Relationship between QS Rankings, International Student Mobility and National Economy Indicators Chun-Heng Chien

This project aims to explore how a country's QS ranking and economic indicators influence the flow of international students.

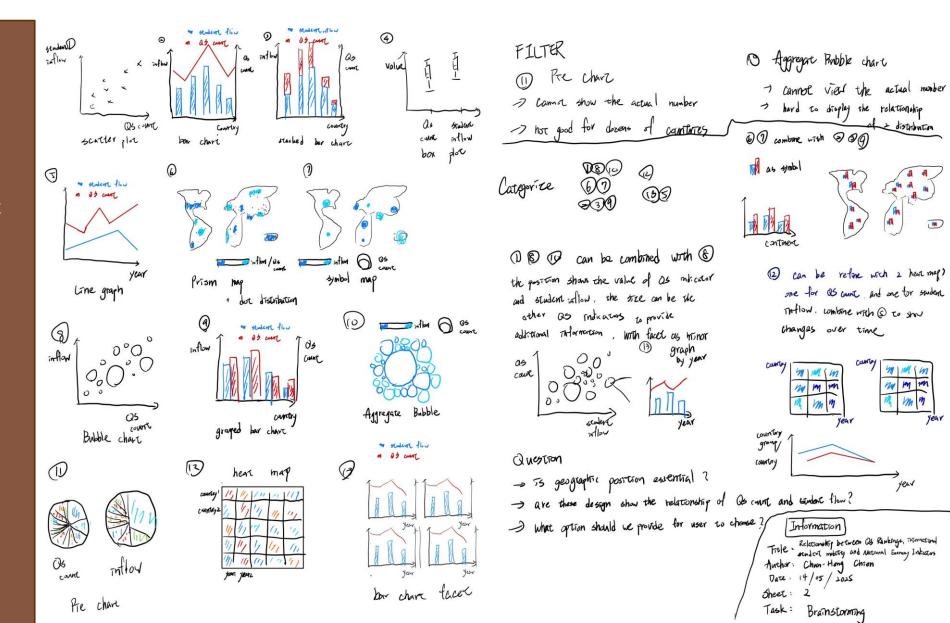
Key message: What factors are related to the number of international students coming into a country?

Target audience: Government agencies, educational institutions, and students from various countries.

- High interactivity
- High readability
- Offers as many data selection options as possible to allow users to explore the data independently

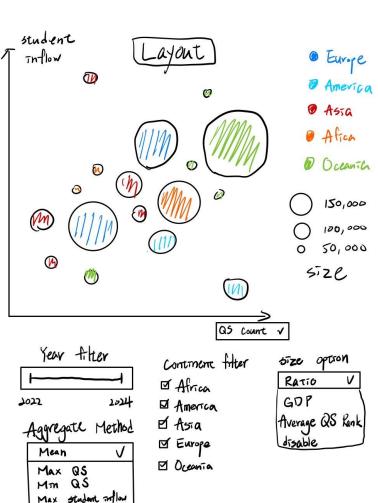
Brain Storming:

- 13 ideas
- 11 ideas after filtering Eliminated
 - Pie chart
 - Aggregate bubble chart
- 5 categories
 - 2D-distributed
 - Map
 - Bar chart
 - Heat map
 - Line graph
- Combined into 3 design
 - 2D-distributed graph + bar chart
 - Map + bar chart
 - Heat map + line graph

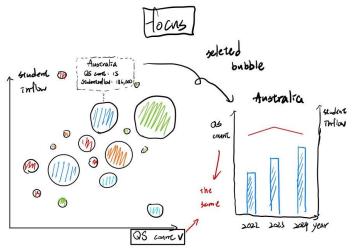


Bubble Chart + Bar Chart

- Core
 - 2D position shows the relationship between QS/economy indicators and student flow
 - The bar chart shows the data changes over time
 - Provide high interactivity
- Advantage
 - Clearly shows the relationship
 - Size option can provide additional information
- Disadvantage
 - Size may reduce readability, need to avoid it when implementing



Min student inflow



Information

Fitle - Relationship between QS Rankings, international Fittle - and coil mobility and National Economy Indicators

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Date: 14/05/1025

Sheet: 2

Task: Altomative design 1

- > shows the relationship is a 29 position
-) bar chart provid additional time information for specific country

Operation

, select Indicator

- · filtering period by sliding bar
- aggregate the filtered data and update
 the visinglisation
 check/undeck the continent fifteer
- > show / hide the data from the contract
- o solect the size option
 2 compute size of each bubble and update.
- select aggregate method
- aggregate data with new method and uplate
- -> take correct data and update visualisation

Utscussion .

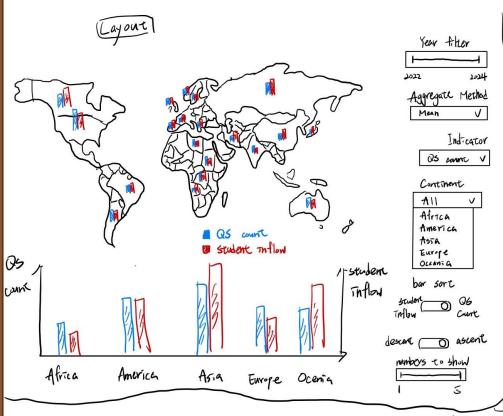
- -> The distribution in this plane can well observe the relationship between Q5 came and student inflow
- Thormation, and aggregation method options reduce the risk of mis leading
 - -> But chart + line graph for specific country shows the changes in data over time.

Cons :

-) 35Ze may make the visualisation too complicated to some situation

Symbol Map + bar chart

- Core
 - Geographical position shows the data distribution in the spatial domain
 - The bar chart shows the relationship of indicators and student flow
 - Users can zoom the map to view the area they concern
- Advantage
 - Maps provide additional spatial information
- Disadvantage
 - The symbol design might be misunderstanding
 - Not clear to show the relationship



how $\frac{1}{3}$ $\frac{1}{3}$

operation

- · focus on a continent
- > map only shows the continent, bar chart display top n "countries" according to the setting
- · filtering period and aggregate method
- -> re-compare and select data, and update visualisation
- · change sort rule
- · Change Indicator
- -) update visualisation with the rule and data

Discussion

Pros:

map shows the geographical information and but chart provide, the ability to compare different continency/countries

focus

the ability to display the relationship is not so good

> bar chart shows the relationship

between QS indicative student inflow

Information

Chun-Heng Chien

or map provides the spatial relationships

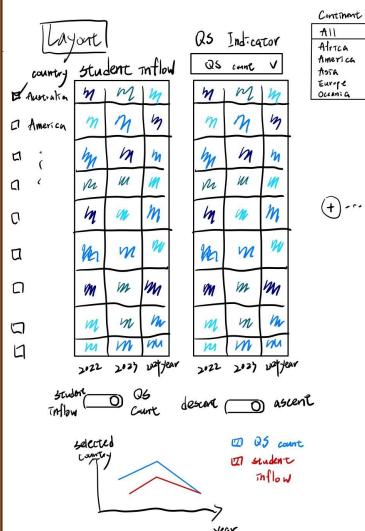
hard to compare countries in different continents

Relationship between Qs Rankings, international arralet mobility and National Economy Indicators

-7 symbols may overlap and reduce readability

Heat Map + line Graph

- Core
 - Heat map shows the data changes over time
 - Multiple heat map shows the relationship
 - The line graph shows the relationship and changes over time
- Advantage
 - Can show the most information without interaction
- Disadvantage
 - Hard to compare the pattern
 - Multiple indicators in a line graph need multiple y-axes, increasing the difficulty of implement



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Check / uncheck check box

> update Ime graph

build and display new hear map

-) add new line in the graph

change sort rule

operation

- -> Shows the relationship by the pattern of 2 or more heat map -> Check box provided interactability in line graph
- > line graph provides ability to compare QS count and

student inflow in one graph

Discussion

pros

- shows the country, year, inductive and student inflow in one graph
- > Ine graph can help comparing the

rons -

- g 2 matrix may be not easy to compare the pattern
- difficult to find specific

Information

Title - Relationality between Qs Rankings, international Following Indicators

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country

Task: Alternative design 3

Final design Bubble Chart + Bar <u>Chart</u>

- Core
 - Bubble chart focuses on the relationship between student flow and selected indicator
 - Bar chart gives additional information in time domain
- Operation
 - Aggregate method of bubbles
 - Continents
 - X-axis and size value
 - Year filter
 - Bubble selection (detail)
- Detail
 - QS, economy and student flow dataset
 - Implement in D3
 - ~25 hours to build

Sheet 5

