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**Course: Applied Data Sc. 1**

**Assignment: Visualisation**

**Plot number 1: Pie Chart.**

**Data description:**

This data set shows debt in percentage of GDP, for lower income countries, from year 2010-2015.

**Why pie plot?**

Because Pie chart is a suitable plot for visualizing data of a variable having different parts. Pie plots make it really easy to compare different parts of a variable, and to visualize relationships that occur among those parts of that whole variable.

**Coding:**

import pandas as pd

import matplotlib.pyplot as plt

Debt = pd.read\_excel(r"C:\Users\saima\Debt data.xls")

print(Debt)

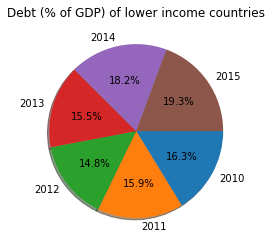
debt= Debt.iloc[:,1]

mylabels = Debt.iloc[:, 0]

plt.pie(debt, labels = mylabels, counterclock=False, autopct='%1.1f%%', shadow=True)

plt.title("Debt (% of GDP) of lower income countries")

plt.show()



**Interpretation:**

In above given pie chart, we can observe that in year 2012 debt in percent of GDP was lowest, that is, 14.8%. Whereas, in years 2014 and 2015 debt increased as compared to previous years. Debt was highest in year2015 i-e 19.3% of GDP.

**Plot number 2: Bar plot:**

**Data description:**

Dept data for lower countries is used.

**Why bar plot?**

I choose bar plot because by using bar plots we can observe the upward trend, downward trend, and can compare differences in a glance.

**Coding:**

import numpy as np

import pandas as pd

import matplotlib.pyplot as plt

Debt = pd.read\_excel(r"C:\Users\saima\Debt data.xls")

print(Debt)

debt= Debt.iloc[:,1]

Years = Debt.iloc[:, 0]

plt.bar(Years, debt, color ='darkblue', width = 0.4)

plt.xlabel("Years")

plt.ylabel("Debt(% of GDP)")

plt.title("Debt of lower income countries")

plt.show()

Chart, bar chart

Description automatically generated

**Interpretation:**

In this bar plot we can observe that in starting years, that is, years 2010 and 2011 Debt in percentage of GDP of lower income countries was at a higher rate, but then in year 2012 there was a decline and debt came to its lowest value among given 6 years data. But again, in year 2013, 2014 and 2015 we can observe an incline in graph. Which shows that in these years debt increased in terms of percentage of GDP.

**Data Source:**

https://www.imf.org/external/datamapper/profile/FAD\_LIC

**low income countries list:**

<https://www.esaic.org/membership/low-income-country-list/>

**Plot number 3: Line plot**

**Data description:**

Labour Force Survey Single Month estimates, by wave data, for employment rate for 16 to 64 years old was collected for year 2021 .

**Why line plot?**

Now we are going to plot this data to have a look at difference that occurs, when people join this survey at wave 1 and what that same households data looks like at the time of wave 2 interviews that occurs after 13 weeks of wave 1 interview. For this purpose, I am choosing line plot, because this plot shows changes occurring in data over some time period or categories effectively, making it easy to interpret output of a single variable or to compare outputs of different variables at same time. Also, these plots are easy to interpret and are understandable.

**Coding:**

import pandas as pd

import matplotlib.pyplot as plt

employment = pd.read\_excel(r"C:\Users\saima\employment rate by wave.xlsx")

print(employment)

Months = employment.iloc[:,0]

Wave\_1 = employment.iloc[:,1]

Wave\_2 = employment.iloc[:,2]

plt.figure()

# plot the waves with labels

plt.plot(employment ["Months"], employment["Wave 1"], label="Wave1")

plt.plot(employment ["Months"], employment["Wave 2"], label="Wave2")

# naming the title and axis of the plot

plt.title("Monthly Employment Rate")

plt.xlabel("Months")

plt.ylabel("Employment Rate((%)")

plt.legend()

plt.show()

**Line Plot:**

Chart, line chart

Description automatically generated

**Interpretation:**

In this graph, both wave 1 and wave 2 are increasing and decreasing at the same time which shows that employment rate is increasing and decreasing in both waves at same time. But on the other hand, wave 1 is always above wave 2. Wave 1 is between 76 and 77 percent and wave 2 is between 74 and 76.5 percent. This shows that employment rate for 16 years to 64 years old who entered survey at the time of wave 1 is higher than that observed for wave 2 time period. So, wave 2 being lower can be due to the reason that people leave the survey till the time of wave 2 interview.

**Source of data:**

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/labourforcesurveysinglemonthestimatesx01>