

1. Visualizing Amounts and Distributions

```
setwd("D:/DSA0613")
getwd()
tips <- read.csv("tips.csv")
head(tips)

#import libraries
library(ggplot2)
library(dplyr)
library(ggridges)

#Bar plot
ggplot(tips, aes(x = day, y = tip, fill = day)) +
  stat_summary(fun = mean, geom = "bar") +
  labs(title = "Average Tip by Day",
       x = "Day",
       y = "Average Tip") +
  theme_minimal()

#Grouped Bar Plot
ggplot(tips, aes(x = day, y = tip, fill = gender)) +
  stat_summary(fun = mean, geom = "bar", position = "dodge")

#Stacked bar plot
ggplot(tips, aes(x = day, y = tip, fill = gender)) +
  stat_summary(fun = sum, geom = "bar")

#Dot plot
ggplot(tips, aes(x = tip, y = day)) +
  geom_point()
```

#Heatmap

```
ggplot(tips, aes(x = day, y = time, fill = tip)) +  
  stat_summary(fun = mean, geom = "tile")
```

#Violin Plot

```
ggplot(tips, aes(x = day, y = tip)) +  
  geom_violin(fill = "lightgreen")
```

#Ridgeline Plot

```
ggplot(tips, aes(x = tip, y = day)) +  
  geom_density_ridges()
```

#Histogram

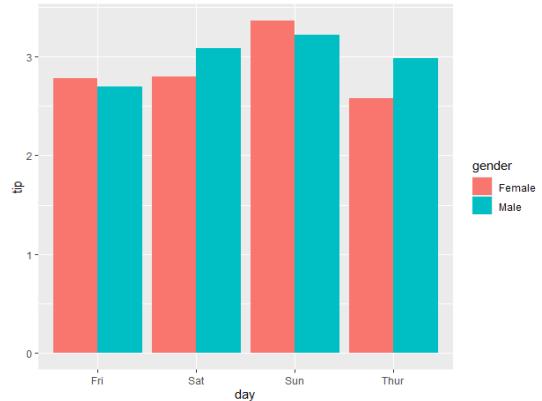
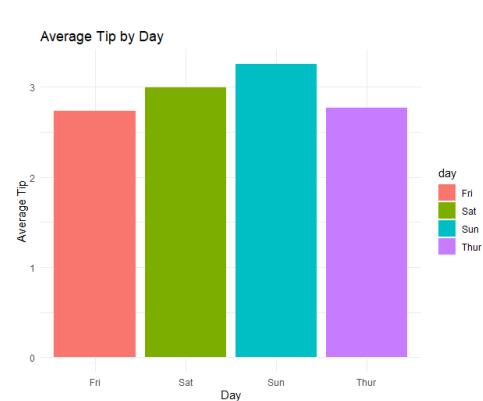
```
ggplot(tips, aes(x = tip)) +  
  geom_histogram(binwidth = 1, fill = "red", color = "black")
```

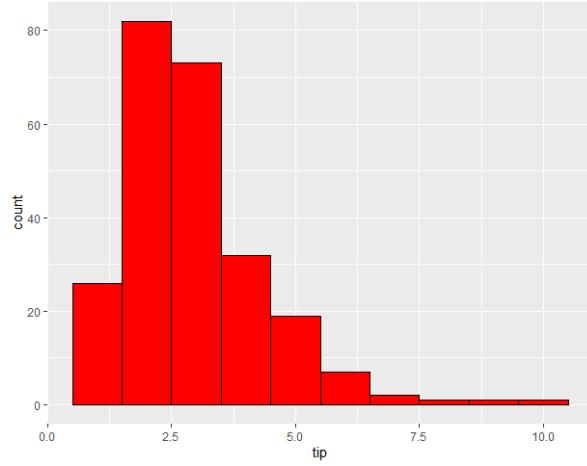
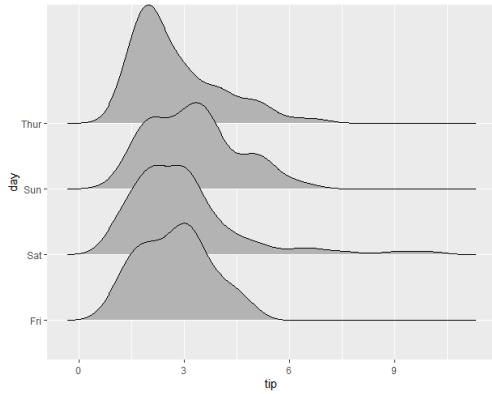
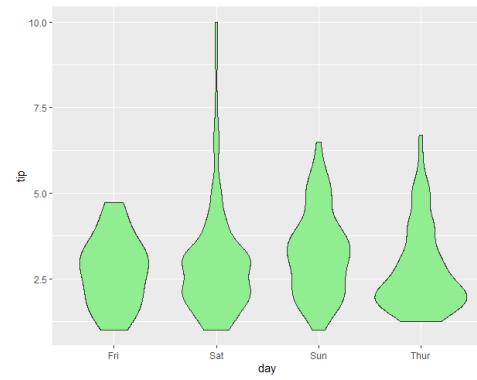
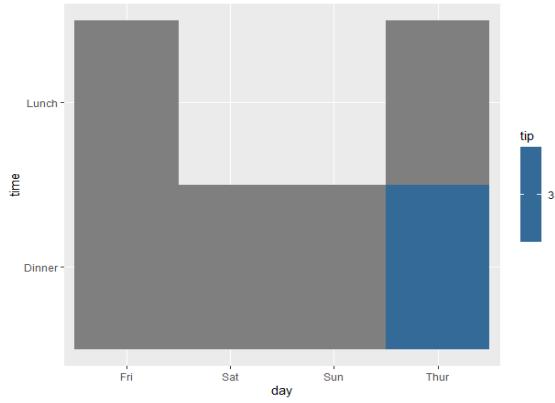
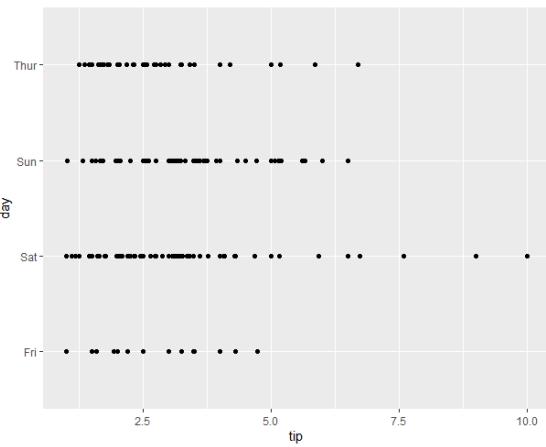
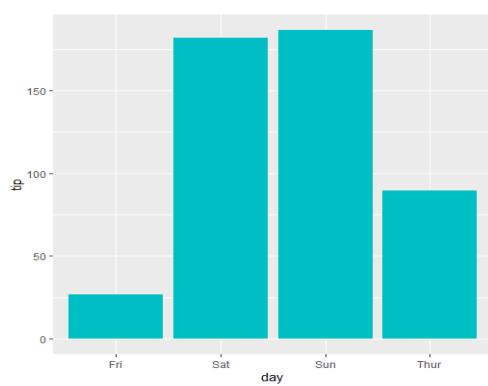
#Density Plot

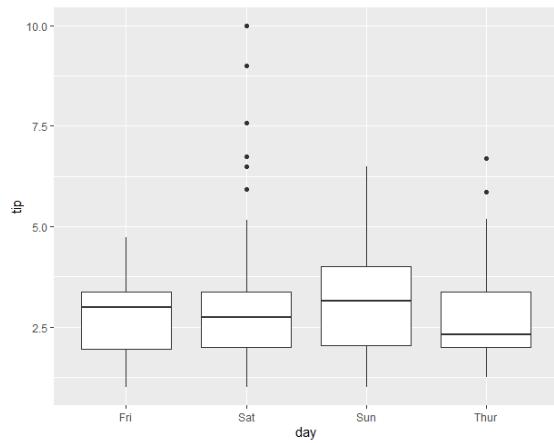
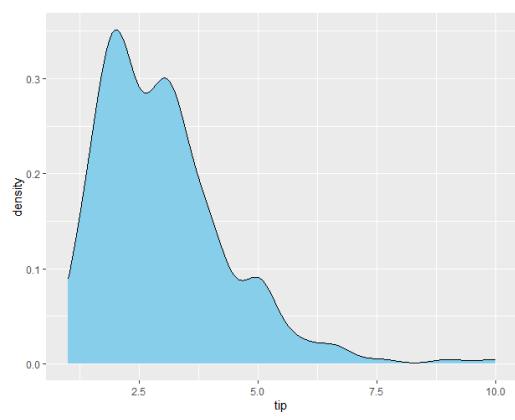
```
ggplot(tips, aes(x = tip)) +  
  geom_density(fill = "skyblue")
```

#Boxplot

```
ggplot(tips, aes(x = day, y = tip)) +  
  geom_boxplot()
```







2. Visualizing Proportions

```
setwd("D:/DSA0613")
getwd()
tips <- read.csv("tips.csv")
head(tips)

#import libraries
library(ggplot2)
library(dplyr)
library(treemapify)
library(ggalluvial)
library(networkD3)

#pie chart
pie_data <- tips %>%
  group_by(day) %>%
  summarise(Value = sum(tip))

ggplot(pie_data, aes(x = "", y = Value, fill = day)) +
  geom_bar(stat = "identity", width = 1) +
  coord_polar("y") +
  labs(fill = "Day")

#tree map
ggplot(pie_data,
  aes(area = Value, fill = day, label = day)) +
  geom_treemap() +
  geom_treemap_text(colour = "white", place = "centre")
```

```

#sunburst chart

# Load libraries

library(dplyr)

library(sunburstR)

# Create hierarchical data (required for sunburst)

sunburst_data <- tips %>%
  group_by(day, gender) %>%
  summarise(Value = sum(tip), .groups = "drop") %>%
  mutate(path = paste(day, gender, sep = "-"))

# Draw sunburst chart

sunburst(sunburst_data[, c("path", "Value")])

#parallel sets

parallel_data <- tips %>%
  count(day, time)

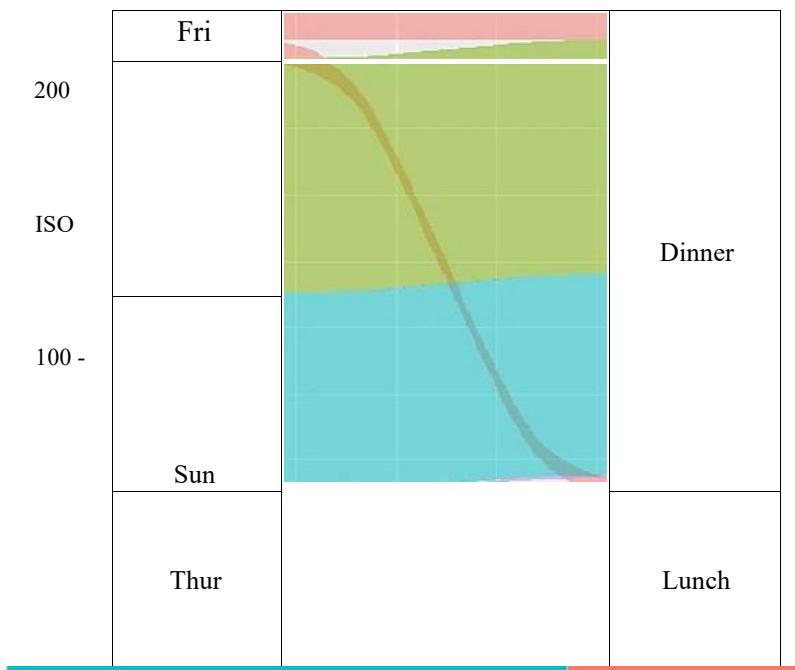
ggplot(parallel_data,
       aes(axis1 = day, axis2 = time, y = n)) +
  geom_alluvium(aes(fill = day)) +
  geom_stratum() +
  geom_text(stat = "stratum", aes(label = after_stat(stratum)))

#Sankey diagram

links <- tips %>%
  count(day, time)

```

```
nodes <- data.frame(  
  name = unique(c(links$day, links$time))  
)  
  
links$source <- match(links$day, nodes$name) - 1  
links$target <- match(links$time, nodes$name) - 1  
  
sankeyNetwork(  
  Links = links,  
  Nodes = nodes,  
  Source = "source",  
  Target = "target",  
  Value = "n",  
  NodeID = "name"  
)
```



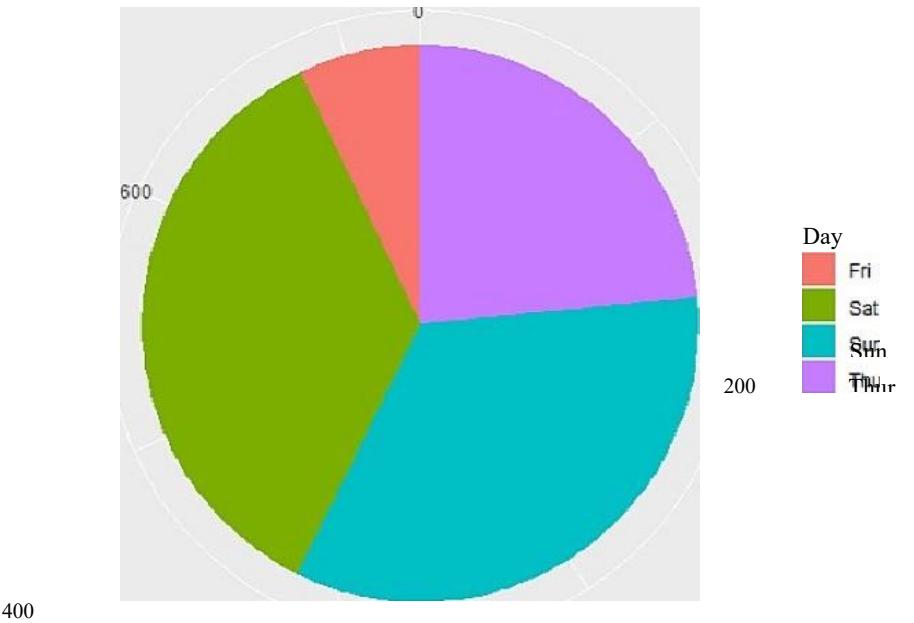
day

- Fri
- Sat
- Sun
- Thur



day

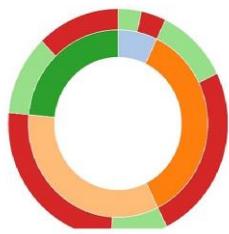
- Fri
- Sat
- Sun
- Thur



Day

- Fri
- Sat
- Sun
- Thur

Legend



3. Visualizing Relationships and Associations

```
setwd("D:/DSA0613")
getwd()
tips <- read.csv("tips.csv")
head(tips)

library(ggplot2)
library(hexbin)
library(corrplot)
library(igraph)
library(ggfortify)
library(dplyr)

#Scatterplot
ggplot(tips, aes(x = total_bill, y = tip)) +
  geom_point()

#Bubble Chart
ggplot(tips, aes(x = total_bill, y = tip, size = size)) +
  geom_point(alpha = 0.6)

# Hexbin Plot
ggplot(tips, aes(x = total_bill, y = tip)) +
  geom_hex()

#Correlogram
numeric_data <- tips %>%
```

```
select(total_bill, tip, size)

corrplot(cor(numeric_data))

#Network Graph
edges <- tips %>%
  count(day, time)

graph <- graph_from_data_frame(edges, directed = FALSE)

plot(graph)

#PCA
pca_data <- tips %>%
  select(total_bill, tip, size)

autoplot(prcomp(pca_data, scale. = TRUE))
```

