Assignment_1_2_R & Python_code_Raghuwanshi_Prashant_DSC640

December 11, 2021

[1]:
```
##### 1.2 Assignment: Exercises: Charts
##### Name: Prashant Raghuwanshi
##### Date: 12/09/2021
##### Course: DSC640-T301 Data Presentation & Visualizat (2223-1)
```

[2]:
```
##### Import common Data preparation libraries:
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

0.1 Python Program

[3]:
```
##### read source file into contest_winners_df dataframe
contest_winners_df = pd.read_excel('hotdog-contest-winners.xlsm')
##### display firt 5 records
contest_winners_df.head(5)
```

[3]:

	Year	Winner	Dogs eaten	Country	New record
0	1980	Paul Siederman & Joe Baldini	9.1	United States	0
1	1981	Thomas DeBerry	11.0	United States	0
2	1982	Steven Abrams	11.0	United States	0
3	1983	Luis Llamas	19.5	Mexico	0
4	1984	Birgit Felden	9.5	Germany	0

[4]:
```
##### read source file into places_df dataframe
places_df = pd.read_excel('hotdog-places.xlsm')
##### display firt 5 records
places_df.head(5) # obama-approval-ratings
```

[4]:

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
0	25	50.0	50.5	44.5	53.5	49	54	66	59	68.0	54
1	24	31.0	26.0	30.5	38.0	37	52	63	59	64.5	43
2	22	23.5	25.5	29.5	32.0	32	37	49	42	55.0	37

[5]:
```
##### read source file into approval_rating_df dataframe
approval_rating_df = pd.read_excel('obama-approval-ratings.xls')
```

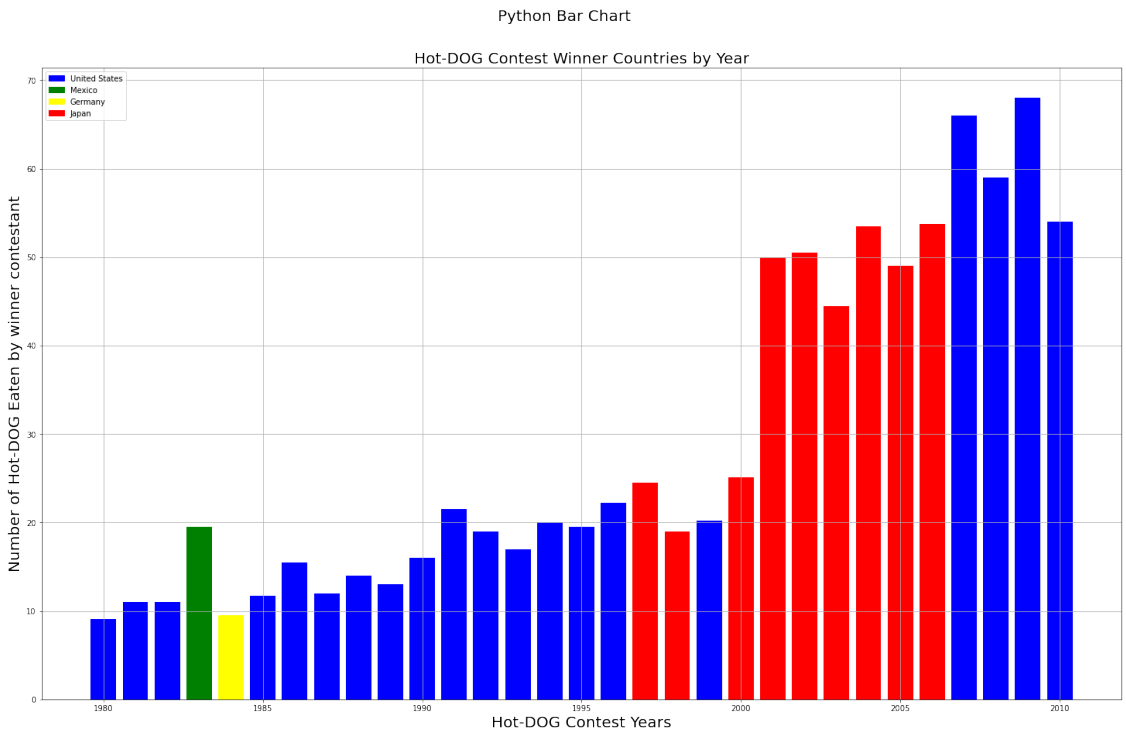
```
##### display firt 5 records
approval_rating_df.head(5)
```

[5]:

	Issue	Approve	Disapprove	None
0	Race Relations	52	38	10
1	Education	49	40	11
2	Terrorism	48	45	7
3	Energy Policy	47	42	11
4	Foreign Affairs	44	48	8

Create the garphs on top of the provided datases by using bar charts, stacked bar charts, pie charts, and donut charts

[6]:
```
plt.figure(figsize=(25,15))
colors = {'United States':'blue', 'Mexico':'green', 'Germany':'yellow', 'Japan':
 ↪'red'}
c = contest_winners_df['Country'].apply(lambda x: colors[x])
plt.bar(contest_winners_df['Year'], contest_winners_df['Dogs eaten'], color=c)
plt.ylabel('Number of Hot-DOG Eaten by winner contestant', fontsize=20)
subtitle_string = 'Hot-DOG Contest Winner Countries by Year'
title_string = 'Python Bar Chart'
plt.xlabel('Hot-DOG Contest Years', fontsize=20)
plt.suptitle(title_string, y=0.95, fontsize=20)
plt.title(subtitle_string, fontsize=20)
labels = list(colors.keys())
handles = [plt.Rectangle((0,0),1,1, color=colors[label]) for label in labels]
plt.legend(handles, labels)
plt.grid(True)
plt.show()
```



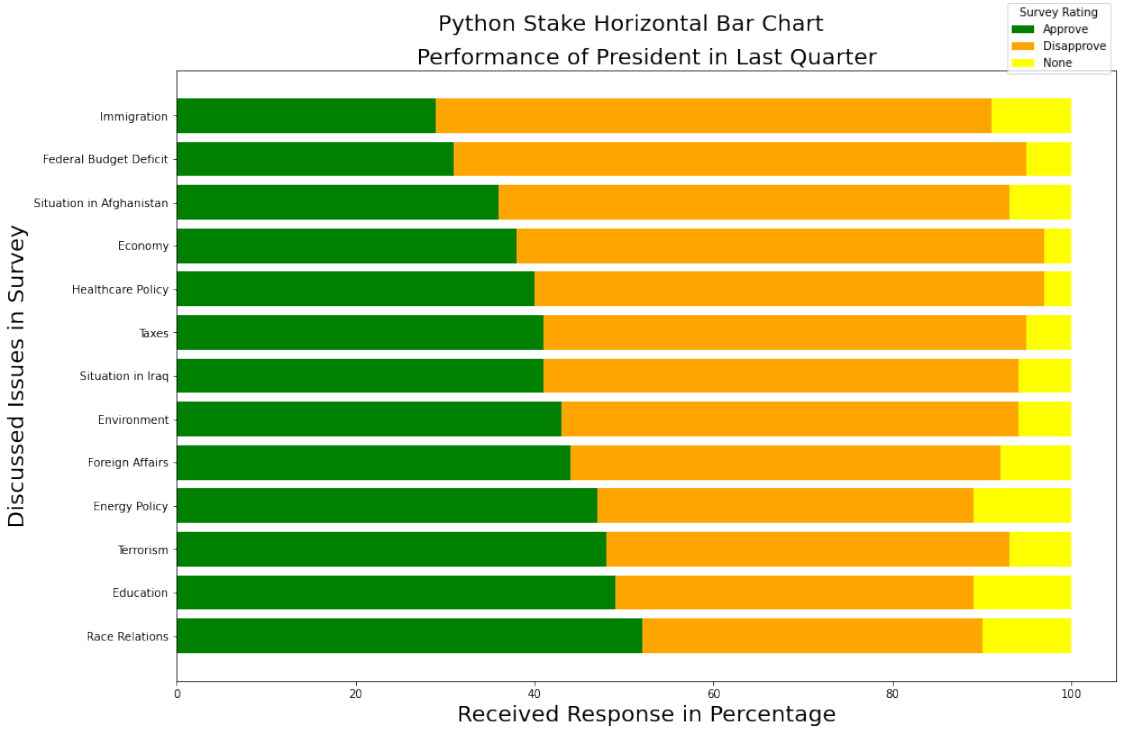
[7]:
```
approval_rating_df.head(5)
```

[7]:

	Issue	Approve	Disapprove	None
0	Race Relations	52	38	10
1	Education	49	40	11
2	Terrorism	48	45	7
3	Energy Policy	47	42	11
4	Foreign Affairs	44	48	8

[8]:
```
from matplotlib import pyplot as plt
plt.figure(figsize=(15,10))
plt.rcParams["figure.autolayout"] = True
plt.ylabel('Discussed Issues in Survey', fontsize=20)
plt.xlabel('Received Response in Percentage', fontsize=20)
subtitle_string = 'Performance of President in Last Quarter'
title_string = 'Python Stake Horizontal Bar Chart'
plt.suptitle(title_string, y=0.95, fontsize=20)
plt.title(subtitle_string, fontsize=20)

b1 = plt.barh(approval_rating_df['Issue'], approval_rating_df['Approve'],␣
 ↪color="green")

b2 = plt.barh(approval_rating_df['Issue'], approval_rating_df['Disapprove'],␣
 ↪left=approval_rating_df['Approve'], color="orange")
```

```
b3 = plt.barh(approval_rating_df['Issue'], approval_rating_df['None'], left=␣
 ↪approval_rating_df['Approve'] + approval_rating_df['Disapprove'],␣
 ↪color="yellow")

plt.legend([b1, b2, b3], ["Approve", "Disapprove", "None"], title="Survey␣
 ↪Rating", loc="upper right", bbox_to_anchor=([0.95, 1, .05, 0.12]))

plt.show()
```

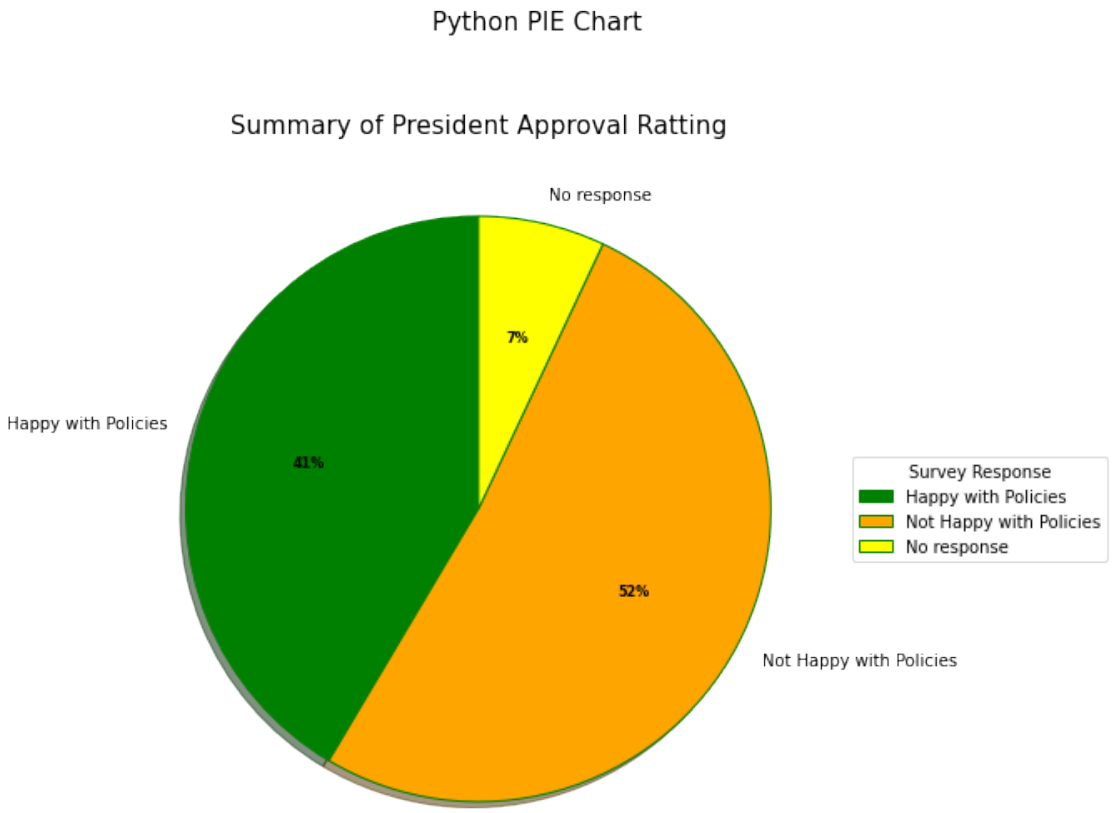


[9]:
```
total_Approval_percentage = approval_rating_df['Approve'].sum()/1300
total_Disapproval_Rating = approval_rating_df['Disapprove'].sum()/1300
total_None_Rating = approval_rating_df['None'].sum()/1300
```

[10]:
```
data = [total_Approval_percentage, total_Disapproval_Rating, total_None_Rating]
pie_lable = ['Happy with Policies', 'Not Happy with Policies', 'No response']
colors =  ["green", "orange", "yellow"]
```

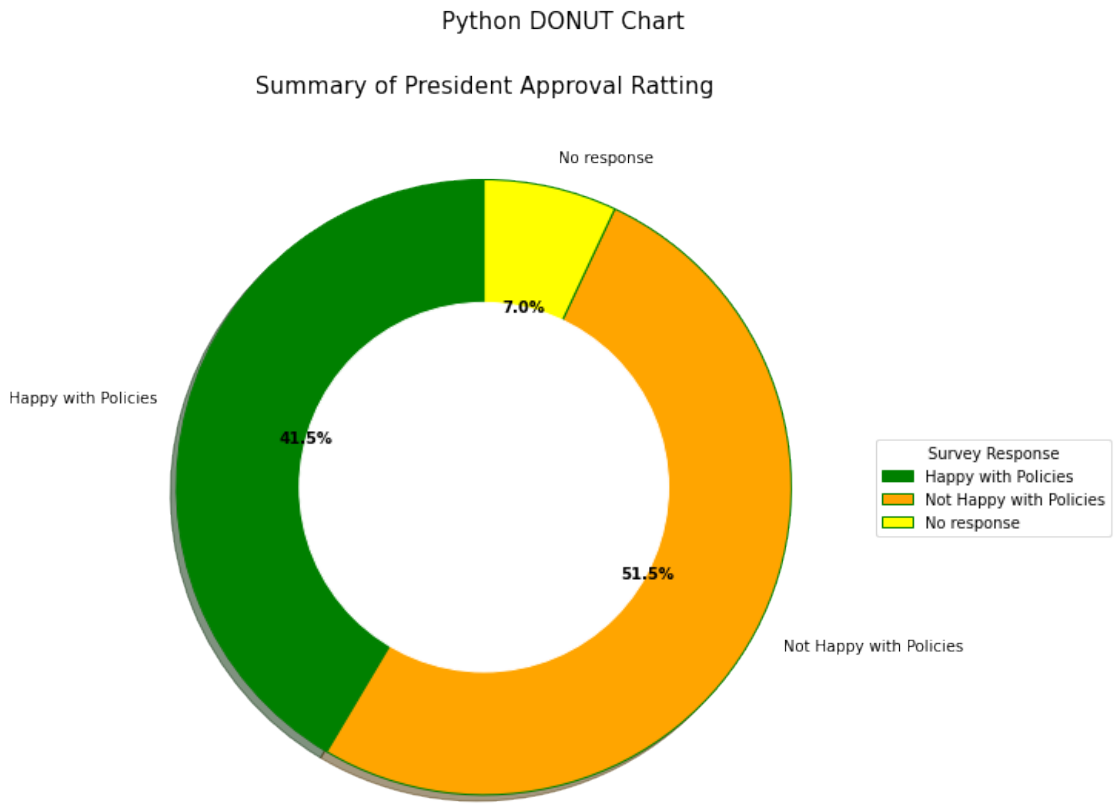
[11]:
```
# Creating plot
# Wedge properties
wp = { 'linewidth' : 1, 'edgecolor' : "green" }
fig, ax = plt.subplots(figsize =(10, 7))
wedges, texts, autotexts = ax.pie(data,
```

```
                                    autopct = '%1.0f%%',
                                    labels = pie_lable,
                                    shadow = True,
                                    colors = colors,
                                    startangle = 90,
                                    wedgeprops = wp,
                                    textprops = dict(color ="black"))

# Adding legend
ax.legend(wedges, pie_lable,
          title ="Survey Response",
          loc ="center left",
          bbox_to_anchor =(1, 0, 0.5, 1))

plt.setp(autotexts, size = 8, weight ="bold")
#ax.set_title("Summary of President Approval Ratting")
subtitle_string = "Summary of President Approval Ratting"
title_string = 'Python PIE Chart'
plt.suptitle(title_string, y=1.05, fontsize=15)
plt.title(subtitle_string, fontsize=15)

# show plot
plt.show()
```



[12]:
```
# Creating Donout plot
# Wedge properties
wp = { 'linewidth' : 1, 'edgecolor' : "green" }
fig, ax = plt.subplots(figsize =(10, 10))
wedges, texts, autotexts = ax.pie(data,
                                  autopct = '%1.1f%%',
                                  labels = pie_lable,
                                  shadow = True,
                                  colors = colors,
                                  startangle = 90,
                                  wedgeprops = wp,
                                  textprops = dict(color ="black"))

# Adding legend
ax.legend(wedges, pie_lable,
          title ="Survey Response",
          loc ="center left",
          bbox_to_anchor =(1, 0, 0.5, 1))
```

```
plt.setp(autotexts, size = 10, weight ="bold")
#ax.set_title("President Approval Ratting")
subtitle_string ="Summary of President Approval Ratting"
title_string = 'Python DONUT Chart'
plt.suptitle(title_string, y=.90, fontsize=15)
plt.title(subtitle_string, fontsize=15)

circle = plt.Circle( (0,0), 0.6, color='white')
p = plt.gcf()
p.gca().add_artist(circle)


# show plot
plt.show()
```



[13]:
```
#renaming the columns names
contest_winners_df1 = contest_winners_df.rename(columns={"Dogs eaten":␣
 ↪"Dogs_eaten"})
```

```
contest_winners_df1.head()
```

[13]:

	Year	Winner	Dogs_eaten	Country	New record
0	1980	Paul Siederman & Joe Baldini	9.1	United States	0
1	1981	Thomas DeBerry	11.0	United States	0
2	1982	Steven Abrams	11.0	United States	0
3	1983	Luis Llamas	19.5	Mexico	0
4	1984	Birgit Felden	9.5	Germany	0

[14]:
```
%load_ext rpy2.ipython
```

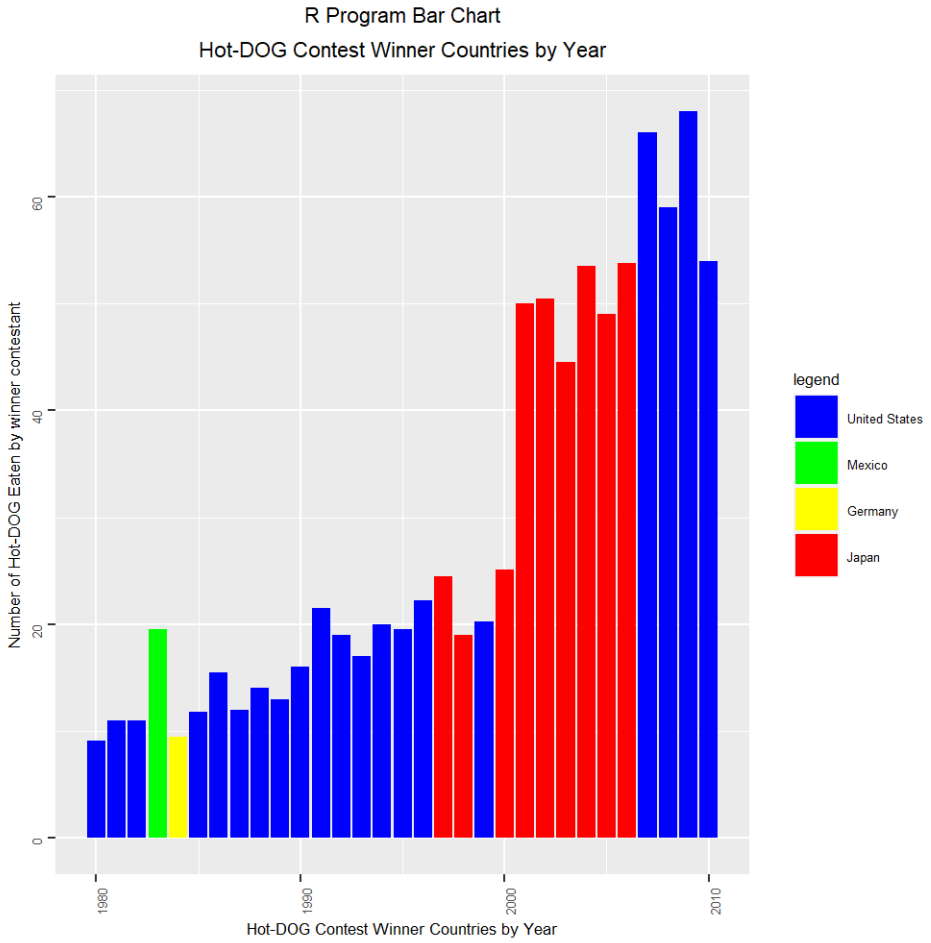
```
C:\Users\21313711\Anaconda3\lib\site-packages\rpy2\robjects\packages.py:366:
UserWarning: The symbol 'quartz' is not in this R namespace/package.
  warnings.warn(
```

0.2 R programming

[15]:
```
%%R -i contest_winners_df -w 5 -h 5 --units in -r 200
# import df from global environment
# make default figure size 5 by 5 inches with 200 dpi resolution
#install.packages("ggplot2", repos='http://cran.us.r-project.org', quiet=TRUE)
library(ggplot2)
```

```
R[write to console]: Learn more about the underlying theory at
https://ggplot2-book.org/
```

[16]:
```
%%R -i contest_winners_df1 -w 5 -h 5 --units in -r 200
ggplot(contest_winners_df, aes(x=Year, y=`Dogs eaten`, fill=Country)) +␣
 ↪geom_bar(stat = "identity") +
  labs(title = "R Program Bar Chart", subtitle = "Hot-DOG Contest Winner␣
 ↪Countries by Year", x = "Hot-DOG Contest Winner Countries by Year", y =␣
 ↪"Number of Hot-DOG Eaten by winner contestant") + theme(plot.title =␣
 ↪element_text(hjust = 0.5, size = 8), plot.subtitle = element_text(hjust = 0.
 ↪5, size = 8), text = element_text(size=6), axis.text.x=␣
 ↪element_text(angle=90, hjust=1), axis.text.y= element_text(angle=90,␣
 ↪hjust=1)) + scale_fill_manual("legend", values = c('United States'='blue',␣
 ↪'Mexico'='green', 'Germany'='yellow', 'Japan'='red'))
```



[17]:
```
# UNPVIOT DATADFAME
approval_rating_pviot = pd.melt(approval_rating_df, id_vars=['Issue'],␣
↪var_name='Rating', value_name='value')
```

[18]:
```
approval_rating_pviot1 = approval_rating_pviot
```

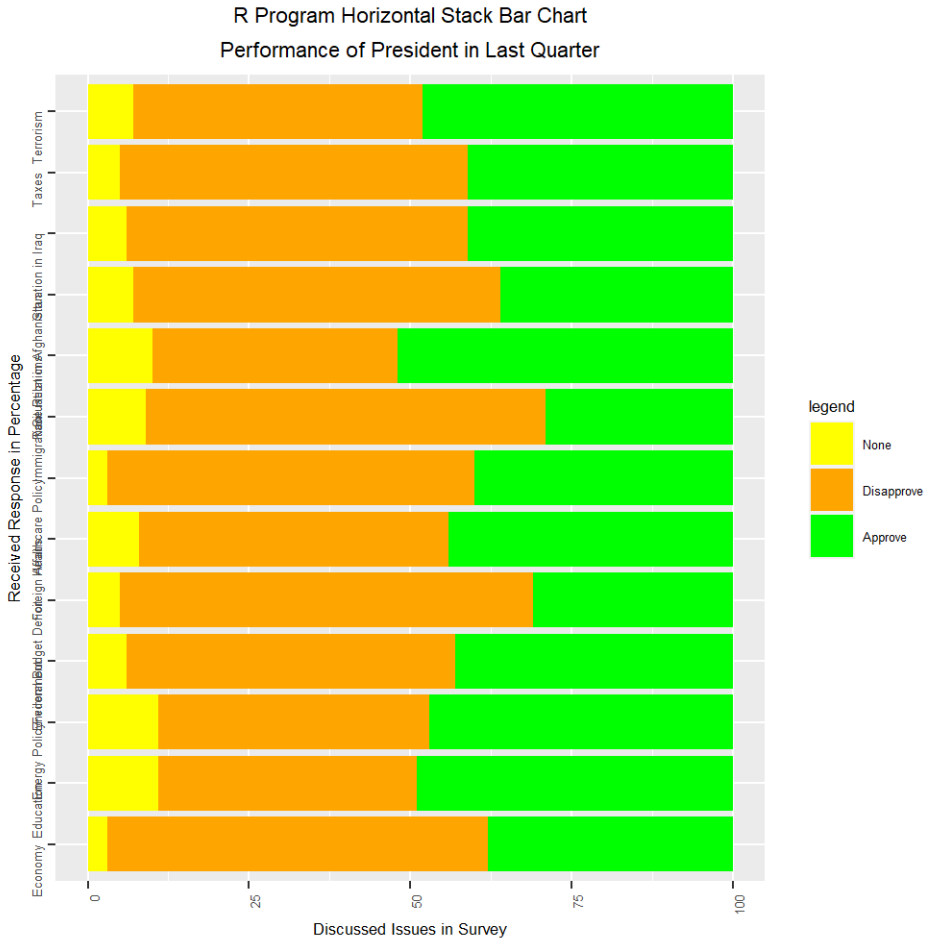
[19]:
```
approval_rating_pviot1.head()
```

[19]:

	Issue	Rating	value
0	Race Relations	Approve	52
1	Education	Approve	49
2	Terrorism	Approve	48
3	Energy Policy	Approve	47
4	Foreign Affairs	Approve	44

[20]:
```
%%R -i approval_rating_pviot1 -w 5 -h 5 --units in -r 200
```

```
ggplot(approval_rating_pviot1, aes(x = Issue, y = value, fill = Rating)) +␣
 ↪geom_bar(stat='identity') + coord_flip() +
labs(title = "R Program Horizontal Stack Bar Chart",
        subtitle = "Performance of President in Last Quarter", x = "Received␣
 ↪Response in Percentage", y = "Discussed Issues in Survey") + theme(
    plot.title = element_text(hjust = 0.5, size = 8), plot.subtitle =␣
 ↪element_text(hjust = 0.5, size = 8), text = element_text(size=6), axis.text.
 ↪x= element_text(angle=90, hjust=1), axis.text.y= element_text(angle=90,␣
 ↪hjust=1)) + scale_fill_manual("legend", values = c('None'='yellow',␣
 ↪'Disapprove'='orange', 'Approve'='green'))
```



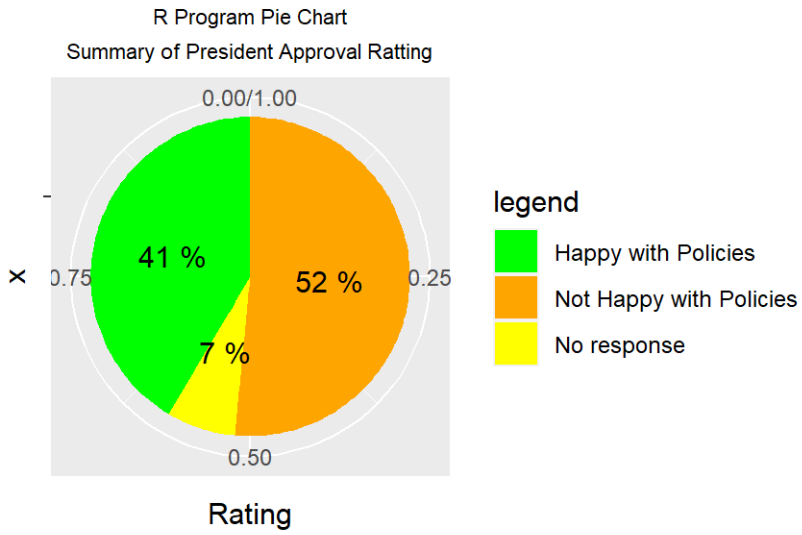
[21]:
```
president_rating = pd.DataFrame(zip(pie_lable, data), columns=['Survey',␣
 ↪'Rating'])
president_rating
```

[21]:

	Survey	Rating
0	Happy with Policies	0.414615

```
1  Not Happy with Policies  0.515385
2              No response  0.070000
```

[22]:
```
%%R -i president_rating -w 5 -h 5 --units in -r 200
ggplot(president_rating, aes(x='', y=Rating, fill= Survey)) + geom_bar(stat =␣
↪"identity") + labs(title = "R Program Pie Chart",
                                                                              ␣
↪                 subtitle = "Summary of President Approval Ratting") +␣
↪geom_col() + coord_polar("y") + theme(plot.title = element_text(hjust = 0.5,␣
↪size = 8), plot.subtitle = element_text(hjust = 0.5, size = 8), plot.
↪margin=unit(c(1,1,1,1),"cm")) + scale_fill_manual("legend", values =␣
↪c('Happy with Policies'='green', 'Not Happy with Policies'='orange', 'No␣
↪response'='yellow')) + geom_text(aes(label = paste(round(Rating*100),'%')),␣
↪position = position_stack(vjust = 0.5))
```



[23]:
```
%%R -i president_rating -w 5 -h 5 --units in -r 200
ggplot(data = president_rating,
```

```
      aes(x = 2, y = Rating, fill = Survey))+
 geom_bar(stat = "identity")+
 coord_polar("y") +
 geom_text(aes(label = paste(round(Rating*100),'%', sep = "")), col = "Black",␣
↪position = position_stack(vjust = 0.5)) +
 labs(title = "R Program Donut Chart", subtitle = "Summary of President␣
↪Approval Ratting") +
 theme(plot.title = element_text(hjust = 0.5, size = 8), plot.subtitle =␣
↪element_text(hjust = 0.5, size = 8)) +
 scale_fill_manual("legend", values = c('Happy with Policies'='green', 'Not␣
↪Happy with Policies'='orange', 'No response'='yellow'))+
 xlim(.2,2.5)
```