Exercise 1.2: Charts

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DSC640 - 12/10/2021

Plots Using **Python**

Load Data

In [1]:
```
# Load libraries
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import seaborn as sns
```

In [2]:
```
# Load data
dogDF = pd.read_excel('hotdog-contest-winners.xlsm')
thanksObama = pd.read_excel('obama-approval-ratings.xls', index_col='Issue')

# Add column combining year and winner
dogDF['Year_Winner'] = dogDF['Winner'] + " " + dogDF['Year'].astype(str)

# Define Seaborn color palatte
colors = sns.color_palette('colorblind')
```

Bar Chart

In [3]:

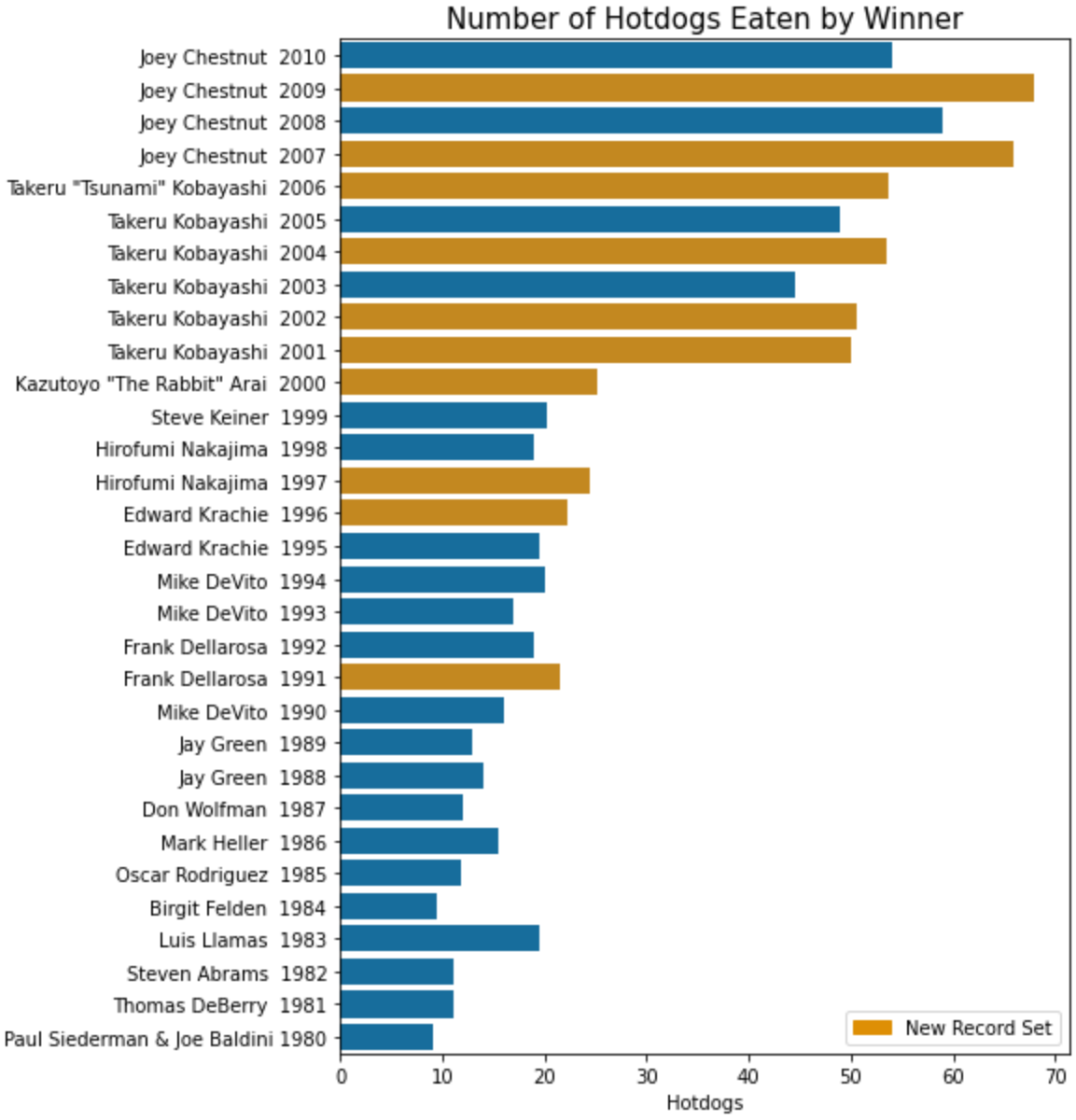
```
# Initialize the matplotlib figure
f, ax = plt.subplots(figsize=(7, 10))

# Set color palette
colors = sns.color_palette('colorblind')
recordColor = colors[1]

# Plot dogs by winner
sns.barplot(x='Dogs eaten', y='Year_Winner', data=dogDF,
            hue=dogDF['New record'], dodge=False, palette=colors,
            order=dogDF.sort_values('Year', ascending=False)['Year_Winner'])

# Set up legend and titles
newRecord = mpatches.Patch(color=recordColor, label='New Record Set')
ax.legend(handles=[newRecord], loc="lower right")
ax.set(ylabel="", xlabel="Hotdogs")
ax.set_title("Number of Hotdogs Eaten by Winner", fontdict={'fontsize': 15})

# Save plot
plt.savefig('Plots/Python-Bar.png', bbox_inches="tight")
```



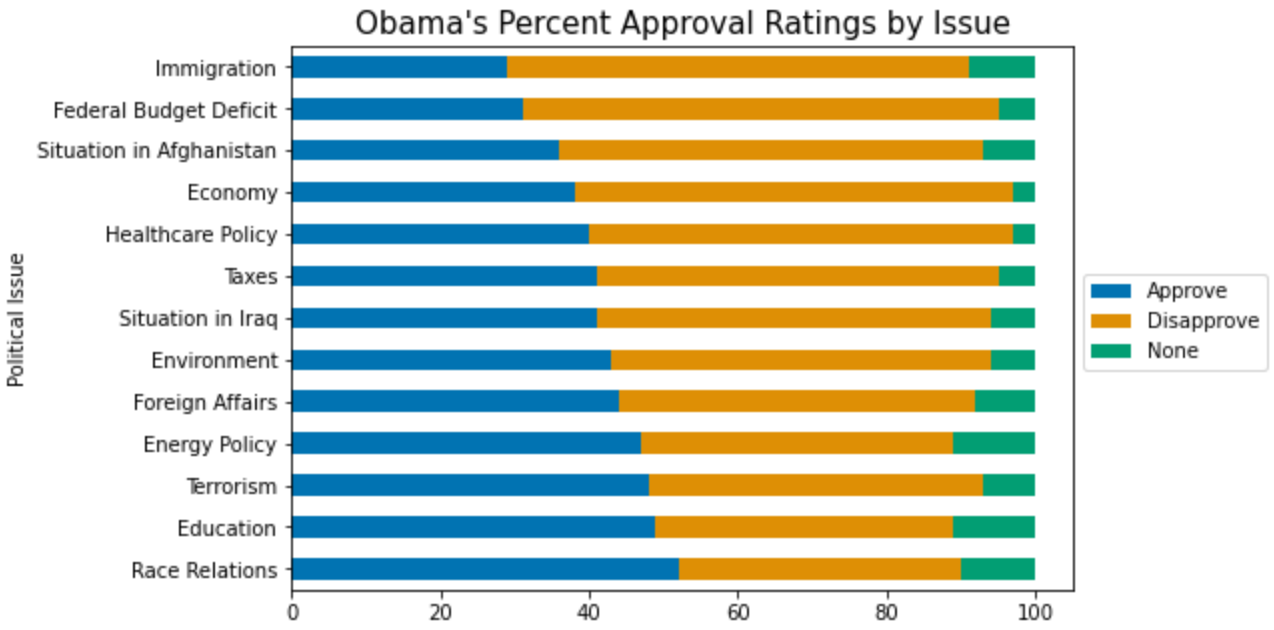
Stacked Bar Chart

In [4]:

```
# Set up stacked bar plot
thanksObama.plot(kind='barh', stacked=True, color=colors, figsize=(7, 5),
                      xlabel="Political Issue").legend(bbox_to_anchor=(1, .6))

# Set up chart title
plt.title("Obama's Percent Approval Ratings by Issue", fontsize=15)

# Save plot
plt.savefig('Plots/Python-StackedBar.png', bbox_inches="tight")
```



Pie Chart

In [5]:

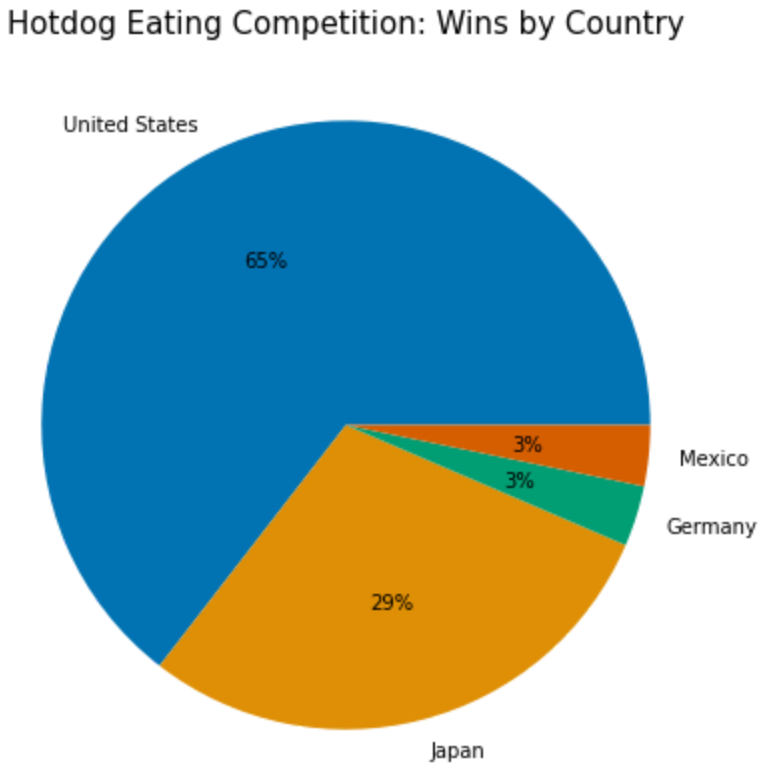
```
# Set up index of country labels, sorted by number of instances
countryLabels = dogDF.groupby('Country')['Year'].nunique().sort_values(ascending=False).index

# Initialize the matplotlib figure
f, ax = plt.subplots(figsize=(7, 7))

# Create pie chart
plt.pie(dogDF['Country'].value_counts(), autopct='%.0f%%',
        labels=countryLabels, colors=colors)

# Set up chart title
plt.title("Hotdog Eating Competition: Wins by Country", fontsize=15)

# Save plot
plt.savefig('Plots/Python-mmmPie.png', bbox_inches="tight")
```



Donut Chart

In [6]:

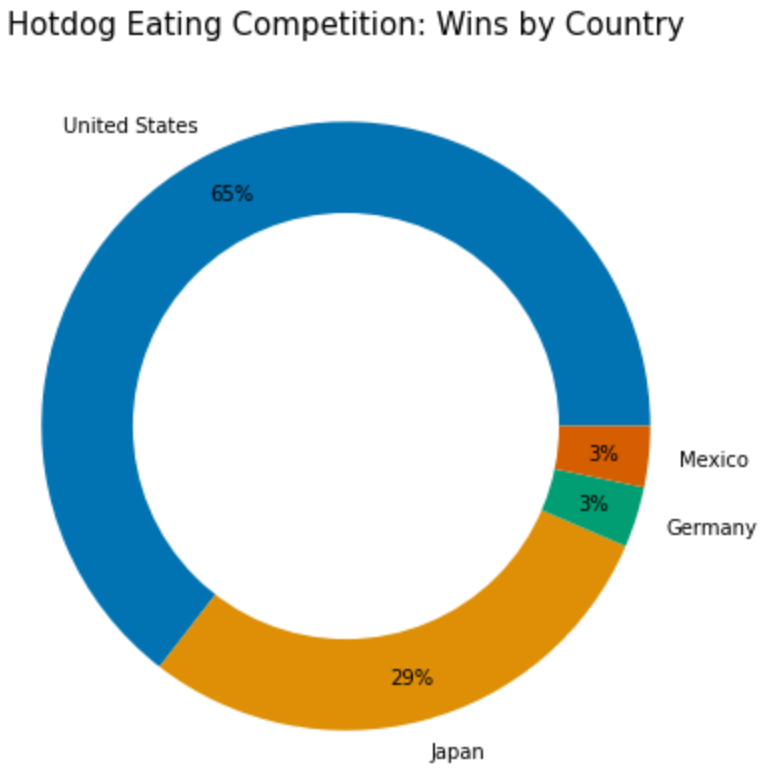
```
# Initialize the matplotlib figure
f, ax = plt.subplots(figsize=(7, 7))

# Create pie chart
plt.pie(dogDF['Country'].value_counts(), autopct='%.0f%%', labels=countryLabels, colors=colors, pc
plt.show

# Draw circle
centre_circle = plt.Circle((0, 0), 0.70, fc='white')
fig = plt.gcf()
# Adding Circle in Pie chart
fig.gca().add_artist(centre_circle)

# Set up chart title
plt.title("Hotdog Eating Competition: Wins by Country", fontsize=15)

# Save plot
plt.savefig('Plots/Python-mmmDonut.png', bbox_inches="tight")
```



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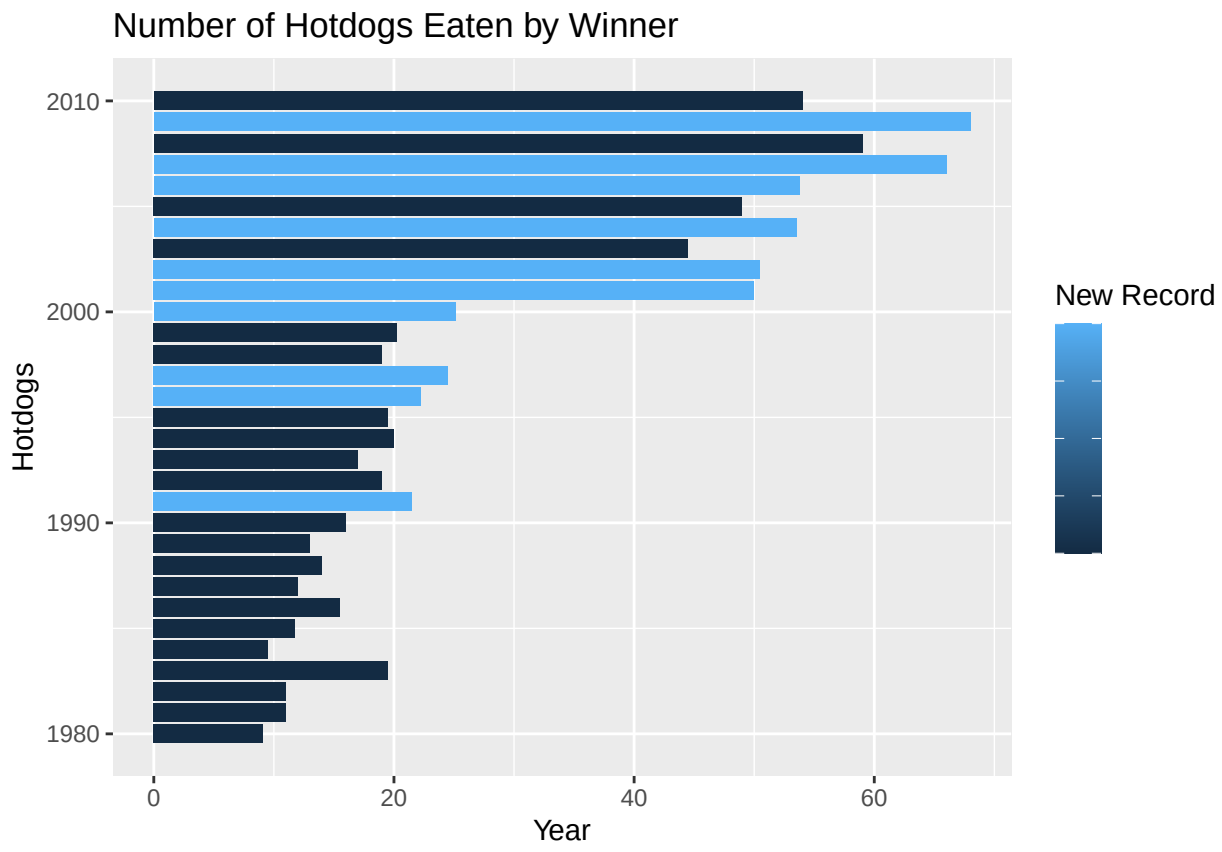
Plots Using R

Load Data

```
# Load DataFrames
dogDF <- read_excel("hotdog-contest-winners.xlsm")
thanksObama <- read_excel("obama-approval-ratings.xls")

# Add column combining year and winner
dogDF$YearWinner <- paste(dogDF$Winner, dogDF$Year)
```

Bar Chart

```
# Plot bar chart
bar <- ggplot(data=dogDF, aes(x=Year, y=`Dogs eaten`, fill=`New record`))
bar + geom_bar(stat = "identity") + coord_flip() +
  theme(legend.text = element_blank()) +
  ggtitle("Number of Hotdogs Eaten by Winner") +
  labs(y="Year", x="Hotdogs") +
  labs(fill="New Record")
```

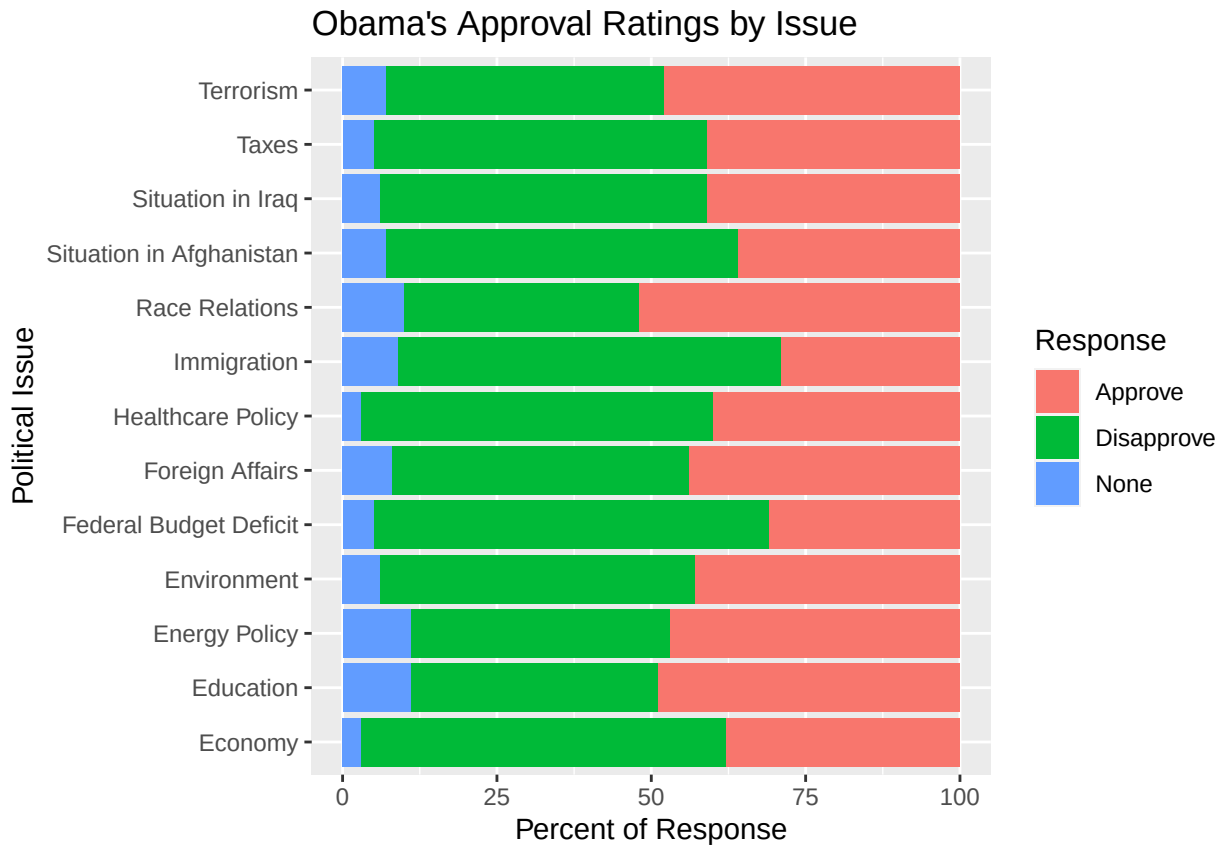


Stacked Bar Chart

```
# Melt data set into proper format for plotting
meltObama <- melt(thanksObama)
```

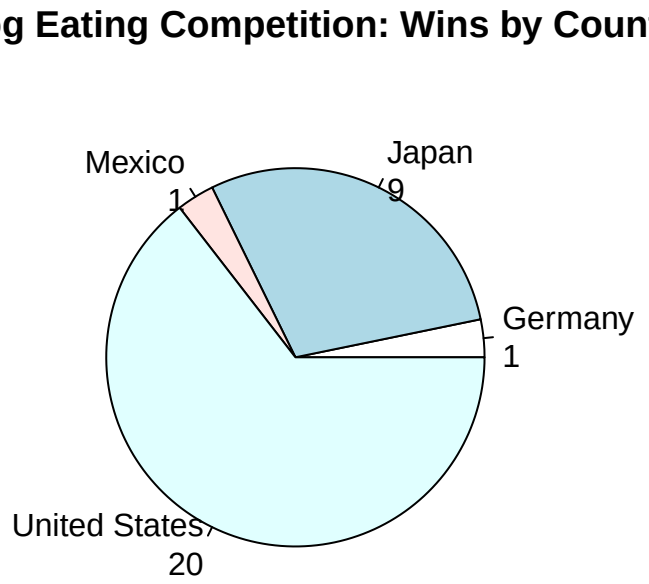
```
## Using Issue as id variables
```

```
# Plot stacked bar chart
ggplot(meltObama, aes(x=Issue, y=value, fill=variable)) +
  geom_bar(stat="identity") + coord_flip() +
  ggtitle("Obama's Approval Ratings by Issue") +
  labs(y="Percent of Response", x="Political Issue") +
  labs(fill="Response")
```



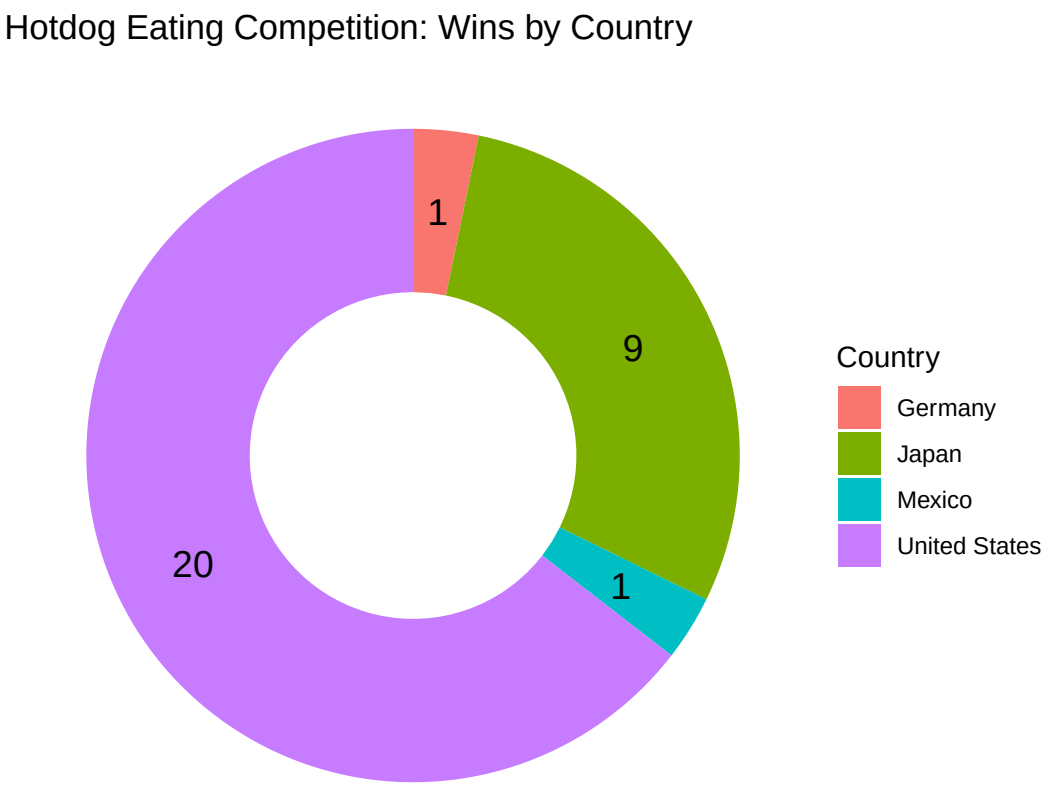
Pie Chart

```
# Convert data to table
mytable <- table(dogDF$Country, dnn = list("Country"))

# Set up chart labels
lbls <- paste(names(mytable), "\n", mytable, sep="")

# Plot pie chart
pie(mytable, labels = lbls,
    main = "Hotdog Eating Competition: Wins by Country")
```

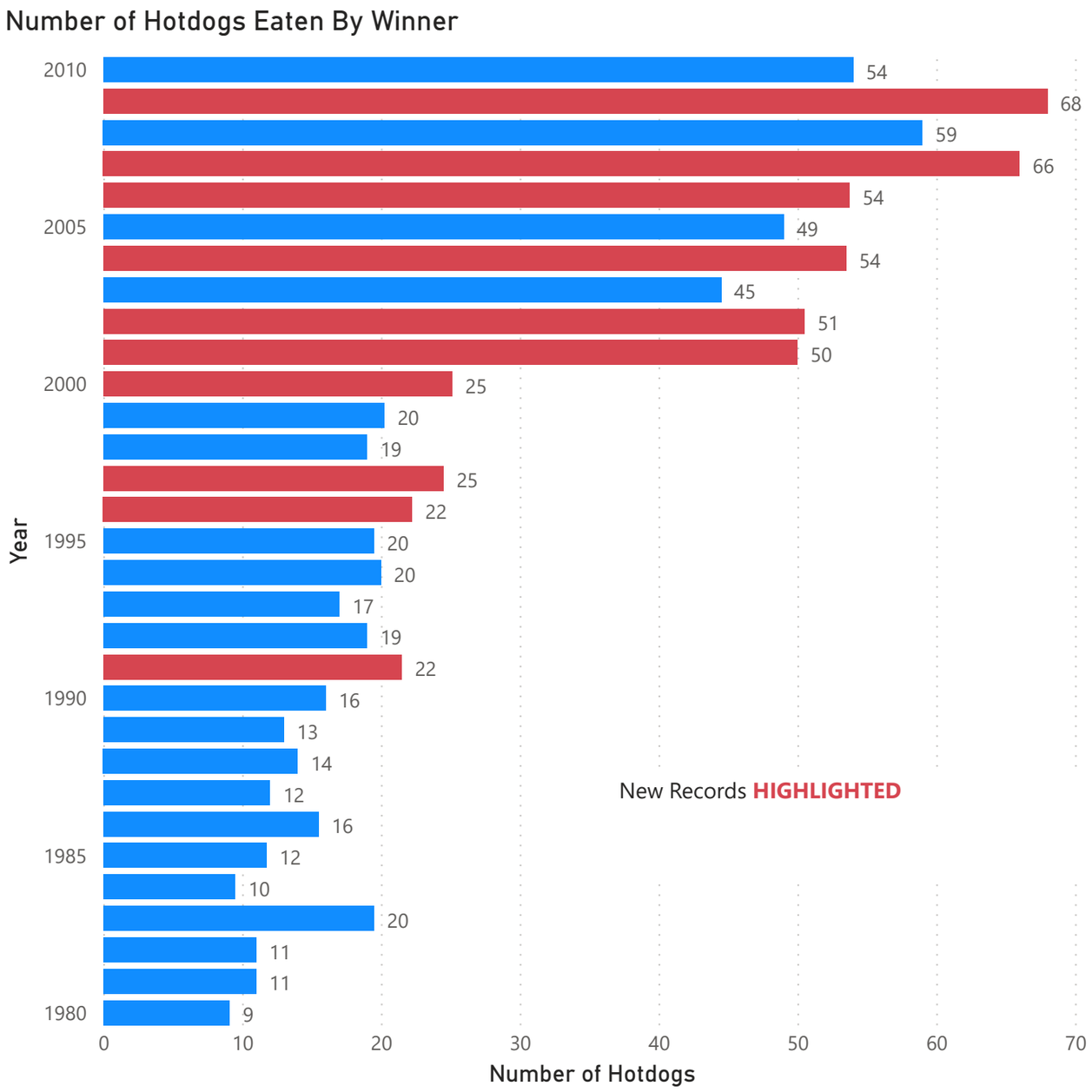


Donut Chart

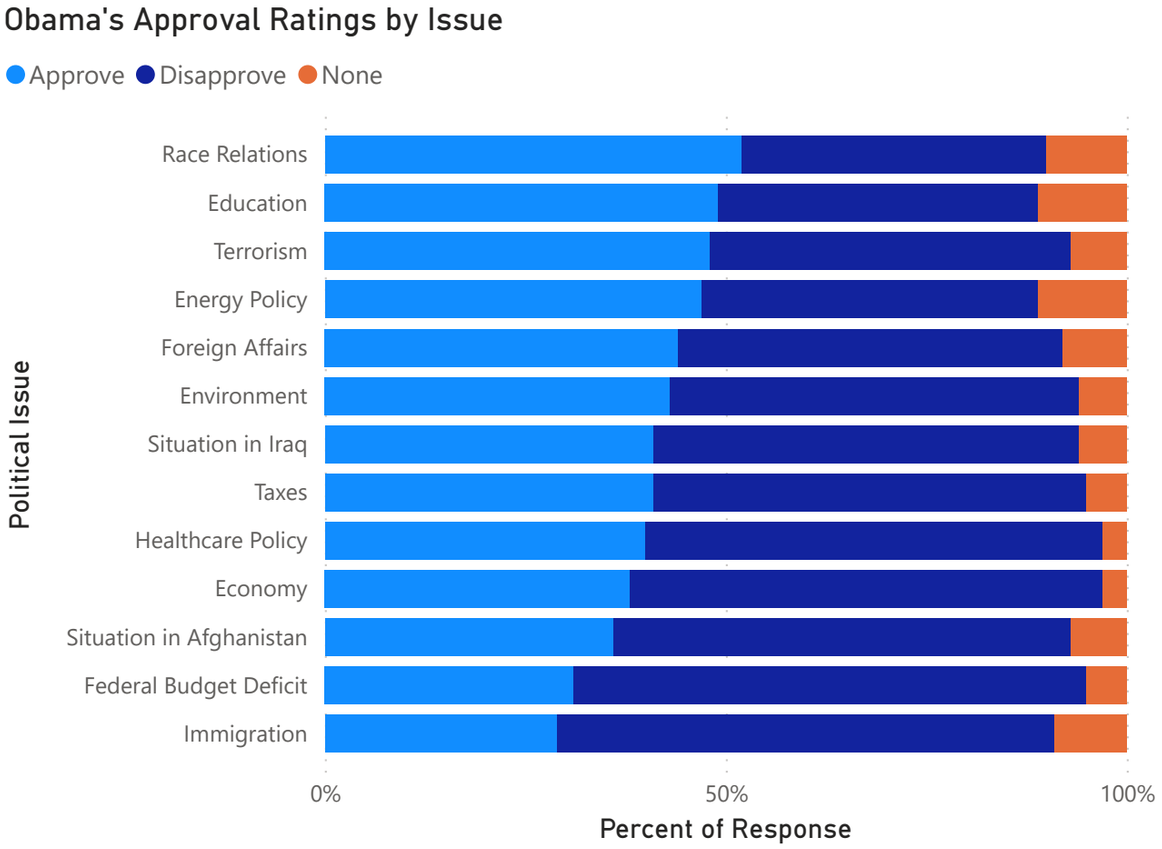
```
# Compute percentages
winsDF <- as.data.frame(mytable, responseName = "Wins")

winsDF$fraction <- winsDF$Wins / sum(winsDF$Wins)

# Compute the cumulative percentages
winsDF$ymax <- cumsum(winsDF$fraction)

# Compute the bottom of each rectangle
winsDF$ymin <- c(0, head(winsDF$ymax, n=-1))

# Compute label position
winsDF$labelPosition <- (winsDF$ymax + winsDF$ymin) / 2

# Plot the donut chart
ggplot(winsDF, aes(ymax=ymax, ymin=ymin, xmax=4, xmin=3, fill=Country)) +
  geom_rect() +
  geom_text(x=3.5, aes(y=labelPosition, label=Wins), size=5) +
  coord_polar(theta = 'y') +
  xlim(c(2, 4)) +
  theme_void() +
  ggtitle("Hotdog Eating Competition: Wins by Country")
```



PowerBI - Bar Chart

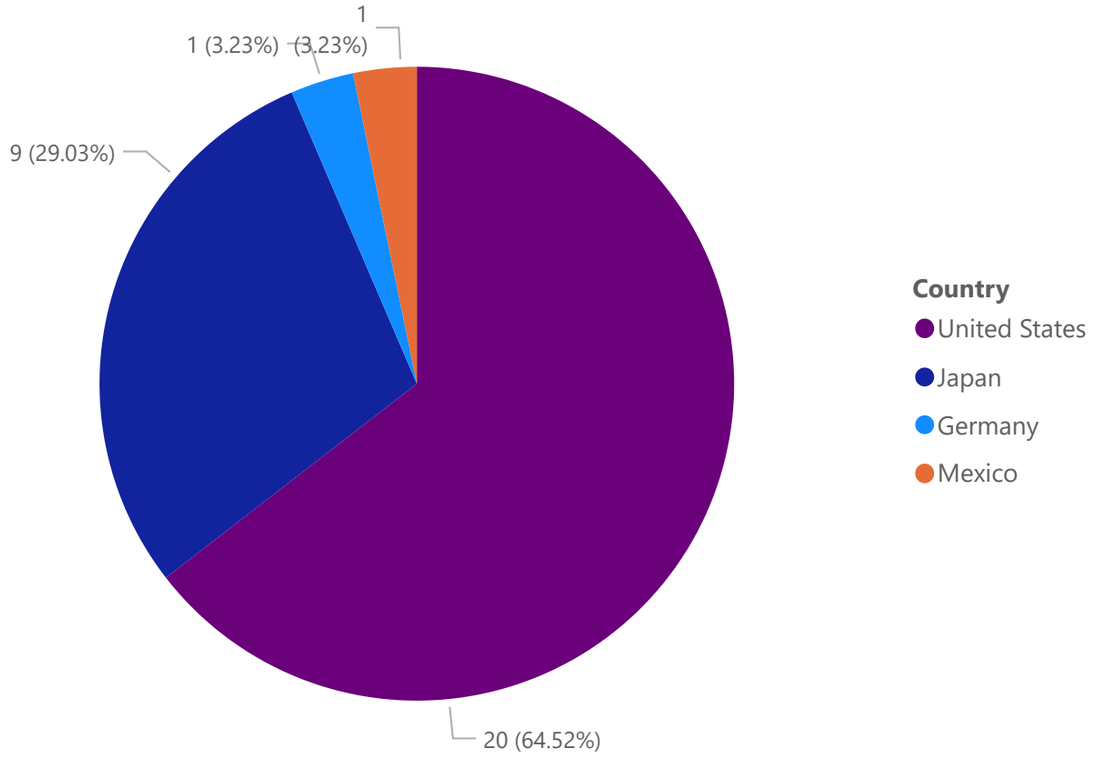


PowerBI - Stacked Bar Chart



PowerBI - Pie Chart

Hotdog Eating Contest Wins by Country: 1980 - 2010



PowerBI - Donut Chart

Hotdog Eating Contest Wins by Country: 1980 - 2010