SESSIONS 5

Pie Chart

Data Science Program

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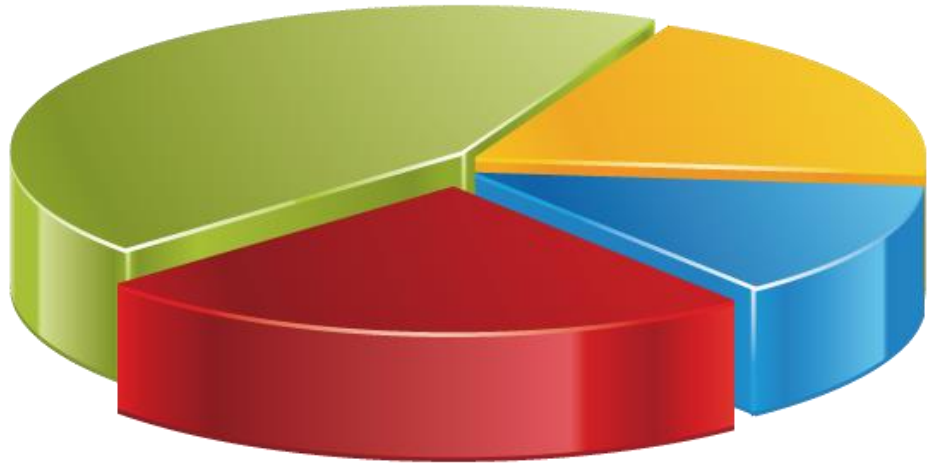
Outline

- What is Pie Chart?
- When to Use Pie Chart?
- When to Avoid Pie Chart?
- Create Pie Chart using Matplotlib, Seaborn, and Pandas



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What is Pie Chart ?

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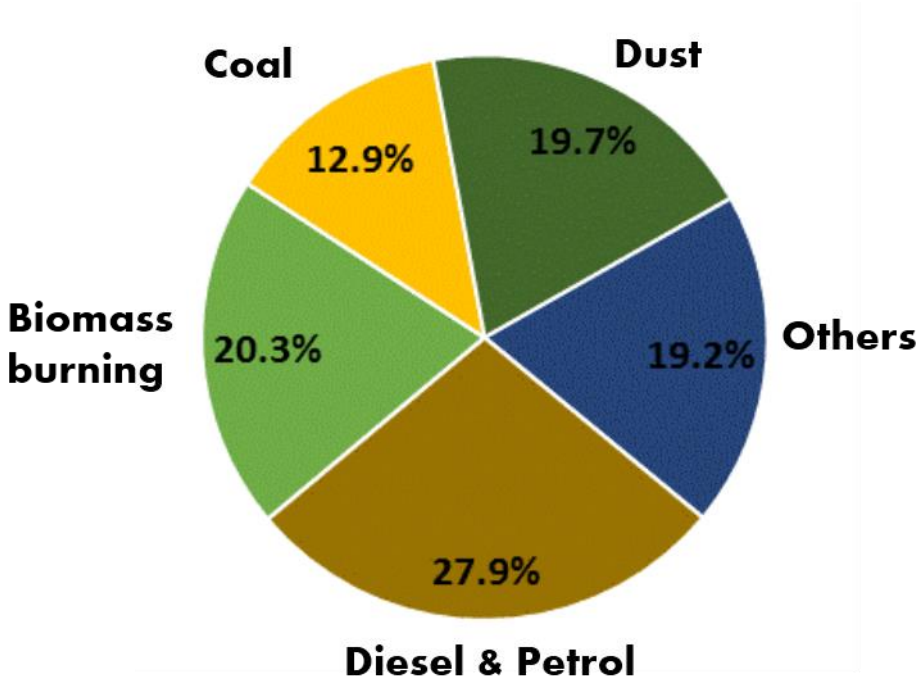
What is Pie Chart ?

- It is a circular plot which is divided into slices to illustrate numerical proportion.
- The slice of a pie chart is to show the proportion of parts out of a whole.
- A pie chart is a circular graph divided into slices. The larger a slice is the bigger portion of the total quantity it represents.
- So, pie charts are best suited to depict sections of a whole.



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What is Pie Chart ?

- Pie charts are very widely used in the business world and the mass media.
- However, they have been criticized, and many experts recommend avoiding them, pointing out that research has shown it is difficult to compare different sections of a given pie chart, or to compare data across different pie charts.
- Pie charts can be replaced in most cases by other plots such as the bar chart, box plot, dot plot, etc.

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When to Use Pie Chart?

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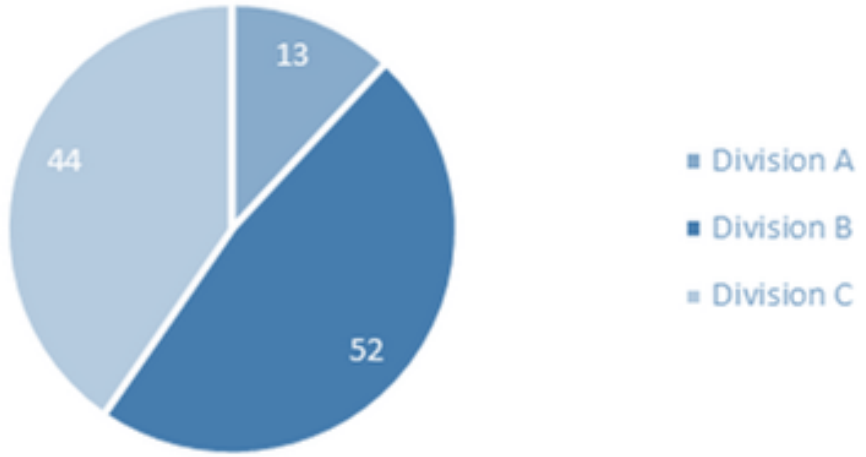
When to Use Pie Chart ?

- Pie chart should be used seldom used because this plot is difficult to compare sections of the chart. pie chart is used instead as comparing sections is easy.
- If a company operates three separate divisions, at year-end its top management would be interested in seeing what portion of total revenue each division accounted for.
- A pie chart is perfect in this case. However, we need to be certain that the sum of the proportions makes 100% of the total.
- That is, we cannot afford to forget any of the three divisions contributing to total revenue.



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When to Avoid Pie Chart?

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When to Avoid Pie Chart?

- We can’t use a pie chart in situations when we would like to show how one or more variables develop over time. Pie charts are a definite no-go in these cases.
- Moreover, a pie chart would be misleading if we don’t consider all values.
- In the context of our example from earlier, we shouldn’t create a pie chart that includes revenue of only two of the firm’s three divisions.

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Create Pie Chart using Matplotlib

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Create Pie Chart using Matplotlib

Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python.

[1]:
```
# Import Matplotlib & Seaborn
import matplotlib.pyplot as plt
import seaborn as sns

# Import Tips Dataset from seaborn
tips = sns.load_dataset("tips")
tips.head(3)
```

[1]:

	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3

[3]:
```
tips_by_day = tips[['tip', 'day']].groupby(['day'], as_index=False).mean()
tips_by_day
```

[3]:

	day	tip
0	Thur	2.771452
1	Fri	2.734737
2	Sat	2.993103
3	Sun	3.255132

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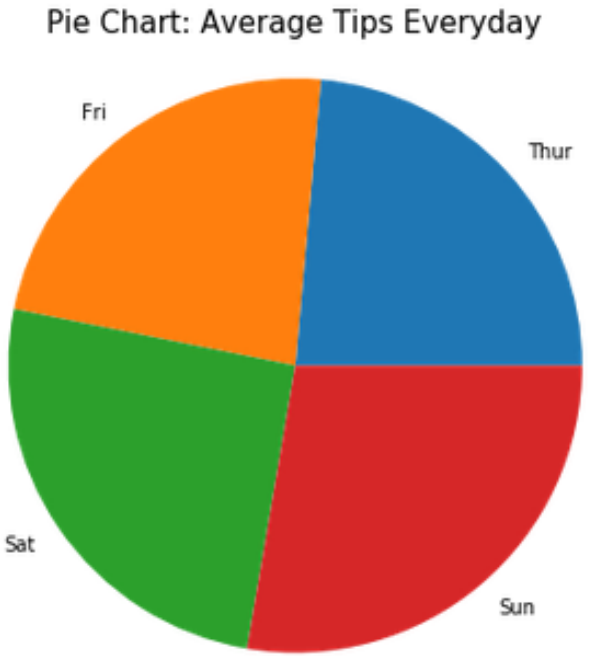
Create Pie Chart using Matplotlib

[4]:
```
plt.figure(figsize=(8,6))                                  # figure size
plt.pie(tips_by_day['tip'], labels=tips_by_day['day']) # create Pie Chart in matplotlib
plt.axis('equal')                                          # pie type
plt.title('Pie Chart: Average Tips Everyday', size=15) # Title
plt.show()
```



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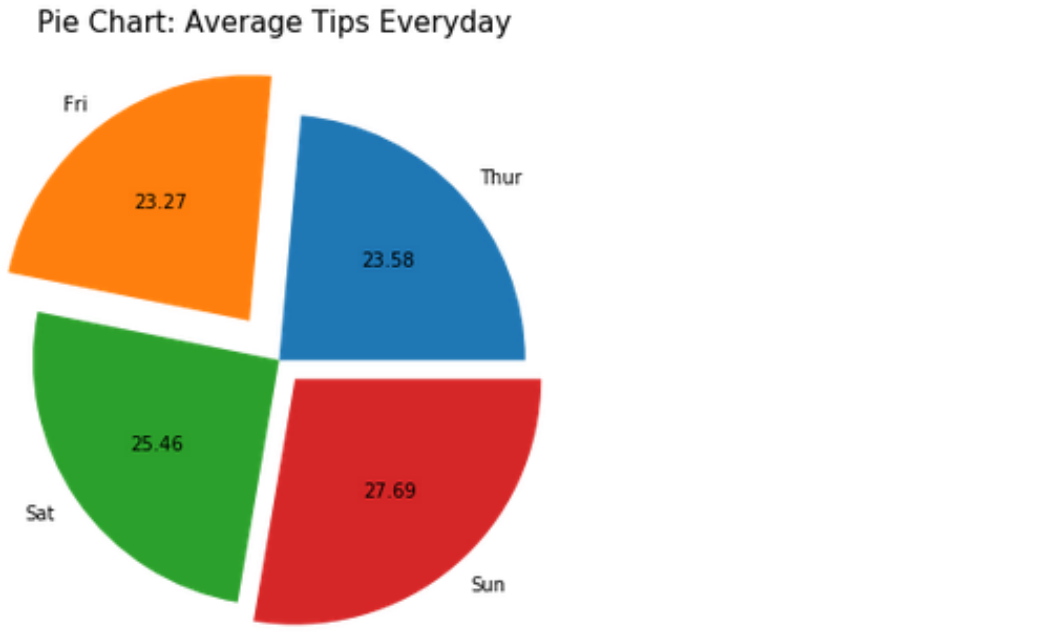
Create Pie Chart using Matplotlib

```
[5]: plt.figure(figsize=(8,6))                                  # figure size
     plt.pie(tips_by_day['tip'],                                # data
             labels = tips_by_day['day'],                       # label
             autopct = '%.2f',                                  # show data in pie chart
             explode = (0, 0.2, 0, 0.1)                         # explode the pie
            )
     plt.axis('equal')                                           # pie type
     plt.title('Pie Chart: Average Tips Everyday', size=15) # Title
     plt.show()
```



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Create Pie Chart using Pandas

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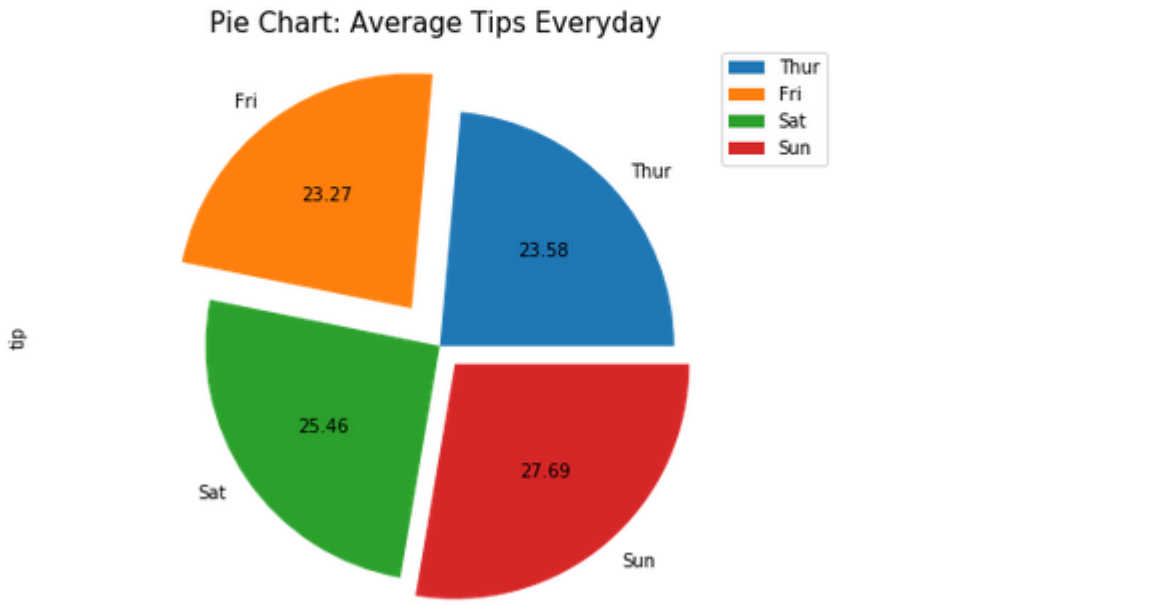
Create Pie Chart using Pandas

```
[10]: tips_by_day.plot.pie(y='tip',                          # data
                           figsize= (8,6),                   # figure size
                           labels = tips_by_day['day'],      # label
                           autopct = '%.2f',                 # show data in pie chart
                           explode = (0, 0.2, 0, 0.1)        # explode the pie
                          )
      plt.axis('equal')                                      # pie type
      plt.title('Pie Chart: Average Tips Everyday', size=15) # Title
      plt.show()
```



Pandas is a fast, powerful, flexible and easy to use open source data analysis and manipulation tool, built on top of the Python programming language.

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Reference

- 365datascience, "Choosing the right chart: Selecting among 14 chart types", https://365datascience.com/chart-types-and-how-to-select-the-right-one/
- Badreesh Shetty, "Data Visualization using Matplotlib", https://towardsdatascience.com/data-visualization-using-matplotlib-16f1aae5ce70
- Wikipedia, "Pie chart", https://en.wikipedia.org/wiki/Pie_chart

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