# BIOL 432 - Assignment 1

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Link to my repository (https://github.com/davidgriffin124/BIOL432_Assignment1)

### Loading Library

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(ggplot2)
```

### Script generating limb data for 5 species of capuchin monkey

```
source('dataGenerato.R')
```

### Script estimating limb volume and adding column

```
source('volumeEstimato.R')
```

### Loading revised limb data

```
limbdat = read.csv("measurements.csv")
```

### Sorting data by Species, then b Observer, then by Limb Volume

```
limbdat = limbdat %>%
  arrange(Organism, Observer, Limb_volume)
```

Table displaying average Limb Volume by Species

```
limbdat %>%
  group_by(Organism)%>%
  summarize(Average_Limb_Volume = mean(Limb_volume))
```

```
## # A tibble: 5 x 2
##   Organism            Average_Limb_Volume
##   <chr>                             <dbl>
## 1 Cebus brunneus                     355.
## 2 Cebus capucinus                    374.
## 3 Cebus cuscinus                     345.
## 4 Sapajus apella                     340.
## 5 Sapajus libidinosus                370.
```

Table displaying number of observations by Species x Observer

```
limbdat %>%
  group_by(Organism, Observer) %>%
  count()
```

```
## # A tibble: 15 x 3
## # Groups:   Organism, Observer [15]
##    Organism            Observer     n
##    <chr>               <chr>    <int>
##  1 Cebus brunneus      David G      9
##  2 Cebus brunneus      Emily P      7
##  3 Cebus brunneus      Eric W       5
##  4 Cebus capucinus     David G     12
##  5 Cebus capucinus     Emily P      4
##  6 Cebus capucinus     Eric W       6
##  7 Cebus cuscinus      David G      7
##  8 Cebus cuscinus      Emily P      5
##  9 Cebus cuscinus      Eric W       9
## 10 Sapajus apella      David G      3
## 11 Sapajus apella      Emily P      8
## 12 Sapajus apella      Eric W       9
## 13 Sapajus libidinosus David G      8
## 14 Sapajus libidinosus Emily P      4
## 15 Sapajus libidinosus Eric W       4
```

Box plot comparing species limb volume

```
ggplot(limbdat, aes(x=Organism, y=Limb_volume)) + geom_boxplot() + xlab("\n Species") + ylab("Li
mb Volume \n") + theme_bw() + labs(title = "Limb Volume Frequency for Capuchin Monkeys", caption
= "\n\n Figure 1. Limb volume distributions for 100 random samples of 5 species of capuchin monk
ey") + theme(plot.title = element_text(hjust = 0.5), plot.caption = element_text(hjust = 0.5))
```

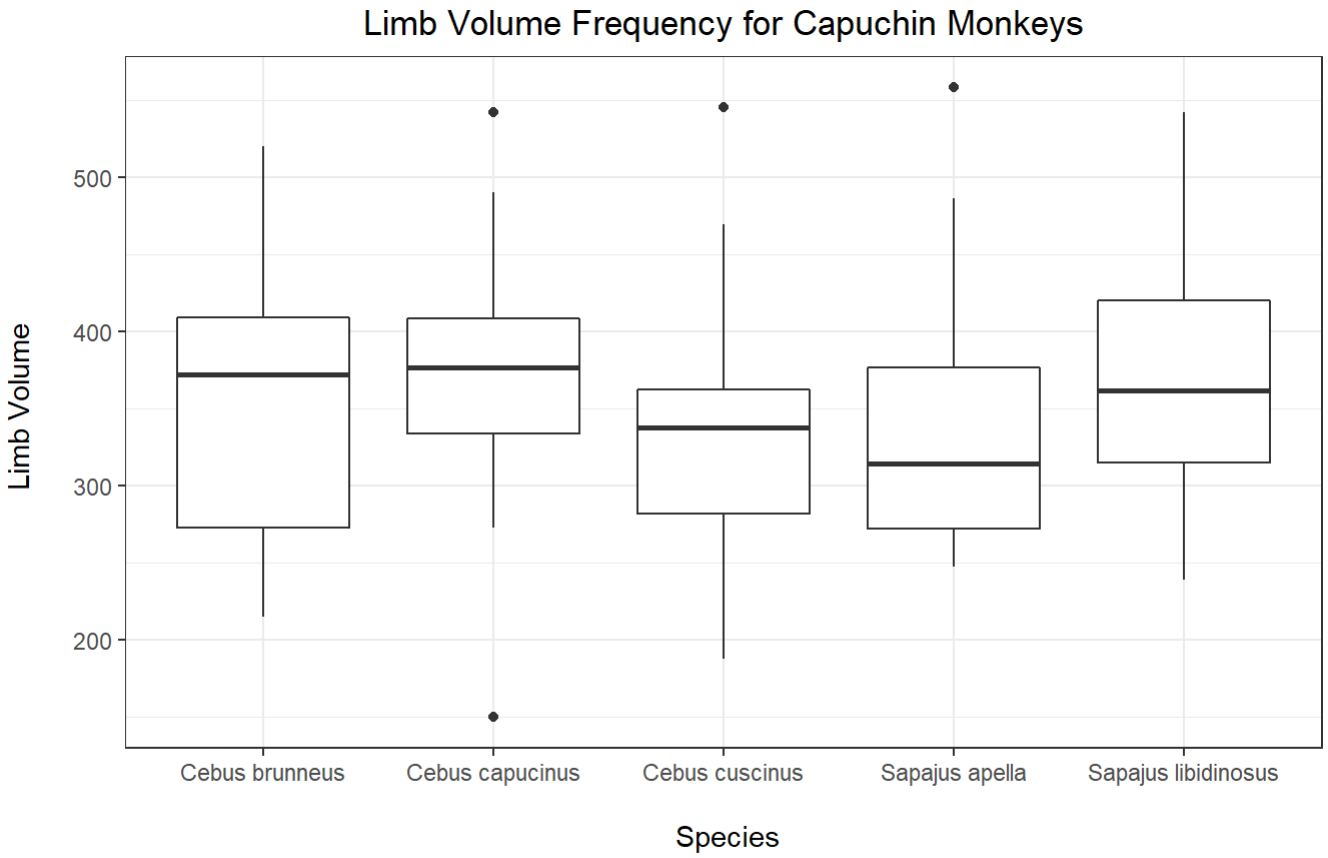


Figure 1. Limb volume distributions for 100 random samples of 5 species of capuchin monkey

## Multi-panel plot showing frequency histograms for each species

```
ggplot(data = limbdat, aes(x = Limb_volume)) + geom_histogram() + xlab("\n Limb Volume") + ylab
("Count \n") + facet_wrap(~Organism, nrow = 2, ncol = 3) + theme_bw() + labs(title = "Limb Volum
e Frequency for Capuchin Monkeys", caption = "\n\n Figure 2. Frequency of various limb volumes f
or 100 random samples of 5 species of capuchin monkey") + theme(plot.title = element_text(hjust
= 0.5), plot.caption = element_text(hjust = 0.5))
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

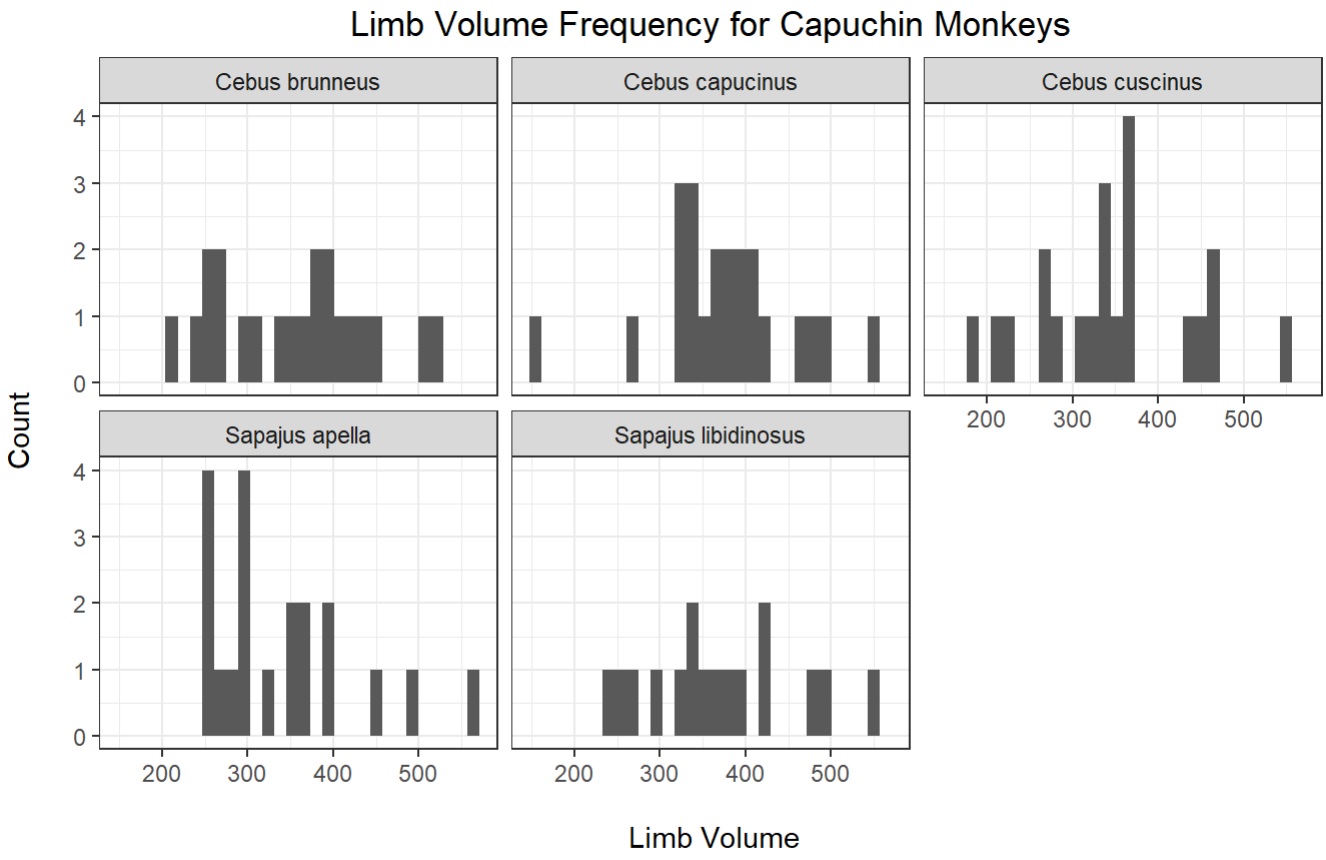


Figure 2. Frequency of various limb volumes for 100 random samples of 5 species of capuchin monkey