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DIGITAL ASSIGNMENT 2

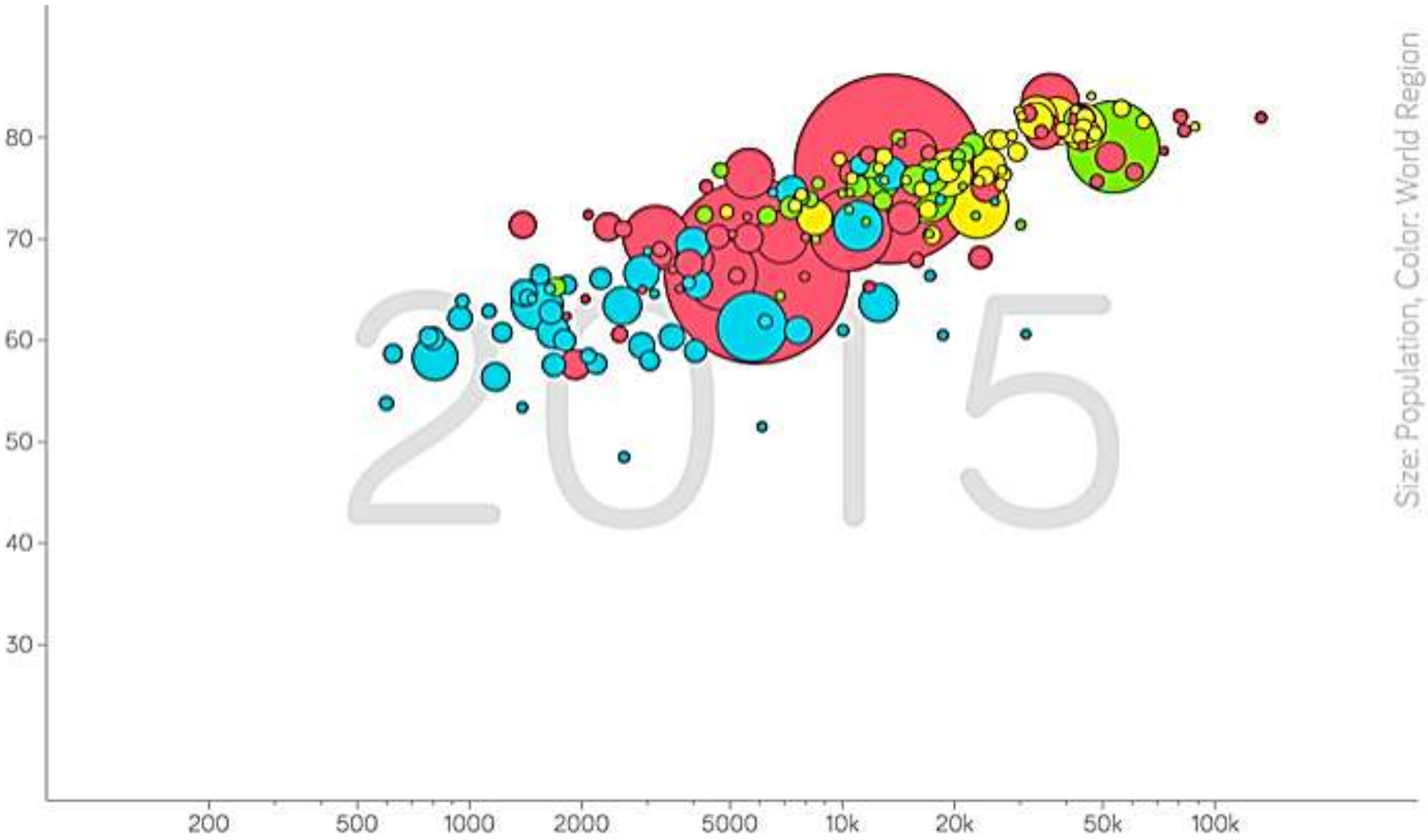
CRITIQUE OF A PLOT AND REPLICATE WITH IMPROVEMENT

DATASET

GDP per capita income and health expectancy - obtained from gapminder.org. The dataset lists the GDP per capita income, health expectancy and population of 187 countries in the year of 2015.

GIVEN VISUALIZATION

The following graph represents the health expectancy vs per capita income for 187 countries.



CRITIQUE OF THE VISUALIZATION

1. Ease of perceptual tasks required to make comparisons of interest

The main aim of the plot is to compare the various countries based on their health expectancy (in years) and the per capita income of their citizens. Some issues in making the comparisons of interest are:

a. **Plot is too cluttered –** The current scaling on the X and Y axes makes the circles too close to each other, concentrating much of the visualization in just a specific region of the graph area.
b. **Insufficient labelling –** The X and Y axes have not been labelled, and the colour legend for the 4 colours used in the plot has not been provided.
c. **Accuracy of data interpretation is lost –** The projection of the centre of the circles on the X and Y axes will give the values of per capita income and health expectancy of people in that country. There are no gridlines to guide the eyes. Hence, in the given plot, it is very difficult to interpret the values.
d. **Comparisons of interest cannot be made easily –** Due to incorrect scaling of the axes, there are many circles overlapping each other, in a small area. Thus, it is difficult to compare the statistics of 2 countries.

2. Pre-attentive properties and perceived/inherent grouping

The pre-attentive properties include: colour, form, movement and spatial positioning.

a. **Colour -** When used correctly, it can drive the viewer's attention to specific areas of the plot. However, in this plot, there are four bright colours used, which counteract each other. Thus, the attention of the viewer is not driven to any specific area of the plot.
b. **Form -** It includes numerosity (multiplicity), size and shape. There are as many circles as countries (187). The size of the circle ranges from very small to large. Spatial grouping and orientation has not been used here.
c. **Movement -** Sub-attributes of movement like flicker and motion have not been used in the given plot.

d. **Spatial positioning -** 2D positioning in this plot has not been done properly. The plot is too cluttered, owing to incorrect scaling of the X and Y axes.

Perceived/inherent grouping

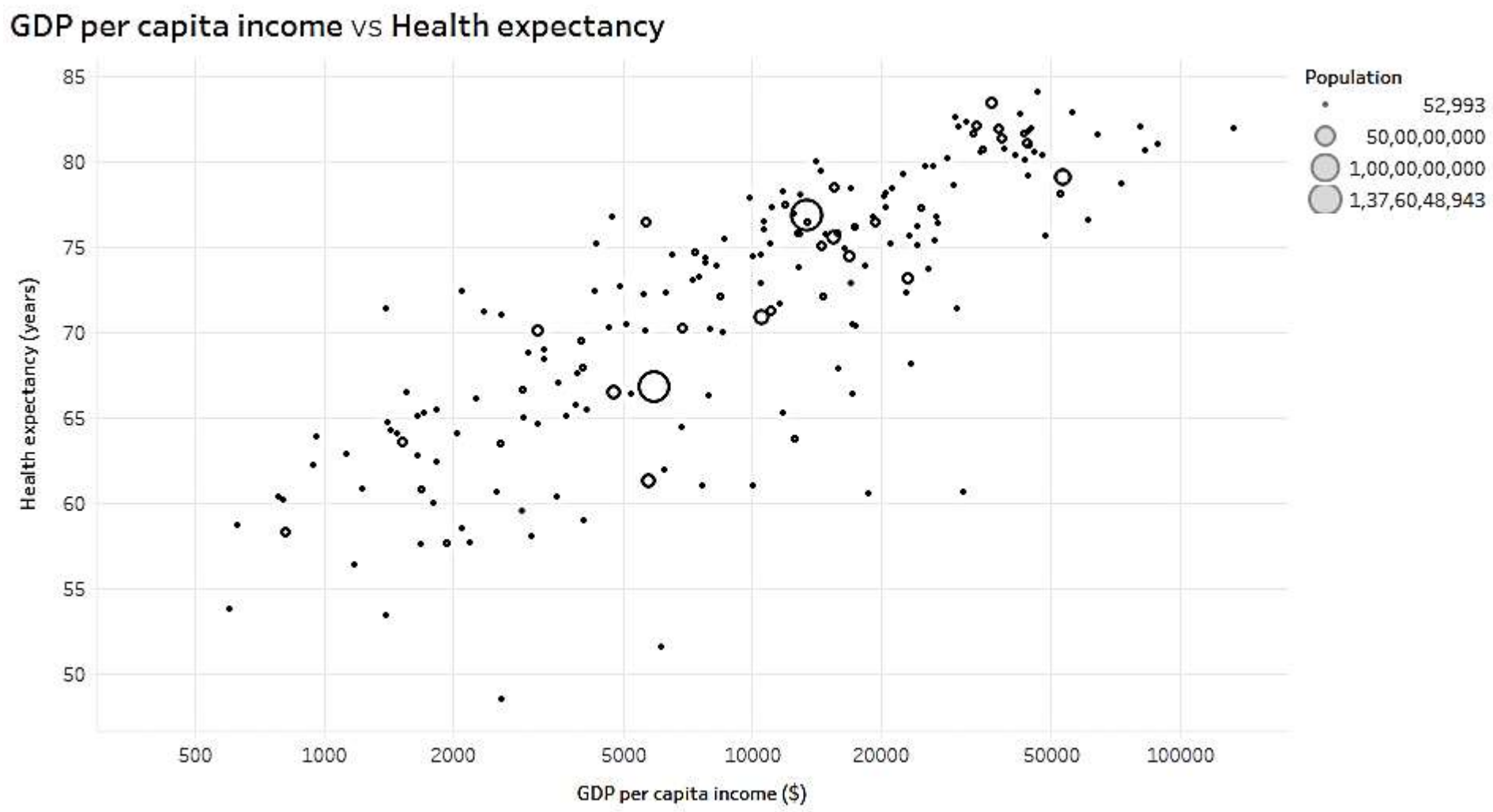
The perceived grouping in the plot is with respect to the 4 colours – blue, red, yellow and green. Although different countries might belong to the same group, the distance between their spatial positions is seen to be large in some cases.

3. Colour

Four colours have been used in the plot- blue, red, yellow and green. The issues with the colours used in the plot are as follows:

a. **Colours not chosen wisely –** The colours used in the plot help to guide the user's eye. However, in this plot, there are 4 bright colours used, which counter each other's effect. Thus, the colours used don't add value for the viewer.
b. **Legend missing –** Although the plot mentions that colour grouping represents world regions, it does not state which colour represents which world region.
c. **Should use colour palettes –** The colour combination used in the visualization should be harmonious. The plot should be pretty, but it should also accurately tell the story, without any scope for misinterpretation.
d. **Does not take colour blindness into account –** Red and green colours cannot be distinguished by colour blind people. Thus the plot should use colour palettes that work well for colour blind people as well.

CORRECED VISUALIZATION USING TABLEAU



GDP per capita income vs. Health expectancy. Size shows sum of Population.

CORRECTIONS MADE FROM THE ORIGINAL VISUALIZATION

1. **Plot is not cluttered –** The X axis follows logarithmic scale which makes the visual compact - horizontally, while the Y axis scale has major intervals set to 5. As seen in the plot, the circles representing the data for various countries, are not too close to each other.
2. **Plot is sufficiently labelled –** The X and Y axis have been labelled, and also marked with their corresponding units. The size legend for the various circles has also been provided.
3. **Can accurately interpret the data shown –** Since the circles in the plot are not too cluttered, their projections on the X and Y axes can be used correctly to determine the values they represent.
4. **Comparisons can be made easily –** Owing to the clarity of representation of the various data points, a comparison between any two countries can be easily made.
5. **Form –** This plot has numerous circles, representing the statistics for various countries. The size of the circle is proportional to the population of the country.
6. **Spatial positioning –** In the new plot, the 2D positioning has been done effectively, and cluttering of data points has been avoided to a considerable extent.
7. **Perceived/inherent grouping –** There is no inherent grouping in the new plot.
8. **Colour –** The usage of colour in the graph was not leading to any beneficial perceivable grouping. Thus, to avoid possible incorrect interpretation for the viewer, colours in the plot have been avoided altogether.