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# User Guide

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**Visualising Global Happiness  
and its Contributing Factors**

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## 1. Accessing Our Dashboard

The dashboard can be found on:

[https://jarrgoh.shinyapps.io/HappinessWatch\\_Dashboard/](https://jarrgoh.shinyapps.io/HappinessWatch_Dashboard/)

## 2. About Happiness Watch's Dashboard

This dashboard has been created for anyone who are interested in studying the World Happiness Index and its contributing factors for the surveyed countries. The dashboard will enable users to find trends and patterns from the available data.

The dashboard consists of four tabs:

1. Home Tab (Landing Page)
2. Global Overview Tab
3. Country View
4. Compare Countries

The dashboard has designed using Shneiderman's mantra - Overview first, zoom and filter, then details-on-demand. This allows users to grasp the Happiness Score Index on a global level before zooming into specific countries of users' interest.

### 2.1 Dashboard's Layout

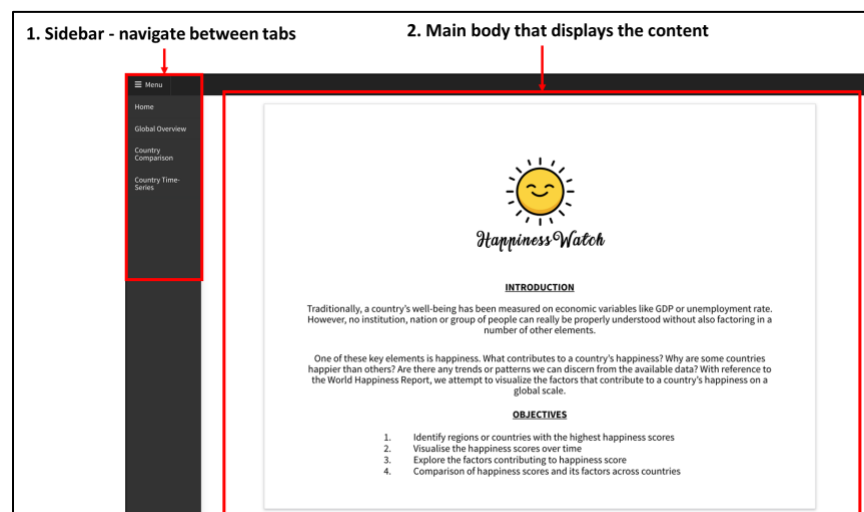


Figure 1: Dashboard's Layout

### 3. First Tab – Home (Landing Page)

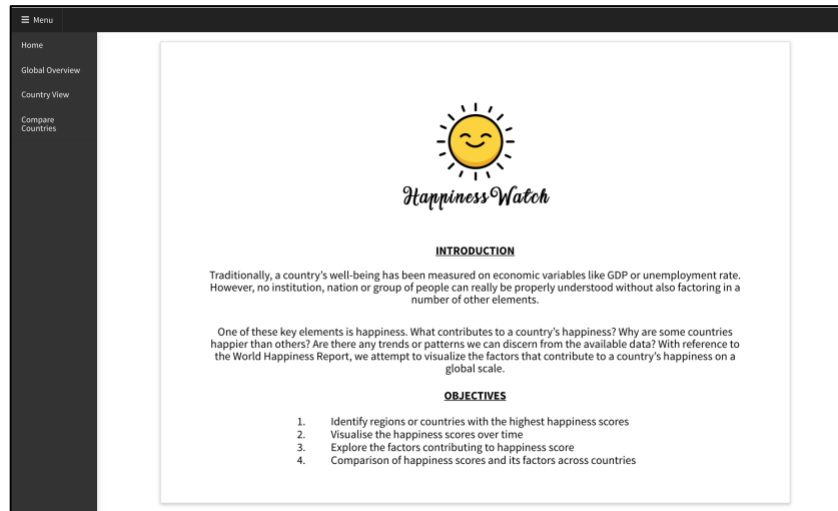


Figure 2: Home Tab

Upon accessing the link, users will first be brought to the dashboard’s Home Tab (Figure 2) where they will be introduced to the problem that the team aims to tackle and how the dashboard enables them to visualize the factors that contribute to the country’s happiness. Moreover, the users will be presented with the objectives of the dashboard.

### 4. Second Tab – Global Overview

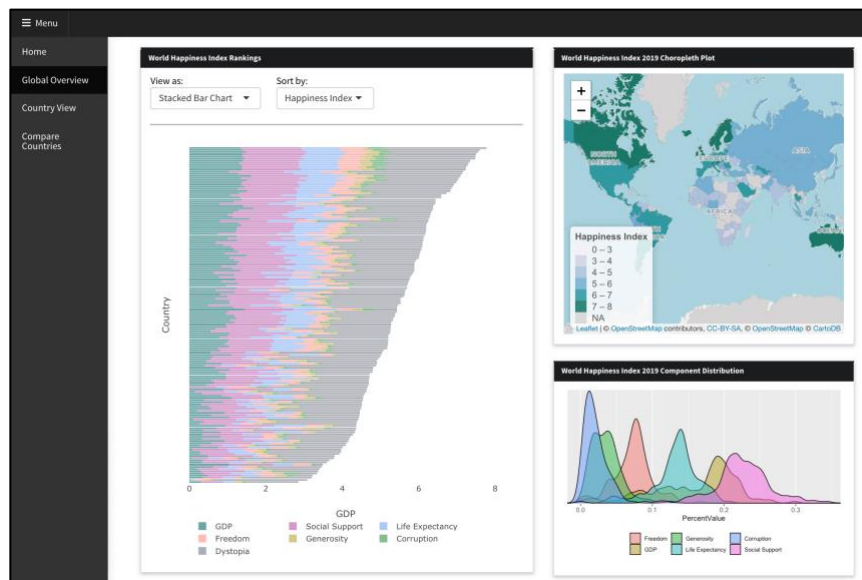


Figure 3: Global Overview Tab

Upon clicking on Global Overview's Tab, users will first be presented with the charts as shown in Figure 3 that show the global overview of the Happiness Index Scores and the component distributions.

#### 4.1 Choropleth Plot



Figure 4: Choropleth Map



Figure 5: Choropleth Map – On Hover

On the choropleth plot shown in Figure 4, the intensity of the green hue represents the degree of each country's Happiness Index Score in 2018, E.G. a country with high green intensity signifies high Score. On the plot, users can scroll around the leaflet map and check any country's Score on hover, as shown in Figure 5.

#### 4.2 Toggling Between Stacked Bar Chart and Scatter Plot

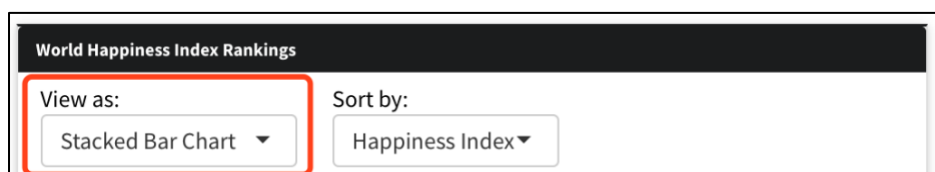


Figure 6: World Happiness Index Rankings' Toggle

Users are able to toggle between using Stacked Bar Chart and Scatter Plot to view the World Happiness Index rankings by selecting their preferred chart as highlighted in Figure 6.

### 4.2.1 Stacked Bar Chart

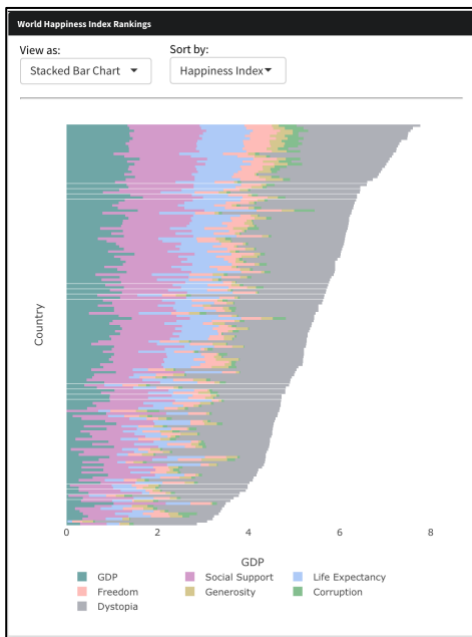


Figure 7: Stacked Bar Chart

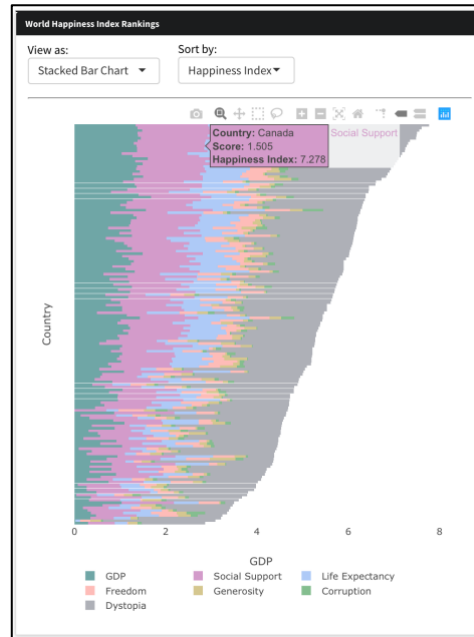


Figure 8: Stacked Bar Chart – on Hover

As seen on Figure 7, users are shown a Stack Bar Chart that have ranked all 156 countries according to their Happiness Index Score in 2018, with each bar representing a country. The components (GDP, Social Support, Life Expectancy, Freedom, Generosity, Corruption and Dystopia) of the Happiness Index of each country are broken down into sub-sections which its information will be shown on hover as shown in Figure 8.

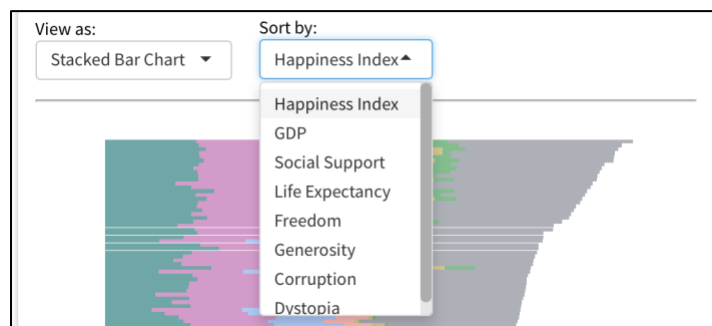


Figure 9: Stacked Bar Chart – Sort by Selector

Furthermore, users can rank these countries according to other components by changing the option shown in the 'Sort by' field (Figure 9).



Figure 10: Stacked Bar Chart – Sorted by Social Support & Generosity

Once users have selected a new ‘Sort By’ option, the selected component will appear as the first sub-bar in all countries’ bar to facilitate comparison as seen in Figure 10.

#### 4.2.2 Scatter Plot

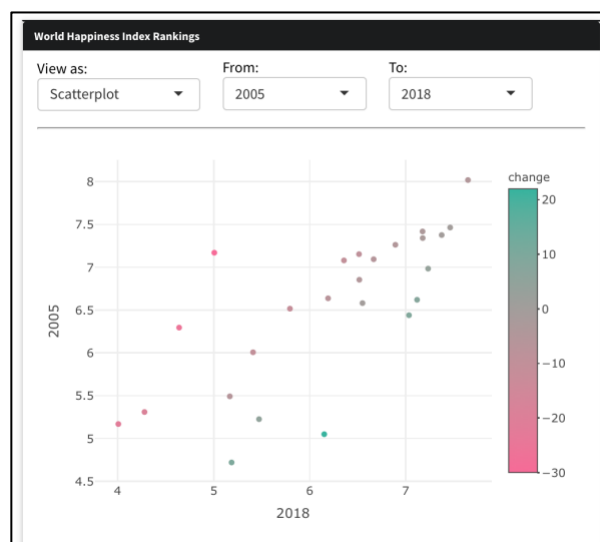


Figure 11: Scatter Plot – Ranking countries’ improvement in Happiness Score

The scatter plot can be used by the users to compare the changes between Happiness Score over any given two years - 2005 and 2018 will be compared by default. The countries with positive change

will be reflected as green on its marker while countries with negative change will be shown red. If a country does not have its Happiness Score recorded in any of the selected years, its marker will not be shown on the plot.

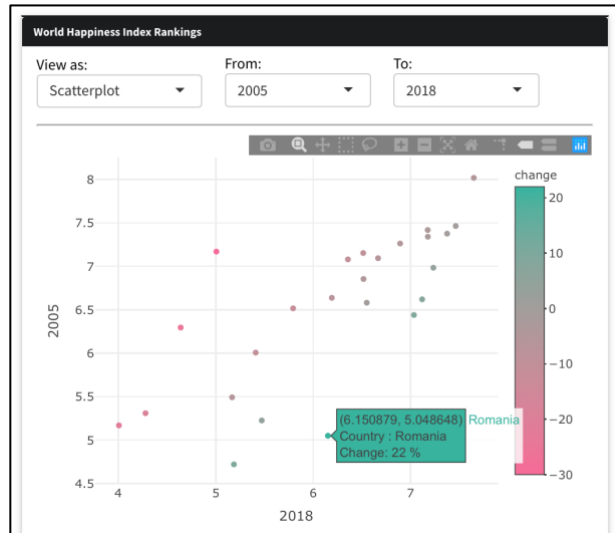


Figure 12: Scatterplot – On Hover

Upon hovering on any marker, the country's information will be displayed as seen in Figure 12.



Figure 13: Scatter Plot – Changing Year's Fields

As shown in Figure 13, to change the years for the comparison, users simply need to change the 'From' field and 'To' field as highlighted.



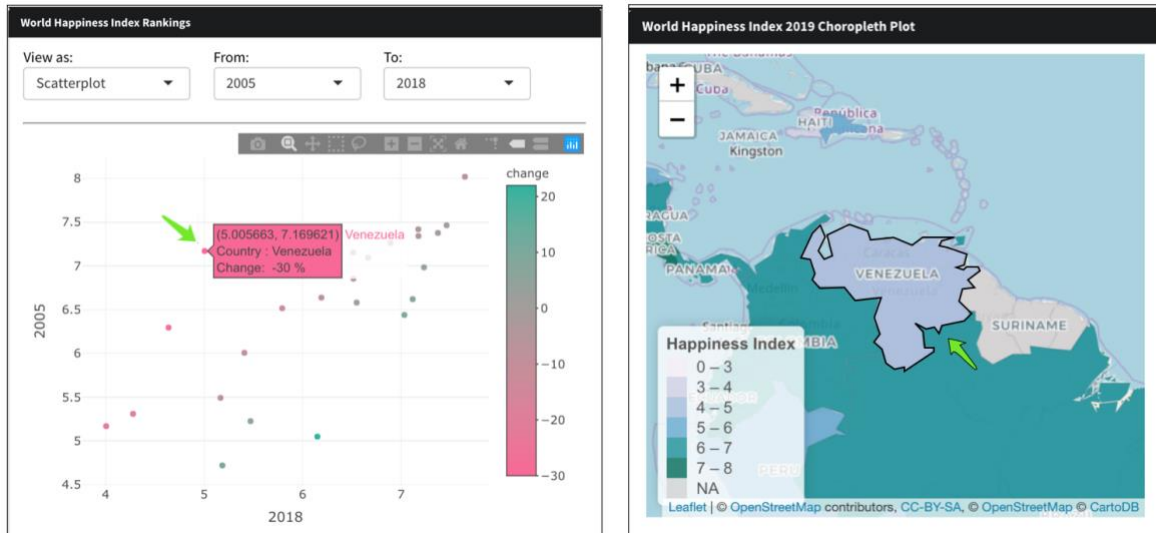


Figure 14: Updated Choropleth Map – on Click of the Bar Chart/Scatter Plot

As shown in Figure 14, upon clicking on any data point on the bar chart or scatter plot, the choropleth map will zoom in to the country selected.

### 4.3 Ridge Plot

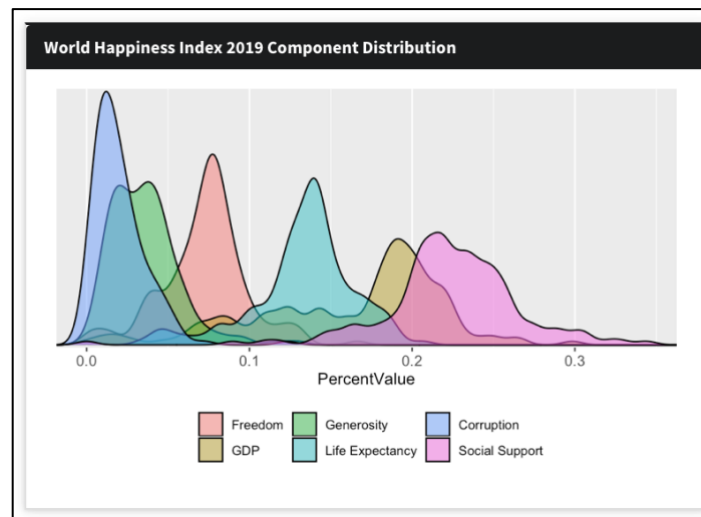


Figure 15: Ridge Plot

The ridge plot can be used to interpret the global distribution of the components in Happiness Index across the countries based on 2018's data.

## 5. Third Tab – Country View

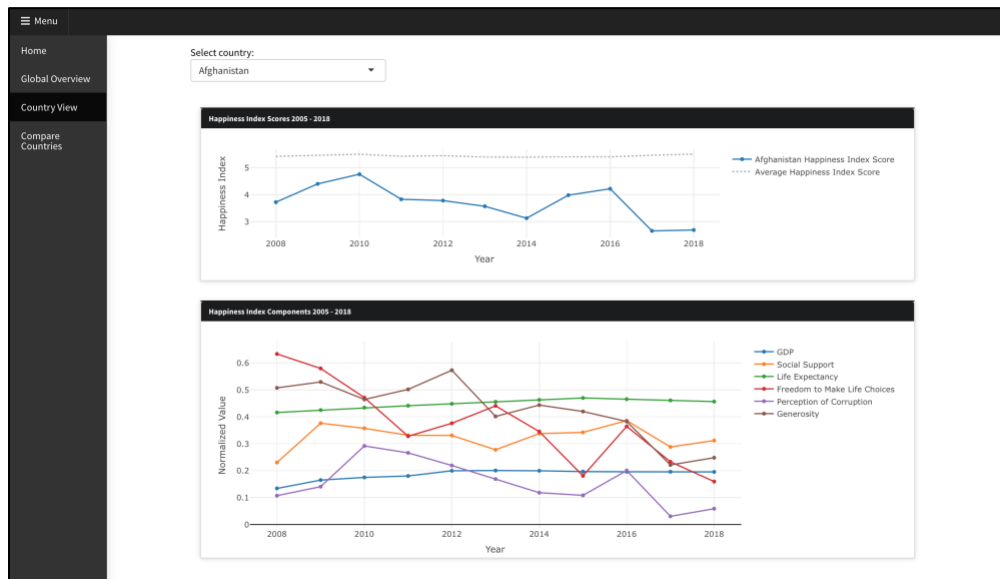


Figure 16. Country View Tab

Once the users have found the countries that they are interested to drill into, they can use the Country View Tab (Figure 16) to study the country’s Happiness Score over time compared to the global average score. Furthermore, this tab enables users to study how the country’s Happiness Index components change over time. To begin, users have to select the country that they wish the analyse as highlighted in Figure 17.

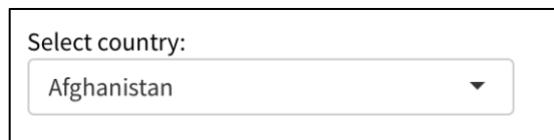


Figure 17. Country View Tab – Country Selection

### 5.1 Line Chart

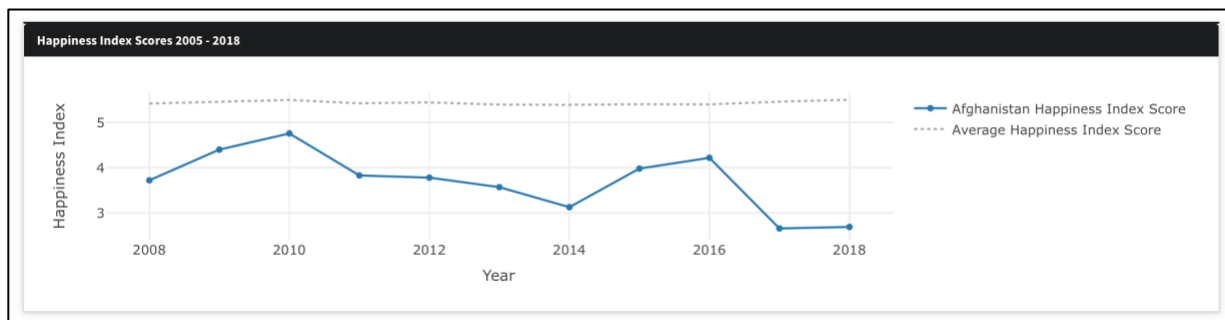


Figure 18. Line Chart – Happiness Score Over Time

With the Line Chart (Figure 18), the chart shows the users how the Happiness Score changes over time for the selected country.

## 5.2 Multivariate Line Chart

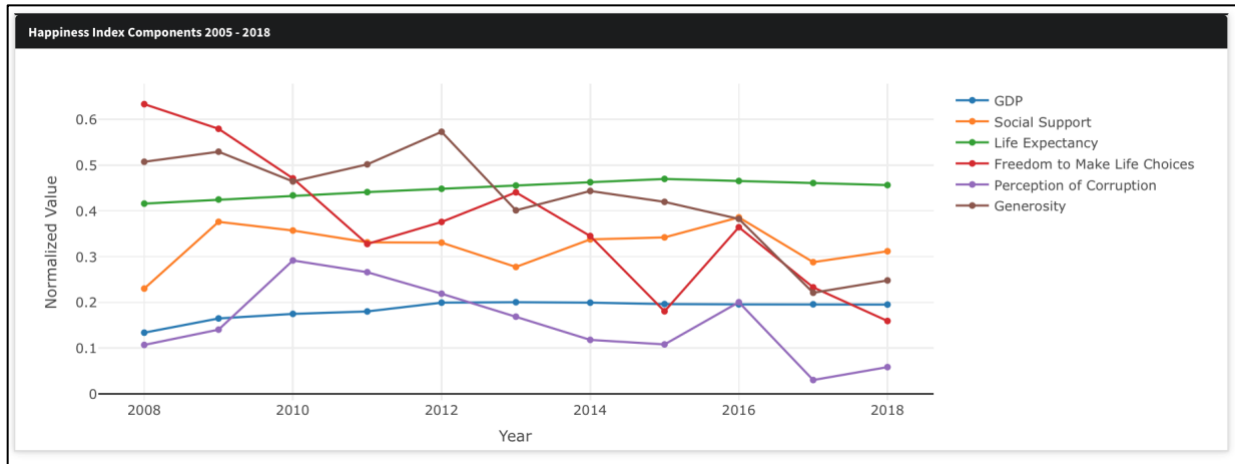


Figure 19. Multivariate Line Chart – Components' Score Over Time

Likewise, the Multivariate Line Chart shown above, Figure 19, shows the users how each Happiness Index's component changes with time. With this chart, it enables user to identify how the main components that contributes to the country's Happiness Index change through the years.

## 6. Fourth Tab – Compare Countries

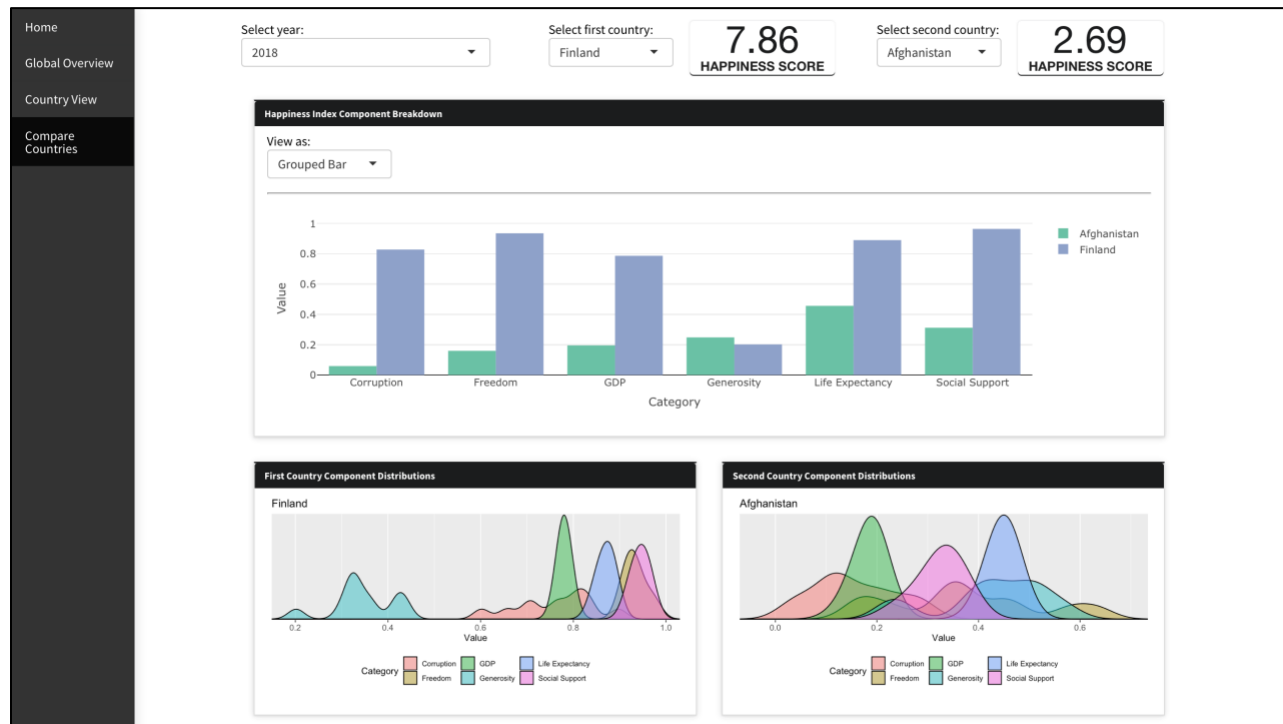


Figure 20. Country Comparison Tab

Upon analysing the country's performance in Happiness Index from the previous tab, users can use the Country Comparison tab (Figure 20) to make comparison of two countries' Happiness Index Score and its components in any given year. Before the users begin, they have to select the countries and the year that they wish to analyse as illustrated in Figure 21. Upon selection, the happiness index of the selected country for selected year will be updated.



The screenshot shows the input selection area. It includes three dropdown menus: 'Select year:' (2018), 'Select first country:' (Finland), and 'Select second country:' (Afghanistan). To the right of each dropdown is a box displaying the Happiness Score: 7.86 for Finland and 2.69 for Afghanistan.

Figure 21. Country Comparison – Input Selections

## 6.1 Toggling between Grouped Bar Chart and Radar Chart

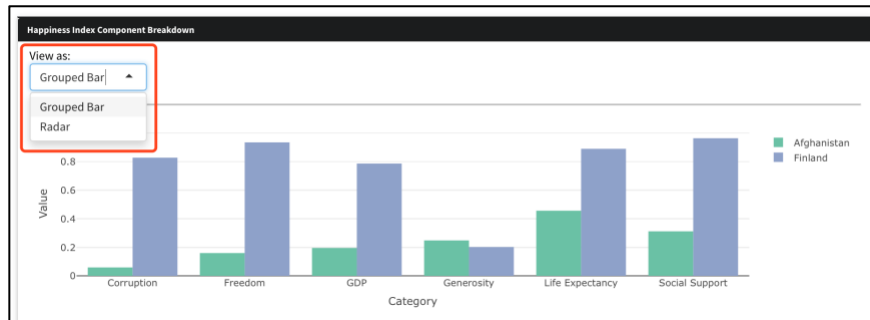


Figure 22. World Happiness Index Component Breakdown

Users are able to toggle between using Grouped Bar Chart and Radar Chart to view the selected countries' Happiness Index components by selecting their preferred chart as highlighted in Figure 22.

### 6.1.1 Grouped Bar Chart

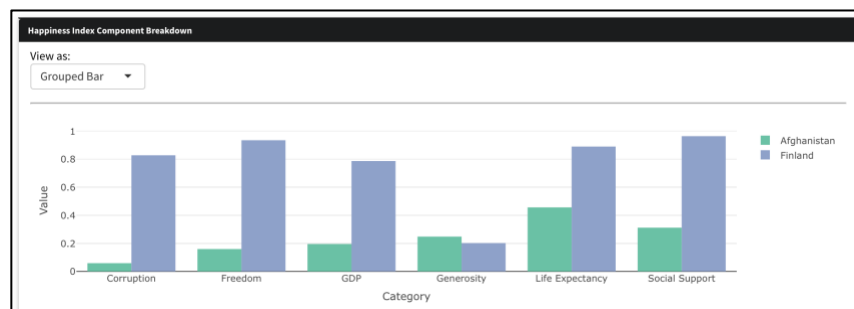


Figure 23. Grouped Bar Chart

Once the countries have been selected, the two countries' Happiness Index components are charted side by side for comparison.

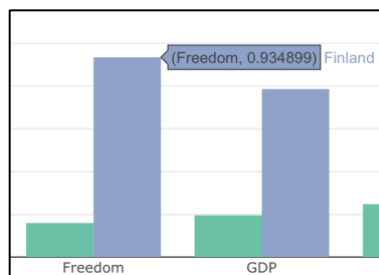


Figure 23. Group Bar Chart – on Hover

When the user's mouse hovers over any bar, the hover text will display the component's information – Figure 23.

## 6.1.2 Radar Chart

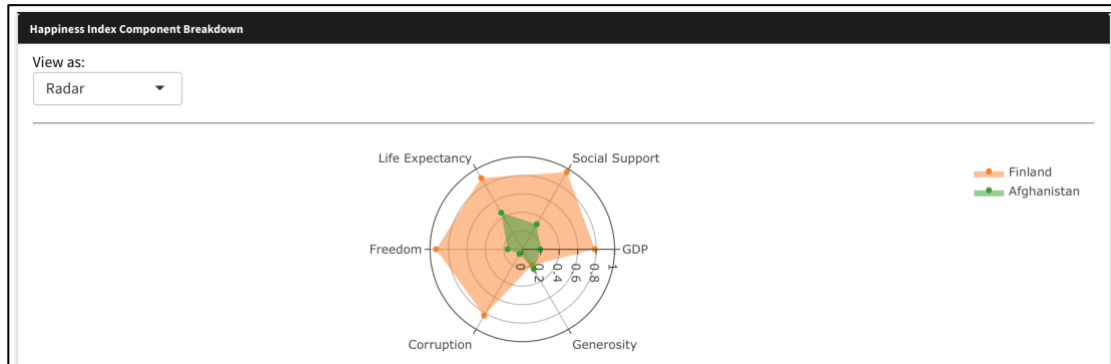


Figure 24. Radar Chart

Two countries' Happiness Index components are plotted onto the Radar Chart as seen in Figure 24. Radar chart enables user to compare the countries' components at a glance.

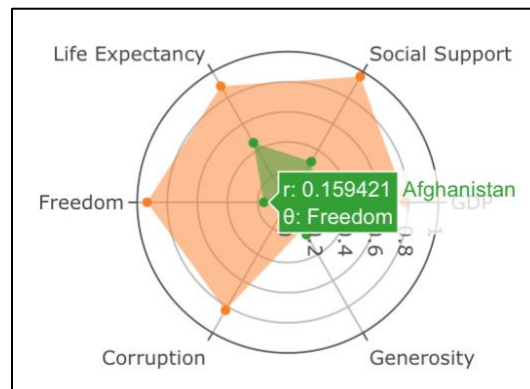


Figure 25. Radar Chart – on Hover

On hovering over the points in the Radar Chart, the hover text will display the component's information – Figure 25.

## 6.2 Ridge Plot

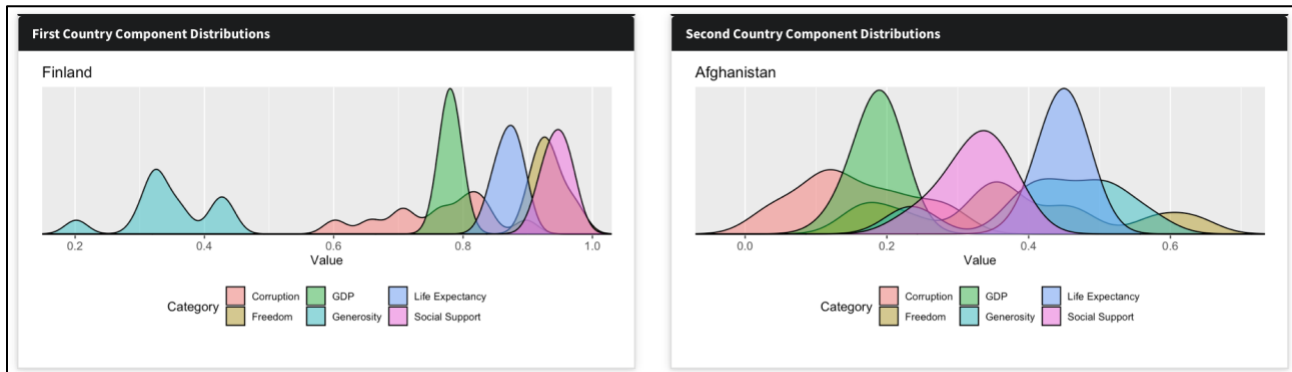


Figure 26. Ridge Plot – Distribution of components over time

The Ridge Plot (Figure 26) can be used to interpret the difference between the main contributing components to each country's Happiness Index and compare the distribution of each components over time.