# Introduction

In this CA I am comparing 3 types of data, Quality of Life, Pollution Score and Safety Score in countries around the world. I am displaying and comparing the data on 4 different charts, a bar chart, horizontal bar chart, stacked bar chart and scatter plot chart. When comparing the data I gathered, a trend can be seen where countries with higher quality of life scores also have the lowest levels of pollution. These same countries also have a higher level of safety where the quality of life is high. Each chart has configurable parameters such as the number of bars you want to display, show the labels of each bar, draw a trend line.

## Gui

When adding the gui I made it possible to control the number of bars that will be displayed on each chart. This is done by setting up the gui and its parameters in an object in the sketch file. I then set the minimum and maximum number of bars for the chart. The gui’s value is then passed through a function named updateGuiVals in the charts class. The number of bars is set to the gui’s value rather than the length of the data array.

## Calculating the max value in an array

Calculating the max value is used to scale the chart correctly so that the data is displayed correctly and not skewed. This is done with a map function. The map function maps an element in an array that you pass through the map function to a new value. This new value can then be passed through a function called ‘max’. This will find the max value of what you pass through it.

## P5 map function

The map function is useful for giving a number a range. To use the map function, you pass it a number that you want to give a range to. It then has 4 parameters for that number, start1, stop1, start2, stop2. I use it in my project to scale the bar height or width in proportion to the chart height or width.

## Translate

The translate function translates the 0,0 point of your sketch. It accepts 2 numbers an X and Y as parameters. It is useful as you can change your starting point of where to draw something. This was useful for each chart but especially for the stacked chart where a new rectangle needed to be drawn on top of each other. Using a loop inside a loop the translation point can be redrawn for each rectangle.

## Using Excel

Using excel to store your data is a lot better than using an array of objects in the sketch file. The excel csv can be imported into the project using the ‘Function preload’. You can then use that excel file as an array with objects inside it, each with properties and values. Using excel is better when working with more data and using calculations. One of the calculations I used was for my pollution index score data, I created a new column named PollIndex. I then got the values from the PollutionIndexScore and divided them into 1 and multiplied them by 1000. This then revered the scoring. I needed to do this to get a positive correlation for my scatter chart.

## Conclusion

When visualising my data, I found the scatter plot chart to be the best chart to represent my data. With the scatter plot chart, I can make the comparison of a country’s pollution, quality of life and safety, all in one chart. The scatter plot is good for finding outliers in the data. For example, Hong Kong has high safety score but very bad pollution. Also, Nigeria can be seen to have low scores for all 3 rankings.

Data source   
<https://www.numbeo.com/quality-of-life/rankings_by_country.jsp>

## Github

https://github.com/Stephen-Gordon/CreativeCoding2