3 - PAL Session for Business Statistics

Objective

Showing how to use the frequency graphs that we have learned, to plot the daily returns from the IVV etf.

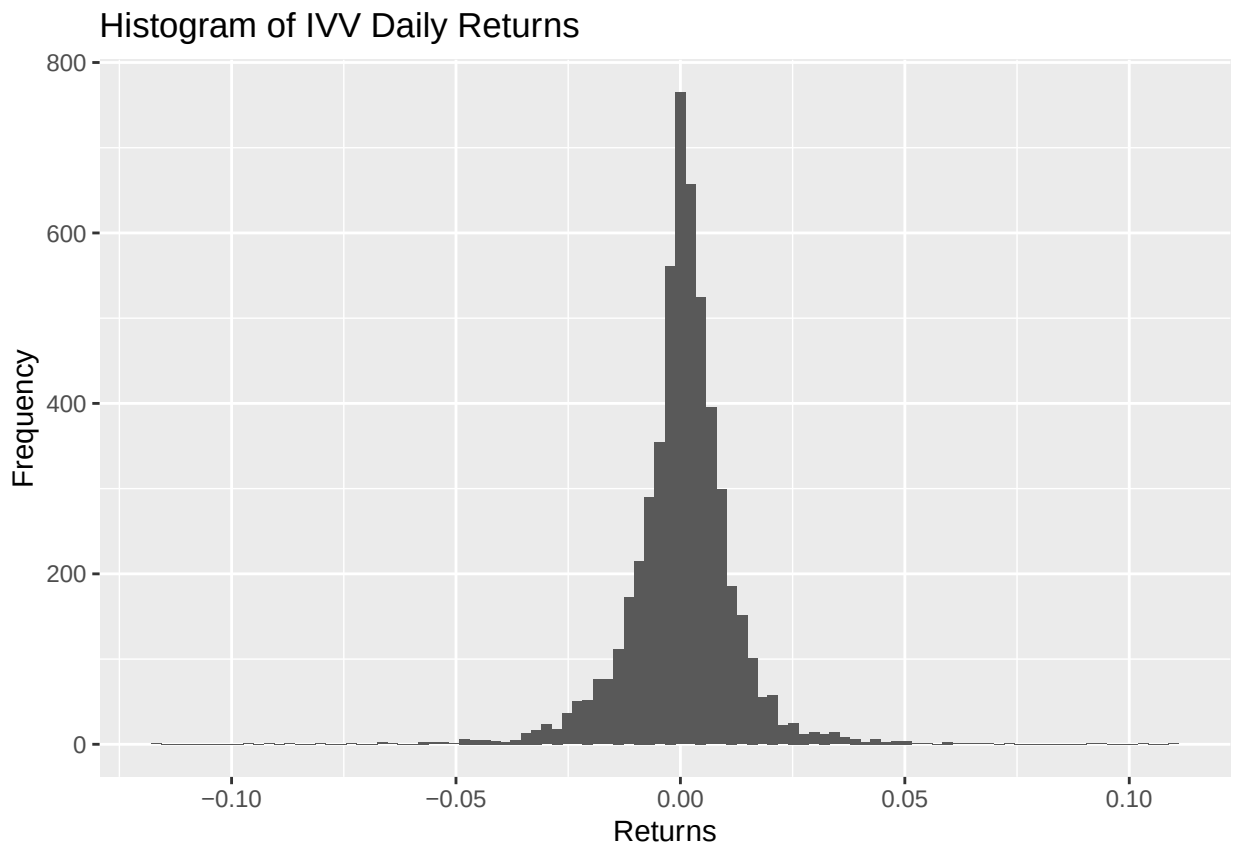
Loading the libraries and the Data

```
library(tidyverse)
library(readxl)
library(ggplot2)
library(readxl)

df <- read_excel('IVV.xlsx')
df
```

```
## # A tibble: 5,449 x 2
##    Date                Close
##    <dttm>              <dbl>
##  1 2000-05-22 00:00:00 -0.00622
##  2 2000-05-23 00:00:00 -0.0152
##  3 2000-05-24 00:00:00  0.0150
##  4 2000-05-25 00:00:00 -0.00917
##  5 2000-05-26 00:00:00 -0.00451
##  6 2000-05-30 00:00:00  0.0329
##  7 2000-05-31 00:00:00  0.00285
##  8 2000-06-01 00:00:00  0.0160
##  9 2000-06-02 00:00:00  0.0198
## 10 2000-06-05 00:00:00 -0.00655
## # ... with 5,439 more rows
```

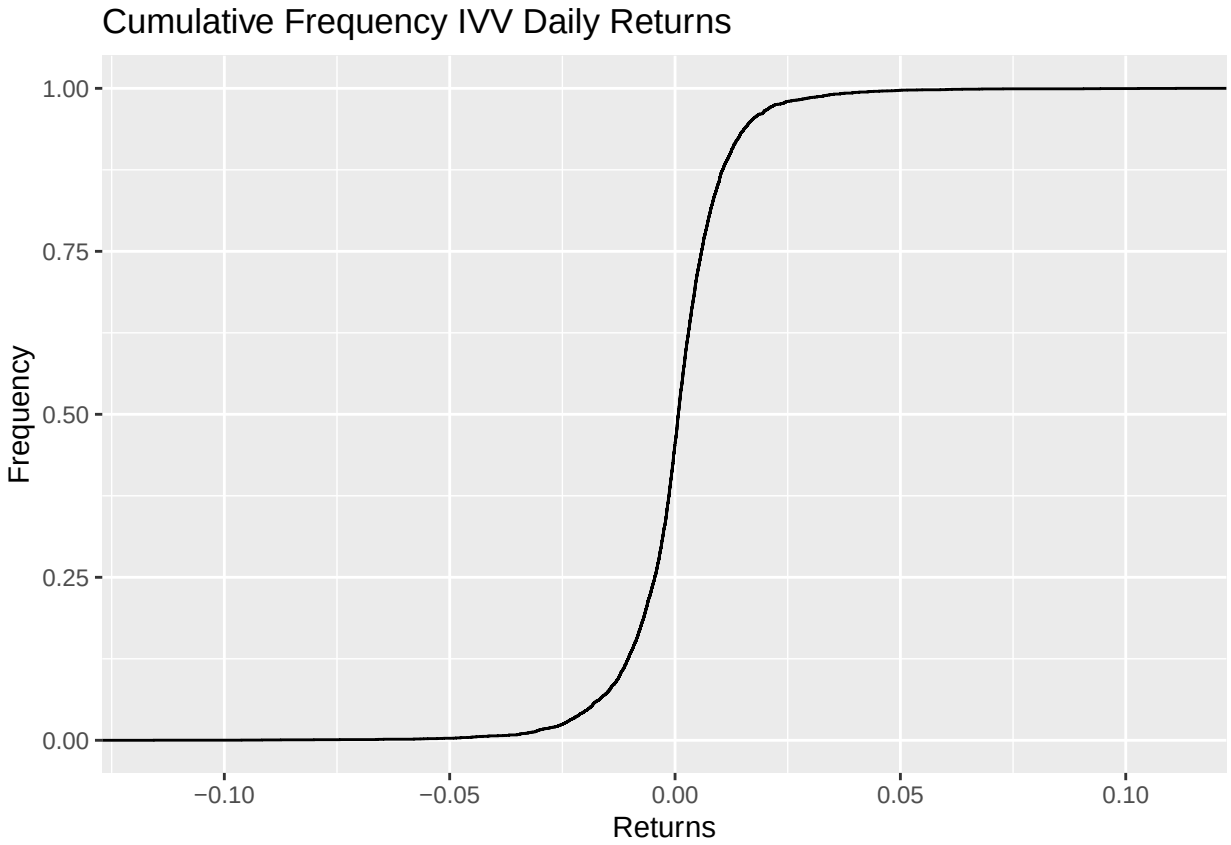
Histogram

```
p <- ggplot(df, aes(Close))

p + geom_histogram(bins = 100,) +
  ggtitle("Histogram of IVV Daily Returns") +
  ylab("Frequency") +
  xlab("Returns")
```



Cumulative Plot

```
ggplot(df, aes(Close)) +
  stat_ecdf(geom = "step") +
  ggtitle("Cumulative Frequency IVV Daily Returns") +
  ylab("Frequency") +
  xlab("Returns")
```


Cumulative Frequency IVV Daily Returns
1.00
0.75
0.50
0.25
0.00
Frequency
−0.10
−0.05
0.00
0.05
0.10
Returns