Discrimination in the California Department of Defense

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Abstract

The main objective of this paper to determine if the California Department of Defense is experiencing discrimination between Hispanic's and White non-Hispanics. However, another objective of this paper is to see if there is any discrimination based on a specific gender. To determine this, I use the California_DDS_Expenditures.csv data set. I subset the data and make plots to determine differences in expenditures. The results are that based on the plots there does not seem to be any discrimination in gender or between Hispanic's and White non-Hispanic's.

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1 Introduction

The California Department of Defense is being accused of racial discrimination against Hispanics. This project's goal is to determine if that statement is true or not using data given to us of the employees' expenditures and determine if there is possible gender discrimination.

Discrimination is seen everywhere, not just here in America. America is the land of the free and strives for equality among everyone. Equality cannot exist when there is discrimination as discrimination affects someone based on a particular trait which is not controllable. The results of this project, depending on the outcome, could have detrimental effects for the California Department of Defense as it harms both legal and ethical values that the company may hold.

For determining if there is discrimination in the California Department of Development Service (DDS), I will use box plots and barchars employees' expenditures.

# 2 Statement of Problem and Statistical Analysis Approach

2.1: Testing discrimination against Hispanic's using raw data

To begin to solve this issue I imported the California_DDS_Expenditures.csv data set into r and made a box plot that contains all the Expenditures of all the races that work in the California Department of Defense.
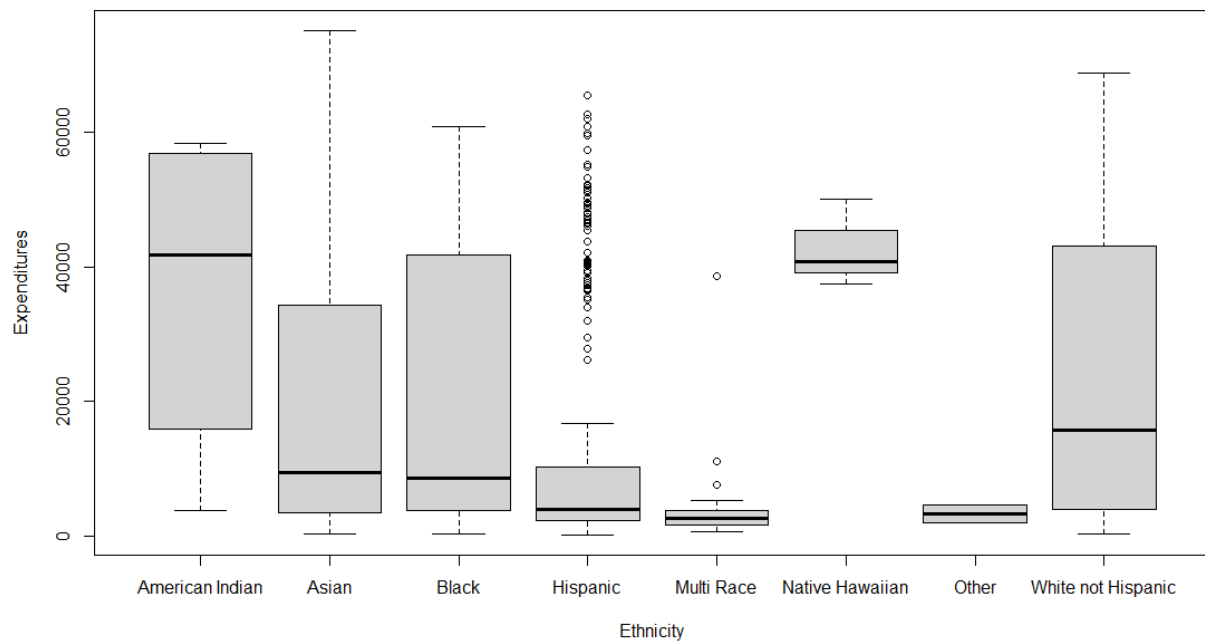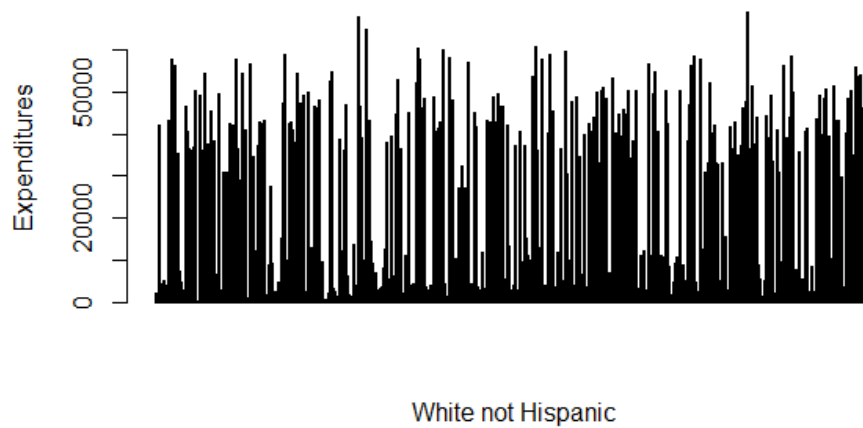
(Figure 1)

To test this further I created bar charts of just Hispanic Expenditure's along with just White not Hispanic Expenditure's.

(Figure 2)

White not Hispanic
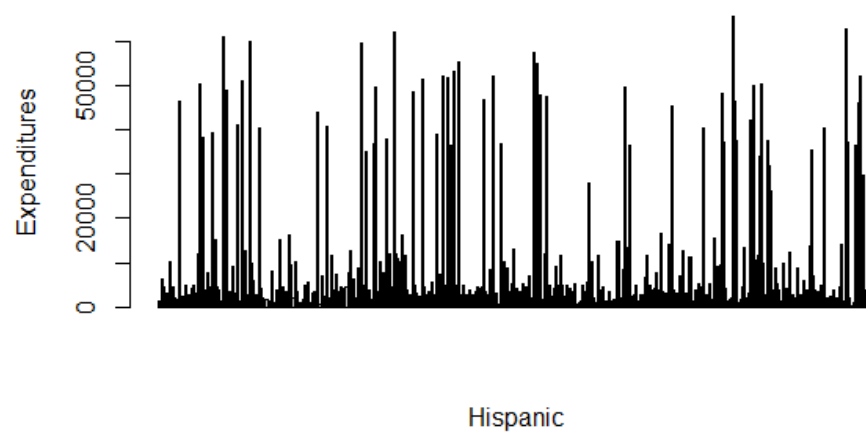
(Figure 3)

2.2: Testing discrimination against Hispanic's using age groups

I was able to narrow this down further by creating box plots of each age group by ethnicity (Figures 4-9).

2.3: Testing discrimination against Gender using age groups

Discrimination on gender is a big issue as well, therefore, in order to prevent a future lawsuit, I subsetted the data by gender and age group and made bar charts comparing their expenditures by age group (Figure 10-21).

2.4: Testing discrimination against Gender using Ethnicity

To further test for discrimination, I subsetted the data again by gender and ethnicity and made bar charts comparing their expenditures (Figure 22-37).

3 Results

3.1 Discrimination Against Hispanics

From the raw data (figure 1), it seems as though there might be discrimination against Hispanics, but upon further study with figures 4-9, the expenditures are close to the same. Therefore, I do not believe there to be discrimination against Hispanic's.

3.2 Discrimination Against a Specific Gender

When looking at figures 10-21 we can see that the expenditures remain around the same depending on which age group someone is in. Next, when looking at ethnicity we start seeing some differences. In figures 22 and 23 we see that Amercian Indian Females make more than the singular male, and in figures 32 and 33 we see that Native Hawaiin males make much more than Native Hawaiin females. However, I do not believe the results from figures 22-37 prove there is gender discrimination as it seems as though people get paid depending on their age group, no matter their gender or ethnicity.

4 Summary and Conclusions

The California Department of Development Service (DDS) wanted to know if there was discrimination between Hispanic's and White non-Hispanic's. In order to solve this issue, I used the data from the California_DDS_Expenditures.csv data set. I plotted the data and subsetted the data to make more accurate plots. The results I gathered were that there is no discrimination based on the data given. I used R Studio to produce these results and more study needs to be done as most of the analysis was a rough estimate by looking at the plots.
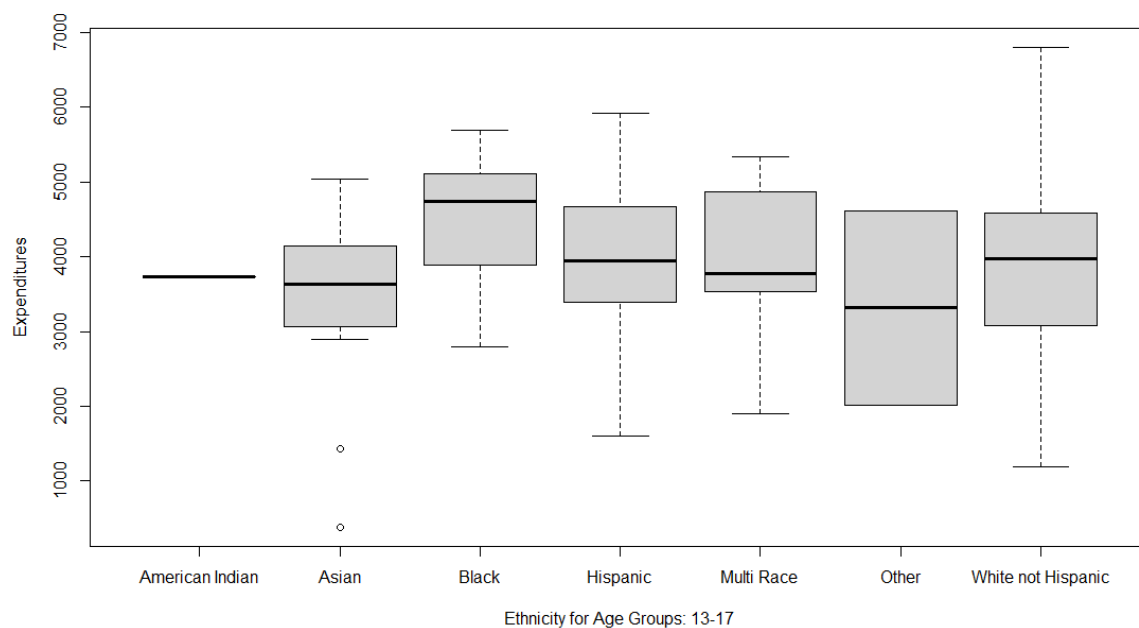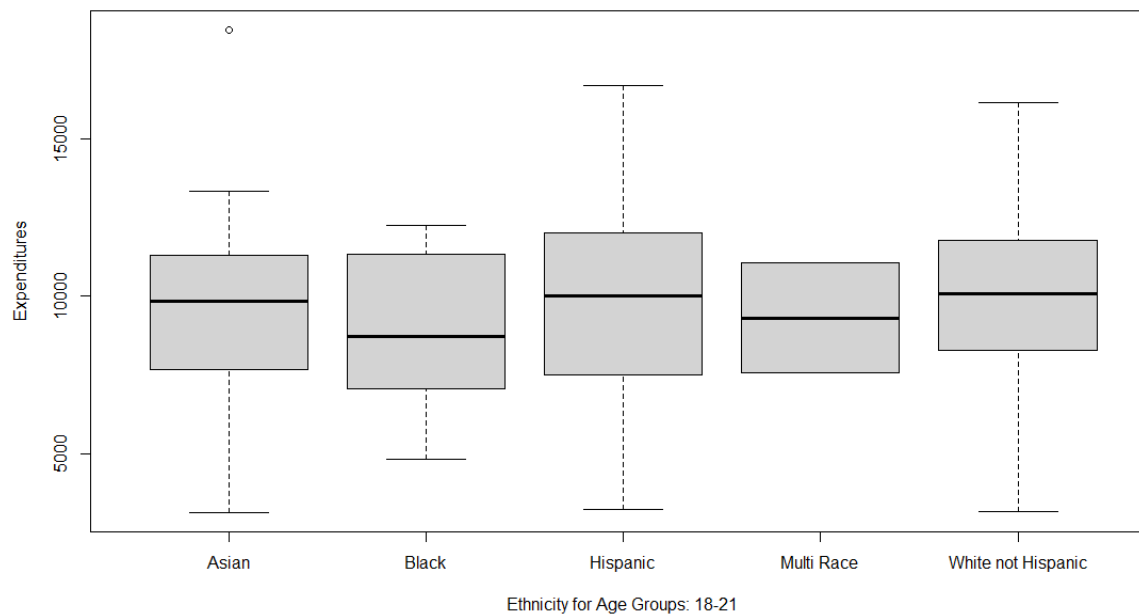
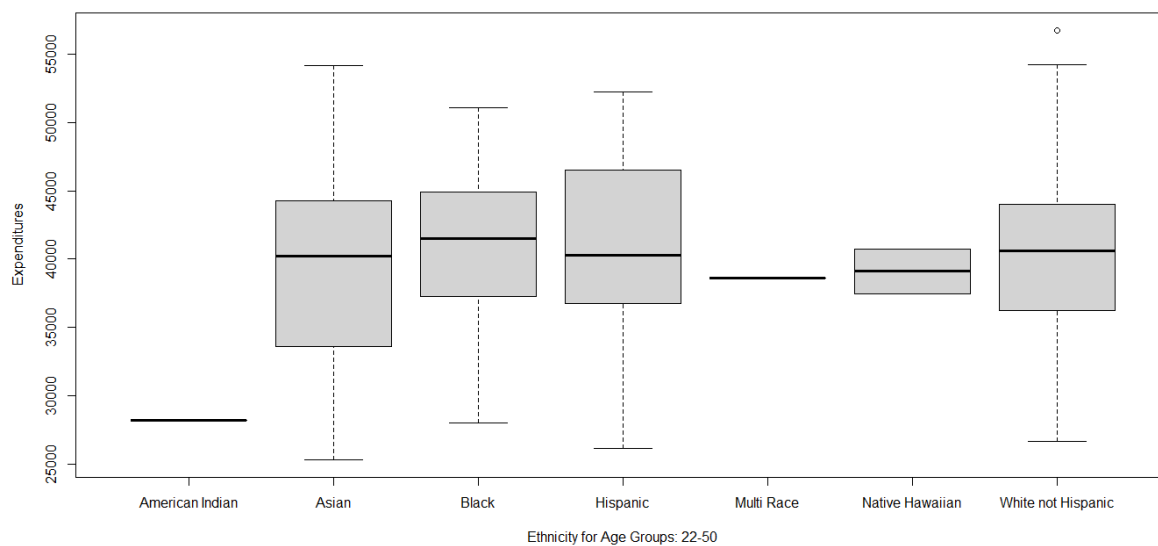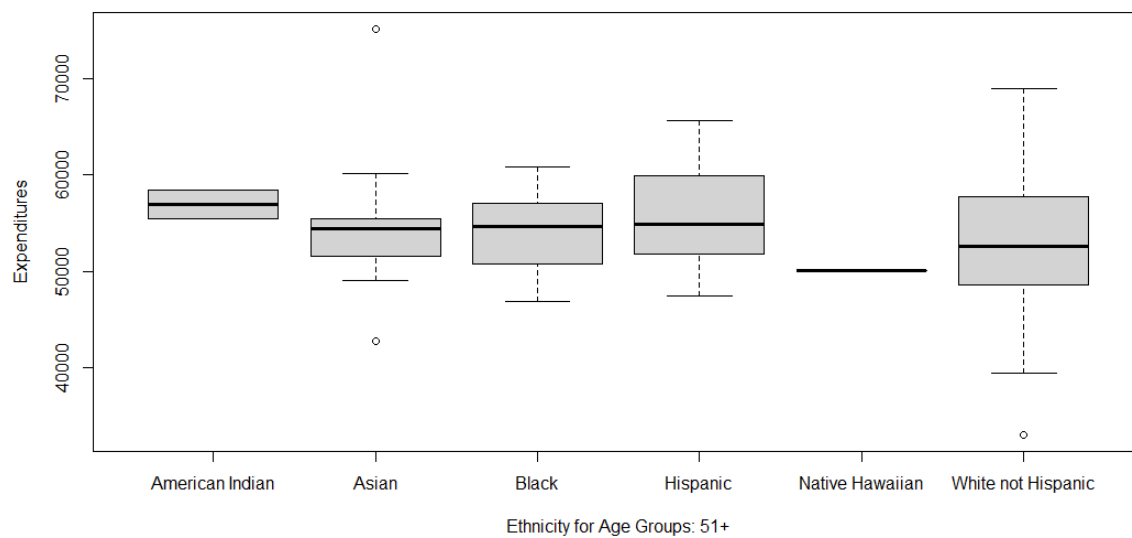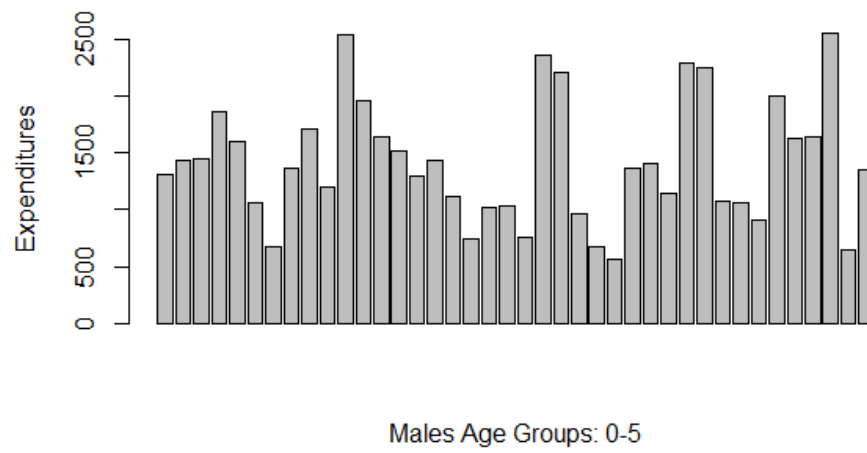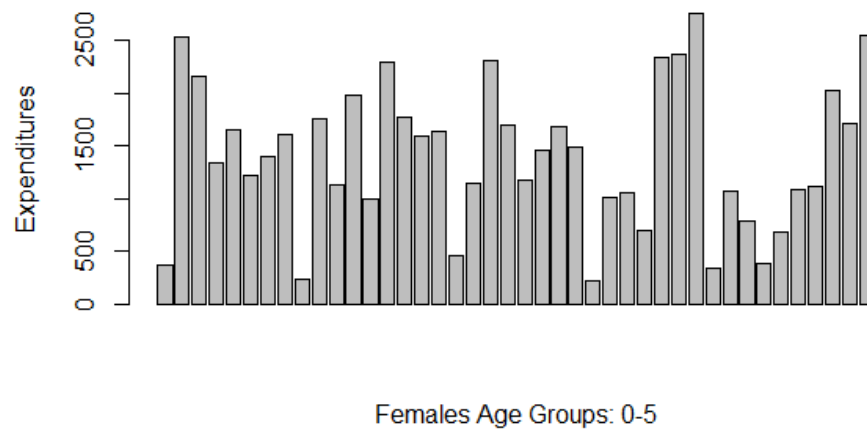# Appendices
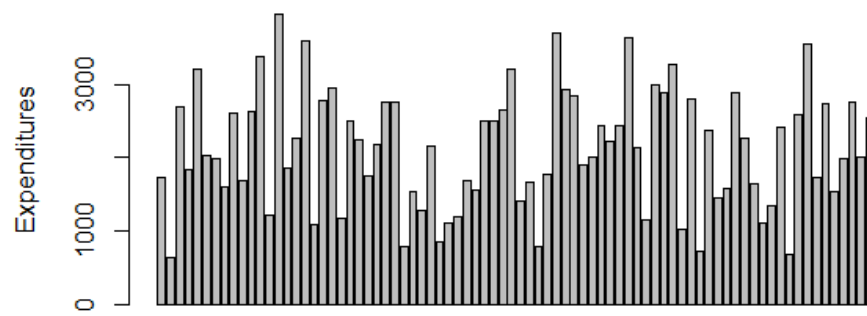
Figures
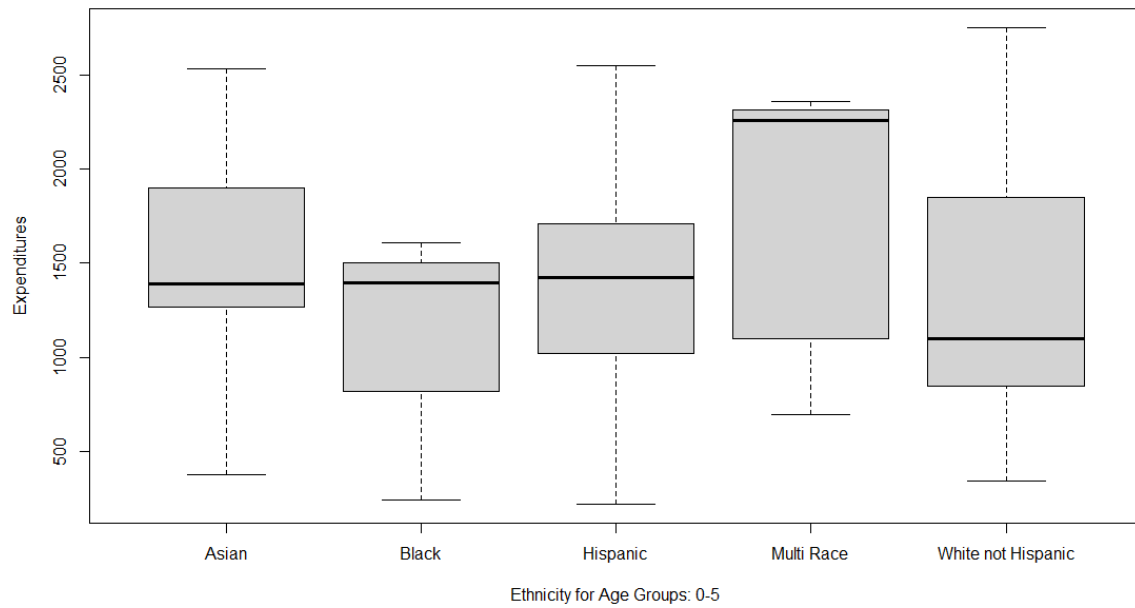
(Figure 4)
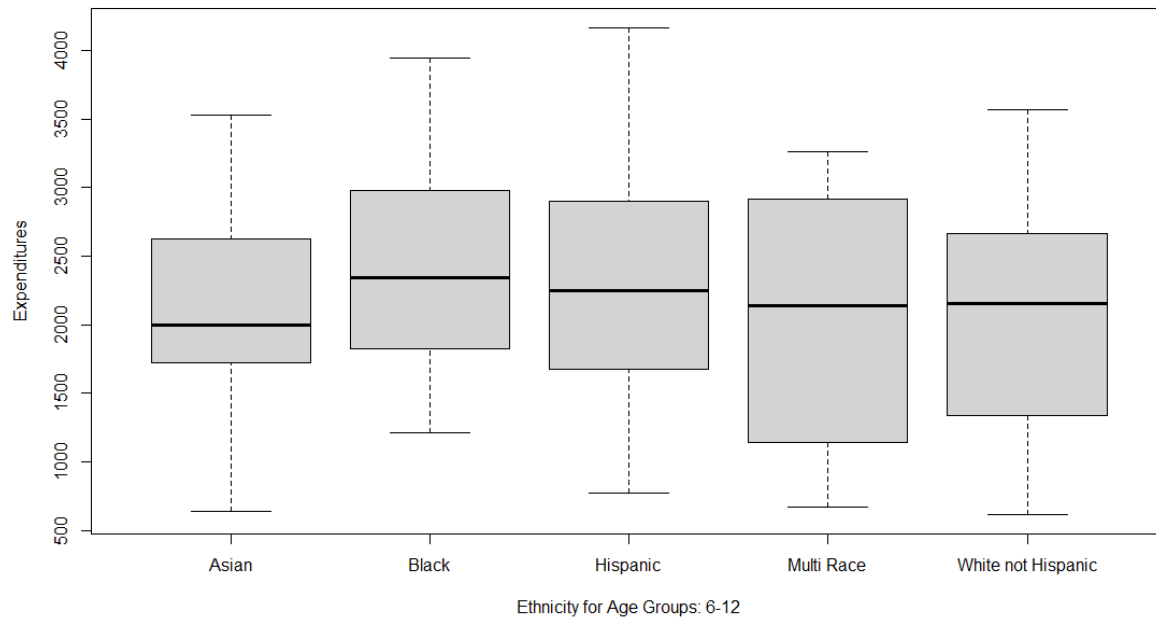
(Figure 5)

(Figure 6)

(Figure 7)

8

(Figure 8)

(Figure 9)

Males Age Groups: 0-5
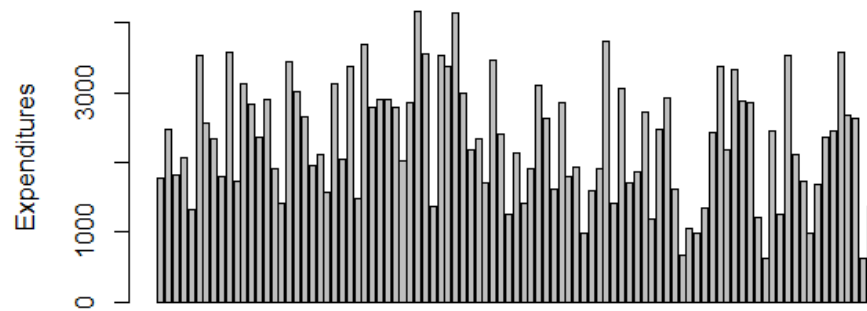
(Figure 10)

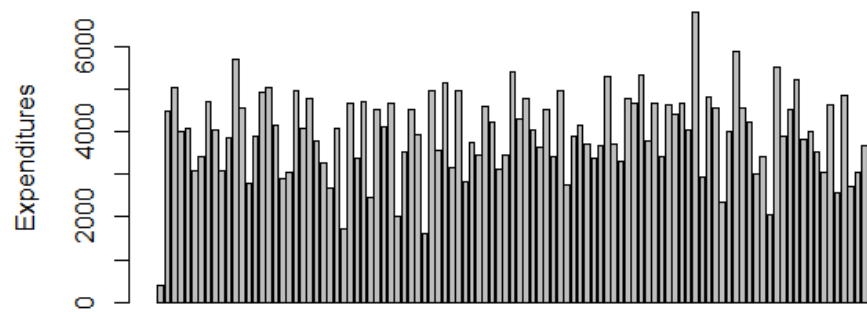Females Age Groups: 0-5

(Figure 11)

10

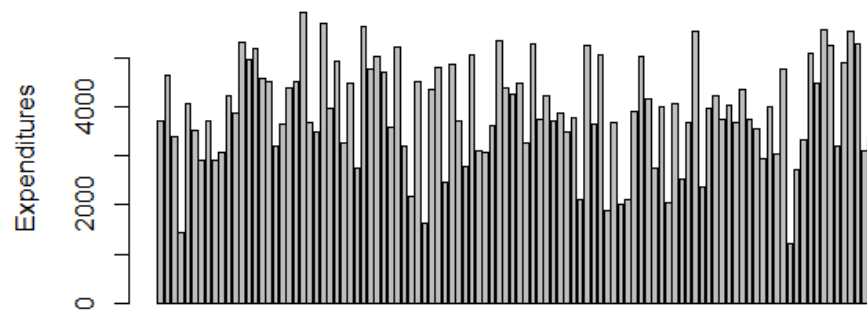Males Age Groups: 6-12

(Figure 12)

Females Age Groups: 6-12
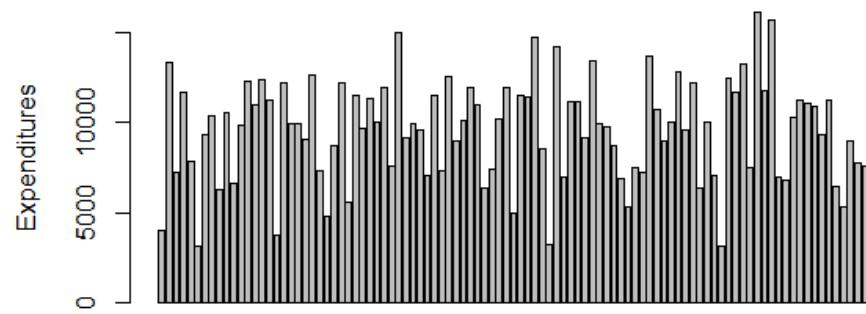
(Figure 13)

Males Age Groups: 13-17
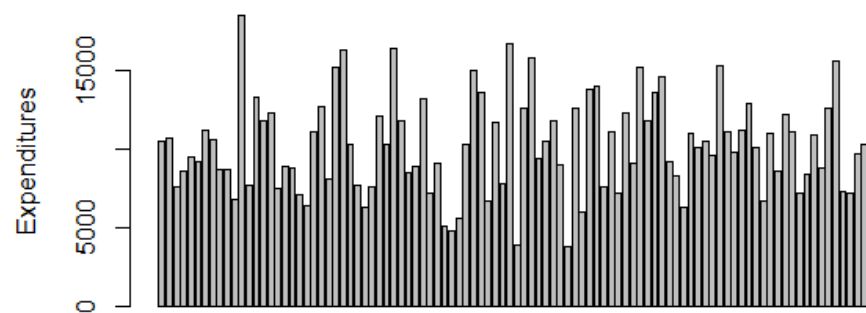
(Figure 14)

Females Age Groups: 13-17
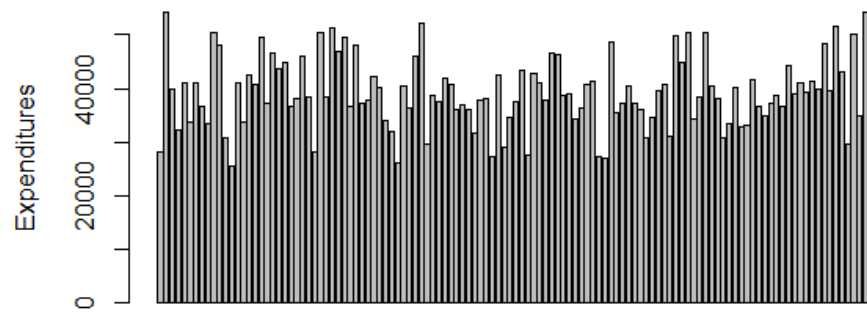
(Figure 15)

12

Males Age Groups: 18-21

(Figure 16)

Females Age Groups: 18-21

(Figure 17)

13

Males Age Groups: 22-50

(Figure 18)
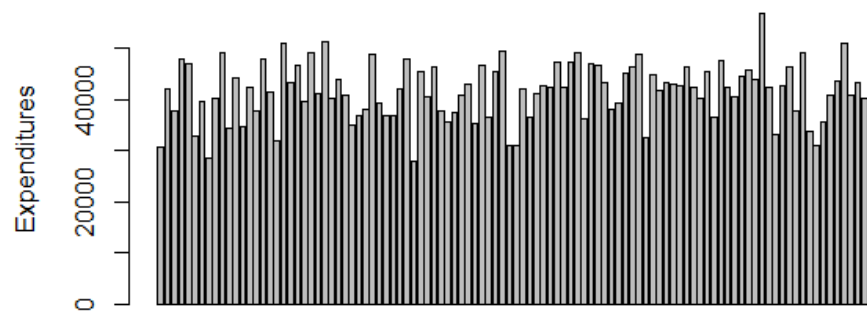
Females Age Groups: 22-50

(Figure 19)

14
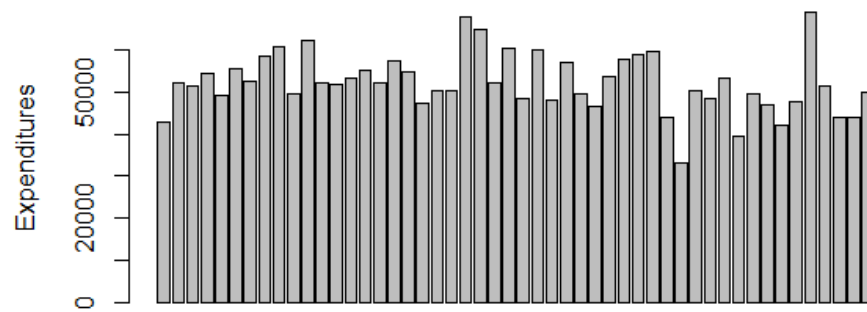
Males Age Groups: 51+

(Figure 20)
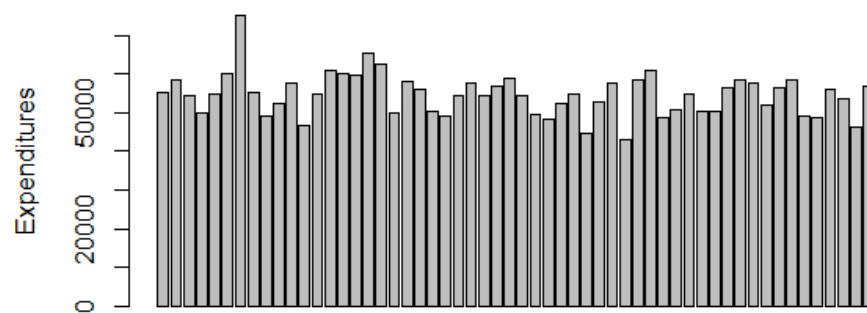
Females Age Groups: 51+

(Figure 21)

Amercian Indian Males
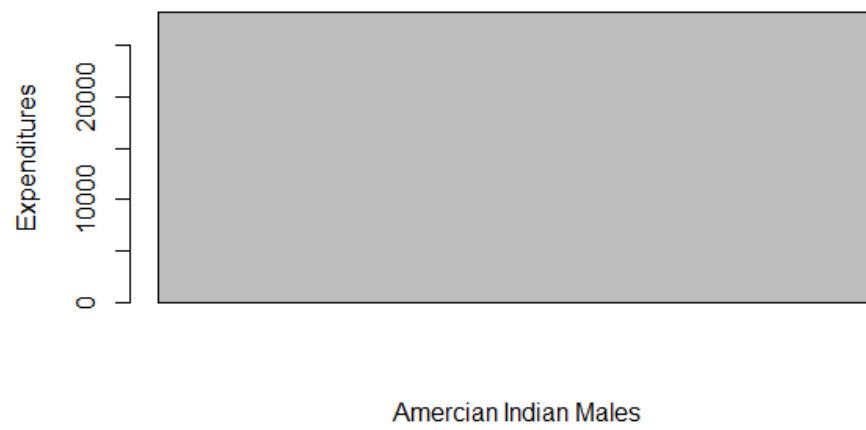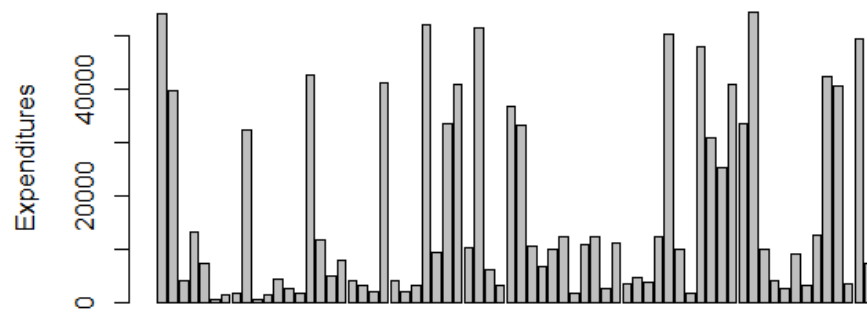
(Figure 22)
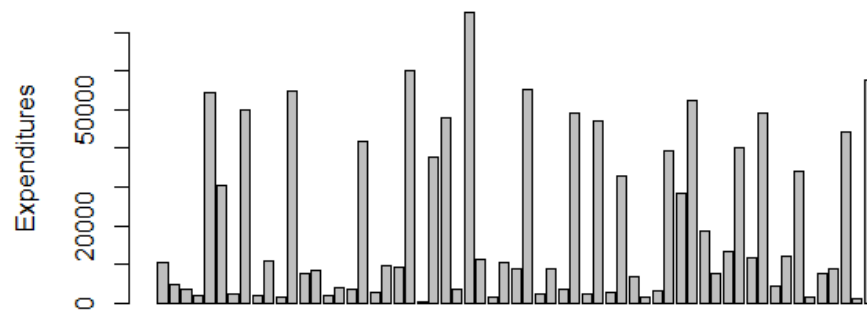
Amercian Indian Females

(Figure 23)

(Figure 24)

(Figure 25)

(Figure 26)

(Figure 27)
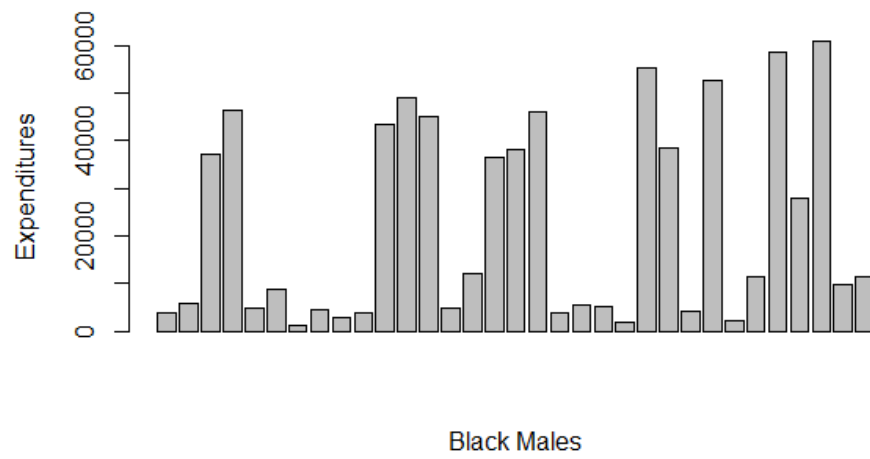
Hispanic Males
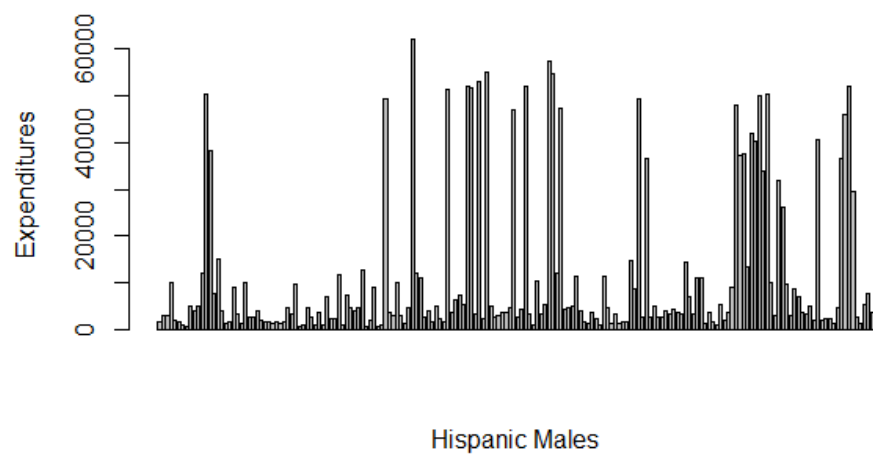
(Figure 28)
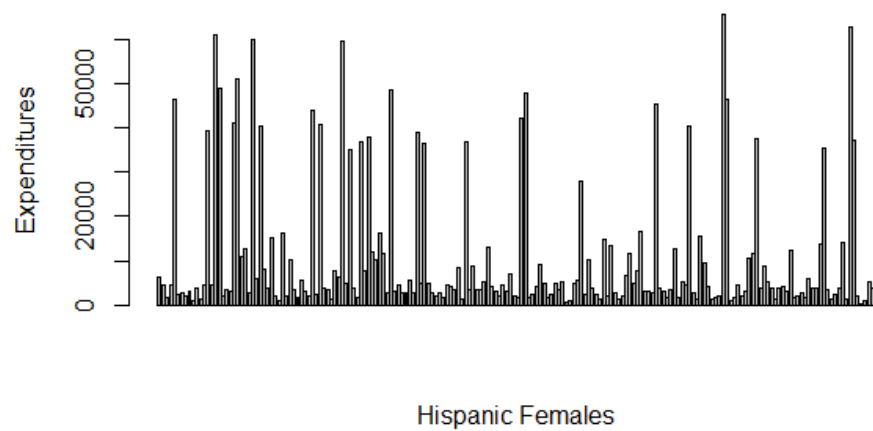
Hispanic Females
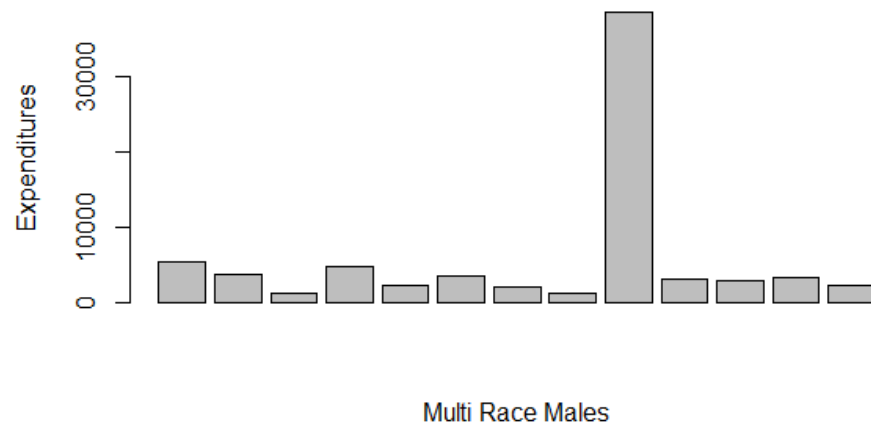
(Figure 29)

(Figure 30)

(Figure 31)

Native Hawaiian Males

(Figure 32)

Native Hawaiian Females
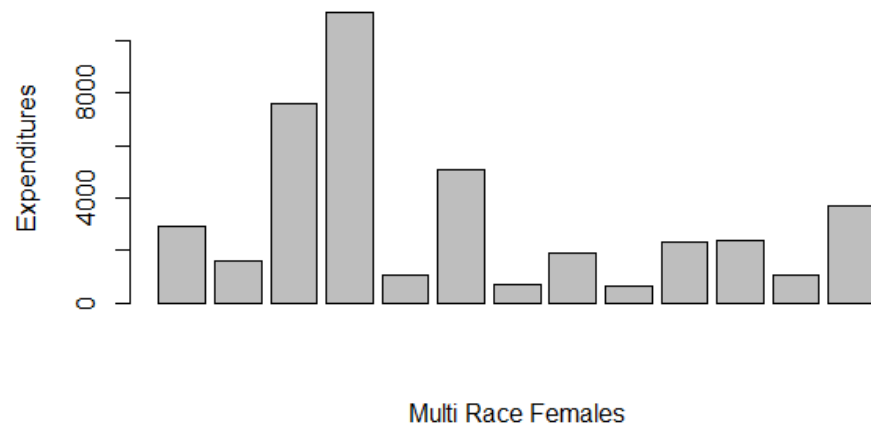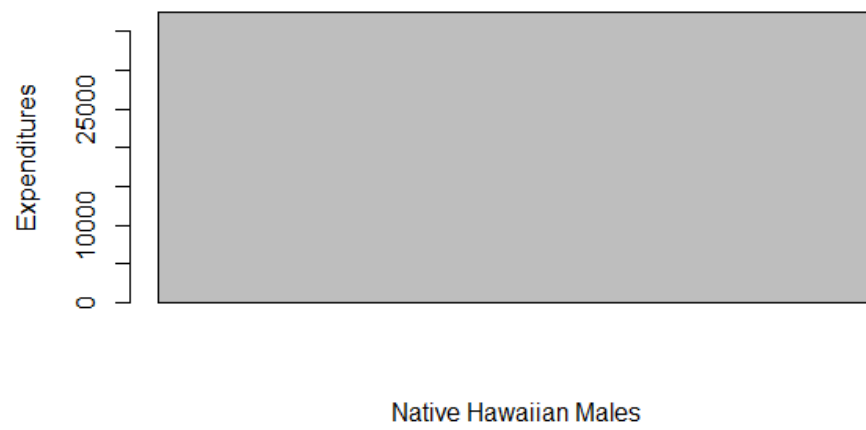
(Figure 33)

(Figure 34)

(Figure 35)

(Figure 36)

(Figure 37)

R Code:

```
#Load the data
data <- read.csv("California_DDS_Expenditures.csv")

#Create side-by-side boxplots of the Expenditures by Ethnicity
boxplot(data$Expenditures ~ data$Ethnicity,
      xlab = "Ethnicity",
      ylab = "Expenditures")

#subset the data by only Hispanic and white non-Hispanic
dataHispanic <- subset(data, Ethnicity == "Hispanic")
dataWhite   <- subset(data, Ethnicity == "White not Hispanic")

#Plot the subsetted dat
barplot(dataHispanic$Expenditures,
      xlab = "Hispanic",
      ylab = "Expenditures")

barplot(dataWhite$Expenditures,
      xlab = "White not Hispanic",
      ylab = "Expenditures")

#Subset the data by Age Group
data1 <- subset(data, Age.Group == "0 to 5")
data2 <- subset(data, Age.Group == "6 to 12")
data3 <- subset(data, Age.Group == "13 to 17")
data4 <- subset(data, Age.Group == "18 to 21")
data5 <- subset(data, Age.Group == "22 to 50")
data6 <- subset(data, Age.Group == "51+")

#Create side-by-side boxplots of the Expenditures by Ethnicity for each of the Age Groups.
boxplot(data1$Expenditures ~ data1$Ethnicity,
      xlab = "Ethnicity for Age Groups: 0-5",
      ylab = "Expenditures")
boxplot(data2$Expenditures ~ data2$Ethnicity,
      xlab = "Ethnicity for Age Groups: 6-12",
      ylab = "Expenditures")
boxplot(data3$Expenditures ~ data3$Ethnicity,
      xlab = "Ethnicity for Age Groups: 13-17",
      ylab = "Expenditures")
boxplot(data4$Expenditures ~ data4$Ethnicity,
      xlab = "Ethnicity for Age Groups: 18-21",
      ylab = "Expenditures")
boxplot(data5$Expenditures ~ data5$Ethnicity,
      xlab = "Ethnicity for Age Groups: 22-50",
      ylab = "Expenditures")
boxplot(data6$Expenditures ~ data6$Ethnicity,
      xlab = "Ethnicity for Age Groups: 51+",
      ylab = "Expenditures")
```
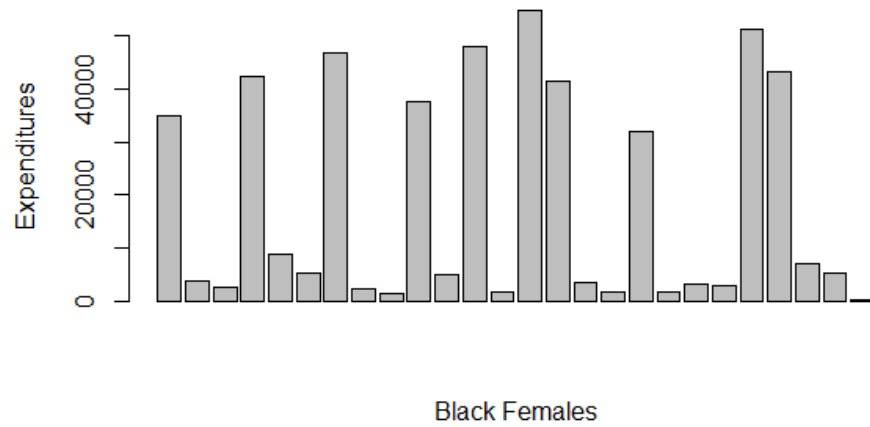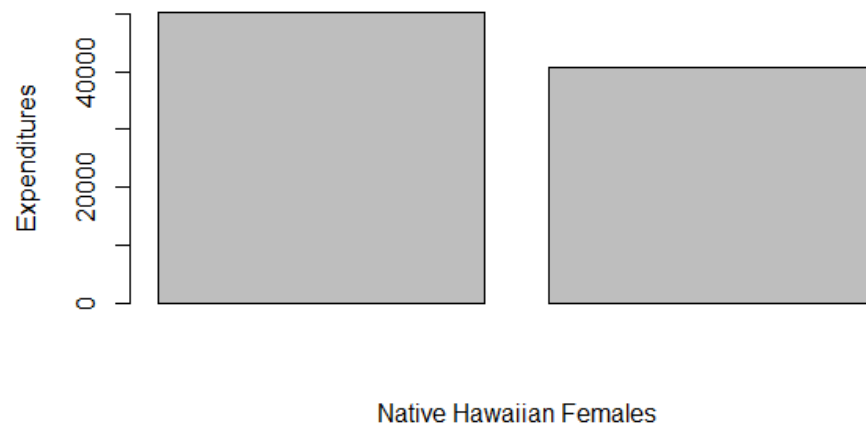
```
#Subset your data by Gender
dataM1 <- subset(data1, Gender == "Male")
dataM2 <- subset(data2, Gender == "Male")
dataM3 <- subset(data3, Gender == "Male")
dataM4 <- subset(data4, Gender == "Male")
dataM5 <- subset(data5, Gender == "Male")
dataM6 <- subset(data6, Gender == "Male")

dataF1 <- subset(data1, Gender == "Female")
dataF2 <- subset(data2, Gender == "Female")
dataF3 <- subset(data3, Gender == "Female")
dataF4 <- subset(data4, Gender == "Female")
dataF5 <- subset(data5, Gender == "Female")
dataF6 <- subset(data6, Gender == "Female")

#Construct bar charts using Age Group as classes for the Expenditures for Males.
barplot(dataM1$Expenditures, xlab = "Males Age Groups: 0-5", ylab = "Expenditures")
barplot(dataM2$Expenditures, xlab = "Males Age Groups: 6-12", ylab = "Expenditures")
barplot(dataM3$Expenditures, xlab = "Males Age Groups: 13-17", ylab = "Expenditures")
barplot(dataM4$Expenditures, xlab = "Males Age Groups: 18-21", ylab = "Expenditures")
barplot(dataM5$Expenditures, xlab = "Males Age Groups: 22-50", ylab = "Expenditures")
barplot(dataM6$Expenditures, xlab = "Males Age Groups: 51+", ylab = "Expenditures")

#Construct bar charts using Age Group as classes for the Expenditures for Females.
barplot(dataF1$Expenditures,
    xlab = "Females Age Groups: 0-5",
    ylab = "Expenditures")
barplot(dataF2$Expenditures,
    xlab = "Females Age Groups: 6-12",
    ylab = "Expenditures")
barplot(dataF3$Expenditures,
    xlab = "Females Age Groups: 13-17",
    ylab = "Expenditures")
barplot(dataF4$Expenditures,
    xlab = "Females Age Groups: 18-21",
    ylab = "Expenditures")
barplot(dataF5$Expenditures,
    xlab = "Females Age Groups: 22-50",
    ylab = "Expenditures")
barplot(dataF6$Expenditures,
    xlab = "Females Age Groups: 51+",
    ylab = "Expenditures")

#Subset the main data by Ethnicity
data2_1 <- subset(data, Ethnicity == "American Indian")
data2_2 <- subset(data, Ethnicity == "Asian")
data2_3 <- subset(data, Ethnicity == "Black")
data2_4 <- subset(data, Ethnicity == "Hispanic")
```

```r
data2_5 <- subset(data, Ethnicity == "Multi Race")
data2_6 <- subset(data, Ethnicity == "Native Hawaiian")
data2_7 <- subset(data, Ethnicity == "Other")
data2_8 <- subset(data, Ethnicity == "White not Hispanic")

#subset your data by Gender
dataM2_1 <- subset(data2_1, Gender == "Male")
dataM2_2 <- subset(data2_2, Gender == "Male")
dataM2_3 <- subset(data2_3, Gender == "Male")
dataM2_4 <- subset(data2_4, Gender == "Male")
dataM2_5 <- subset(data2_5, Gender == "Male")
dataM2_6 <- subset(data2_6, Gender == "Male")
dataM2_7 <- subset(data2_7, Gender == "Male")
dataM2_8 <- subset(data2_8, Gender == "Male")

dataF2_1 <- subset(data2_1, Gender == "Female")
dataF2_2 <- subset(data2_2, Gender == "Female")
dataF2_3 <- subset(data2_3, Gender == "Female")
dataF2_4 <- subset(data2_4, Gender == "Female")
dataF2_5 <- subset(data2_5, Gender == "Female")
dataF2_6 <- subset(data2_6, Gender == "Female")
dataF2_7 <- subset(data2_7, Gender == "Female")
dataF2_8 <- subset(data2_8, Gender == "Female")

#Create bar charts using Ethnicity as classes for Males.
barplot(dataM2_1$Expenditures,
    xlab = "Amercian Indian Males",
    ylab = "Expenditures")
barplot(dataM2_2$Expenditures,
    xlab = "Asian Males",
    ylab = "Expenditures")
barplot(dataM2_3$Expenditures,
    xlab = "Black Males",
    ylab = "Expenditures")
barplot(dataM2_4$Expenditures,
    xlab = "Hispanic Males",
    ylab = "Expenditures")
barplot(dataM2_5$Expenditures,
    xlab = "Multi Race Males",
    ylab = "Expenditures")
barplot(dataM2_6$Expenditures,
    xlab = "Native Hawaiian Males",
    ylab = "Expenditures")
barplot(dataM2_7$Expenditures,
    xlab = "Other Males",
    ylab = "Expenditures")
barplot(dataM2_8$Expenditures,
    xlab = "White not Hispanic Males",
    ylab = "Expenditures")
```

```r
#Create bar charts using Ethnicity as classes for Females.
barplot(dataF2_1$Expenditures,
      xlab = "Amercian Indian Females",
      ylab = "Expenditures")
barplot(dataF2_2$Expenditures,
      xlab = "Asian Females",
      ylab = "Expenditures")
barplot(dataF2_3$Expenditures,
      xlab = "Black Females",
      ylab = "Expenditures")
barplot(dataF2_4$Expenditures,
      xlab = "Hispanic Females",
      ylab = "Expenditures")
barplot(dataF2_5$Expenditures,
      xlab = "Multi Race Females",
      ylab = "Expenditures")
barplot(dataF2_6$Expenditures,
      xlab = "Native Hawaiian Females",
      ylab = "Expenditures")
barplot(dataF2_7$Expenditures,
      xlab = "Other Females",
      ylab = "Expenditures")
barplot(dataF2_8$Expenditures,
      xlab = "White not Hispanic Females",
      ylab = "Expenditures")
```