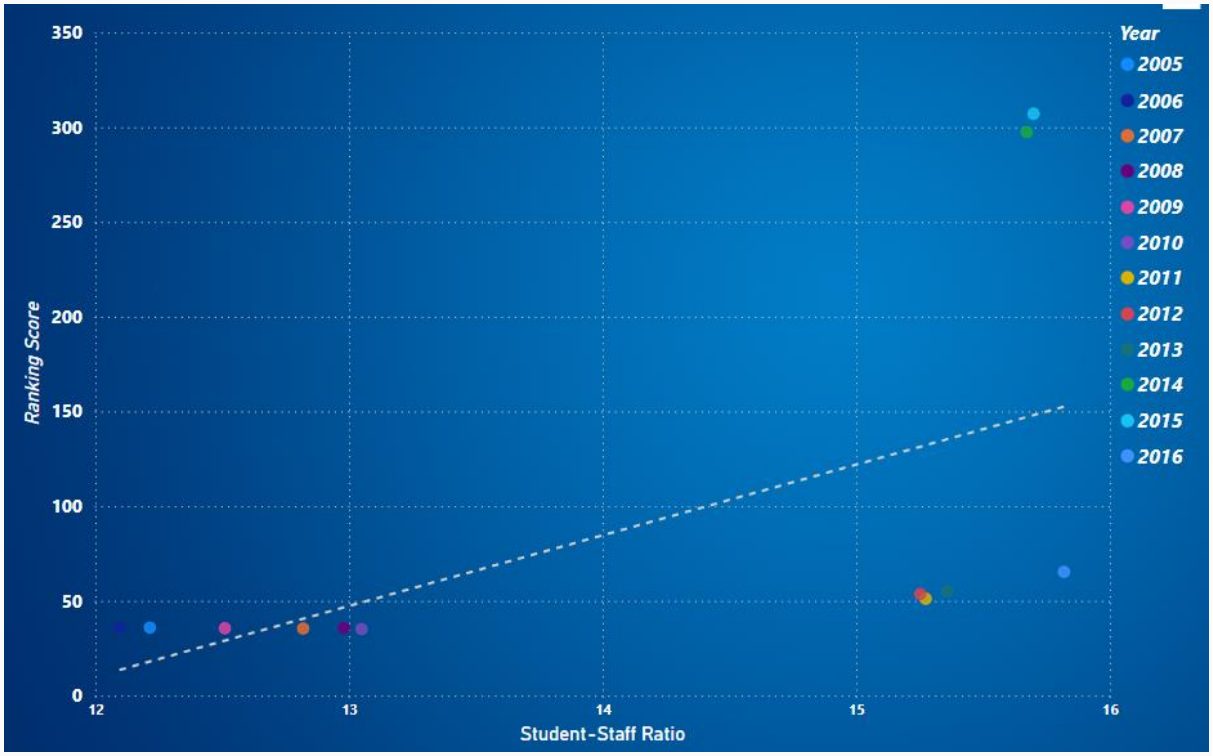
This graph shows the trend of total students over time, likely in an educational system or institution. The data spans from 2006 to 2016, with measurements every two years.

From 2006 to 2010, there was a gradual increase in student numbers, rising from 8.9 million to 9.3 million. However, the most striking feature of the graph is the dramatic spike that occurs between 2010 and 2012. During this period, the number of students more than doubled, jumping from 9.3 million to 22.8 million.

After this sudden increase, the growth continued but at a more moderate pace. The student population reached 24.4 million in 2012, then 24.7 million in 2014, peaking at 25.9 million in 2015 or early 2016.

Interestingly, the graph shows a sharp decline at the end, with numbers dropping to 14.9 million in 2016. This significant decrease might indicate a major policy change, a shift in data collection methods, or some other substantial event affecting student enrolment.

- *Is there a correlation between a university's ranking score and the student-staff ratio over the years?*



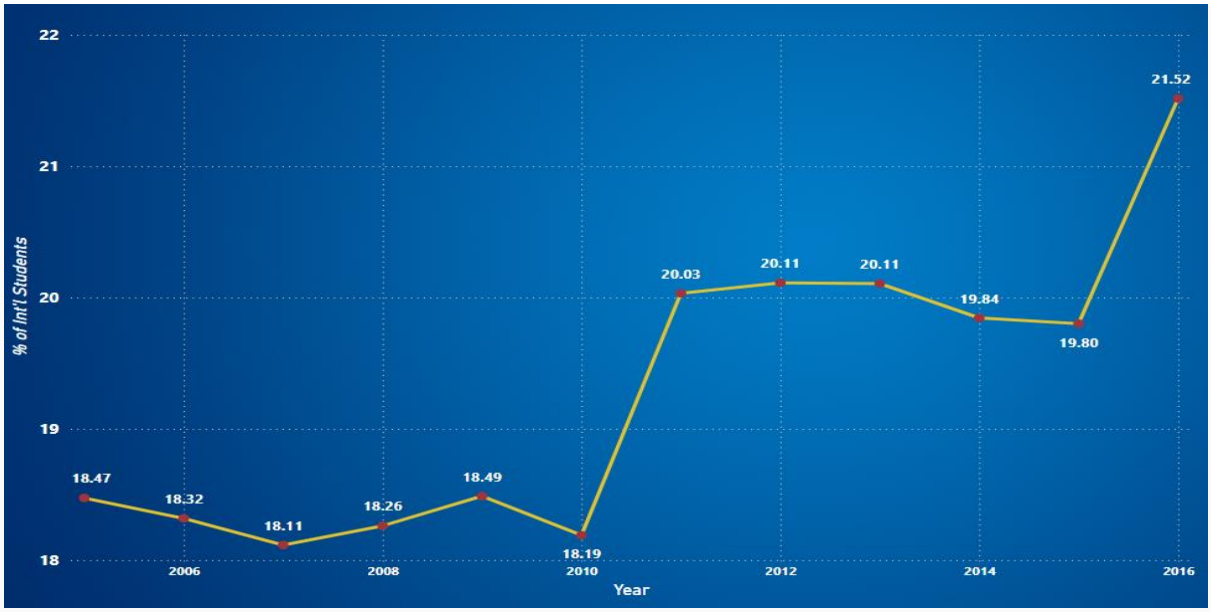
INSIGHT:

This graph depicts the relationship between Student-Staff Ratio and Ranking Score across different years from 2005 to 2016. The x-axis represents the Student-Staff Ratio, ranging from 12 to 16, while the y-axis shows the Ranking Score, which goes up to 350.

There's a clear positive correlation between the Student-Staff Ratio and Ranking Score. As the Student-Staff Ratio increases (moving right on the x-axis), the Ranking Score tends to increase as well (moving up on the y-axis). This suggests that institutions with higher student-to-staff ratios generally achieve higher ranking scores.

The data points are color-coded by year, allowing us to see how this relationship has evolved over time. Most of the earlier years (2005-2012) cluster in the lower left of the graph, indicating lower student-staff ratios and lower ranking scores. In contrast, the more recent years (2013-2016) are positioned in the upper right, showing both higher ratios and higher scores.

- *How does the percentage of international students vary across different years?*



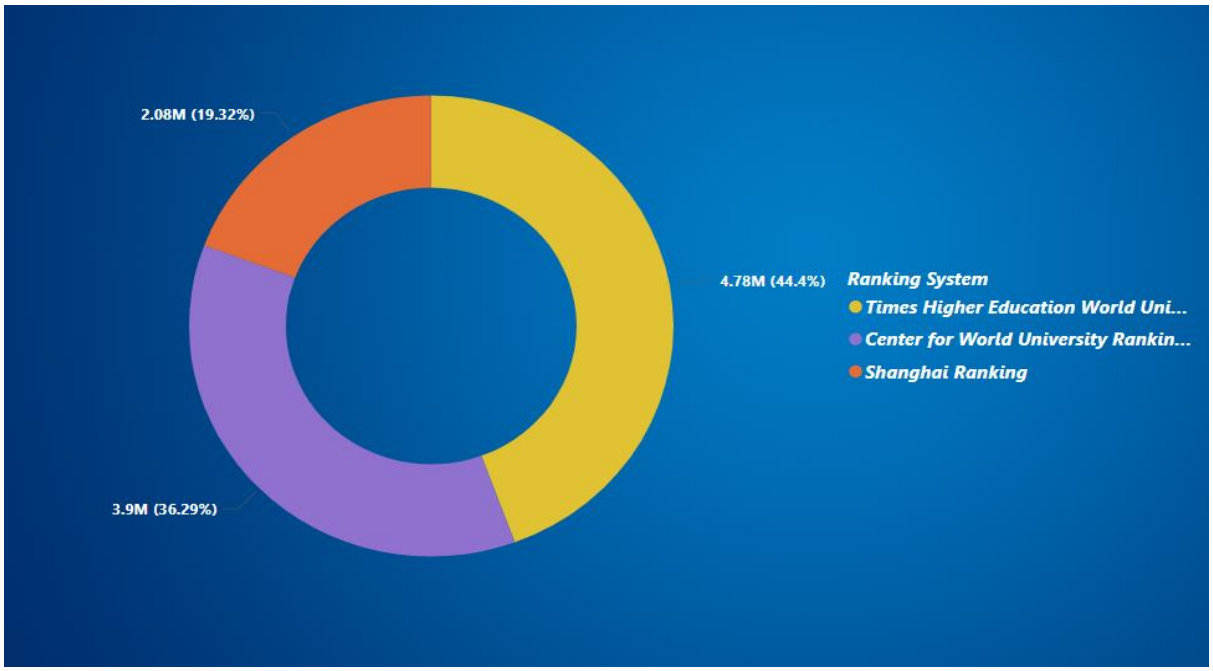
INSIGHT:

This graph illustrates the percentage of international students over a decade, from 2006 to 2016. The y-axis represents the percentage of international students, while the x-axis shows the years. The trend begins in 2006 with 18.47% international students. There's a slight fluctuation in the early years, with the percentage dropping to 18.11% in 2008, then rising slightly to 18.49% in 2010. A significant change occurs between 2010 and 2011. The percentage of international students jumps dramatically from 18.19% to 20.03%, an increase of nearly 2 percentage points. This sharp rise suggests a possible change in policy, increased recruitment efforts, or other factors that suddenly made the institution much more attractive or accessible to international students. After this sharp increase, the percentage of international students remains relatively stable for a few years, hovering around 20%. There's a slight increase to 20.11% in 2012, which holds steady through 2013.From 2013 to 2015, there's a small decline, with the percentage dropping to 19.84% in 2014

and further to 19.80% in 2015. This might indicate a slight shift in enrolment patterns or policies during this period.

Overall, the graph shows a general upward trend in the percentage of international students over the decade, with two notable jumps: one between 2010 and 2011, and another between 2015 and 2016.

- *What is the impact of a university's ranking on the number of international students it attracts?*

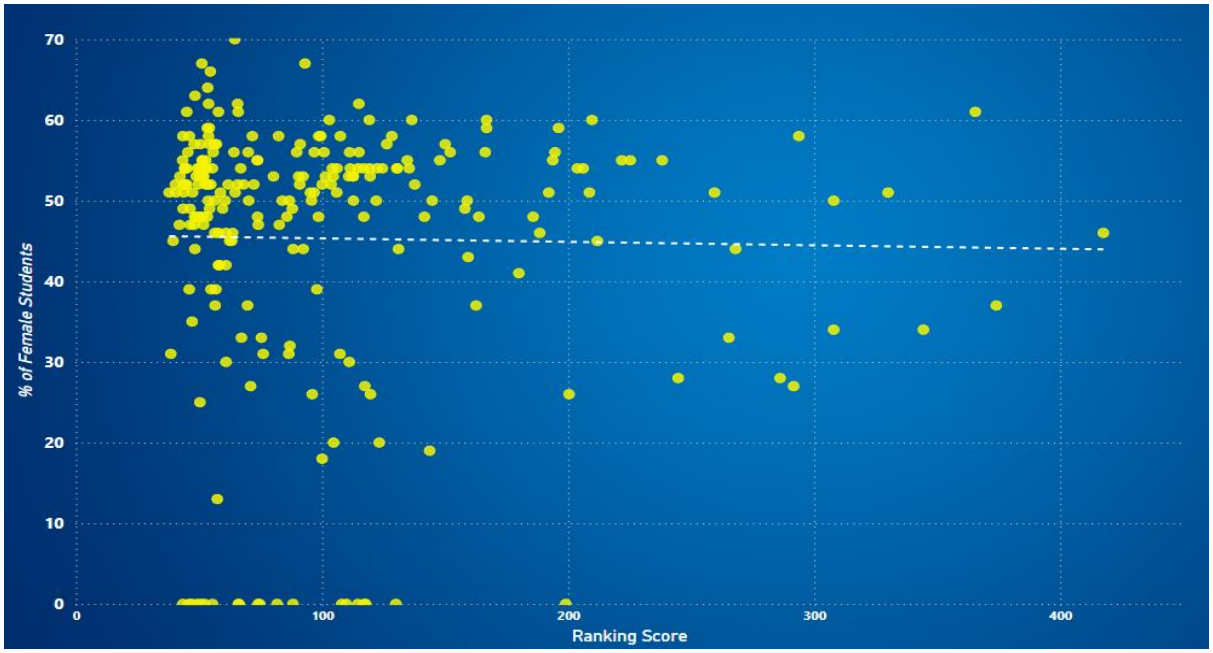


INSIGHT:

This pie chart illustrates the distribution of three major university ranking systems. The chart provides insights into the relative prominence or usage of these ranking systems in the higher education landscape. The largest segment, comprising 44.4% of the total, represents the Times Higher Education World University Rankings. This indicates that it is the most widely recognized or utilized ranking system among the three, accounting for nearly half of the representation. The second largest segment, coloured purple, represents the Centre for World University Rankings, which accounts for 36.29% of the total. This suggests that while not as dominant as the Times Higher Education rankings, it still holds a significant position in the university ranking sphere. The Shanghai Ranking, represented by the orange segment, makes up 19.32% of the total. While it has the smallest share among the three, it still represents a substantial portion, indicating its relevance in the global university ranking landscape.

Overall, this visualization effectively demonstrates the relative importance or prevalence of these three ranking systems in the global higher education context, with the Times Higher Education World University Rankings holding the most prominent position, followed by the Centre for World University Rankings, and then the Shanghai Ranking.

- *Is there a relationship between a university's ranking score and the percentage of female students enrolled?*

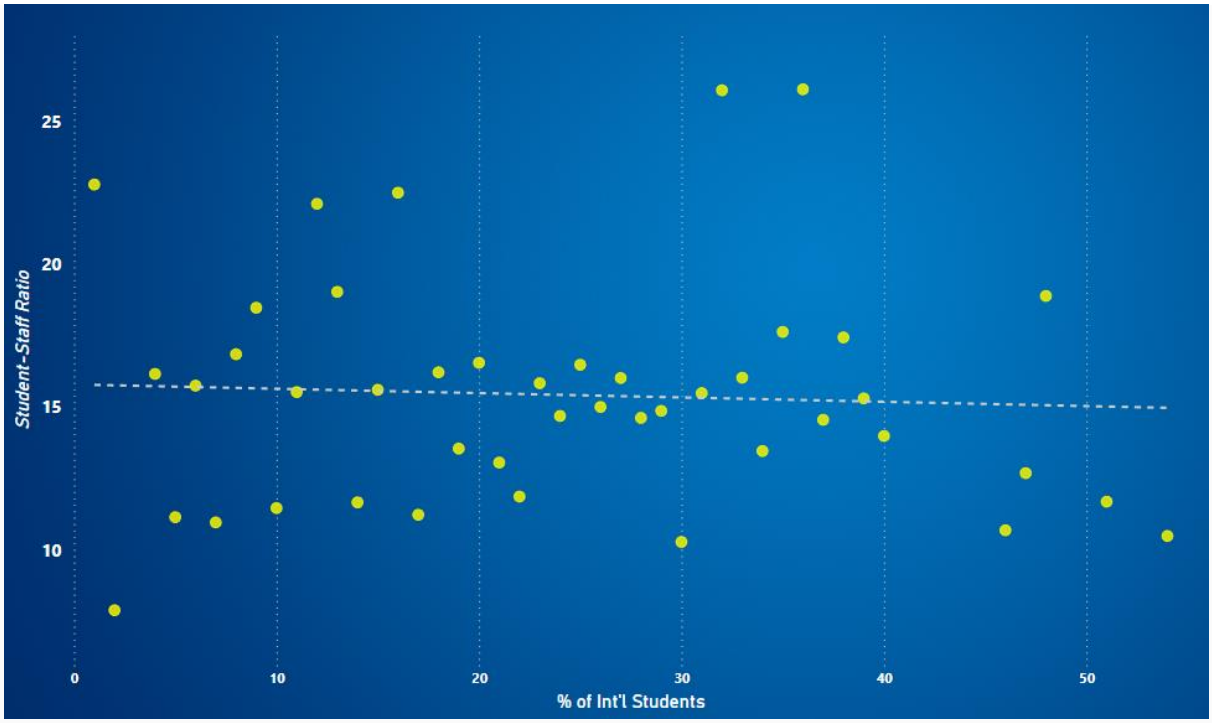


INSIGHT:

The Ranking Score ranges from 0 to about 450, while the percentage of female students spans from 0% to 70%. A notable feature is a dotted horizontal line at around 46% female students, which may represent an average or target percentage. There's a high concentration of institutions in the 40-60% range for female students, particularly for those with lower ranking scores (0-200). As the Ranking Score increases, there's a slight decrease in the density of data points, suggesting fewer institutions with very high scores. There's a cluster of points at 0% female students across various ranking scores, which could represent all-male institutions or incomplete data. The highest-ranking institutions (scores above 300) show a wide spread in female student percentages, ranging from about 30% to 60%. There doesn't appear to be a strong correlation between Ranking Score and percentage of female students. High-ranking institutions have varying levels of female representation, as do lower-ranking ones. The majority of institutions fall below the 60% female student mark, with only a few exceeding this percentage.

This visualization suggests that while there's significant variation in female student representation across institutions, higher ranking scores don't necessarily correlate with higher or lower percentages of female students. The data also indicates that most institutions have a relatively balanced gender distribution, with a slight skew towards male students in many cases.

- *How does the percentage of international students affect a university's student-staff ratio?*



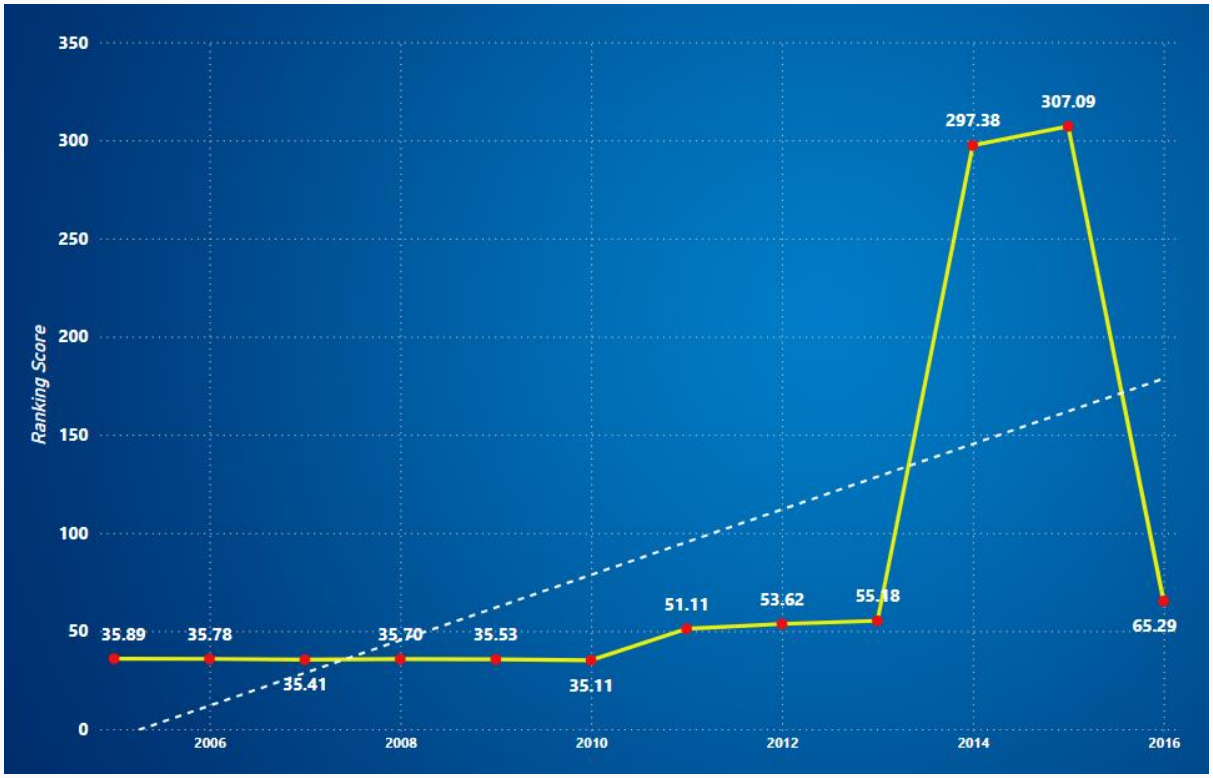
INSIGHT:

This scatter plot displays the relationship between the percentage of international students (x-axis) and the student-staff ratio (y-axis) across various institutions, likely universities or colleges. The data points are scattered across the graph with a slight downward trend, as indicated by the dashed trend line. This suggests a weak negative correlation between the two variables. As the percentage of international students increases, there's a slight tendency for the student-staff ratio to decrease, though this relationship is not strong or consistent across all data points.

There's considerable variation in both variables. The percentage of international students ranges from near 0% to about 50%, while the student-staff ratio varies from around 10 to 25. Some institutions have high percentages of international students with relatively low student-staff ratios, while others show the opposite pattern.

Overall, while there's a slight trend suggesting that institutions with more international students might have lower student-staff ratios, the relationship is not strong enough to draw definitive conclusions without considering other potential influencing factors.

- *Are there any significant trends or patterns in the rankings of universities from different countries?*



INSIGHT:

The visual shows the university's ranking score from 2005 to 2016, highlighting several key trends. Initially, the ranking score remained stable around the mid-30s until 2010. From 2011 to 2014, the score steadily improved, reaching 55.18. A significant spike occurred in 2015, with the score peaking at 297.38, likely due to substantial achievements or changes. However, in 2016, the score declined sharply to 65.29, although it remained higher than pre-2011 levels. Overall, despite fluctuations, the long-term trend indicates an upward trajectory, reflecting consistent improvement in the university's performance over the period.

EDA PROBLEM STATEMENTS

- ***Is there a correlation between a country's GDP and the number of universities?***

While the current dataset lacks relevant data to establish a direct correlation between a country's GDP and the number of universities, integrating external open-source data can facilitate the creation of a comprehensive visualization. This visualization can unveil potential connections between economic strength and educational infrastructure. Analysing this correlation provides valuable insights into how economic resources influence a country's investment in higher education. Nations with higher GDPs might exhibit a propensity to allocate more resources to educational institutions, leading to a greater number of universities. By undertaking this analysis, institutions and policymakers can make informed decisions about educational funding, resource allocation, and strategies for sustainable economic growth.

- ***What are the names of universities along with their respective countries in the dataset?***

```
select u.id, u.university_name,
c.country_name
from university as u
join country as c
on c.id = u.country_id;
```

OUTPUT:

id	university_name	country_name
379	University of Buenos Aires	Argentina
742	National University of La Plata	Argentina
898	National University of CÃƒÂ³rdoba	Argentina
979	National University of Rosario	Argentina
92	University of Queensland	Australia
94	University of Sydney	Australia
107	Australian National University	Australia
118	University of Melbourne	Australia
152	University of New South Wales	Australia
171	Monash University	Australia
226	University of Western Australia	Australia
341	University of Adelaide	Australia
487	Macquarie University	Australia
507	University of Wollongong	Australia
508	Flinders University	Australia
547	University of Newcastle	Australia
573	James Cook University	Australia
606	Queensland University of Technology	Australia
609	University of Tasmania	Australia
613	Curtin University	Australia
614	Deakin University	Australia

INSIGHT:

The dataset provides a comprehensive list of universities along with their respective countries, offering insights into the global distribution of higher education institutions. This information can be leveraged to analyse geographical patterns in university rankings, assess international collaborations in research and academia, and understand regional disparities in educational opportunities.

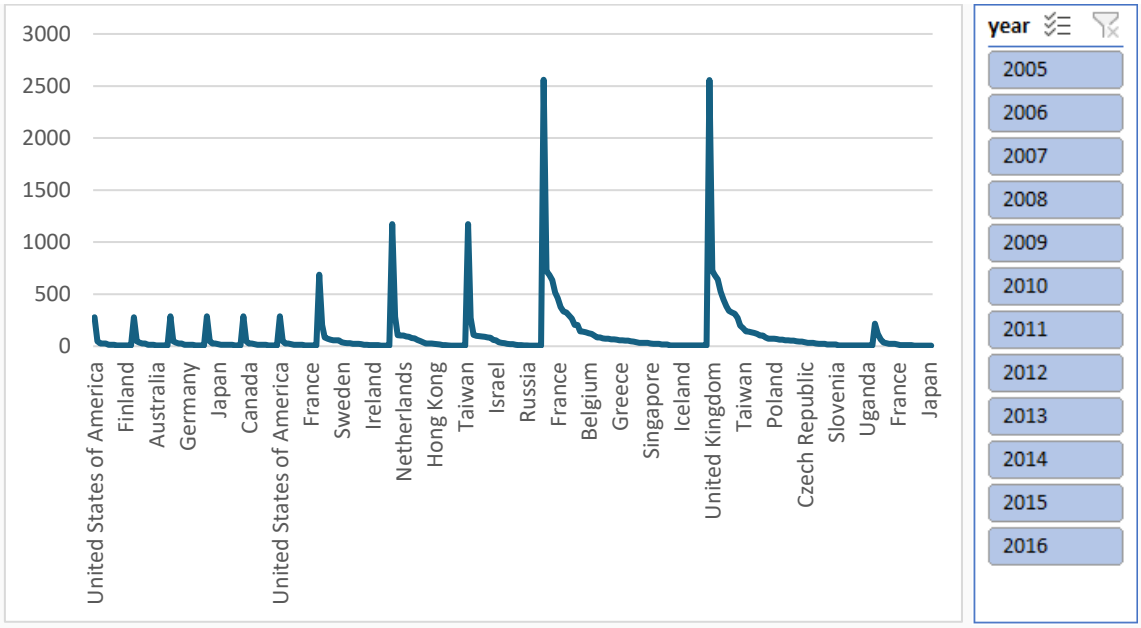
- ***How has the number of universities changed over the years in each country?***

```
select c.country_name, ury.year,
count(u.university_name) as Num_of_Universities
from country as c
join university as u
on c.id = u.country_id
join university_ranking_year as ury
on ury.university_id = u.id
group by 1, 2
order by 2, 3 desc;
```

OUTPUT:

country_name	year	Num_of_Universities
United States of America	2005	280
United Kingdom	2005	49
Canada	2005	28
Japan	2005	28
Sweden	2005	28
France	2005	14
Netherlands	2005	14
Switzerland	2005	14
Australia	2005	7
Austria	2005	7
Denmark	2005	7
Finland	2005	7
Germany	2005	7
Norway	2005	7
United States of America	2006	280
United Kingdom	2006	49
Japan	2006	35
Canada	2006	28
Sweden	2006	28
France	2006	14
Netherlands	2006	14
Switzerland	2006	14
Australia	2006	7
Denmark	2006	7
Finland	2006	7
Germany	2006	7
Norway	2006	7
United States of America	2007	287
United Kingdom	2007	49
Japan	2007	35

VISUAL:



INSIGHT:

This graph illustrates the distribution of universities across various countries. Most nations have relatively few institutions, as shown by the low baseline. However, three countries - Belgium, Greece, and the United Kingdom - stand out with dramatically higher numbers of universities, depicted by tall spikes on the chart. These spikes, reaching up to about 2,500 universities, contrast sharply with the lower counts in other countries. The graph reveals significant disparity in higher education infrastructure among nations, with a few countries having a notably larger university presence. This pattern could reflect differences in population, education policies, or historical developments in tertiary education across these countries.

- ***Is there a relationship between a country's population and the number of universities?***

While the current dataset lacks relevant data to establish a direct correlation between a country's GDP and the number of universities, integrating external open-source data can facilitate the creation of a comprehensive visualization. Therefore, chosen a new problem statement to resolve from the dataset.

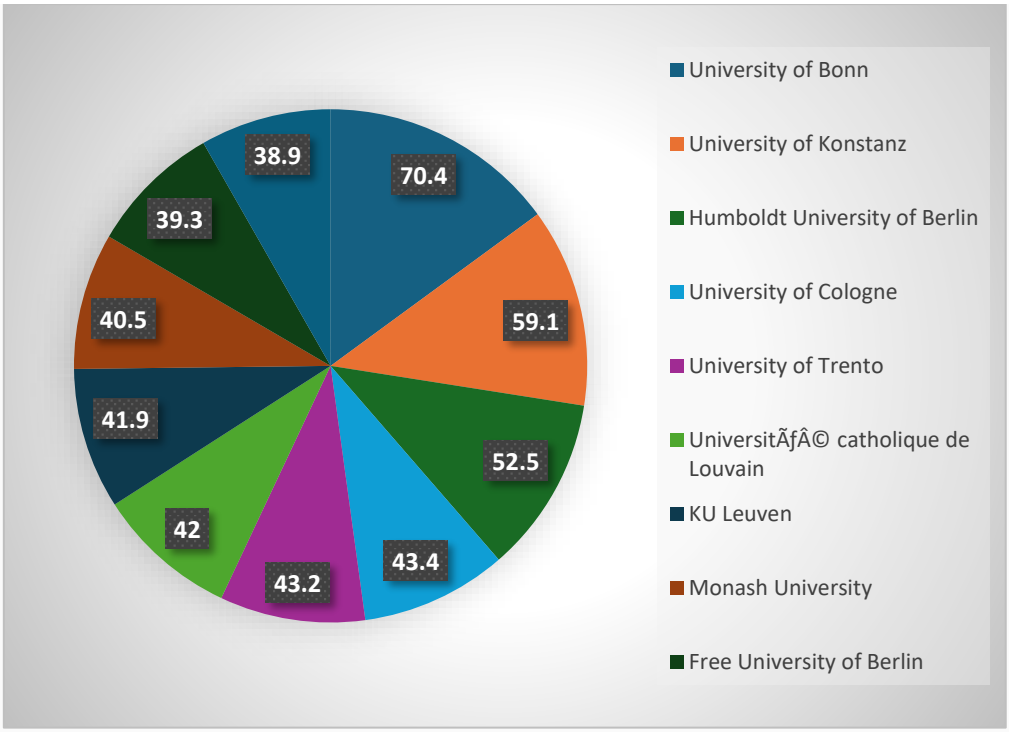
- ***Which University Has Better Student-staff Ratio?***

```sql
select u.university_name,
max(uy.student_staff_ratio) as Student_Staff_Ratio
from university as u
join university_year as uy
on u.id = uy.university_id
group by 1
order by 2 desc
limit 10;
```

OUTPUT:

university_name	Student_Staff_Ratio
University of Bonn	70.4
University of Konstanz	59.1
Humboldt University of Berlin	52.5
University of Cologne	43.4
University of Trento	43.2
UniversitÃƒÂ© catholique de Louvain	42
KU Leuven	41.9
Monash University	40.5
Free University of Berlin	39.3
University of TÃƒÂ¼bingen	38.9

VISUAL:



INSIGHT:

This pie chart illustrates the student-staff ratios for nine different universities. The University of Bonn has the highest ratio at 70.4 students per staff member, significantly higher than the others. The University of Konstanz follows with 59.1, and Humboldt University of Berlin is third with 52.5. The remaining universities have ratios ranging from about 38 to 43 students per staff member, with relatively small differences between them. This visualization highlights substantial variations in how these institutions allocate their human resources, with some universities having nearly twice the number of students per staff member compared to others. Such differences could impact the quality of education, student support, and overall academic experience at each institution.

- ***Are there any common criteria used by different ranking systems?***

```
select rs.system_name, rc.criteria_name,
count(rs.system_name) as Count
from ranking_criteria as rc
join ranking_system as rs
on rc.ranking_system_id = rs.id
group by 1, 2;
```

OUTPUT:

system_name	criteria_name	Count
Times Higher Education World University Ranking	Teaching	1
Times Higher Education World University Ranking	International	1
Times Higher Education World University Ranking	Research	1
Times Higher Education World University Ranking	Citations	1
Times Higher Education World University Ranking	Income	1
Times Higher Education World University Ranking	Total Times	1
Shanghai Ranking	Alumni	1
Shanghai Ranking	Award	1
Shanghai Ranking	HiCi	1
Shanghai Ranking	N and S	1
Shanghai Ranking	Pub	1
Shanghai Ranking	PCP	1
Shanghai Ranking	Total Shanghai	1
Center for World University Rankings	Quality of Education Rank	1
Center for World University Rankings	Alumni Employment Rank	1
Center for World University Rankings	Quality of Faculty Rank	1
Center for World University Rankings	Publications Rank	1
Center for World University Rankings	Influence Rank	1
Center for World University Rankings	Citations Rank	1
Center for World University Rankings	Patents Rank	1
Center for World University Rankings	Total CWUR	1

INSIGHT:

As evident from the chart, each ranking system employs its unique set of criteria, indicating the absence of common criteria across systems. This suggests that every ranking system utilizes its distinct parameters and methodologies to evaluate universities.

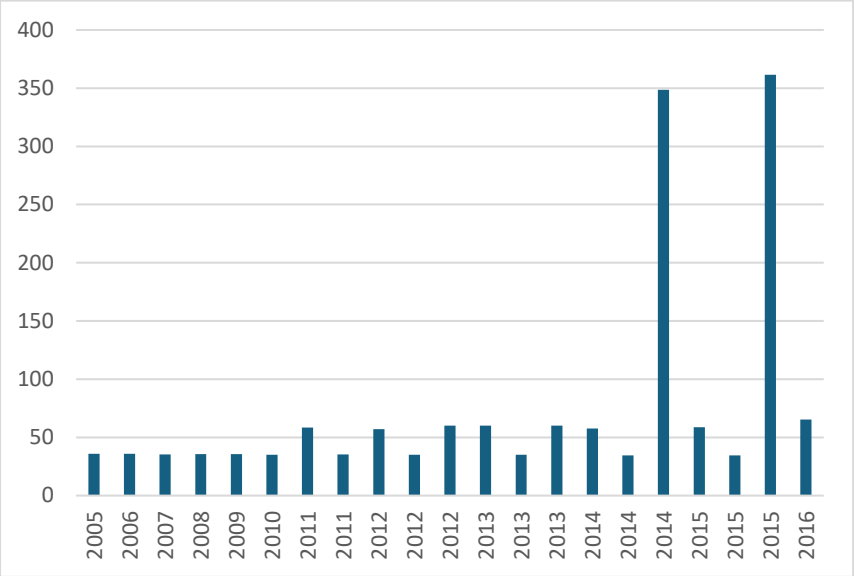
- ***What is the trend in university rankings over the years according to each system?***

```
select rs.system_name, ury.year,
round(avg(ury.score), 2) as Score
from university_ranking_year as ury
join ranking_criteria as rc
on ury.ranking_criteria_id = rc.id
join ranking_system as rs
on rc.ranking_system_id = rs.id
group by 1, 2
order by 2;
```

OUTPUT:

system_name	year	Score
Shanghai Ranking	2005	35.89
Shanghai Ranking	2006	35.78
Shanghai Ranking	2007	35.41
Shanghai Ranking	2008	35.7
Shanghai Ranking	2009	35.53
Shanghai Ranking	2010	35.11
Times Higher Education World University Ranking	2011	58.54
Shanghai Ranking	2011	35.31
Times Higher Education World University Ranking	2012	57.06
Shanghai Ranking	2012	35.05
Center for World University Rankings	2012	60.21
Times Higher Education World University Ranking	2013	60.17
Shanghai Ranking	2013	35.22
Center for World University Rankings	2013	60.18
Times Higher Education World University Ranking	2014	57.62
Shanghai Ranking	2014	34.52
Center for World University Rankings	2014	348.54
Times Higher Education World University Ranking	2015	58.74
Shanghai Ranking	2015	34.64
Center for World University Rankings	2015	361.39
Times Higher Education World University Ranking	2016	65.29

VISUAL:



INSIGHT:

Times Higher Education World University Ranking: Scores fluctuate slightly over the years but show an increasing trend from 2011 to 2016, with the average score peaking at 65.29 in 2016. Shanghai Ranking: Scores remain relatively stable from 2005 to 2013, with a slight decrease towards 2015. Center for World University Rankings: Scores start moderately in 2012 and 2013, but there's a significant spike in 2014 and 2015, with scores jumping to 348.54 and 361.39, respectively.

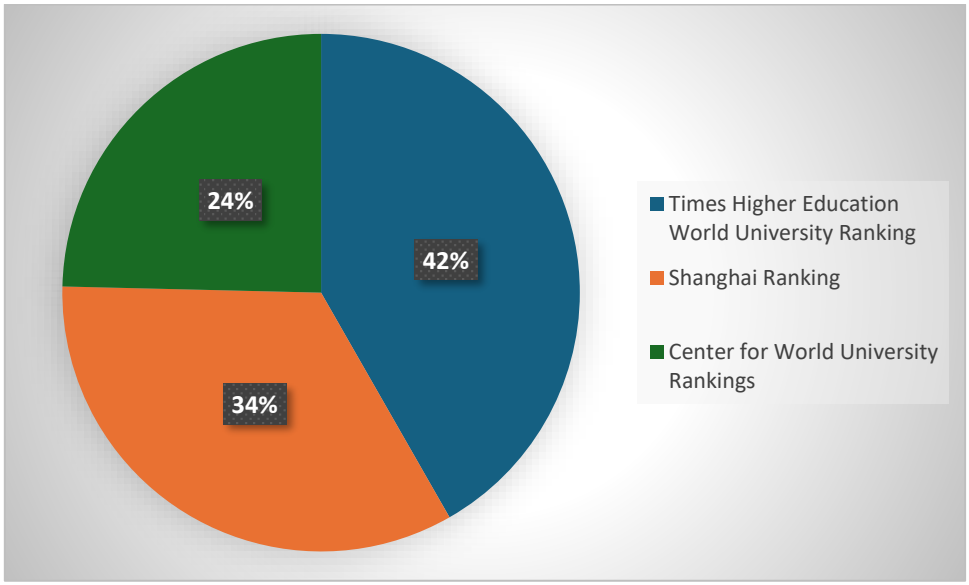
- ***How does the choice of ranking system affect a university's international student enrolment?***

```
select rs.system_name,
sum((uy.pct_international_students/100)*uy.num_students) as Intl_Students
from ranking_system as rs
join ranking_criteria as rc
on rc.ranking_system_id = rs.id
join university_ranking_year as ury
on ury.ranking_criteria_id = rc.id
join university as u
on u.id = ury.university_id
join university_year as uy
on uy.university_id = u.id
group by 1;
```

OUTPUT:

system_name	Intl_Students
Times Higher Education World University Ranking	152012572.7
Shanghai Ranking	122566791.8
Center for World University Rankings	89673957.52

VISUAL:



INSIGHT:

This pie chart illustrates the distribution of international students across three major university ranking systems. The Times Higher Education World University Ranking accounts for the largest share at 42%, indicating it's the most popular or influential among international students. Shanghai Ranking follows with 34%, suggesting it's the second most recognized system. The Center for World University Rankings represents 24% of the distribution, the smallest but still significant portion. This visualization highlights the varying degrees of impact these ranking systems have on international student choices or representation, with Times Higher Education having a clear lead in this context.

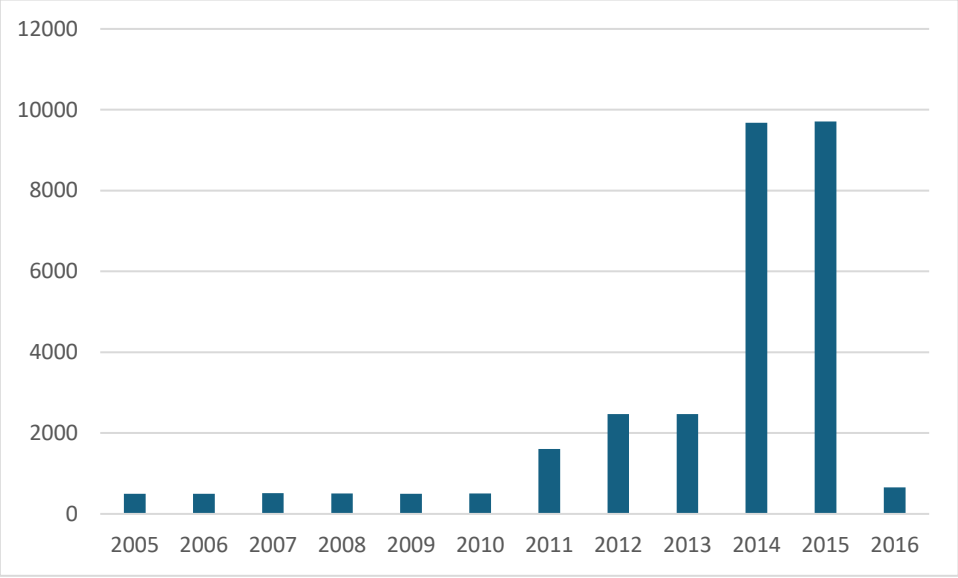
- ***How have the weights of ranking criteria changed over time?***

```
select year,
count(ranking_criteria_id) as Ranking_Criteria_Weights
from university_ranking_year
group by 1
order by 1;
```

OUTPUT:

Year	Ranking_Criteria_Weights
2005	497
2006	497
2007	511
2008	504
2009	497
2010	504
2011	1607
2012	2473
2013	2472
2014	9678
2015	9712
2016	660

VISUAL:



INSIGHT:

This graph shows the "Ranking Criteria Weights" over time from 2005 to 2016. The most striking feature is the dramatic increase in values starting around 2011. The weights remain relatively low and stable from 2005 to 2010, hovering around 500 or less. However, there's a sharp upward trend beginning in 2011, with the values climbing rapidly each year until reaching a peak of nearly 10,000 in 2014 and 2015. Interestingly, there's a sudden drop in 2016, returning to levels similar to those seen in the early years of the graph. This pattern suggests a significant change in ranking criteria or methodology occurred around 2011, leading to much higher weights for several years before an apparent reversal or adjustment in 2016.

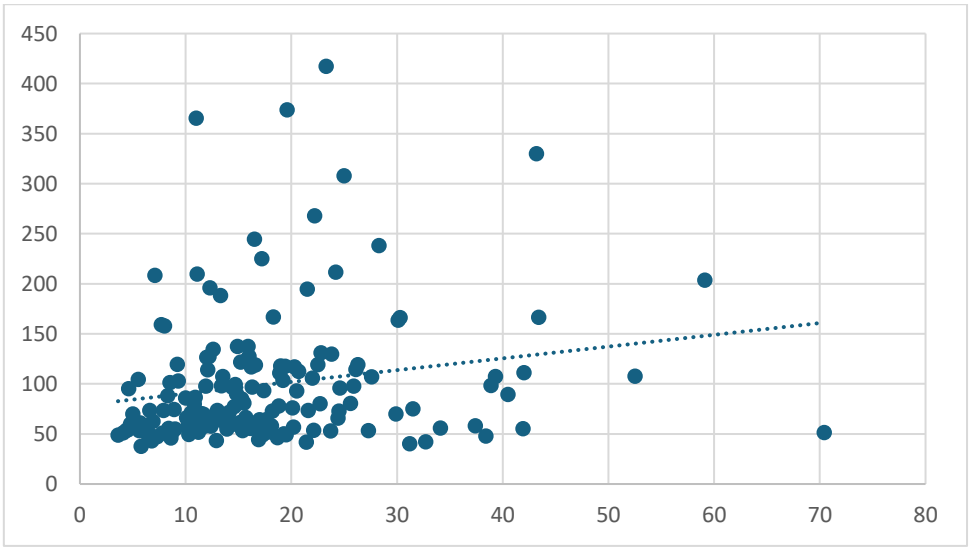
- ***Is there a relationship between a university's score and the student-staff ratio?***

```
select student_staff_ratio,
avg(ury.score) as Score
from university_ranking_year as ury
join university_year as u
on u.university_id = ury.university_id
group by 1;
```

OUTPUT:

Student_Staff_Ratio	Score
8.9	74.6621
6.9	62.6224
9	55.0265
7.8	50.9808
8.4	55.7257
11.8	57.7992
11.6	62.8259
16.4	57.5281
11.7	69.7059
4.4	53.7708
10.3	49.6857
3.6	48.8636
10.2	58.0438
14.7	99.6641
5.9	55.4748
6.5	50.192
13.1	67.8627
17.6	64.4191
10.7	59.4424
4.8	60.2562
13.8	60.0206
5.7	61.0596
20.1	76.0533

VISUAL:



INSIGHT:

This scatter plot displays a relationship between an unnamed variable on the x-axis (ranging from 0 to 80) and a "Score" on the y-axis (ranging from 0 to 450). The data points show a wide dispersion, indicating significant variability in scores. There's a slight positive trend, as indicated by the dotted trendline, suggesting that scores tend to increase moderately as the x-axis variable increases.

The majority of data points are clustered in the lower left quadrant of the graph, with x-values between 0 and 30 and scores mostly below 200. However, there are several outliers with notably higher scores, reaching up to around 400. The data becomes sparser as we move right on the x-axis, with fewer points beyond the 40 mark.

This pattern could indicate a complex relationship between the variables, where other factors beyond the x-axis measure significantly influence the score. The wide spread of scores, particularly at lower x-values, suggests that while there's a general upward trend, the x-axis variable alone is not a strong predictor of the score.

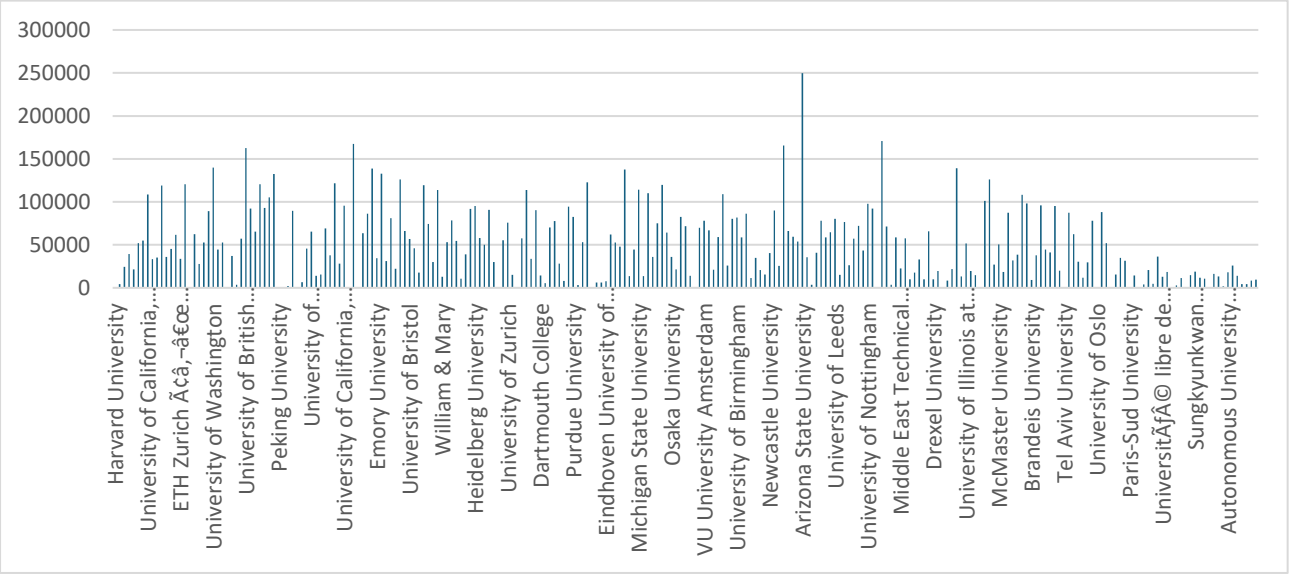
- ***How does the number of female students differ among universities?***

```
select u.university_name, round(sum((uy.pct_female_students/100) * uy.num_students)) as Total_Female_Students
from university_year as uy
join university as u
on uy.university_id = u.id
group by 1;
```

OUTPUT:

university_name	Total_Female_Students
Harvard University	NULL
California Institute of Technology	4441
Massachusetts Institute of Technology	24584
Stanford University	39302
Princeton University	21408
University of Cambridge	51921
University of Oxford	54976
University of California, Berkeley	108558
Imperial College London	33433
Yale University	35253
University of California, Los Angeles	119203
University of Chicago	35837
Johns Hopkins University	45384
Cornell University	61701
ETH Zurich Ã¢â‚¬â€œ Swiss Federal Institute of Technology Zurich	33811
University of Michigan	120344
Columbia University	NULL
University of Pennsylvania	62351
Carnegie Mellon University	27811
University of Hong Kong	52563
University College London	89400

VISUAL:



INSIGHT:

The bar chart illustrates the total number of female students across various universities. Notably, there is significant variation in female student populations, with some universities having over 100,000 female students while others have considerably fewer. For example, Harvard University and the University of California, Los Angeles, have relatively high numbers of female students, while many other universities have much smaller populations. This visual highlight the diverse scale of female student enrolment across different institutions, reflecting the varying sizes and possibly the gender demographics of these universities.

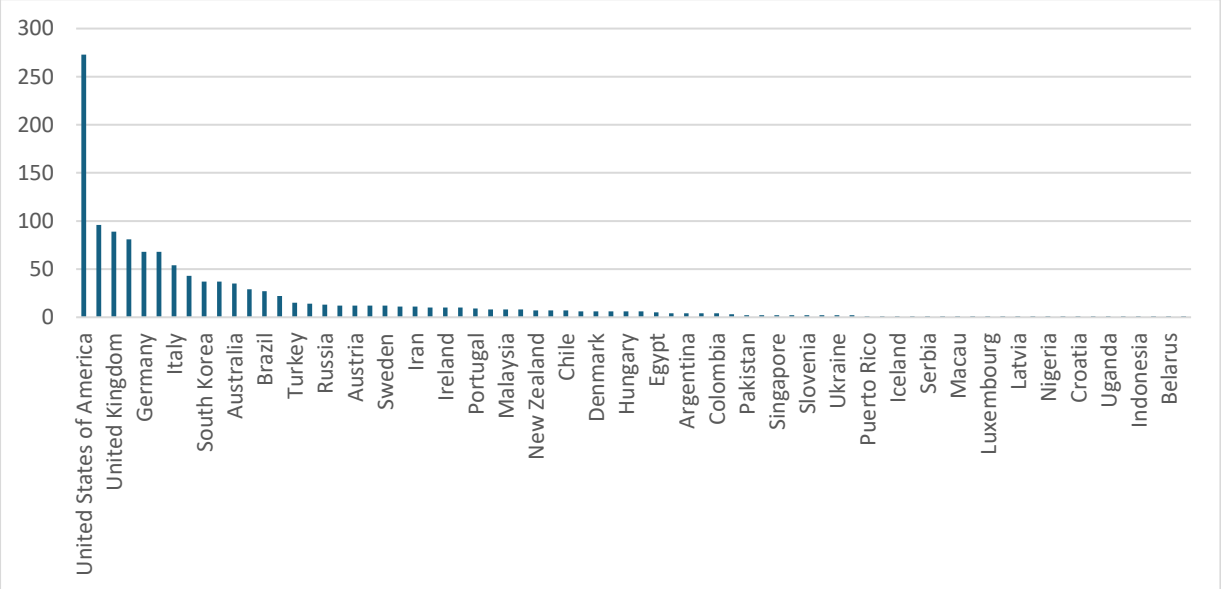
- ***What is the distribution of universities across different countries?***

```
select c.country_name,
count(u.university_name) as Num_of_Universities
from country as c
join university as u
on u.country_id = c.id
group by 1
order by 2 desc;
```

OUTPUT:

country_name	Num_of_Universities
United States of America	273
China	96
United Kingdom	89
Japan	81
Germany	68
France	68
Italy	54
Spain	43
South Korea	37
Canada	37
Australia	35
Taiwan	29
Brazil	27
India	22
Turkey	15
Netherlands	14
Russia	13
Switzerland	12
Austria	12
Poland	12
Sweden	12
Belgium	11

VISUAL:



INSIGHT:

The bar chart illustrates the number of universities across various countries. The United States of America leads significantly, with over 250 universities, followed by the United Kingdom, Germany, and Italy, each with considerably fewer institutions. Other countries such as South Korea, Australia, and Brazil also have a notable number of universities, but the numbers drop off sharply after the top few countries. The chart shows a wide disparity in the distribution of universities, with many countries having fewer than 10 institutions represented, highlighting the concentration of higher education institutions in a few key nations.

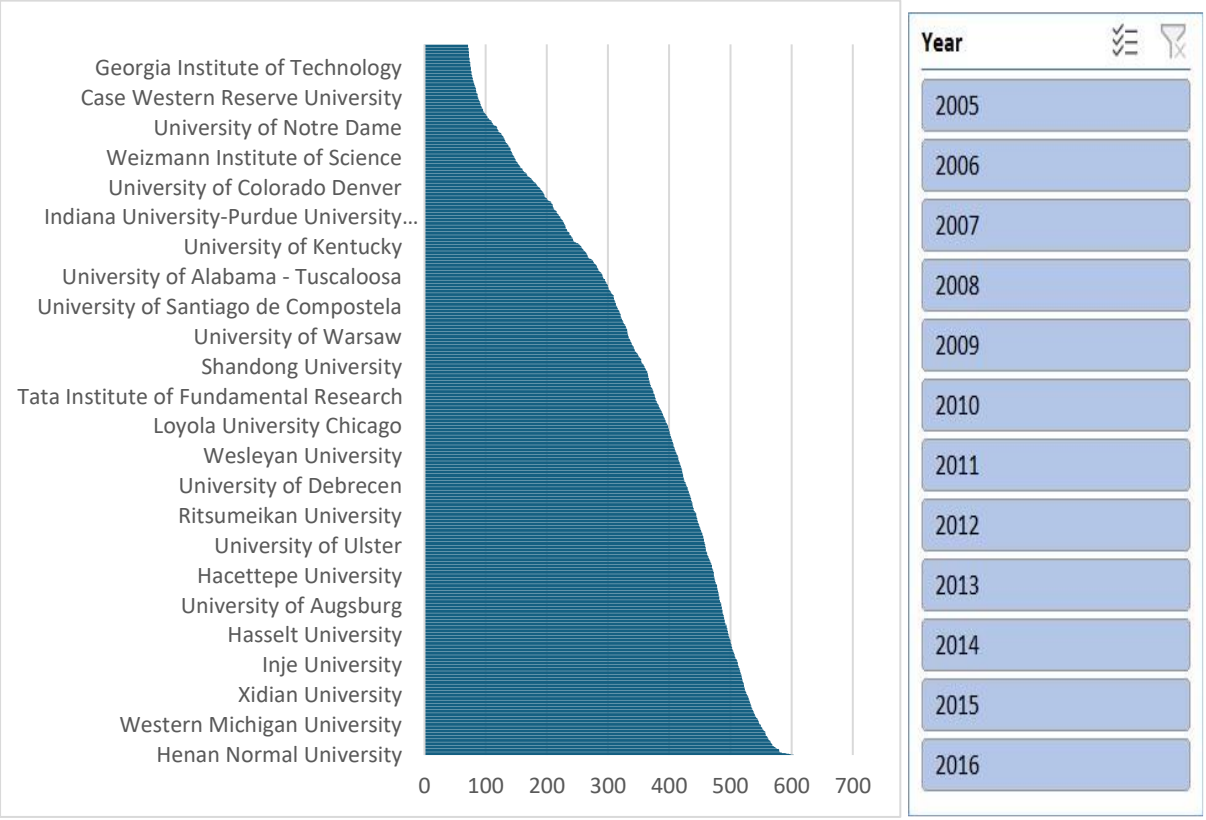
- ***How has the ranking of universities changed over the years?***

```
select u.university_name, ury.year as Year,
round(avg(ury.score)) as Ranking
from university_ranking_year as ury
join university as u
on u.id = ury.university_id
group by 1,2
order by 3 desc;
```

OUTPUT:

University_name	Year	Ranking
Henan Normal University	2015	604
University of Pau and Pays de l'Adour	2015	599
Yuan Ze University	2015	598
Dokuz EylÃƒÂ¼l University	2015	596
University of Thessaly	2015	592
Hunan Normal University	2015	590
University of Hyderabad	2015	584
Mansoura University	2015	584
Shanghai Normal University	2015	581
University of Chemistry and Technology, Prague	2015	581
University of Wales, Trinity Saint David	2015	580
Federal University of Santa Maria	2015	580
Feng Chia University	2015	580
Yangzhou University	2015	580
Tarbiat Modares University	2015	580
Harbin Engineering University	2015	580
University of AlmerÃƒÂ-a	2015	579
Shahid Beheshti University of Medical Sciences	2015	579
BabeÃˆâ„c-Bolyai University	2015	576
University of Pau and Pays de l'Adour	2014	575
University of the Algarve	2015	574
Tianjin Medical University	2015	574

VISUAL:



INSIGHT:

The bar chart depicts the ranking distribution of various universities, with Michigan State University at the top. The rankings increase gradually as we move down the list, with Henan Normal University appearing at the lower end. This visual indicates a wide range of university rankings, showcasing a gradual decrease from lower to higher-ranked institutions, suggesting a relatively even spread across the rankings rather than sharp drops or clusters.

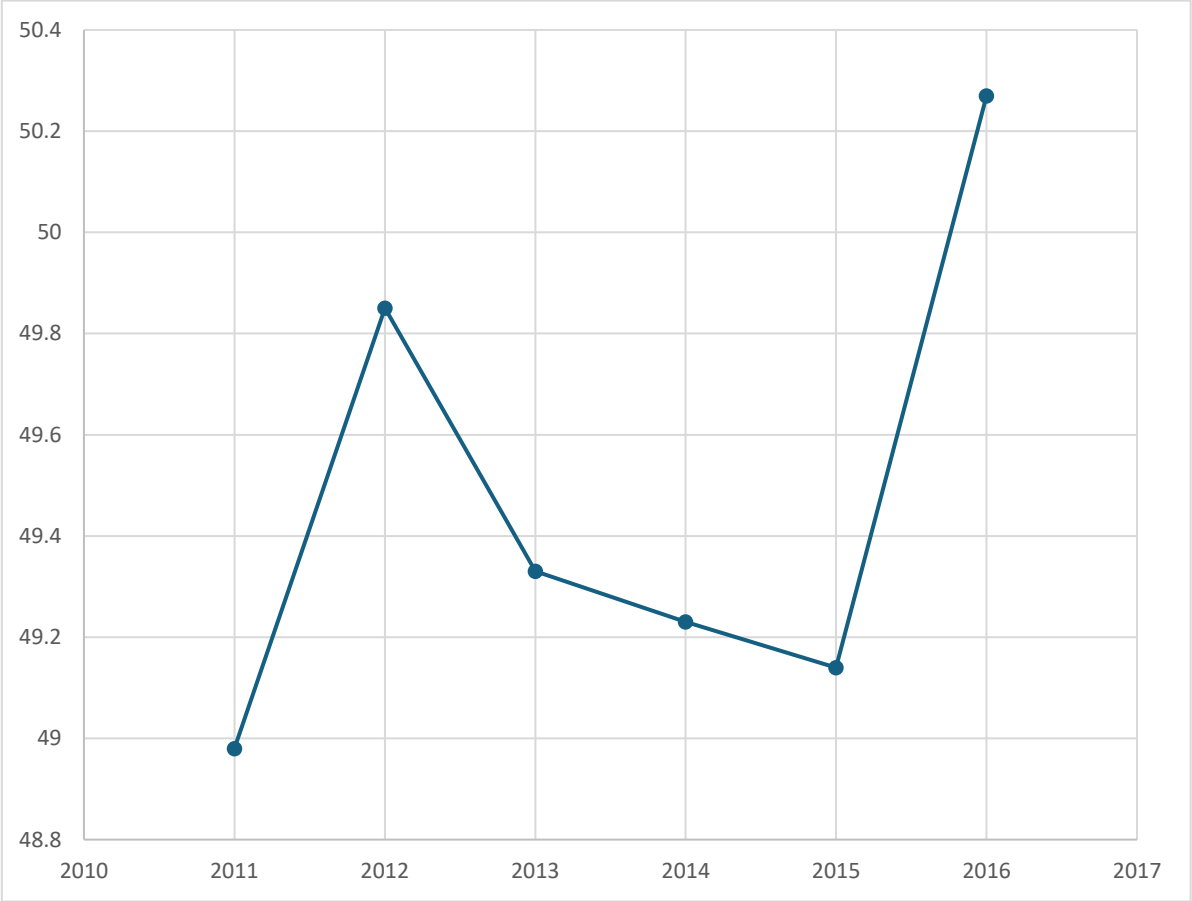
- ***What is the trend in the percentage of female students over time?***

```
select year as Year,
round(avg(pct_female_students), 2) as Fem_Student_Percentage
from university_year
group by 1;
```

OUTPUT:

Year	Fem_Student_Percentage
2011	48.98
2012	49.85
2013	49.33
2014	49.23
2015	49.14
2016	50.27

VISUAL:



INSIGHT:

The line chart displays the percentage of female students from 2010 to 2016. The percentage starts at approximately 49% in 2010 and peaks at nearly 50% in 2012. Following 2012, there is a gradual decline in the percentage, reaching its lowest point around 2015 at just under 49%. However, there is a sharp increase in 2016, bringing the percentage back up to above 50%. This indicates some fluctuations in female student enrolment over the years, with a notable recovery and improvement by the end of the observed period.

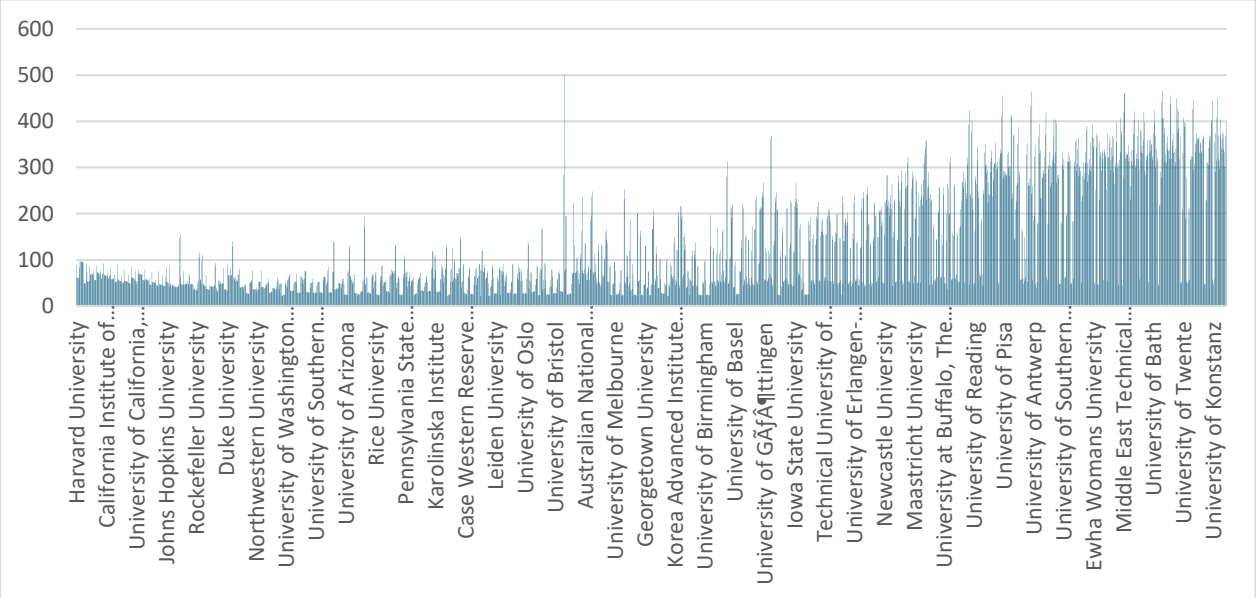
- ***How has the ranking score of universities evolved over the years?***

```
select u.university_name, ury.year as Year,
round(sum(ury.score), 2) as Ranking_Score
from university as u
join university_ranking_year as ury
on u.id = ury.university_id
group by 1, 2;
```

OUTPUT:

University_Name	Year	Ranking_Score
Harvard University	2011	90.08
Harvard University	2012	61.29
Harvard University	2013	60.76
Harvard University	2014	60.76
Harvard University	2015	61.05
Harvard University	2016	82.83
Harvard University	2005	96
Harvard University	2006	96.29
Harvard University	2007	96.14
Harvard University	2008	96.29
Harvard University	2009	96.43
Harvard University	2010	95.57
Massachusetts Institute of Technology	2011	92.5
Massachusetts Institute of Technology	2012	49.07
Massachusetts Institute of Technology	2013	48.86
Massachusetts Institute of Technology	2014	49
Massachusetts Institute of Technology	2015	48.79
Massachusetts Institute of Technology	2016	91.5

VISUAL:



INSIGHT:

The bar chart displays the ranking scores of various universities. Harvard University and other top institutions show relatively high-ranking scores, while many other universities have lower scores. There are significant variations in ranking scores, indicating a wide disparity in performance or reputation among the institutions listed. The chart also highlights that a few universities have exceptionally high scores compared to the majority, which tend to cluster around lower values.

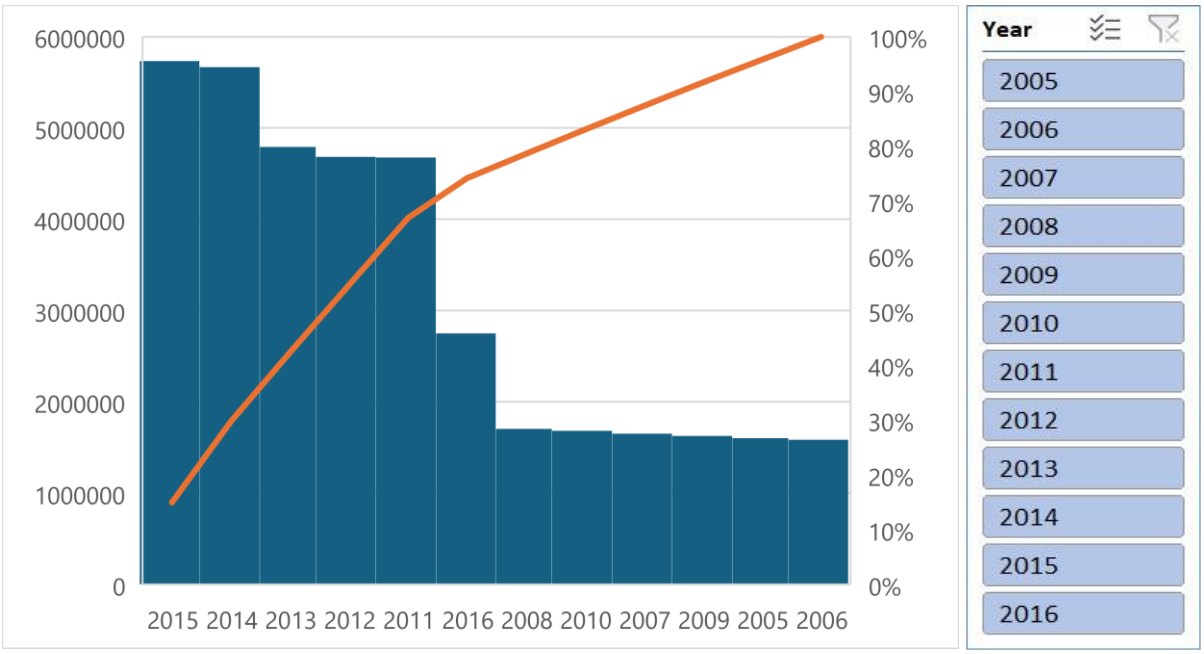
- ***Is there a relationship between a university's ranking score and the number of students over time?***

```
select ury.year, uy.num_students as Total_Students,
round(avg(score), 2) as Ranking_Score
from university_ranking_year as ury
join university_year as uy
on uy.university_id = ury.university_id
group by 1, 2;
```

OUTPUT:

Year	Total_Students	Ranking_Score
2011	20152	90.08
2012	20152	61.29
2013	20152	60.76
2014	20152	60.76
2015	20152	61.05
2016	20152	82.83
2005	20152	96
2006	20152	96.29
2007	20152	96.14
2008	20152	96.29
2009	20152	96.43
2010	20152	95.57
2011	2243	75.85
2012	2243	57.76
2013	2243	61.14
2014	2243	69.24
2015	2243	70.71
2016	2243	91.83
2005	2243	67.57
2006	2243	66.43

VISUAL:



INSIGHT:

This combined bar and line chart presents two key pieces of information over the years 2005 to 2016. The bars depict the total number of students, with a noticeable peak around 2015 and a significant drop in 2016. The line indicates a percentage measure that consistently increases over the same period, reaching 100% by 2016. This could represent the cumulative growth or another metric reaching its maximum. The chart suggests a relationship where, despite fluctuations in the total number of students, the percentage metric steadily improves.

DASHBOARD VISUALISATION

UNIVERSITY SUCCESS ANALYSIS

Demography Analysis

The goal of the country-wise analysis is to understand how various factors, such as demographic and economic conditions, impact university rankings and metrics like student-staff ratio, international student percentage, and overall scores. This analysis helps identify trends and patterns specific to each country.

University Analysis

The objective of the University Analysis is to comprehensively examine the factors within individual universities that impact their overall performance and rankings. This involves analyzing various metrics such as student-staff ratio, the percentage of international students, and overall scores to understand how these elements contribute to a university's success. The analysis aims to identify key characteristics of top-performing universities and provide actionable insights for other institutions looking to improve their rankings.

Ranking Analysis

The objective of the Ranking Analysis is to explore how different ranking systems and their criteria influence university rankings. This involves a deep dive into the methodologies used by various ranking systems (such as CWUR, THE, etc.), understanding the weight of different criteria (like academic reputation, employer reputation, research output), and analyzing how these factors affect the rankings of universities. The goal is to provide a comparative analysis of ranking systems and highlight the most influential criteria that universities should focus on.

Trend Analysis

The objective of the Trend/Yearly Analysis is to identify and analyze significant trends or patterns in university rankings over different years. This includes examining how university rankings have evolved over time, identifying factors that contribute to these changes, and understanding the broader implications of these trends.

DEMOGRAPHY ANALYSIS

COUNTRIES

Select all | Argentina | Australia

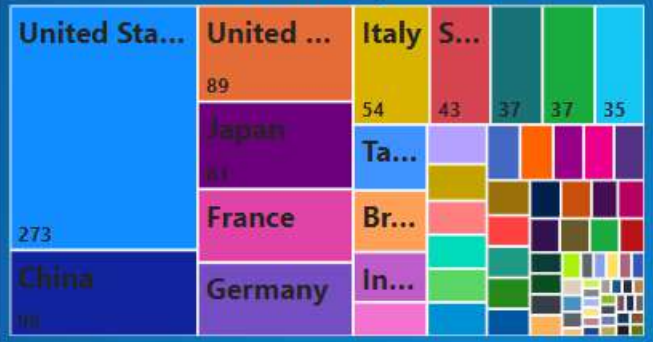
Total Students
26M

Total Universities
1247

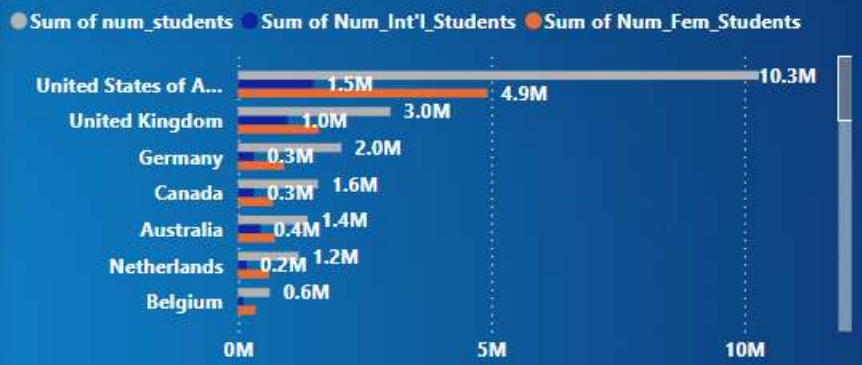
Total International Students
4.78M

Total Female Students
12.02M

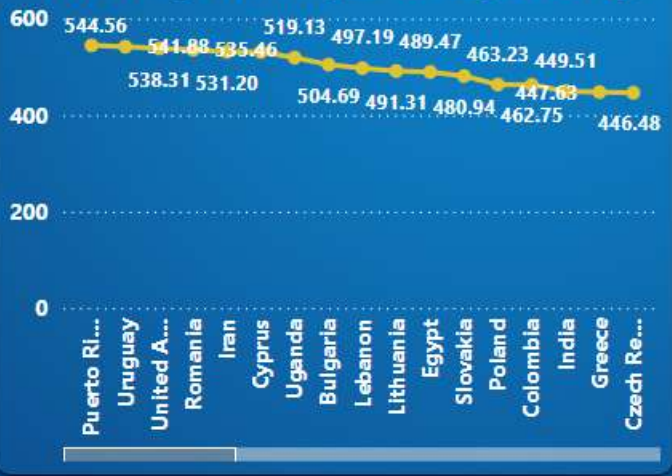
Distribution of Universities by Country



Distribution of Students by Country



University Ranking Score by Country



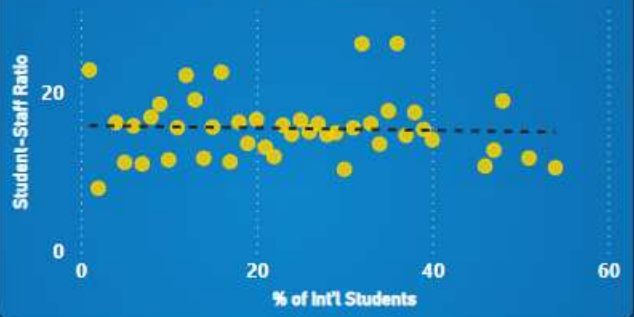
Student-Staff Ratio by Country

UNIVERSITY ANALYSIS

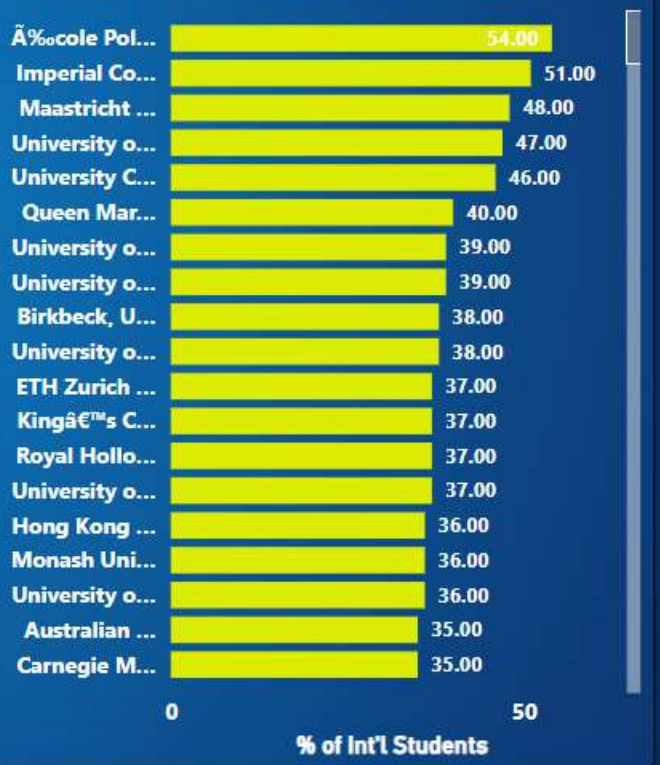
Total Students	Total Universities	Total International Students	Total Female Students
26M	1247	4.78M	12.02M

Distribution of Students by University

Impact on Student-Staff Ratio by Int'l Students%

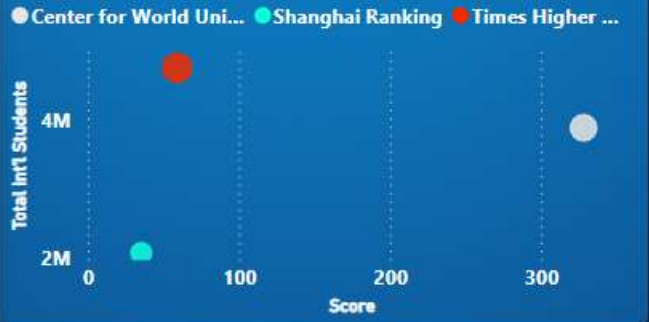


Distribution of Percentage of Int'l Students by University



Mean Ranking Score by Ranking System

Impact on Int'l Students Admission by Score



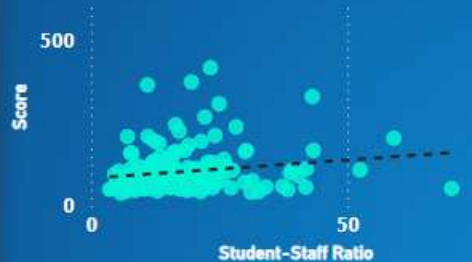
RANKING ANALYSIS

Ranking System

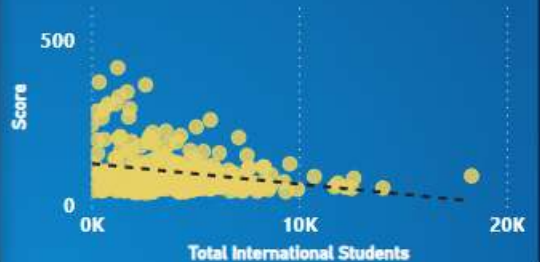
Center for World Universit... | Shanghai Ranking | Times Higher Education...

Distribution of Universities by Ranking System

Impact on Ranking Score by Student-Staff Ratio

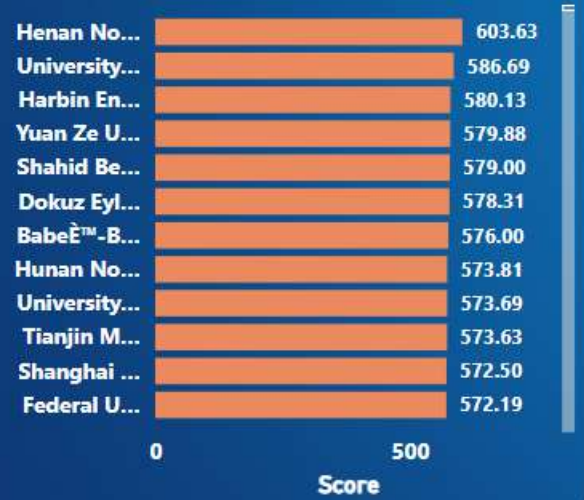


Relation between Score & Num_Int'l_Students



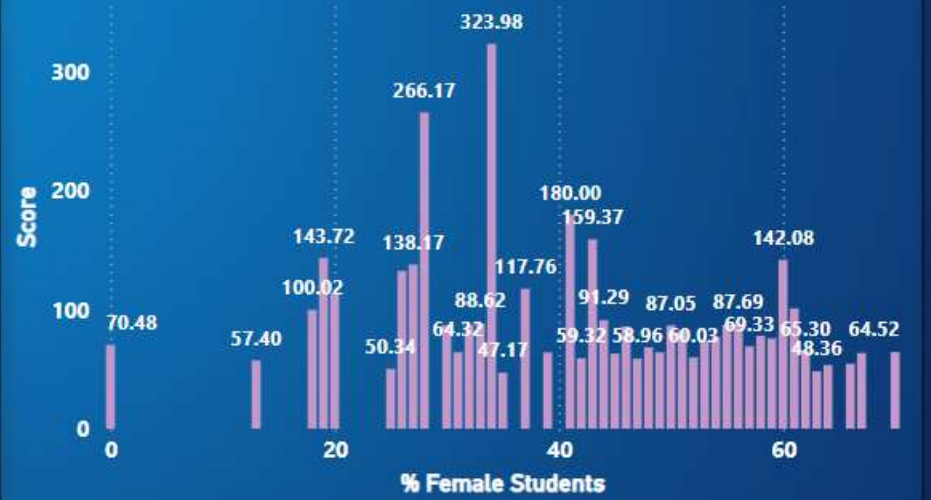
Relation between Score and % of Female Students

Ranking Score by University



Ranking Score by Ranking Criteria

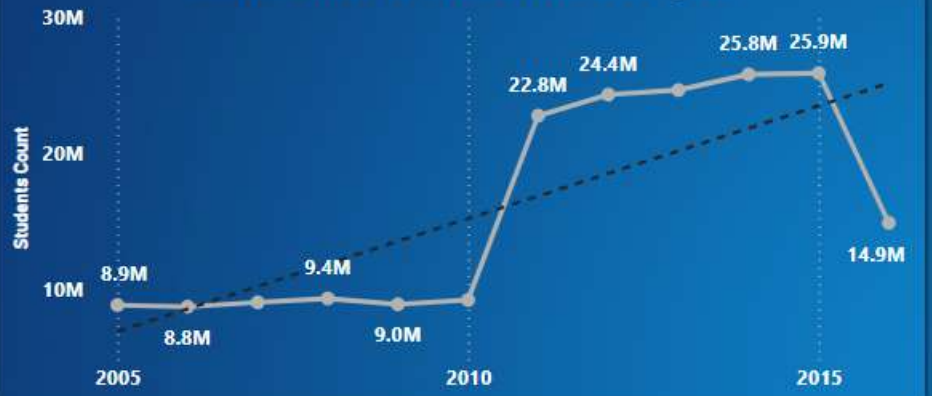
Impact on Score by % of Female Students



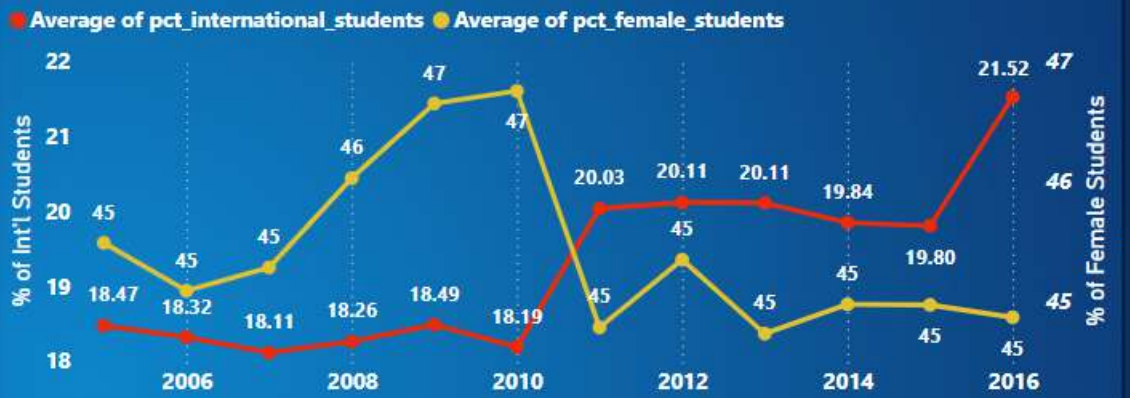
TREND ANALYSIS

Year: 2005 | 2006 | 2007 | 2008 | 2009

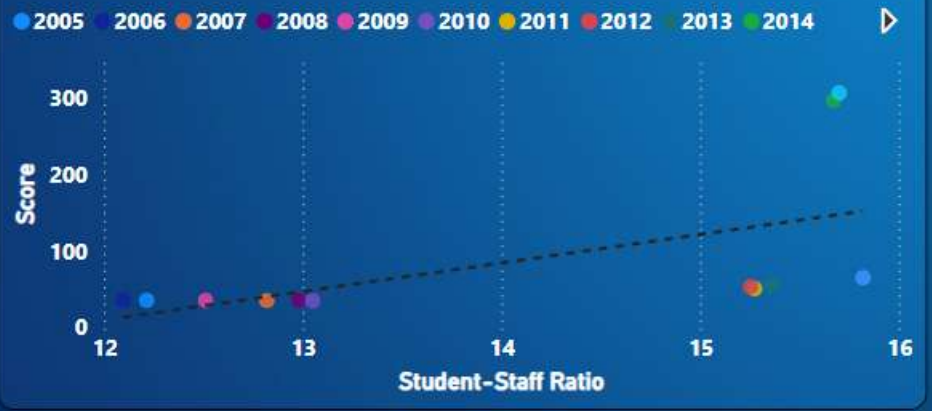
Distribution of Students over year



Rise of Female & Int'l Students % over year



Correlation between Student-Staff Ratio & Score over year



Universities Over Year

CONCLUSION

In conclusion, this University Success Analysis provides a comprehensive overview of various factors contributing to the success and ranking of universities worldwide. The insights gathered from different visualizations highlight key aspects such as the distribution of universities across different ranking systems, student-staff ratios, total female student populations, and the overall number of universities by country.

1. ***Diverse Ranking Systems****: The analysis of the number of universities ranked by different systems (CWUR, THE, and Shanghai) indicates significant variability, with CWUR ranking a substantially higher number of universities compared to THE and Shanghai. This suggests differences in criteria and scope among these ranking systems.*
2. ***Top Performing Universities****: The focus on top-ranking universities reveals institutions from diverse geographic regions, emphasizing the global nature of higher education excellence. Universities like Henan Normal University and the University of Pau and Pays de l'Adour show strong performances in specific metrics.*
3. ***Student-Staff Ratios****: The comparison of student-staff ratios across ranking systems reveals a relatively consistent range, with Shanghai ranking having a slightly lower ratio, indicating a possible focus on personalized education and better staff availability for students.*
4. ***Female Student Representation****: The distribution of total female students across various universities highlights the significant presence of female students in higher education. Universities with higher female populations might indicate better gender diversity and inclusivity practices.*
5. ***Geographic Distribution****: The number of universities by country showcases the dominance of certain countries like the United States and the United Kingdom in global higher education. However, a diverse set of countries also contribute significantly, highlighting the widespread commitment to higher education excellence.*
6. ***Overall Rankings****: The area chart of university rankings demonstrates a gradual decline from top to lower-ranked institutions, suggesting a broad spectrum of performance levels among global universities.*

This analysis underscores the importance of multiple factors in determining university success and ranking. It also highlights the need for universities to focus on various aspects, including faculty availability, gender diversity, and maintaining high standards across different ranking systems, to achieve and sustain success in the global education landscape.