

# REPORT

## Overview of the Visualization

Universities are locations where diamonds get dulled, and stones are polished. Choosing a university has been a challenging undertaking in recent years, and it will become even more difficult for those who wish to pursue their studies abroad. Consider my situation: I am an overseas student at The University of Exeter. It was challenging for me to select a university that would be a good fit for me. I had to search each university independently, writing down every detail, and comparing them to other universities based on rank, location, research output, size, and the number of students. Making a decision regarding which university to attend took me at least a month and a half. That's where Find my University comes into play in this situation. Find My University is an interactive dashboard that allows students to quickly learn about institutions, compare them to other universities, and helps them to decide which university they should attend for their further education. Students can use this dashboard to see which universities are the finest in their respective nations. The primary goal of this dashboard is to make the process of selecting a university considerably more efficient and to help students select the university that best fits their needs.

## Data

After doing a lot of research, I decided to use QS World Ranking as my criterion for creating the dashboard. The dataset comes from Kaggle and is titled QS World Rankings from 2017 -2022. The dataset appears to be ideal for this dashboard because it includes latitude and longitude coordinates, rank display in years, research output, university size, faculty ratio, and overall score. When I started analyzing the dataset, I discovered that it had not been cleaned. I used python to clean the data.

```
In [12]: print(len(df[df.isnull().sum(axis=1) > 4]))
drop_index = df[df.isnull().sum(axis=1) > 4].index.tolist()
df.drop(drop_index, inplace=True)
print('Rows which have more than 4 null values have been dropped!')
```

```
22
Rows which have more than 4 null values have been dropped!
```

```
In [13]: df['research_output'] = df['research_output'].replace('Very high', 'Very High')
df['international_students'] = df['international_students'].apply(lambda x: float(str(x).replace(',', '')))
df['faculty_count'] = df['faculty_count'].apply(lambda x: float(str(x).replace(',', '')))
```

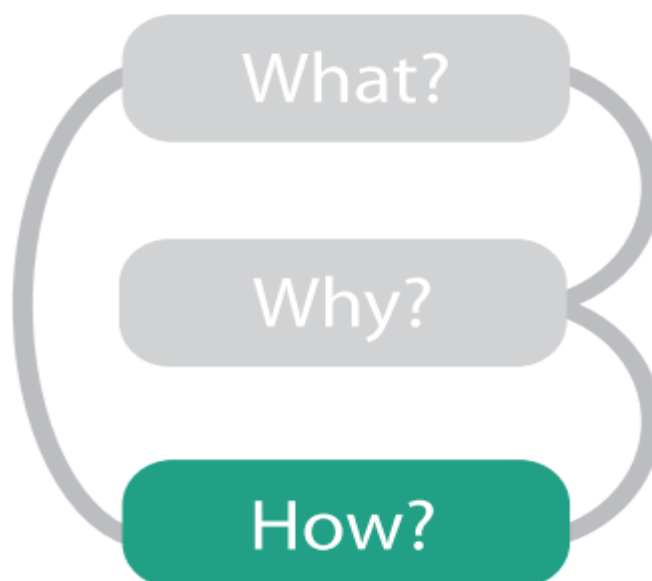
## QS World Rankings

Quacquarelli Symonds' QS World University Rankings is an annual compilation of global university rankings. The QS rating, along with the Academic Ranking of World Universities and Times Higher Education World University Rankings, is approved by the International Ranking Expert Group (IREG) and is considered one of the three most frequently read university rankings in the world. Quacquarelli Symonds (QS) is a corporation based in the United Kingdom that specializes in the analysis of higher education institutions all over the world.

## Dashboard Preparation

The Dashboard is prepared using Tableau Software. The interactive dashboard consists of a World Map, bar chart, and line chart.

Analyzing the dashboard using Munzner's What -Why-How Model:



## What?

What kind of information is displayed on the dashboard? The dashboard's data collection offers information about the elements that users consider while choosing a university for their higher education. The dashboard's available data offers all of the required information for the user to make an informed decision on which university to attend. The dataset also includes dates, which will allow the user to track the university's growth over time.

## Why?

Users can search for institutions in different locations to see which ones have the highest rankings in their respective countries. The bar chart also gives users an indication of the colleges' overall rankings. The line chart gives users an indication of the total number of universities in the top 300 in their respective countries, allowing students to see which countries place a higher emphasis on education and which countries have the greatest infrastructure.

It is quite difficult for students to obtain information about the university. They must search the internet one by one, take notes, and compare the results, which will take a long time and leave the students with a lack of general clarity. However, by using this dashboard, students will be able to access university information more completely and straightforwardly, which they will be able to compare.

## How?

**Bar Chart:** The universities are listed in the bar chart in order of their overall score. When the user hovers over a university, it will display vital information about the university.

**Line chart:** It displays the number of universities in the top 300 in the country year after year so that viewers may track their growth. By using the filter, users can change the year.

**Map:** Zoom in and out on the globe, then select the country where the user wants to pursue his studies and use the slider to filter the time span. The bar chart and line chart will alter depending on the country selected on the map.

## Find My University

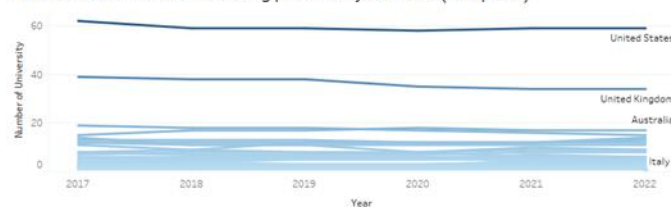
Top 300 Universities based on QS World Ranking



Choose a year, Click on any country on the Map

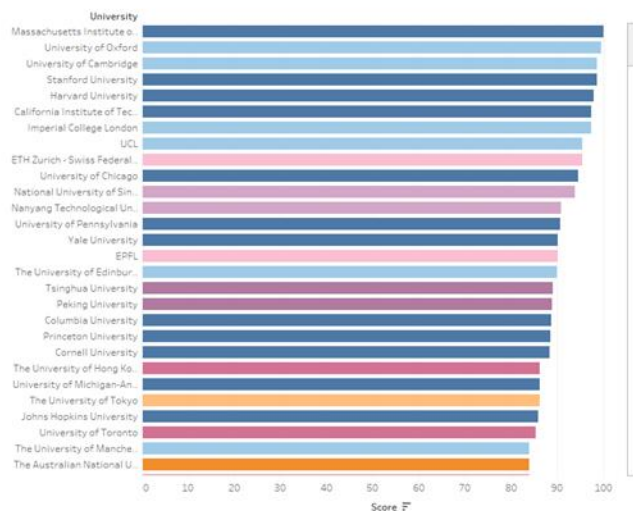


Number of Universities in ranking per country over time(in top 300)



### Universities in top 300

If no universities shows up, It means that there is no universities in that country that are in the top 300



Dashboard Image

## Design Process

The four models are addressed with validation of all four levels(Munzner, Visualization Analysis, and Design).

## Domain Situation

The challenges that our users are facing are clearly stated at the domain scenario level, and this visualization can help them solve their problems. Multiple attributes and position datatypes are present in the information, allowing us to map the geographical location of the elite universities as well as their details. The data is validated by Quacquarelli Symonds (QS), a UK company specializing in the analysis of higher education institutions around the world.

## Task and Data Abstraction

Users can see how domain scenario blocks presented in different languages might have comparable reasoning for why the user needs the viz tool and what data it shows by abstracting into a domain-independent vocabulary.

Questions from a variety of domains are mapped to the same abstract vis tasks such as Browsing, comparing, and summarizing. Task blocks are recognized, and datasets are translated into visual form so that users' problems can be solved in an interactive manner.

## Visual Encoding and Interactive Idiom

At this level, we've run into difficulty figuring out how to create a visually representative image from the dataset in order to explain the story to the users and help them solve their problems. In order to address this problem, I created a Find My University Interactive dashboard that offers all the necessary information for a user looking for their ideal university. The dashboard includes a geographical map that assists users in selecting their ideal study destination countries, as well as a horizontal bar chart that displays university statistics and allows users to filter the time span.

## Algorithm

The innermost level covers all the design decisions made during the development of our system. Our main goal was to create an algorithm that could handle our dashboard efficiently and without causing any computational difficulties.

We all live in a world where we have instant access to all information. However, because they are widely scattered, gathering all the information and making a decision takes a long time. This is where an interactive dashboard may aid consumers, as it graphically encodes all the information they require. This dashboard assists users in making an informed decision about university in a shorter period.

## Evaluation

This dashboard can make the entire procedure so simple that the user can select the desired country and year of the rankings. They will have all the necessary information such as rank, faculty ratio, research output, and size of the Universities.

The dashboard is very beneficial to users; yet, it does have some limits and a limited possibility for further expansion. The data does not include expected fee structures for universities and living costs in the region, which would have been more beneficial for users to find universities that meet their financial needs. Filters such as the total number of students, and living costs could have added much more value to the dashboard's usability.

As a result, I would recommend this dashboard to everyone, especially those who are having trouble deciding which university to attend. I wish I had known about a dashboard like this while I was looking for a university since it would have saved me a lot of time because it took me a lot of time to gather information on universities.

## References

*Understanding the Methodology: QS World University Rankings*. (n.d.). Top Universities. <https://www.topuniversities.com/university-rankings-articles/world-university-rankings/understanding-methodology-qs-world-university-rankings>

*QS World University Rankings 2017 - 2022*. (n.d.). Wwww.kaggle.com. Retrieved May 1, 2022, from <https://www.kaggle.com/datasets/padhmam/qs-world-university-rankings-2017-2022>

Munzner, T. (2015). *Visualization analysis & design*. Crc Press, Taylor & Francis Group.