IS428 – Visual Analytics for Business Intelligence – G1

User Guide

Done by:

Group 7
Chew Hui Ling
Damian Er
Jenny Lee

Contents

1. Before running application

Before you run the application, make sure to run the Pre_run.Rmd. This would help to clean the raw data and generate a structured data for easy utilization. Besides that, it would also help to install all the libraries needed so that running the app.R itself would be a fast process.

2. Front Page

The first thing the user will see once they access the page:
https://macaotravel.shinyapps.io/VAProject/

Figure 1 – Front Page

From this page, the user can read about the problems and motivation for our project. Currently, Tourism is one of the most important industries in Macao. Thus, it is important to optimize marketing campaigns to further boost its economy. Besides that, due to the lack of graphs visualisation the available information. Our group have decided to embark on this journey to help users to better visualise and analyse the data to provide more insights. The objectives of our visualisation application are also displayed on the current page.

3. Economic Contribution

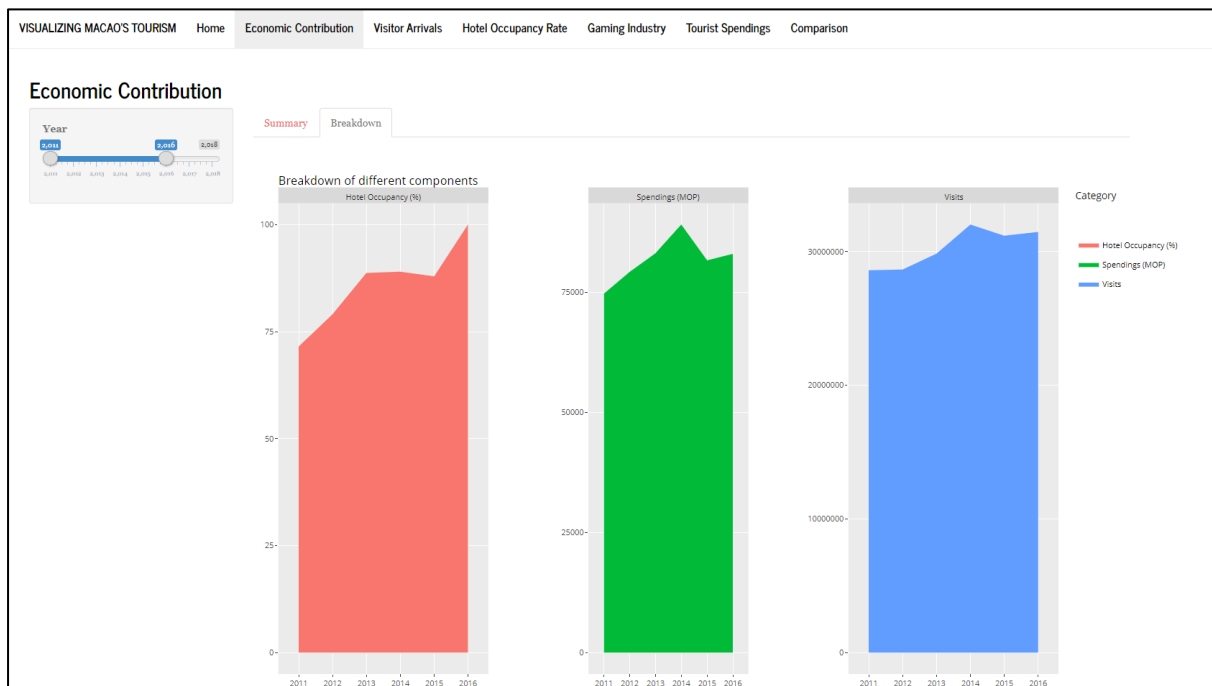**Figure 2.1 – Economic Contribution (GDP vs Tourist Spending)**

Figure 2.2 – Economic Contribution (Breakdown of different components)

When the user clicks on "Economic Contribution", the user will be able to see the dashboard on Figure 2.1 and Figure 2.2.

When the user clicks on "Summary", it will display the dashboard as shown on Figure 2.1. The dashboard gives a brief outlook on how tourism is doing through the user of the bar and line graph. Whereas, when the user clicks on "Breakdown", it displays the dashboard on Figure 2.2. The

dashboard on Figure 2.2 gives an in-depth view of how each category is doing throughout the years. The reason why the number of years is not consistent with each other are based on the raw data given. We have decided to display all the information, to provide user a greater insight despite the years not consistent with each other.

The user can also filter by year which allows the user to concentrate on important years which may provide valuable information.

4. Visitor Arrivals

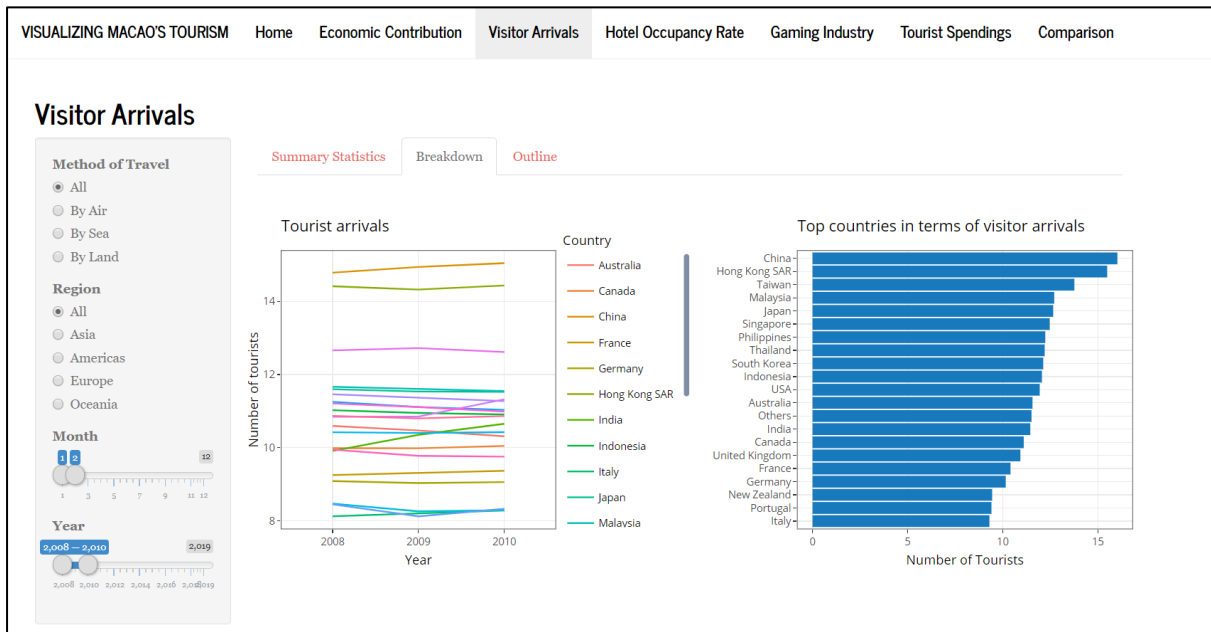Figure 3.1 – Visitor Arrivals (Summary Statistics)

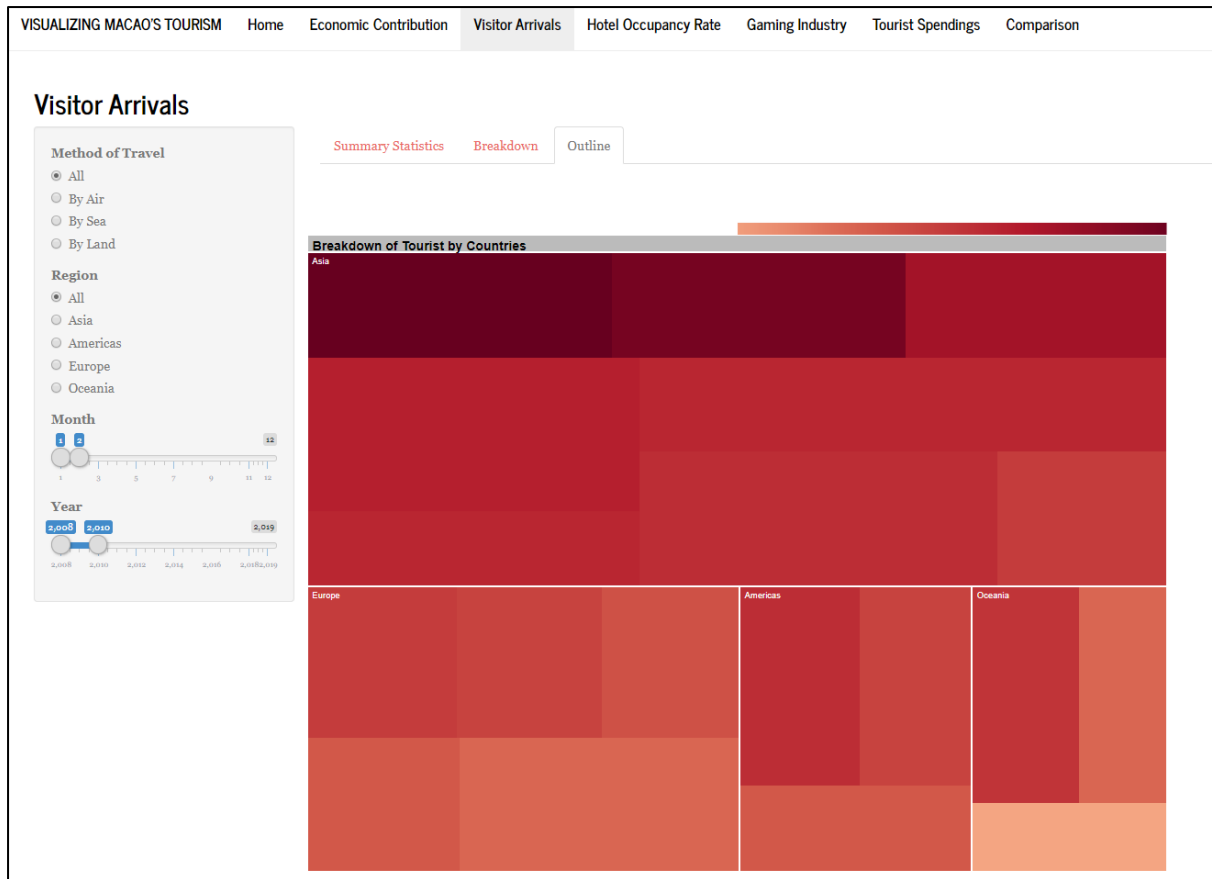Figure 3.2 – Visitor Arrivals (Breakdown)

Figure 3.3 – Outline

When the user clicks on "Visitor Arrivals", the user will be able to see the dashboard on Figure 3.1, 3.2 and 3.3.

When the user clicks on "Summary Statistics", it will display the dashboard as shown on Figure 3.1. The dashboard gives a summary of how each region and country is doing. When the user clicks on "Breakdown", it will display the dashboard as shown on Figure 3.2. The dashboard gives a more in-depth look on the breakdown for different countries. The "Tourist arrivals" dashboard shows the data using a continuous graph using Year as one of the axes. Whereas the "Top countries in terms of visitor arrivals" dashboard gives an overall view of which country is having the greatest number of tourists coming into Macao. When the user clicks on "Outline", it shows a treemap which gives a breakdown of region and country. For example, the user can click on the area that is labelled "Asia" to zoom into the different countries within Asia. When the user wants to return to the region view, the user simply must click on the title "Breakdown of Tourist by Countries". The treemap allows a complete view of which region and country is providing the most tourists.

The user can then filter by the method of travel, region, month and year to give better insights where different aspects affect the arrival rate for different region or countries.
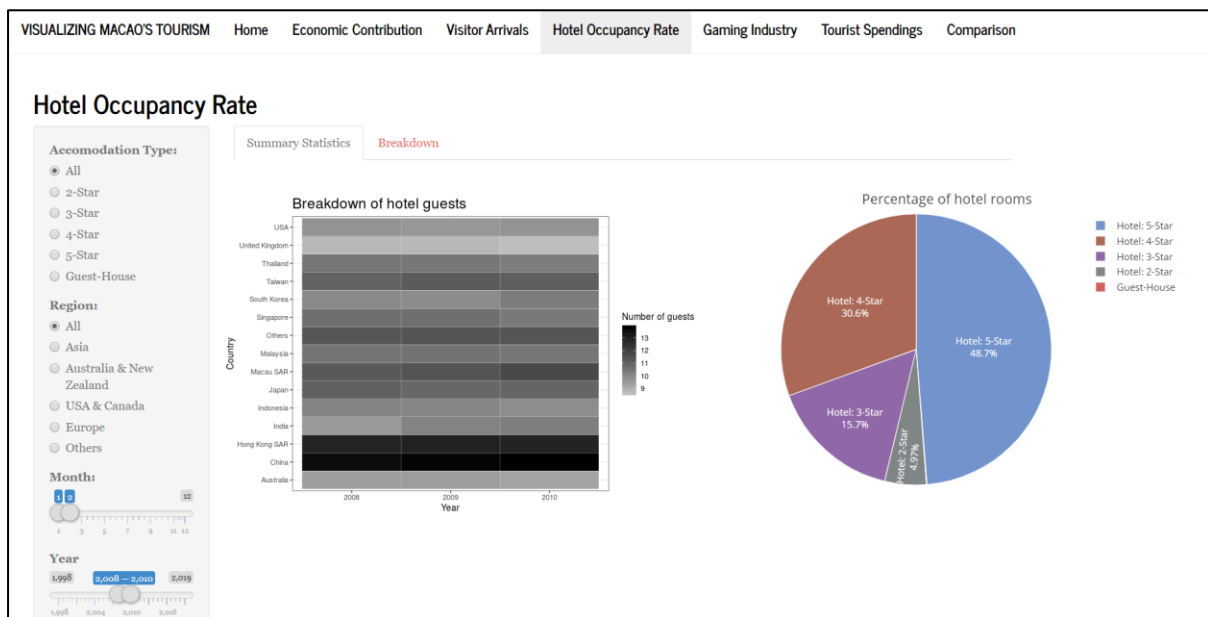
5. Hotel Occupancy
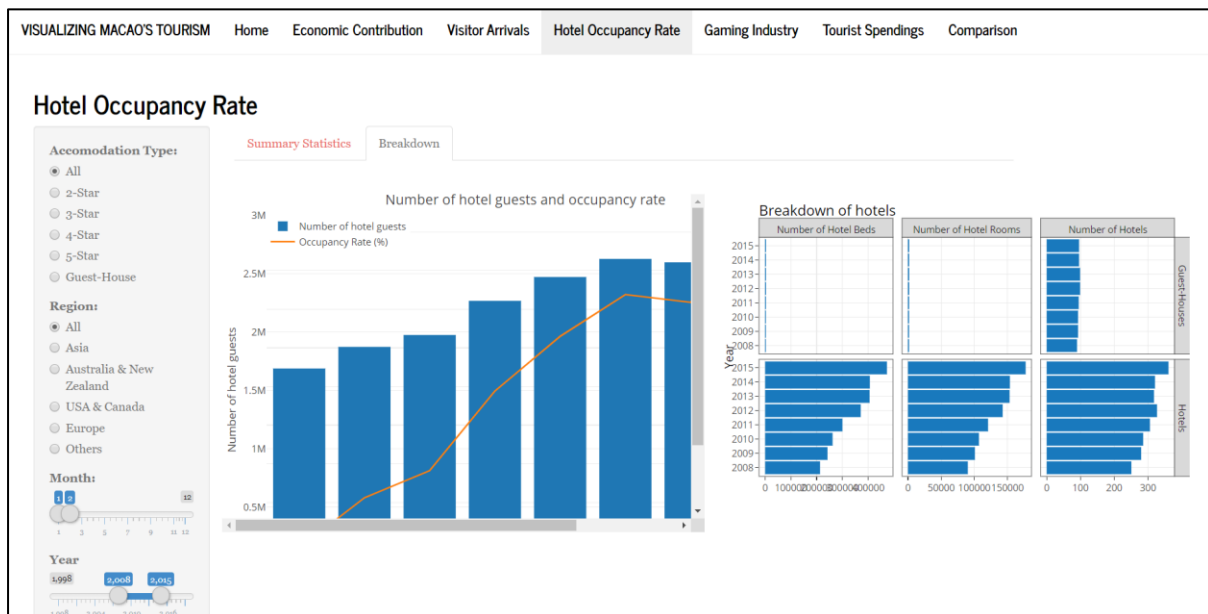

Figure 4.1 – Summary Statistics

Figure 4.2 – Breakdown

When the user clicks on "Hotel Occupancy Rate", the user will be able to see the dashboard on Figure 4.1 and 4.2

When the user clicks on "Summary Statistics", it will display the dashboard as shown on Figure 4.1. It displays a summary of how the occupancy for the different accommodation type is like for the different countries in the different years. Besides that, it also displays a general breakdown of the occupancy rate for the different accommodation type. When the user clicks on "Breakdown", it gives a more in-depth view of how the overall occupancy rate and number of hotel guest is doing throughout all the years. Besides that, it also displays how is the number of hotels, hotel beds and hotel room doing throughout all the years. This gives a general idea of how the accommodation in

Macao is doing and whether there is a trend for the different countries for different accommodation type.

The user can then filter by the accommodation type, region, month and year to give better insights where different aspects affect the arrival rate for different region or countries.
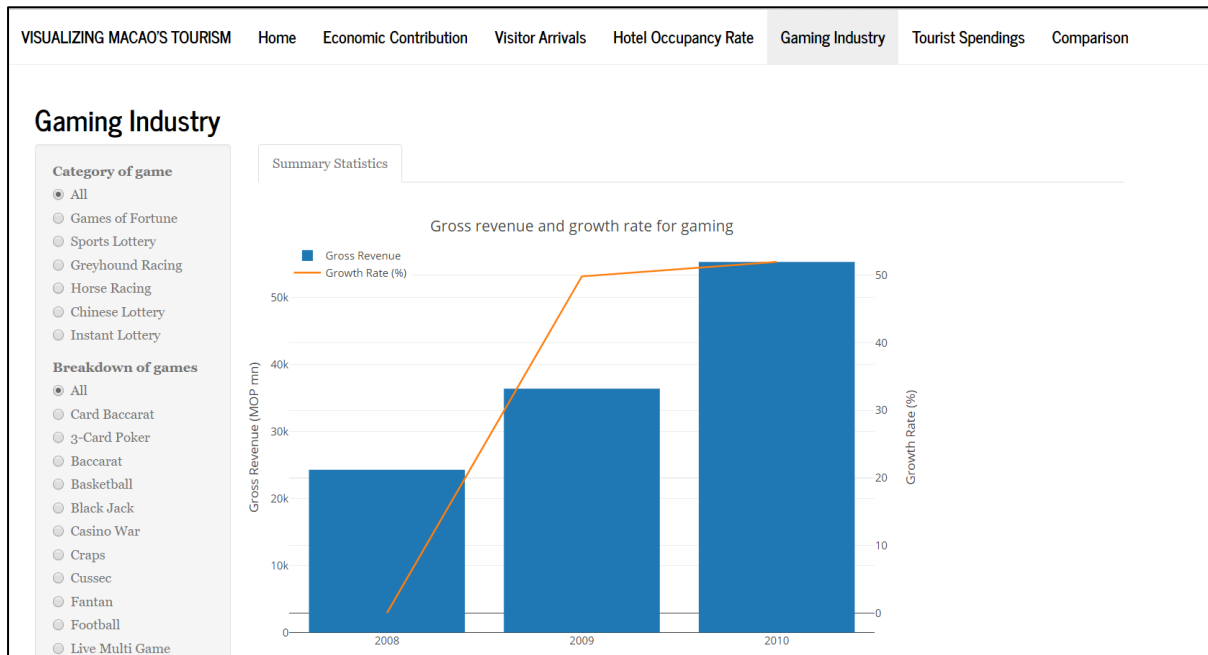
6. Gaming Industry

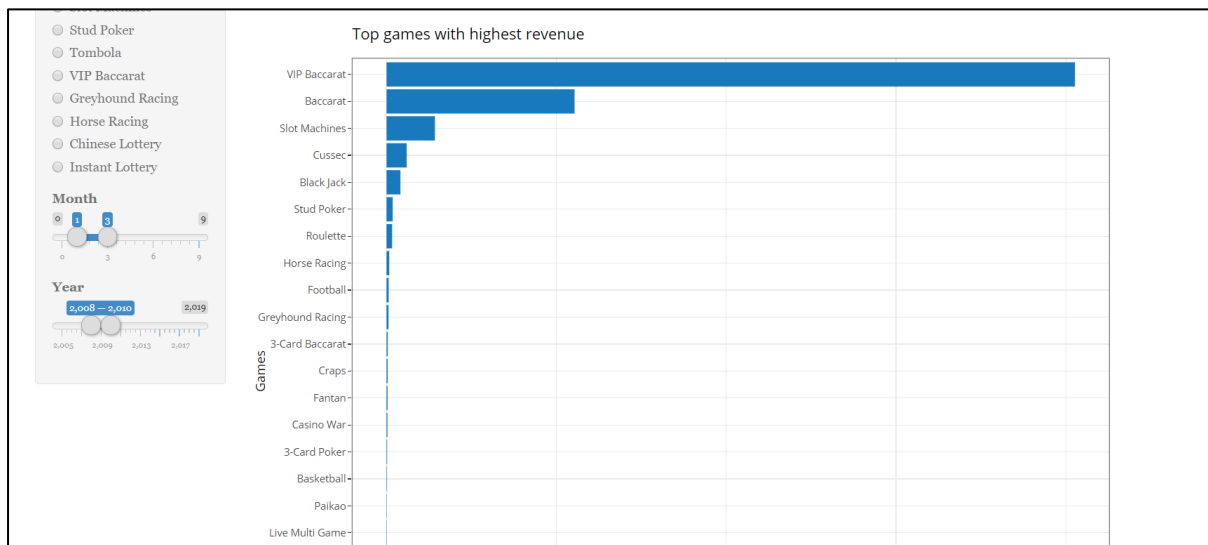**Figure 5.1 – Gross revenue and growth rate for gaming**

Figure 5.1 – Top games with highest revenue

When the user clicks on "Gaming Industry", the user will be able to see the dashboard on Figure 5.1 and 5.2.

It will the display the dashboard as shown on Figure 5.1 and 5.2. It displays a summary for the gaming industry which includes a bar and line chart for comparing how well the gaming industry is doing for the different years. The user will be able to see if there was an increase in growth rate and gross revenue while using the dashboard in Figure 5.1. Besides that, it also provides the games that generates the highest revenue towards the gaming industry. The user will be able view over the few years, how have each gaming been generating their income.

For the user to get more information, there are filters available which includes the game, subgame, month and year. This will provide more information to the user. For example, if the user wants to look

at how VIP Baccarat have been doing for the past 5 years. The user can filter the year frame and click on the VIP Baccarat option within the subgame. This will provide more information to the user to see whether the game is profitable or not.
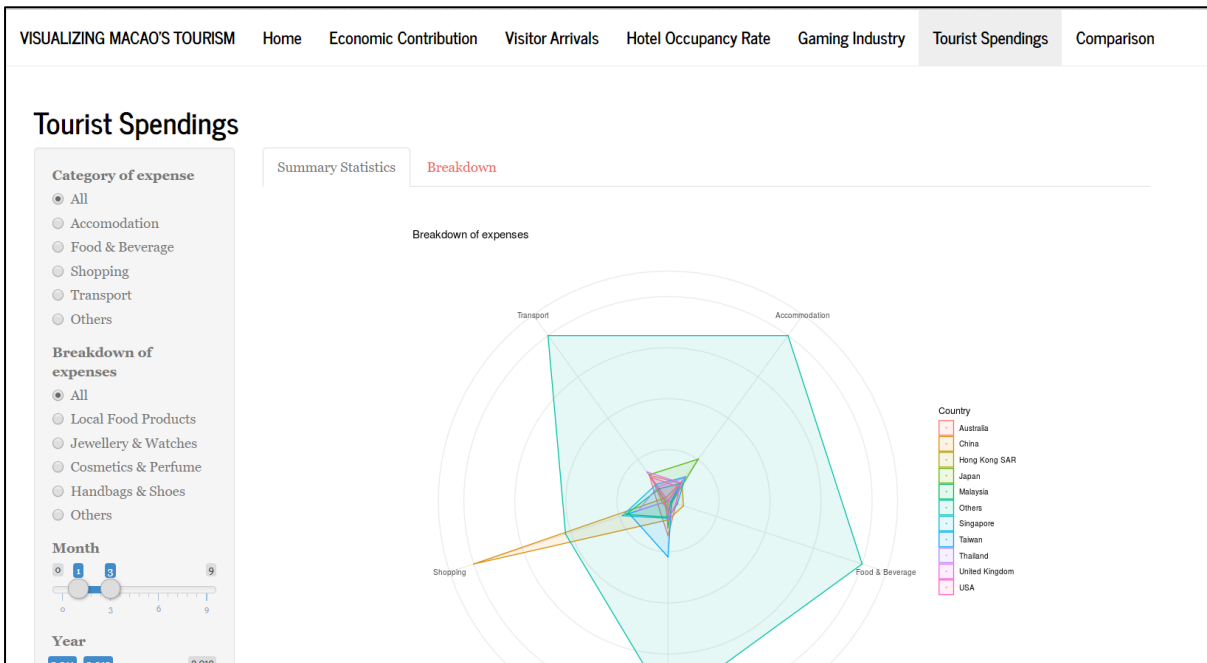
7. Tourist Spendings
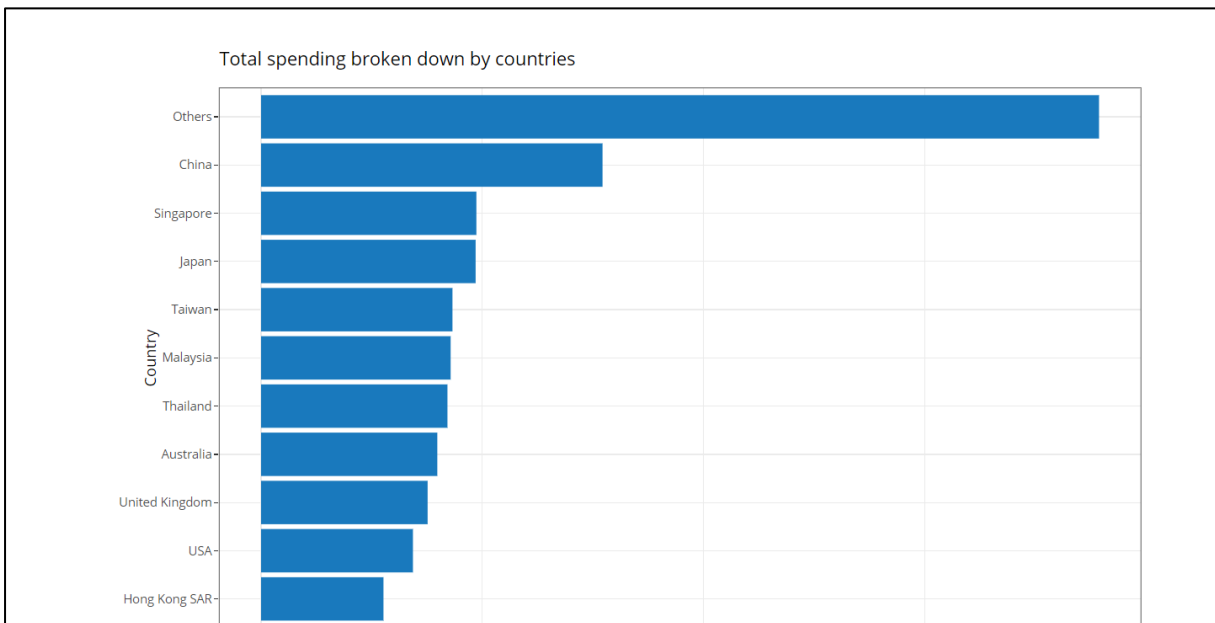

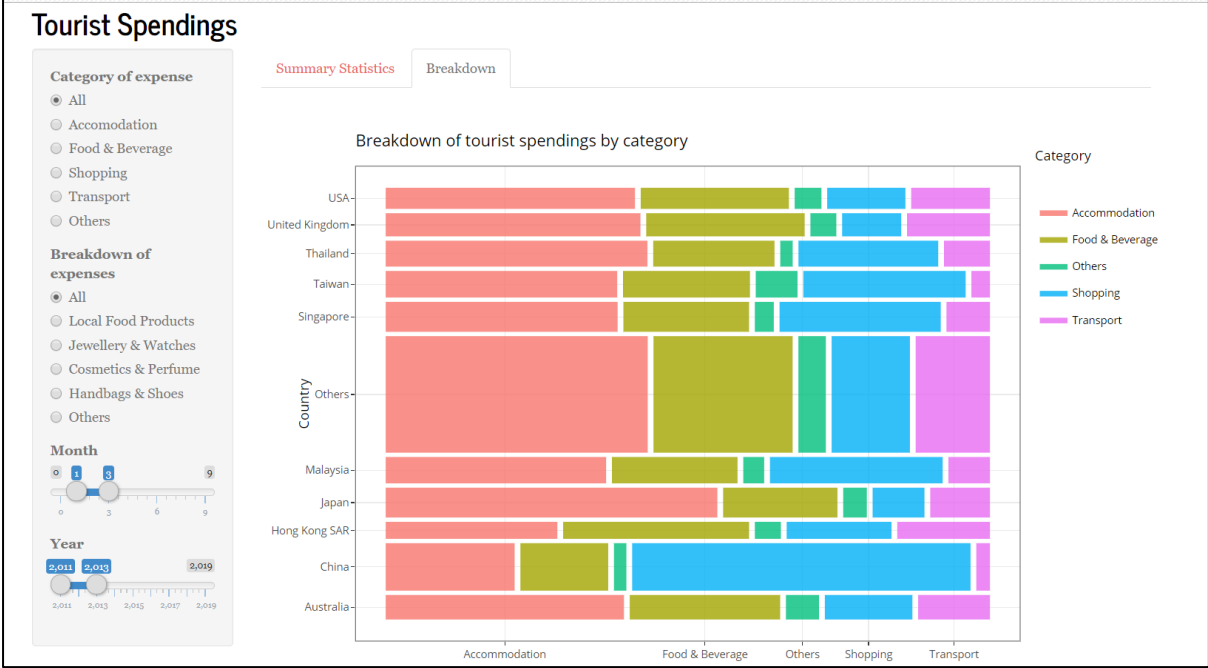**Figure 6.1 – Summary Statistics – Breakdown of expenses**

Figure 6.2 – Summary Statistics – Total spending broken down by countries

6.3 – Breakdown – Breakdown of tourist spending's by category

Figure 6.4 – Breakdown – Breakdown of tourist spending shopping and non-shopping

When the user clicks on "Tourist Spending's", the user will be able to see the dashboard on Figure 6.1, 6.2, 6.3 and 6.4

When the user clicks on "Summary Statistics", it displays the dashboard as shown on Figure 6.1 and 6.2. It displays a summary of the expenses spent. The radar chart provides a quick summary to see which country is spending the most on which category. Whereas the bar chart provides a overview of how much each country is spending in total. When the user clicks on "Breakdown", it displays the dashboard as shown on Figure 6.3 and 6.4. The dashboard gives an in-depth view of how much each

country is spending on each category and an overview of how much people are spending in shopping categories and non-shopping category. The user will be able to see the spending pattern for the different country so that they can better cater packages and promotional items to them.

The user will also be able to filter via the category of expense, breakdown of expense (all for shopping), month and year. One thing to note for this is that, the region is not included into the filters as the raw data has not separated the countries properly into regions. There were only some of the countries separated into the regions correctly whereas some were not. We decided not to take the risk of allocating the country to a region, just in case we were giving the wrong data.

8. Comparison

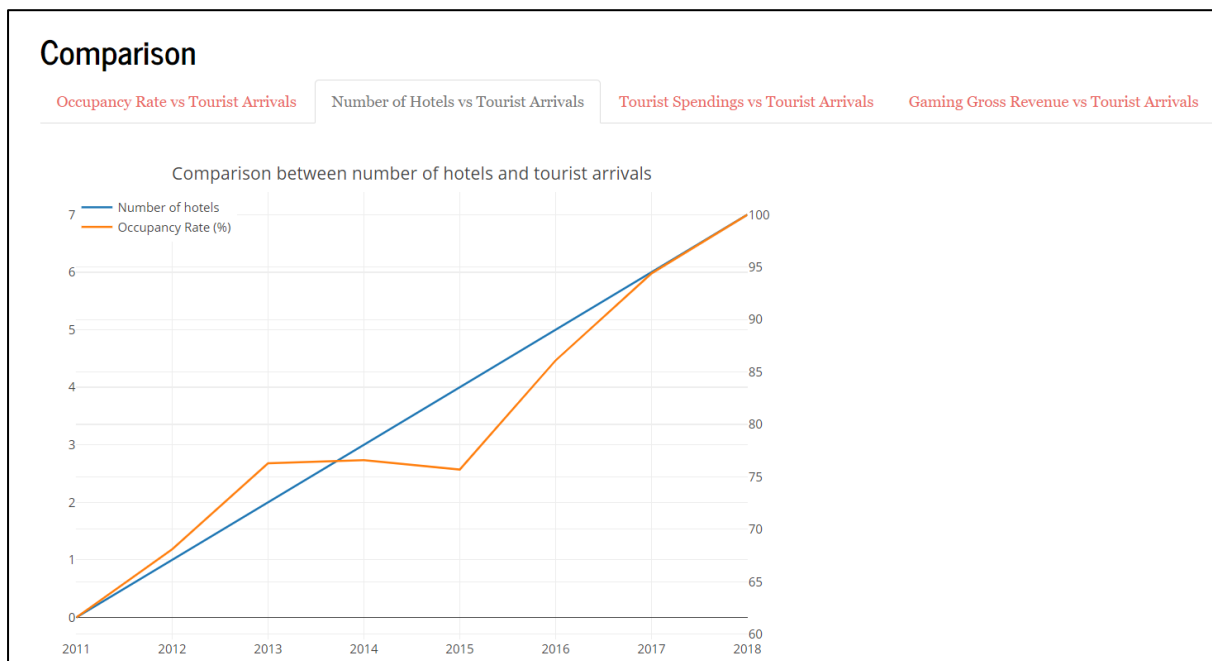**Figure 7.1 – Occupancy Rate vs Tourist Arrivals**

Figure 7.2 – Number of Hotels vs Tourist Arrivals

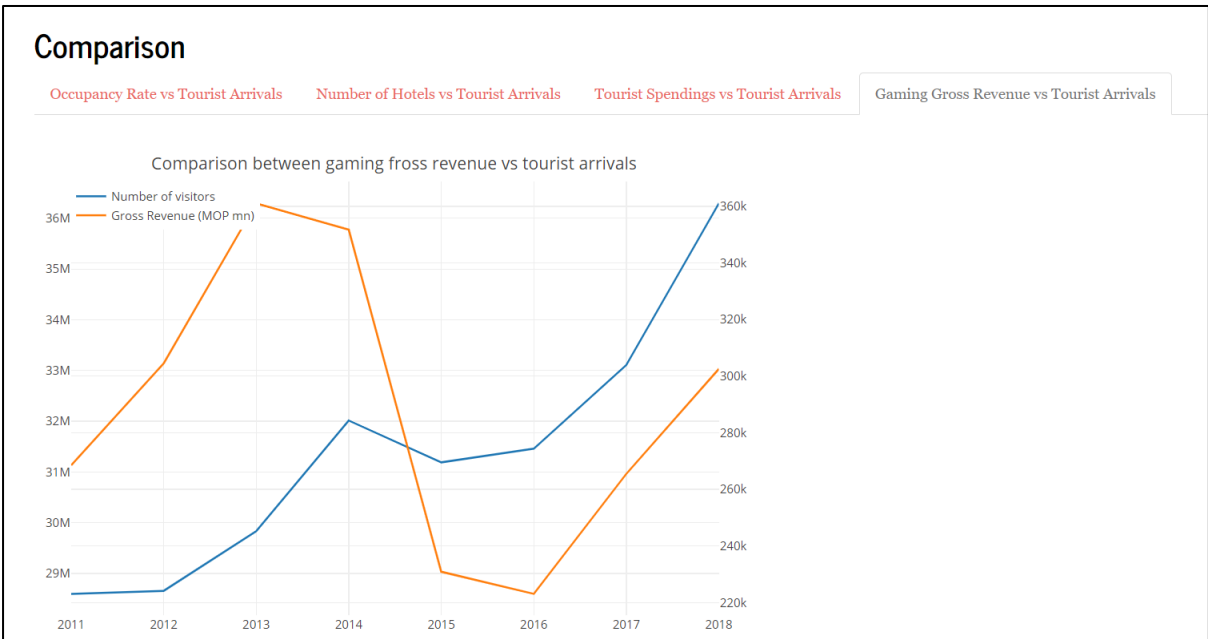**Figure 7.3 – Tourist Spending's vs Tourist Arrivals**

Figure 7.4 – Gaming Gross Revenue vs Tourist Arrivals

When the user clicks on "Comparison", the user will be able to see the dashboard on Figure 7.1, 7.2, 7.3 and 7.4

For each of the different tabs, there will be a dashboard displayed comparing the different variables. This data has been filtered so that only matching years will be displayed for the user to be able to get a comparison and find if there is a trend or if there is something wrong. The user will be able to check whether the graph would be as planned. For example, if tourist arrivals is going up, the user can check whether occupancy rate is going up or down. In most cases the occupancy rate would be going up, so in the case of the occupancy rate going down. The user can go through the previous tabs and find out more information in order to get more information.