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## The visualisations of Melbourne Urban Trees Data

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## 1. Introduction

Data visualization is the process of conveying complex information through simple graphs and charts. Visualization through visual imagery has been an effective way to help people to learn and observe data (Munzner, 2014). This report aims to perform exploratory data of Melbourne urban trees analysis using Tableau. Firstly, it will load the dataset to Tableau to find out some implicit data errors and resolve them. Then, it will explore the data to diffident views and applying those visualization views to analysis some categories of trees' spatial clusterisation and the tendency of planted trees number between 2013 and 2017.

## 2. Data checking and resolving

PEI_Tableau_Tre...	PEI_Tableau_Tree...	Abc	PEI_Tableau_Tree...	#	PEI_Tableau_Tree_Data.csv	#	PEI_Tableau_Tree_Data.csv	Abc	#
Latitude	Longitude	Genus	Date.Planted	Diameter.Breast.H...	Useful.Life.Expect...	Located.in	PEI_Tableau_Tree_Data...	Year.Planted	PEI_Tableau_Tree_Dat...
-37.81082703	144.97915930	Melaleuca	14/10/1998	78.000	30.0000	Park		1998	
-37.81197240	144.98131200	Araucaria	16/10/1998	83.000	60.0000	Park		1998	
-37.81261948	144.98211290	Pinus	16/10/1998	null	null	Park		1998	
-37.81596948	144.97818620	Pittosporum	10/12/1998	7.000	10.0000	Park		1998	
-37.81208588	144.97955270	Phoenix	16/10/1998	87.000	60.0000	Park		1998	
-37.81451539	144.97774300	Ulmus	10/12/1998	136.000	20.0000	Park		1998	
-37.81297214	144.98008070	Washingtonia	1/01/2000	31.000	60.0000	Park		2000	
-37.81407930	144.98196070	Phoenix	13/10/1998	77.000	60.0000	Park		1998	
-37.81239966	144.97862800	Platanus	14/10/1998	85.000	20.0000	Park		1998	
-37.81293395	144.97679570	Phoenix	2/01/2000	65.000	60.0000	Park		1900	
-37.81598701	144.97834620	Pittosporum	10/12/1998	8.000	10.0000	Park		1998	

Figure 1. Data tabular

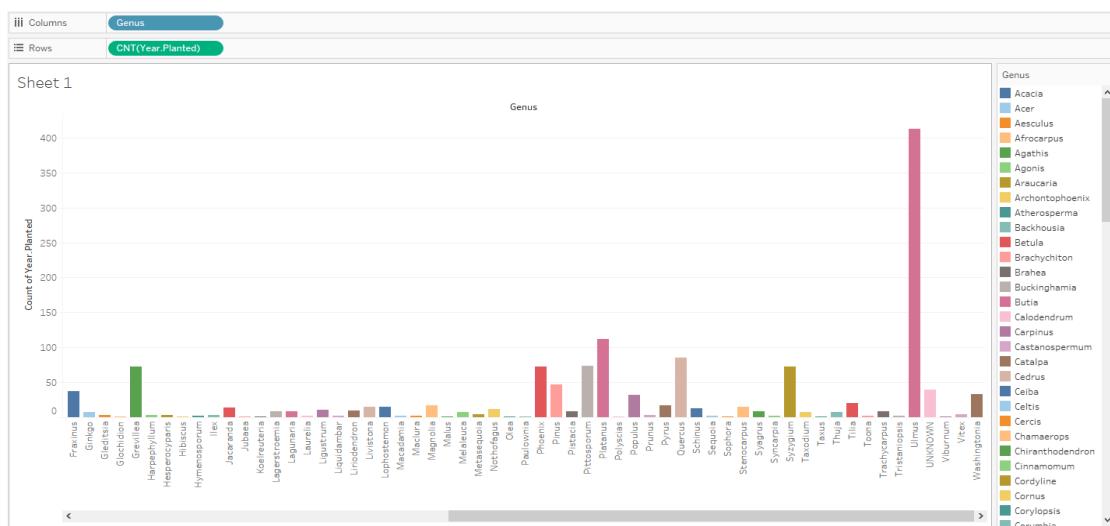


Figure 2. The overall visualization

The data upload to Tableau shown above (see Figure 1). There have 2156 rows

x 8 columns of data provided in the table. Through exploring the data, the overall data visualization has been established (see Figure2).

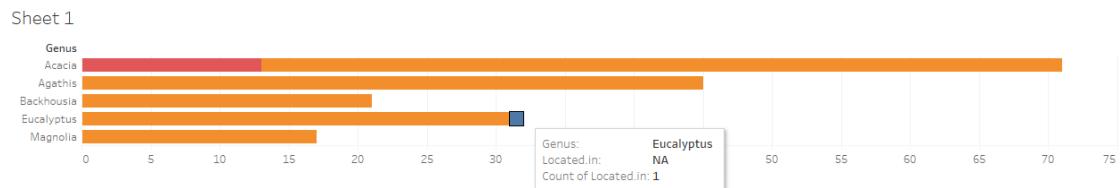


Figure 3. Error

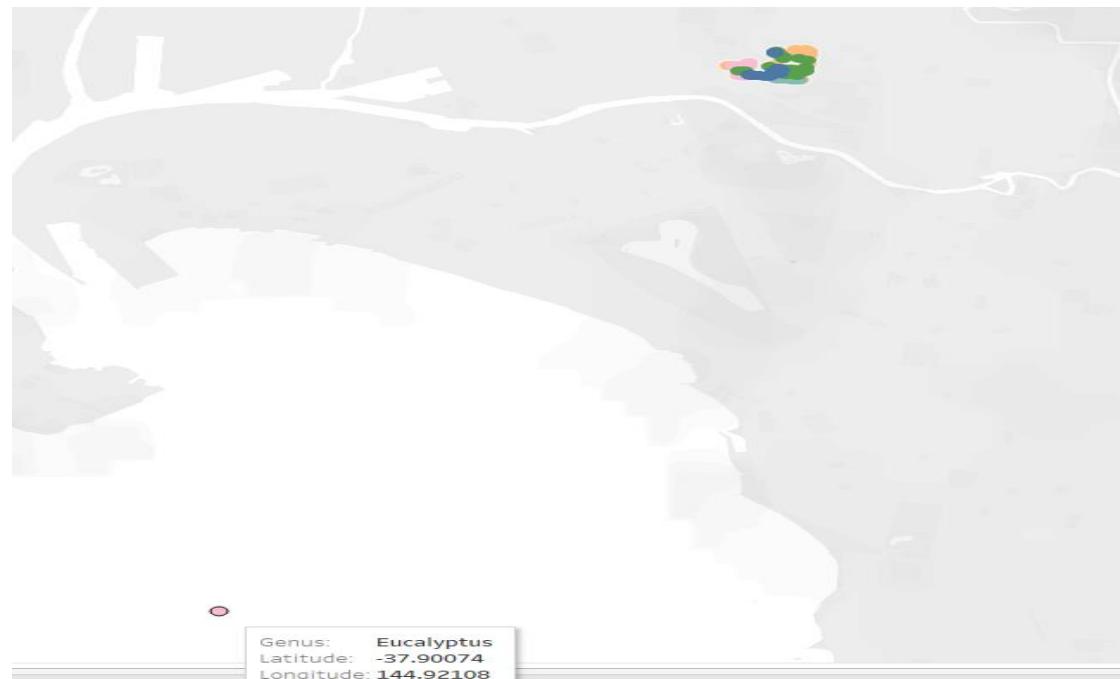
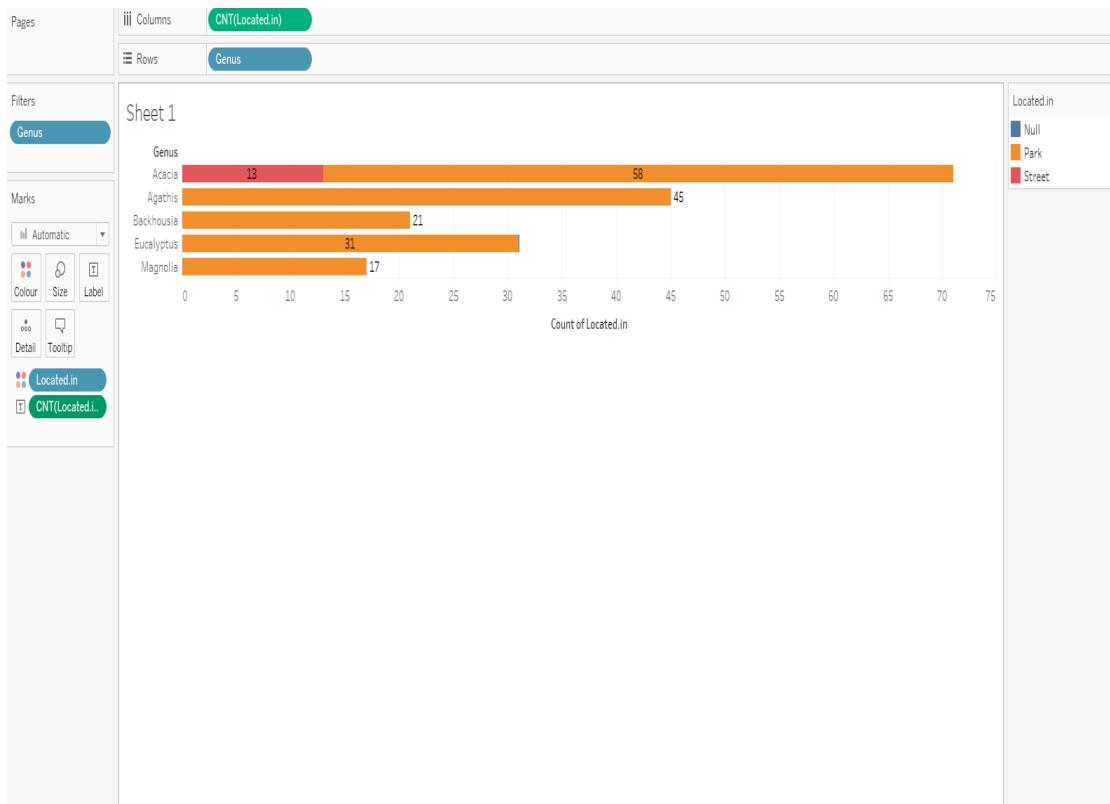


Figure 4. Data error

During exploration, there found some error in the provided data (see Figure 3 and 4). As we can see in figure 3, there has a tree that planted location is an unknown value. Besides, through analyzing its latitude and longitude, it is unrealistic to plant it in the sea. So, it should be regarded as a useless or error data, then it should be deleted. Before to exploring the data, I use the python program, padas package, to delete those error data.

### 3. Answering questions

#### 3.1 Question 1



*Figure 5. The horizontal bar visualization*



*Figure 6. The map visualization*

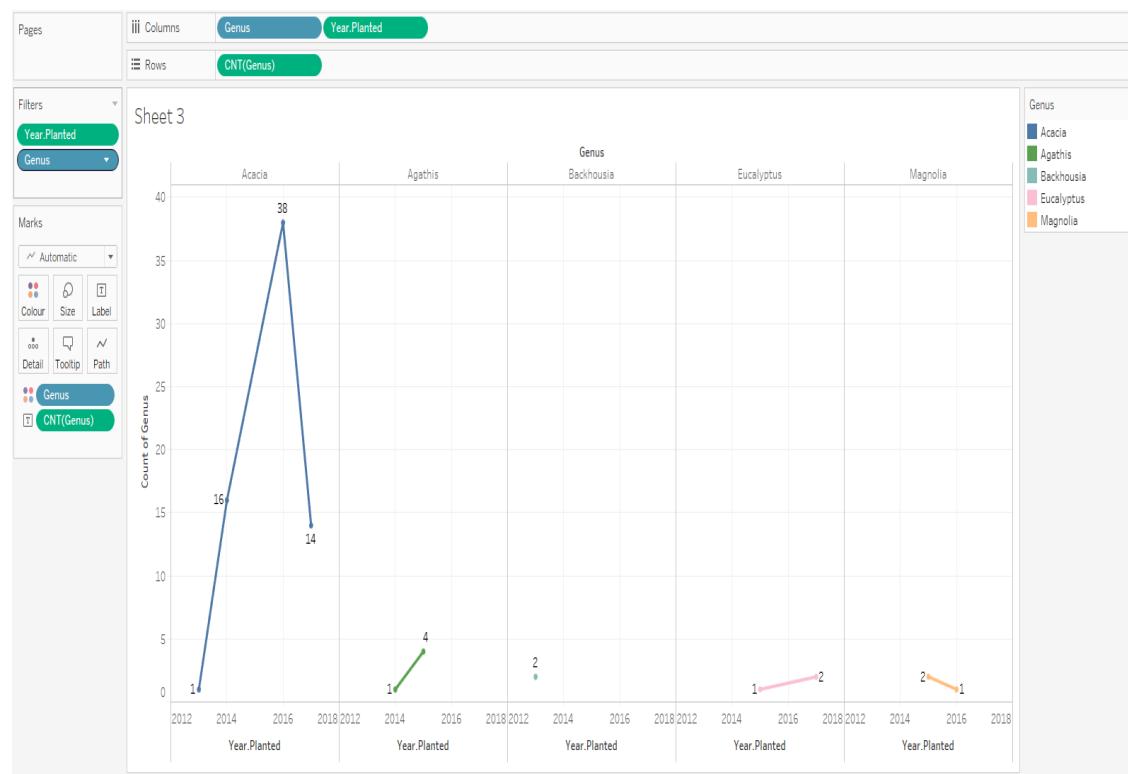
The spatial clusterisation of Acacia, Agathis, Backhousia, Eucalyptus and Magnolia has been explored in the horizontal bar and the map which is shown above (see Figure 5, 6).

As can be seen from the graph, the genus of trees is constituted as the vertical axis and the horizontal axis is composed of number which represents the number of the tree planted. From the overall aspect, most trees are located in

the park while a few trees are planted on street. To be specific, Agathis, Backhousia, Eucalyptus and Magnolia are all planted in the park. However, most Acacia is located in the park which contains 58 and another part is located on the street that is 4 times less than the number planted in the park.

From the density aspect, the distribution of Magnolia is extremely sparse and the location of them looks star-shaped, by contrast, the distribution of Acacia is significantly different from Magnolia and they are densely planted. Backhousia is planted in a row in the south of the park and Eucalyptus has been separated into three areas in the park.

### 3.2 Question 2



*Figure 7. The tendency of planted trees number visualization*

The tendency of planted trees number visualization is provided in the line graph which shown above (see Figure 7). Each category of trees has been assigned in a different colour line. Through that visualization way, the tendency of planted tree number can be obviously illustrated.

From the graph, it is clear that the number of Acacia showed a dramatically increasing tendency from 2013 to 2016, which has reached a peak of 38 in 2016. Then it decreased to 14 in 2017. As for Agathis, from 2014 to 2015 the quantity of planted trees slightly increased from 1 to 4. However, the count of Magnolia has minimally declined between 2015 to 2016, which has only reduced by 1. Besides, the genus of Backhousia has been planted once time over the period of the last 5 years. To sum up, as can be seen from the graph, Acacia was an important target that has been used to plant and other categories played minor roles in the planting project.

## 4. Conclusion

In conclusion, most trees have been planted in the park except for a few Acacia and the distribution of Acacia is dense, especially, the tree located in the park. Compare with that, other trees are extremely sparsely planted. In addition, Acacia is the main category tree that planted in the past 5 years and the newly planted number of that reached 69 that occupied a significant part in planting activity.

## Reference

1. Munzner, T. (2014). *Visualization Analysis and Design* (1st ed., A K Peters visualization series). <https://doi.org/10.1201/b17511>