UCL Data Analysis

Elise

2024-06-09

Set the right working directory.

```
setwd("C:/Users/elise/Documents/Mémoire/Main/Data/Templates/UCL")
```

Data importation

Import the data sets extracted from the Data Preparation R Markdown.

```
list.files()
```

```
## [1] "endpoint.txt"     "plant_info.txt"   "S_timeseries.txt" "T_timeseries.txt"
## [5] "timeseries.txt"
```

```
plant_info <- read.table("plant_info.txt", header = TRUE, sep = "\t")
endpoint <- read.table("endpoint.txt", header = TRUE, sep = "\t")
```

Convert the columns to factor and date formats.

```
# plant_info
plant_info <- lapply(plant_info, factor)

# endpoint
matching_cols <- intersect(names(endpoint), names(plant_info))
endpoint[, matching_cols] <- lapply(endpoint[, matching_cols], factor)
endpoint$Date <- date(endpoint$Date)
endpoint$Timestamp <- NA

# timeseries
# No data

# S_timeseries
# No data

# T_timeseries
# No data
```

Collect the variables of every data template and print the names of the variables. This serves as a double check.

```
platform <- "UCL"

# endpoint
df <- endpoint[,colSums(is.na(endpoint))<nrow(endpoint)]
genotype_index <- which(colnames(df) == "Genotype")
variables <- colnames(df[, c(3:(genotype_index - 1))]) # We remove the 3 first columns
that are "Unit.ID" and "Date" etc

print(paste(platform, ": The variables for endpoint are", paste(variables, collapse =
", "), sep = " "))
```

```
## [1] "UCL : The variables for endpoint are DW_shoot_g, FW_shoot_g, DW_root_g, FW_root
_g"
```

Remove unknown genotypes

```
endpoint <- endpoint %>%
  filter(Genotype != "Local")
```

Add a column Plant_type with three levels, H L and T. This variable is useful to test for heterosis effects.

```
endpoint$Plant_type <- substr(endpoint$Genotype, nchar(as.character(endpoint$Genotyp
e)), nchar(as.character(endpoint$Genotype)))
```

1. Endpoint dataframe

A. Exploration of data

Exploration tables using the rstatix, janitor and skimr packages

```
endpoint %>%
  count(Genotype)
```

```
##    Genotype  n
## 1   EPPN1_H 29
## 2   EPPN1_L 23
## 3  EPPN10_H 25
## 4  EPPN10_L 10
## 5  EPPN11_H 27
## 6  EPPN11_L 21
## 7  EPPN12_H 25
## 8  EPPN12_L 14
## 9  EPPN13_H 15
## 10 EPPN13_L  6
## 11 EPPN14_H 15
## 12 EPPN14_L  6
## 13 EPPN15_H 25
## 14 EPPN15_L 18
## 15  EPPN2_H 24
## 16  EPPN2_L 17
## 17 EPPN20_T 27
## 18  EPPN3_H 18
## 19  EPPN3_L 19
## 20  EPPN4_H 20
## 21  EPPN4_L 20
## 22  EPPN5_H 16
## 23  EPPN5_L  8
## 24  EPPN6_H 24
## 25  EPPN6_L 17
## 26  EPPN7_H  7
## 27  EPPN7_L 16
## 28  EPPN8_H 21
## 29  EPPN8_L 18
## 30  EPPN9_H 25
## 31  EPPN9_L 22
```

```
endpoint %>%
  tabyl(Genotype, Column) %>%
  adorn_totals("row") %>%
  adorn_percentages("row") %>%
  adorn_pct_formatting() %>%
  adorn_ns() %>%
  adorn_title("combined")
```

```
##  Genotype/Column          1          2          3          4          5
##          EPPN1_H 10.3%  (3) 10.3%  (3) 10.3%  (3)  6.9%  (2) 10.3%  (3)
##          EPPN1_L  8.7%  (2)  8.7%  (2)  8.7%  (2)  8.7%  (2) 13.0%  (3)
##         EPPN10_H  8.0%  (2)  8.0%  (2)  8.0%  (2)  8.0%  (2) 12.0%  (3)
##         EPPN10_L 10.0%  (1) 20.0%  (2) 20.0%  (2)  0.0%  (0)  0.0%  (0)
##         EPPN11_H 11.1%  (3) 11.1%  (3)  7.4%  (2)  7.4%  (2) 11.1%  (3)
##         EPPN11_L 14.3%  (3)  4.8%  (1)  9.5%  (2)  0.0%  (0) 14.3%  (3)
##         EPPN12_H 12.0%  (3) 12.0%  (3)  8.0%  (2)  8.0%  (2)  8.0%  (2)
##         EPPN12_L  7.1%  (1)  7.1%  (1) 14.3%  (2)  7.1%  (1) 21.4%  (3)
##         EPPN13_H 13.3%  (2) 13.3%  (2) 13.3%  (2)  6.7%  (1) 20.0%  (3)
##         EPPN13_L 16.7%  (1) 16.7%  (1)  0.0%  (0) 16.7%  (1) 16.7%  (1)
##         EPPN14_H  6.7%  (1) 13.3%  (2) 20.0%  (3) 13.3%  (2)  6.7%  (1)
##         EPPN14_L 33.3%  (2) 16.7%  (1) 16.7%  (1) 16.7%  (1) 16.7%  (1)
##         EPPN15_H  8.0%  (2) 12.0%  (3) 12.0%  (3)  8.0%  (2) 12.0%  (3)
##         EPPN15_L 11.1%  (2)  5.6%  (1)  5.6%  (1) 11.1%  (2) 11.1%  (2)
##          EPPN2_H 12.5%  (3)  8.3%  (2)  8.3%  (2)  8.3%  (2)  8.3%  (2)
##          EPPN2_L  5.9%  (1)  0.0%  (0)  5.9%  (1) 17.6%  (3) 17.6%  (3)
##         EPPN20_T  7.4%  (2) 11.1%  (3) 11.1%  (3) 11.1%  (3) 11.1%  (3)
##          EPPN3_H  5.6%  (1) 11.1%  (2) 11.1%  (2) 11.1%  (2) 11.1%  (2)
##          EPPN3_L 10.5%  (2)  5.3%  (1)  5.3%  (1)  5.3%  (1) 10.5%  (2)
##          EPPN4_H  5.0%  (1) 15.0%  (3) 10.0%  (2) 10.0%  (2) 15.0%  (3)
##          EPPN4_L  5.0%  (1)  5.0%  (1) 10.0%  (2) 10.0%  (2) 10.0%  (2)
##          EPPN5_H  6.2%  (1)  6.2%  (1) 12.5%  (2) 12.5%  (2) 18.8%  (3)
##          EPPN5_L 12.5%  (1)  0.0%  (0)  0.0%  (0) 12.5%  (1) 12.5%  (1)
##          EPPN6_H 12.5%  (3)  8.3%  (2)  8.3%  (2) 12.5%  (3) 12.5%  (3)
##          EPPN6_L 11.8%  (2)  5.9%  (1)  5.9%  (1) 17.6%  (3) 11.8%  (2)
##          EPPN7_H 28.6%  (2)  0.0%  (0) 14.3%  (1)  0.0%  (0) 14.3%  (1)
##          EPPN7_L 12.5%  (2)  6.2%  (1) 12.5%  (2) 12.5%  (2)  0.0%  (0)
##          EPPN8_H  9.5%  (2)  9.5%  (2)  9.5%  (2)  4.8%  (1)  9.5%  (2)
##          EPPN8_L 11.1%  (2) 16.7%  (3) 16.7%  (3) 11.1%  (2) 11.1%  (2)
##          EPPN9_H  8.0%  (2)  8.0%  (2) 12.0%  (3) 12.0%  (3) 12.0%  (3)
##          EPPN9_L  4.5%  (1)  9.1%  (2) 13.6%  (3) 13.6%  (3) 13.6%  (3)
##            Local     -  (0)     -  (0)     -  (0)     -  (0)     -  (0)
##            Total  9.9% (57)  9.2% (53) 10.2% (59)  9.5% (55) 11.8% (68)
##           6          7          8          9         10
##  10.3%  (3) 10.3%  (3) 10.3%  (3) 10.3%  (3) 10.3%  (3)
##   8.7%  (2)  8.7%  (2)  8.7%  (2) 13.0%  (3) 13.0%  (3)
##  12.0%  (3) 12.0%  (3) 12.0%  (3)  8.0%  (2) 12.0%  (3)
##  10.0%  (1) 20.0%  (2)  0.0%  (0) 10.0%  (1) 10.0%  (1)
##  11.1%  (3)  7.4%  (2) 11.1%  (3) 11.1%  (3) 11.1%  (3)
##   9.5%  (2) 14.3%  (3)  9.5%  (2)  9.5%  (2) 14.3%  (3)
##  12.0%  (3)  8.0%  (2) 12.0%  (3) 12.0%  (3)  8.0%  (2)
##   0.0%  (0)  7.1%  (1) 14.3%  (2) 14.3%  (2)  7.1%  (1)
##   6.7%  (1)  0.0%  (0)  6.7%  (1)  6.7%  (1) 13.3%  (2)
##  16.7%  (1) 16.7%  (1)  0.0%  (0)  0.0%  (0)  0.0%  (0)
##   6.7%  (1)  6.7%  (1)  0.0%  (0) 13.3%  (2) 13.3%  (2)
##   0.0%  (0)  0.0%  (0)  0.0%  (0)  0.0%  (0)  0.0%  (0)
##  12.0%  (3)  4.0%  (1) 12.0%  (3)  8.0%  (2) 12.0%  (3)
##  11.1%  (2)  5.6%  (1) 11.1%  (2) 16.7%  (3) 11.1%  (2)
##   8.3%  (2) 12.5%  (3)  8.3%  (2) 12.5%  (3) 12.5%  (3)
##  17.6%  (3)  5.9%  (1)  5.9%  (1) 11.8%  (2) 11.8%  (2)
##   7.4%  (2) 11.1%  (3) 11.1%  (3)  7.4%  (2) 11.1%  (3)
##   5.6%  (1)  5.6%  (1) 11.1%  (2) 16.7%  (3) 11.1%  (2)
##  15.8%  (3)  5.3%  (1) 15.8%  (3) 10.5%  (2) 15.8%  (3)
##   5.0%  (1) 10.0%  (2) 15.0%  (3)  5.0%  (1) 10.0%  (2)
```

```
##  15.0%  (3) 10.0%  (2) 10.0%  (2) 15.0%  (3) 10.0%  (2)
##  12.5%  (2) 12.5%  (2) 12.5%  (2)  0.0%  (0)  6.2%  (1)
##  12.5%  (1) 25.0%  (2)  0.0%  (0) 12.5%  (1) 12.5%  (1)
##   8.3%  (2)  4.2%  (1) 12.5%  (3)  8.3%  (2) 12.5%  (3)
##   5.9%  (1)  5.9%  (1) 11.8%  (2) 11.8%  (2) 11.8%  (2)
##   0.0%  (0) 14.3%  (1) 14.3%  (1)  0.0%  (0) 14.3%  (1)
##   6.2%  (1) 12.5%  (2) 12.5%  (2) 12.5%  (2) 12.5%  (2)
##  14.3%  (3)  9.5%  (2) 14.3%  (3)  9.5%  (2)  9.5%  (2)
##  11.1%  (2) 11.1%  (2)  0.0%  (0)  5.6%  (1)  5.6%  (1)
##  12.0%  (3)  8.0%  (2) 12.0%  (3)  8.0%  (2)  8.0%  (2)
##  13.6%  (3)  9.1%  (2)  4.5%  (1) 13.6%  (3)  4.5%  (1)
##      -  (0)     -  (0)     -  (0)     -  (0)     -  (0)
##  10.0% (58)  9.0% (52)  9.9% (57) 10.0% (58) 10.6% (61)
```

```
endpoint %>%
  tabyl(Genotype, Row) %>%
  adorn_totals("row") %>%
  adorn_percentages("row") %>%
  adorn_pct_formatting() %>%
  adorn_ns() %>%
  adorn_title("combined")
```

```
##  Genotype/Row        1         2        3         4        5        6        7
##       EPPN1_H 3.4% (1)  0.0% (0) 0.0% (0)  3.4% (1) 0.0% (0) 3.4% (1) 0.0% (0)
##       EPPN1_L 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##      EPPN10_H 0.0% (0)  0.0% (0) 4.0% (1)  4.0% (1) 4.0% (1) 0.0% (0) 0.0% (0)
##      EPPN10_L 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##      EPPN11_H 0.0% (0)  3.7% (1) 0.0% (0)  0.0% (0) 0.0% (0) 3.7% (1) 3.7% (1)
##      EPPN11_L 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 4.8% (1) 0.0% (0) 0.0% (0)
##      EPPN12_H 0.0% (0)  0.0% (0) 4.0% (1)  4.0% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##      EPPN12_L 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 7.1% (1) 0.0% (0) 0.0% (0)
##      EPPN13_H 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 6.7% (1) 0.0% (0) 6.7% (1)
##      EPPN13_L 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##      EPPN14_H 6.7% (1)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 6.7% (1) 0.0% (0)
##      EPPN14_L 0.0% (0) 16.7% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##      EPPN15_H 4.0% (1)  0.0% (0) 0.0% (0)  0.0% (0) 4.0% (1) 0.0% (0) 0.0% (0)
##      EPPN15_L 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN2_H 4.2% (1)  4.2% (1) 4.2% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN2_L 0.0% (0)  0.0% (0) 5.9% (1)  0.0% (0) 5.9% (1) 0.0% (0) 0.0% (0)
##      EPPN20_T 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 3.7% (1)
##       EPPN3_H 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN3_L 0.0% (0) 10.5% (2) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN4_H 0.0% (0)  5.0% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN4_L 5.0% (1)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN5_H 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN5_L 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN6_H 4.2% (1)  4.2% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.2% (1)
##       EPPN6_L 0.0% (0)  0.0% (0) 0.0% (0)  5.9% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN7_H 0.0% (0)  0.0% (0) 0.0% (0) 14.3% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN7_L 0.0% (0)  6.2% (1) 0.0% (0)  0.0% (0) 0.0% (0) 6.2% (1) 0.0% (0)
##       EPPN8_H 0.0% (0)  0.0% (0) 4.8% (1)  4.8% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN8_L 0.0% (0)  0.0% (0) 5.6% (1)  5.6% (1) 5.6% (1) 0.0% (0) 5.6% (1)
##       EPPN9_H 0.0% (0)  0.0% (0) 4.0% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##       EPPN9_L 0.0% (0)  4.5% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##         Local    - (0)     - (0)    - (0)     - (0)    - (0)    - (0)    - (0)
##         Total 1.0% (6)  1.6% (9) 1.2% (7)  1.2% (7) 1.2% (7) 0.7% (4) 0.9% (5)
##         8         9         10       11       12       13       14        15
##  0.0% (0)  0.0% (0)  0.0%  (0) 3.4% (1) 0.0% (0) 0.0% (0) 3.4% (1)  0.0% (0)
##  0.0% (0)  0.0% (0)  4.3%  (1) 0.0% (0) 0.0% (0) 8.7% (2) 0.0% (0)  4.3% (1)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 4.0% (1)  0.0% (0)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 10.0% (1)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 3.7% (1) 3.7% (1)  0.0% (0)
##  4.8% (1)  0.0% (0)  0.0%  (0) 0.0% (0) 4.8% (1) 0.0% (0) 0.0% (0)  4.8% (1)
##  0.0% (0)  0.0% (0)  8.0%  (2) 4.0% (1) 4.0% (1) 0.0% (0) 0.0% (0)  0.0% (0)
##  7.1% (1)  0.0% (0)  7.1%  (1) 0.0% (0) 0.0% (0) 7.1% (1) 0.0% (0)  0.0% (0)
##  0.0% (0)  6.7% (1)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  6.7% (1)
##  0.0% (0) 16.7% (1) 16.7%  (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 13.3% (2)  6.7%  (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 4.0% (1)  0.0% (0)
##  5.6% (1)  0.0% (0)  0.0%  (0) 5.6% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  4.2%  (1) 0.0% (0) 4.2% (1) 0.0% (0) 0.0% (0)  4.2% (1)
##  0.0% (0)  0.0% (0)  0.0%  (0) 5.9% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  3.7%  (1) 0.0% (0) 3.7% (1) 3.7% (1) 3.7% (1)  3.7% (1)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  5.3% (1)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  5.3% (1)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 5.0% (1)  5.0% (1)
```

```
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 5.0% (1) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0)  6.2% (1)  0.0%  (0) 6.2% (1) 0.0% (0) 0.0% (0) 6.2% (1)  0.0% (0)
##  0.0% (0) 12.5% (1)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  0.0%  (0) 4.2% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  6.2% (1)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 4.8% (1) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  0.0%  (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  4.0% (1)  4.0% (1)  0.0%  (0) 4.0% (1) 0.0% (0) 4.0% (1) 0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0)  9.1%  (2) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##     - (0)     - (0)     -  (0)    - (0)    - (0)    - (0)    - (0)     - (0)
##  1.0% (6)  1.2% (7)  1.7% (10) 1.2% (7) 0.9% (5) 1.4% (8) 1.0% (6)  1.4% (8)
##         16        17        18        19        20        21        22        23
##   0.0% (0)  3.4% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 4.0% (1) 4.0% (1)  4.0% (1)  4.0% (1) 0.0% (0)
##   0.0% (0) 20.0% (2) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##   3.7% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  3.7% (1)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 4.8% (1) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 4.8% (1)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.0% (1)  0.0% (0)  4.0% (1) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 7.1% (1)  0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  16.7% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##   6.7% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0) 16.7% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  4.0% (1) 0.0% (0) 0.0% (0) 4.0% (1)  0.0% (0)  0.0% (0) 4.0% (1)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 5.6% (1)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.2% (1)  0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 5.9% (1) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  3.7% (1) 0.0% (0) 3.7% (1) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  5.6% (1) 0.0% (0) 0.0% (0) 5.6% (1)  5.6% (1)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  5.3% (1)  0.0% (0) 0.0% (0)
##   0.0% (0)  5.0% (1) 5.0% (1) 0.0% (0) 0.0% (0)  0.0% (0)  5.0% (1) 0.0% (0)
##   0.0% (0)  0.0% (0) 5.0% (1) 5.0% (1) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 6.2% (1) 0.0% (0)  0.0% (0)  0.0% (0) 6.2% (1)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 25.0% (2) 0.0% (0)
##   0.0% (0)  4.2% (1) 0.0% (0) 0.0% (0) 0.0% (0)  4.2% (1)  4.2% (1) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  5.9% (1)  5.9% (1) 5.9% (1)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 14.3% (1)  0.0% (0) 0.0% (0)
##   6.2% (1)  0.0% (0) 0.0% (0) 6.2% (1) 0.0% (0)  0.0% (0)  6.2% (1) 0.0% (0)
##   0.0% (0)  0.0% (0) 4.8% (1) 4.8% (1) 0.0% (0)  0.0% (0)  4.8% (1) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  5.6% (1)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  4.0% (1)  0.0% (0) 0.0% (0)
##   4.5% (1)  0.0% (0) 0.0% (0) 0.0% (0) 4.5% (1)  0.0% (0)  0.0% (0) 0.0% (0)
##      - (0)     - (0)    - (0)    - (0)    - (0)     - (0)     - (0)    - (0)
##   0.9% (5)  1.6% (9) 0.7% (4) 1.2% (7) 1.4% (8)  1.4% (8)  1.6% (9) 0.9% (5)
##        24        25        26        27        28        29        30        31
##  3.4% (1) 0.0% (0)  0.0% (0)  3.4% (1) 3.4% (1)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 4.3% (1)  4.3% (1)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 4.3% (1)
##  4.0% (1) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 3.7% (1)  0.0% (0)  0.0% (0) 3.7% (1)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 9.5% (2)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 4.0% (1) 4.0% (1)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
```

```
##  6.7% (1) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 6.7% (1)  0.0% (0) 0.0% (0) 6.7% (1)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 16.7% (1) 0.0% (0) 0.0% (0)
##  4.0% (1) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  4.0% (1) 0.0% (0) 0.0% (0)
##  0.0% (0) 5.6% (1)  0.0% (0)  5.6% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  4.2% (1) 4.2% (1) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  5.9% (1) 0.0% (0)  5.9% (1) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 5.6% (1) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 5.3% (1)  0.0% (0) 5.3% (1) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  5.0% (1) 0.0% (0)  5.0% (1) 0.0% (0) 0.0% (0)
##  0.0% (0) 5.0% (1)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 5.0% (1)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 12.5% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 4.2% (1)  0.0% (0)  0.0% (0) 4.2% (1)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0)  5.9% (1) 0.0% (0)  0.0% (0) 0.0% (0) 5.9% (1)
##  0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 6.2% (1)  0.0% (0)  0.0% (0) 0.0% (0)  6.2% (1) 0.0% (0) 0.0% (0)
##  4.8% (1) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 4.8% (1)
##  0.0% (0) 0.0% (0) 11.1% (2)  0.0% (0) 0.0% (0)  0.0% (0) 5.6% (1) 0.0% (0)
##  0.0% (0) 4.0% (1)  4.0% (1)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 4.0% (1)
##  0.0% (0) 4.5% (1)  0.0% (0)  0.0% (0) 4.5% (1)  0.0% (0) 0.0% (0) 0.0% (0)
##     - (0)    - (0)     - (0)     - (0)    - (0)     - (0)    - (0)    - (0)
##  0.9% (5) 1.4% (8)  0.7% (4)  1.0% (6) 1.4% (8)  1.0% (6) 0.9% (5) 1.2% (7)
##        32       33        34        35       36        37       38       39
##  3.4% (1)  0.0% (0) 3.4% (1) 0.0% (0) 3.4% (1)  0.0% (0)  0.0% (0) 0.0% (0)
##  4.3% (1)  0.0% (0) 4.3% (1) 4.3% (1) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 4.0% (1) 4.0% (1) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 20.0% (2) 0.0% (0)
##  0.0% (0)  3.7% (1) 0.0% (0) 0.0% (0) 3.7% (1)  0.0% (0)  3.7% (1) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  4.8% (1) 0.0% (0)
##  0.0% (0)  0.0% (0) 4.0% (1) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  7.1% (1) 7.1% (1)
##  6.7% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 16.7% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 6.7% (1)  0.0% (0)  6.7% (1) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  5.6% (1)  0.0% (0) 5.6% (1) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  5.9% (1) 0.0% (0)
##  0.0% (0)  3.7% (1) 0.0% (0) 3.7% (1) 3.7% (1)  0.0% (0)  0.0% (0) 3.7% (1)
##  5.6% (1)  0.0% (0) 5.6% (1) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 5.6% (1)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  5.3% (1)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 10.0% (2)  0.0% (0) 0.0% (0)
##  5.0% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 6.2% (1) 0.0% (0) 0.0% (0)  6.2% (1)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  4.2% (1)  0.0% (0) 4.2% (1)
##  0.0% (0)  0.0% (0) 0.0% (0) 5.9% (1) 5.9% (1)  0.0% (0)  0.0% (0) 5.9% (1)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 14.3% (1)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 6.2% (1) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 4.8% (1) 4.8% (1)  4.8% (1)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0)
```

```
##  4.5% (1)  0.0% (0) 4.5% (1) 4.5% (1) 4.5% (1)  0.0% (0)  0.0% (0) 4.5% (1)
##     - (0)     - (0)    - (0)    - (0)    - (0)     - (0)     - (0)    - (0)
##  1.2% (7)  0.5% (3) 1.6% (9) 1.0% (6) 1.2% (7)  1.2% (7)  1.2% (7) 1.0% (6)
##        40        41       42       43       44        45        46       47
##  6.9% (2)  0.0% (0) 0.0% (0) 3.4% (1) 3.4% (1) 6.9% (2)  0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0)
##  4.0% (1)  0.0% (0) 0.0% (0) 0.0% (0) 4.0% (1) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0) 10.0% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 3.7% (1) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.8% (1) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 4.0% (1) 0.0% (0) 4.0% (1)  4.0% (1)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 7.1% (1) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  6.7% (1) 6.7% (1) 0.0% (0) 0.0% (0) 6.7% (1)  0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 6.7% (1) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0) 16.7% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  4.0% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  4.0% (1)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 5.6% (1)  0.0% (0)  5.6% (1)
##  0.0% (0)  0.0% (0) 4.2% (1) 4.2% (1) 4.2% (1) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  5.9% (1) 5.9% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  5.9% (1)
##  3.7% (1)  0.0% (0) 3.7% (1) 0.0% (0) 0.0% (0) 0.0% (0)  3.7% (1)  3.7% (1)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 5.6% (1)  0.0% (0)  0.0% (0)
##  5.3% (1)  0.0% (0) 0.0% (0) 5.3% (1) 0.0% (0) 5.3% (1)  0.0% (0)  0.0% (0)
##  5.0% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  5.0% (1)
##  5.0% (1)  0.0% (0) 0.0% (0) 5.0% (1) 0.0% (0) 0.0% (0)  0.0% (0)  5.0% (1)
##  0.0% (0)  0.0% (0) 6.2% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 12.5% (1)
##  0.0% (0)  0.0% (0) 4.2% (1) 0.0% (0) 4.2% (1) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 14.3% (1)  0.0% (0)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0)
##  0.0% (0)  4.8% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0)
##  5.6% (1)  5.6% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  5.6% (1)
##  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.0% (1) 4.0% (1)  0.0% (0)  0.0% (0)
##  0.0% (0)  4.5% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)  0.0% (0)
##     - (0)     - (0)    - (0)    - (0)    - (0)    - (0)     - (0)     - (0)
##  1.4% (8)  1.4% (8) 1.0% (6) 0.9% (5) 1.6% (9) 1.4% (8)  0.5% (3)  1.4% (8)
##        48        49       50       51       52       53        54       55
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.3% (1) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  3.7% (1) 0.0% (0) 0.0% (0) 0.0% (0) 3.7% (1)  0.0% (0) 0.0% (0)
##   9.5% (2)  0.0% (0) 0.0% (0) 4.8% (1) 0.0% (0) 0.0% (0)  4.8% (1) 0.0% (0)
##   0.0% (0)  4.0% (1) 4.0% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 7.1% (1)  0.0% (0) 7.1% (1)
##   6.7% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   6.7% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  16.7% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 4.0% (1) 0.0% (0) 4.0% (1) 0.0% (0)  0.0% (0) 4.0% (1)
##   0.0% (0)  5.6% (1) 0.0% (0) 0.0% (0) 0.0% (0) 5.6% (1)  5.6% (1) 5.6% (1)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.2% (1) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  5.9% (1) 0.0% (0) 0.0% (0) 5.9% (1) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  3.7% (1) 0.0% (0)
##   5.6% (1)  5.6% (1) 5.6% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
```

```
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 5.0% (1)  5.0% (1) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 6.2% (1) 0.0% (0) 0.0% (0)  0.0% (0) 6.2% (1)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 12.5% (1) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 4.2% (1) 0.0% (0) 0.0% (0)  4.2% (1) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0) 14.3% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   6.2% (1)  0.0% (0) 0.0% (0) 6.2% (1) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 4.8% (1)
##   0.0% (0)  0.0% (0) 5.6% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 5.6% (1)
##   4.0% (1)  4.0% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 4.5% (1) 0.0% (0) 0.0% (0) 0.0% (0)  9.1% (2) 0.0% (0)
##      - (0)     - (0)    - (0)    - (0)    - (0)    - (0)     - (0)    - (0)
##   1.4% (8)  1.2% (7) 0.9% (5) 0.7% (4) 0.7% (4) 0.7% (4)  1.4% (8) 1.0% (6)
##        56        57        58        59        60        61        62        63
##  0.0% (0) 3.4% (1)  3.4% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 4.3% (1) 0.0% (0)  8.7% (2)
##  0.0% (0) 4.0% (1)  0.0% (0) 4.0% (1)  0.0% (0) 0.0% (0) 0.0% (0)  4.0% (1)
##  0.0% (0) 0.0% (0) 10.0% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 10.0% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 3.7% (1)  0.0% (0) 0.0% (0) 3.7% (1)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  4.0% (1) 4.0% (1)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 6.7% (1) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 6.7% (1)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 6.7% (1)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 4.0% (1)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 4.0% (1)  0.0% (0)
##  5.6% (1) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 5.6% (1)  0.0% (0)
##  4.2% (1) 4.2% (1)  0.0% (0) 4.2% (1)  0.0% (0) 0.0% (0) 4.2% (1)  4.2% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  3.7% (1) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  5.6% (1) 0.0% (0)  5.6% (1) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 5.3% (1)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 5.0% (1)  5.0% (1) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  5.0% (1) 5.0% (1) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  6.2% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  6.2% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 4.2% (1)  0.0% (0) 4.2% (1) 4.2% (1)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 5.9% (1)  5.9% (1) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 14.3% (1) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 6.2% (1)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  4.8% (1) 0.0% (0)  0.0% (0) 0.0% (0)  4.8% (1) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  4.0% (1) 4.0% (1) 0.0% (0)  0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0)
##     - (0)    - (0)     - (0)    - (0)     - (0)    - (0)    - (0)     - (0)
##  0.5% (3) 1.2% (7)  0.9% (5) 1.2% (7)  1.4% (8) 0.9% (5) 1.0% (6)  1.0% (6)
##         64        65        66       67       68        69       70       71
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   4.3% (1)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  4.3% (1) 0.0% (0) 0.0% (0)
##   0.0% (0)  4.0% (1)  4.0% (1) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##  10.0% (1)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  3.7% (1) 3.7% (1) 0.0% (0)
##   4.8% (1)  0.0% (0)  0.0% (0) 0.0% (0) 9.5% (2)  0.0% (0) 0.0% (0) 0.0% (0)
```

```
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 4.0% (1)  0.0% (0) 4.0% (1) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  6.7% (1) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0) 16.7% (1) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0) 16.7% (1)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   4.0% (1)  0.0% (0)  4.0% (1) 4.0% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  5.6% (1) 0.0% (0) 0.0% (0)
##   0.0% (0)  4.2% (1)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 5.9% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   5.3% (1)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  5.3% (1) 0.0% (0) 0.0% (0)
##   0.0% (0)  5.0% (1)  5.0% (1) 0.0% (0) 5.0% (1)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  5.0% (1) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 6.2% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 25.0% (2) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 4.2% (1)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 5.9% (1)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 6.2% (1) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 4.8% (1)  0.0% (0) 4.8% (1) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 5.6% (1)
##   4.0% (1)  4.0% (1)  0.0% (0) 4.0% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)
##   0.0% (0)  0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 4.5% (1)
##      - (0)     - (0)     - (0)    - (0)    - (0)     - (0)    - (0)    - (0)
##   1.0% (6)  0.9% (5)  0.9% (5) 0.7% (4) 1.0% (6)  1.2% (7) 0.7% (4) 0.5% (3)
##        72        73        74       75       76        77       78       79
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 3.4% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.3% (1) 4.3% (1) 4.3% (1)
##  0.0% (0) 4.0% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 7.4% (2) 0.0% (0) 0.0% (0) 3.7% (1) 0.0% (0)
##  4.8% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 7.1% (1) 0.0% (0) 0.0% (0) 0.0% (0) 7.1% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  4.0% (1) 4.0% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 4.0% (1)
##  0.0% (0) 5.6% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  4.2% (1) 0.0% (0) 4.2% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##  5.9% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 3.7% (1)  3.7% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 5.0% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 4.2% (1) 4.2% (1) 0.0% (0) 0.0% (0) 4.2% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 5.9% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 14.3% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 4.8% (1)  0.0% (0) 4.8% (1) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
```

```
##  0.0% (0) 0.0% (0)  5.6% (1) 0.0% (0) 5.6% (1) 5.6% (1) 0.0% (0) 0.0% (0)
##  0.0% (0) 8.0% (2)  0.0% (0) 0.0% (0) 0.0% (0) 4.0% (1) 4.0% (1) 0.0% (0)
##  0.0% (0) 4.5% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##     - (0)    - (0)     - (0)    - (0)    - (0)    - (0)    - (0)    - (0)
##  0.5% (3) 1.4% (8)  0.7% (4) 0.9% (5) 0.9% (5) 0.5% (3) 0.5% (3) 0.9% (5)
##        80       81       82       83       84       85       86       87
##  3.4% (1) 3.4% (1) 0.0% (0) 0.0% (0)  3.4% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.3% (1)
##  0.0% (0) 4.0% (1) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 3.7% (1) 0.0% (0)  0.0% (0) 3.7% (1) 0.0% (0) 3.7% (1)
##  0.0% (0) 4.8% (1) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 4.8% (1) 0.0% (0)
##  0.0% (0) 0.0% (0) 4.0% (1) 4.0% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 7.1% (1) 0.0% (0) 0.0% (0)
##  6.7% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 4.0% (1)  0.0% (0) 4.0% (1) 4.0% (1) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 5.6% (1)
##  0.0% (0) 0.0% (0) 0.0% (0) 4.2% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 3.7% (1) 3.7% (1) 3.7% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 5.6% (1) 5.6% (1) 0.0% (0)  0.0% (0) 0.0% (0) 5.6% (1) 0.0% (0)
##  0.0% (0) 5.3% (1) 0.0% (0) 0.0% (0) 10.5% (2) 5.3% (1) 0.0% (0) 5.3% (1)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 5.0% (1) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 5.0% (1) 0.0% (0)  5.0% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 5.9% (1) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 6.2% (1)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  4.0% (1) 0.0% (0) 0.0% (0) 4.0% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 4.5% (1) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##     - (0)    - (0)    - (0)    - (0)     - (0)    - (0)    - (0)    - (0)
##  0.5% (3) 1.4% (8) 0.9% (5) 0.9% (5)  0.7% (4) 0.9% (5) 0.5% (3) 0.9% (5)
##        88       89       90       91       92       93       94       95
##  6.9% (2) 0.0% (0)  3.4% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 3.4% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 4.3% (1) 0.0% (0) 0.0% (0)  0.0% (0) 4.3% (1)
##  0.0% (0) 4.0% (1)  4.0% (1) 4.0% (1) 4.0% (1) 0.0% (0)  4.0% (1) 0.0% (0)
##  0.0% (0) 0.0% (0) 10.0% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 3.7% (1)  0.0% (0) 0.0% (0) 3.7% (1) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 4.0% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 6.7% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0) 16.7% (1) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 6.7% (1) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 4.0% (1) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  4.2% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 5.9% (1) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
```

```
##  3.7% (1) 0.0% (0)  3.7% (1) 3.7% (1) 0.0% (0) 3.7% (1)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  5.6% (1) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 5.0% (1) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 5.0% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 5.0% (1)
##  6.2% (1) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 8.3% (2)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 5.9% (1) 0.0% (0)  5.9% (1) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 6.2% (1)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  4.8% (1) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)  0.0% (0) 5.6% (1)
##  0.0% (0) 0.0% (0)  0.0% (0) 0.0% (0) 0.0% (0) 4.0% (1)  0.0% (0) 0.0% (0)
##  0.0% (0) 4.5% (1)  0.0% (0) 0.0% (0) 4.5% (1) 0.0% (0)  0.0% (0) 0.0% (0)
##     - (0)    - (0)     - (0)    - (0)    - (0)    - (0)     - (0)    - (0)
##  0.7% (4) 0.9% (5)  1.0% (6) 0.7% (4) 1.2% (7) 0.3% (2)  0.7% (4) 1.4% (8)
##        96       97       98       99
##  0.0% (0) 0.0% (0) 0.0% (0) 3.4% (1)
##  0.0% (0) 0.0% (0) 0.0% (0) 4.3% (1)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  4.8% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 8.0% (2) 0.0% (0)
##  0.0% (0) 0.0% (0) 7.1% (1) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 6.7% (1)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  4.2% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##  5.9% (1) 5.9% (1) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  5.6% (1) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 5.0% (1) 0.0% (0) 0.0% (0)
##  6.2% (1) 0.0% (0) 0.0% (0) 6.2% (1)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 5.9% (1) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 6.2% (1) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 4.8% (1)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 0.0% (0)
##  0.0% (0) 0.0% (0) 0.0% (0) 4.5% (1)
##     - (0)    - (0)    - (0)    - (0)
##  0.9% (5) 0.7% (4) 0.5% (3) 1.0% (6)
```

```
get_summary_stats(data = endpoint,
                  variables,
                  type = "common")
```

```
## Warning: Using an external vector in selections was deprecated in tidyselect 1.1.0.
## ℹ Please use `all_of()` or `any_of()` instead.
##   # Was:
##   data %>% select(variables)
##
##   # Now:
##   data %>% select(all_of(variables))
##
## See <https://tidyselect.r-lib.org/reference/faq-external-vector.html>.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

```
## # A tibble: 4 × 10
##   variable       n   min   max median   iqr  mean    sd    se    ci
##   <fct>      <dbl> <dbl> <dbl>  <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1 DW_shoot_g   572     0 0.538  0.238 0.122 0.24  0.095 0.004 0.008
## 2 FW_shoot_g   574     0 8.63   3.48  2.07  3.52  1.60  0.067 0.131
## 3 DW_root_g    577     0 0.275  0.102 0.056 0.104 0.048 0.002 0.004
## 4 FW_root_g    576     0 7.29   2.52  1.78  2.57  1.33  0.055 0.109
```

```
skim(endpoint[variables])
```

Data summary

Name	endpoint[variables]
Number of rows	578
Number of columns	4
_____	
Column type frequency:	
numeric	4
_____	
Group variables	None

Variable type: numeric

skim_variable	n_missing	complete_rate	mean	sd	p0	p25	p50	p75	p100	hist
DW_shoot_g	6	0.99	0.24	0.09	0	0.18	0.24	0.30	0.54	▂▅▇▃▁
FW_shoot_g	4	0.99	3.52	1.60	0	2.51	3.48	4.58	8.63	▂▇▇▃▁
DW_root_g	1	1.00	0.10	0.05	0	0.07	0.10	0.13	0.28	▂▇▆▂▁
FW_root_g	2	1.00	2.57	1.33	0	1.65	2.51	3.43	7.29	▂▇▆▂▁

Data visualization

Using several functions that are located in the functions.R script

Boxplots

```
create_boxplots(endpoint, variables, "Genotype")
```

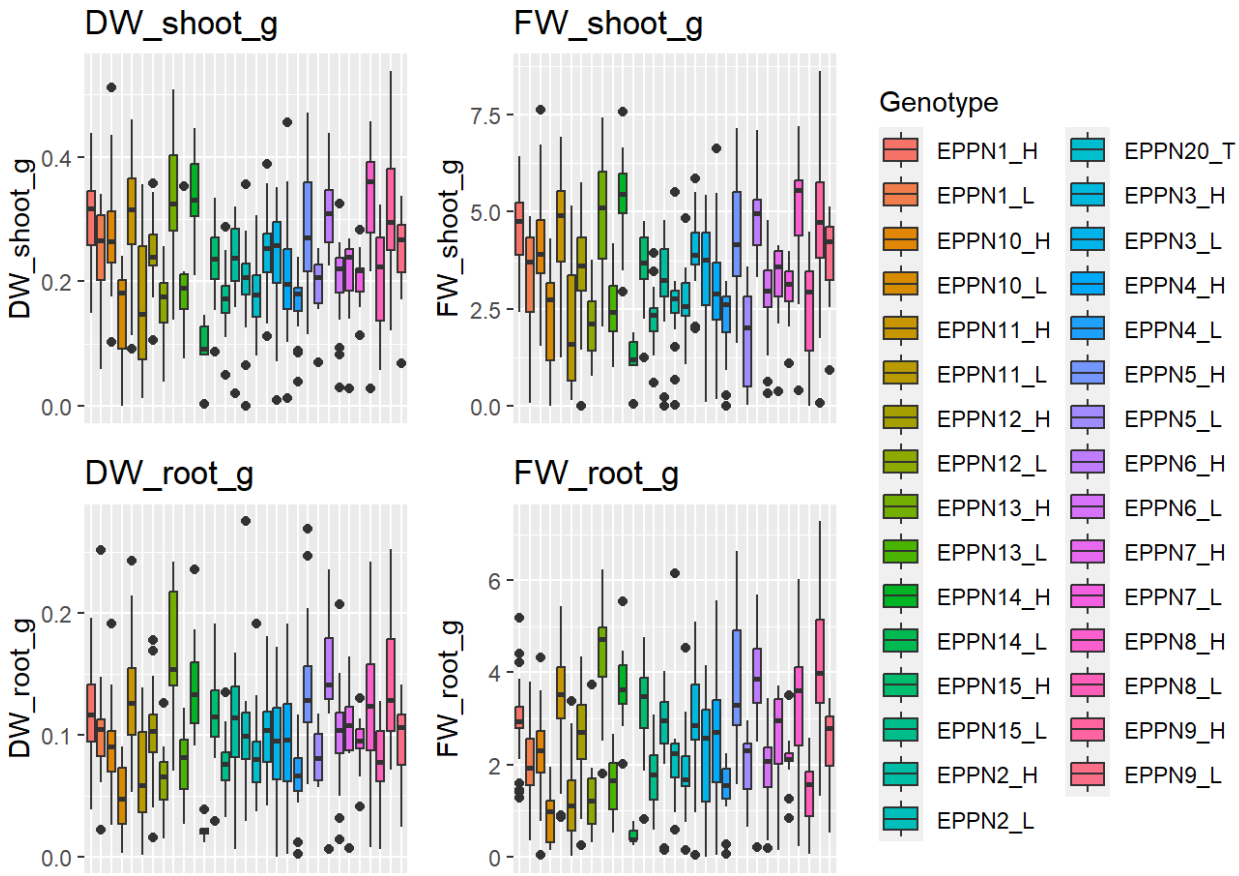
```
## Warning: `aes_string()` was deprecated in ggplot2 3.0.0.
## ℹ Please use tidy evaluation idioms with `aes()`.
## ℹ See also `vignette("ggplot2-in-packages")` for more information.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

```
## Warning: Removed 6 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 4 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 1 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 2 rows containing non-finite values (`stat_boxplot()`).
```



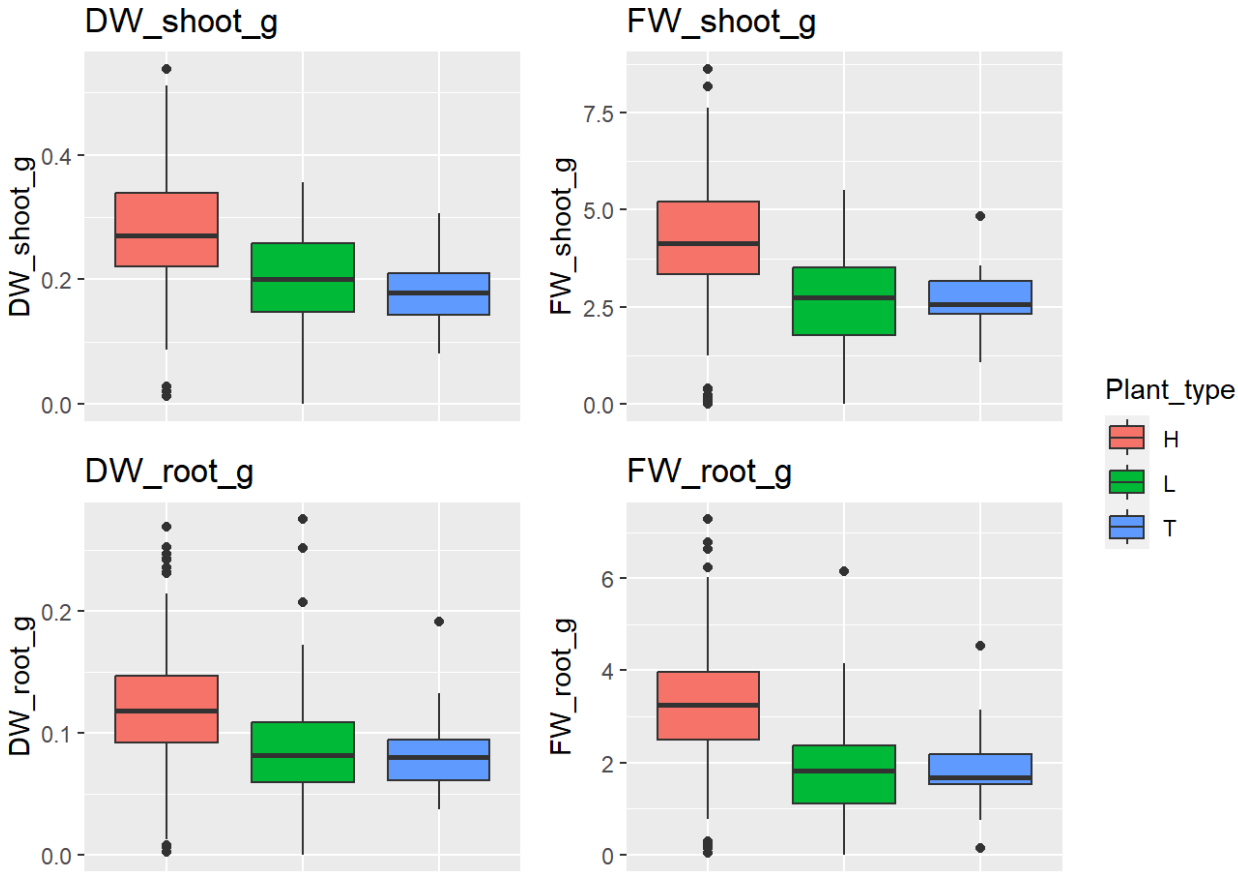

```
create_boxplots(endpoint, variables, "Plant_type")
```

```
## Warning: Removed 6 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 4 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 1 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 2 rows containing non-finite values (`stat_boxplot()`).
```



Correlation plots

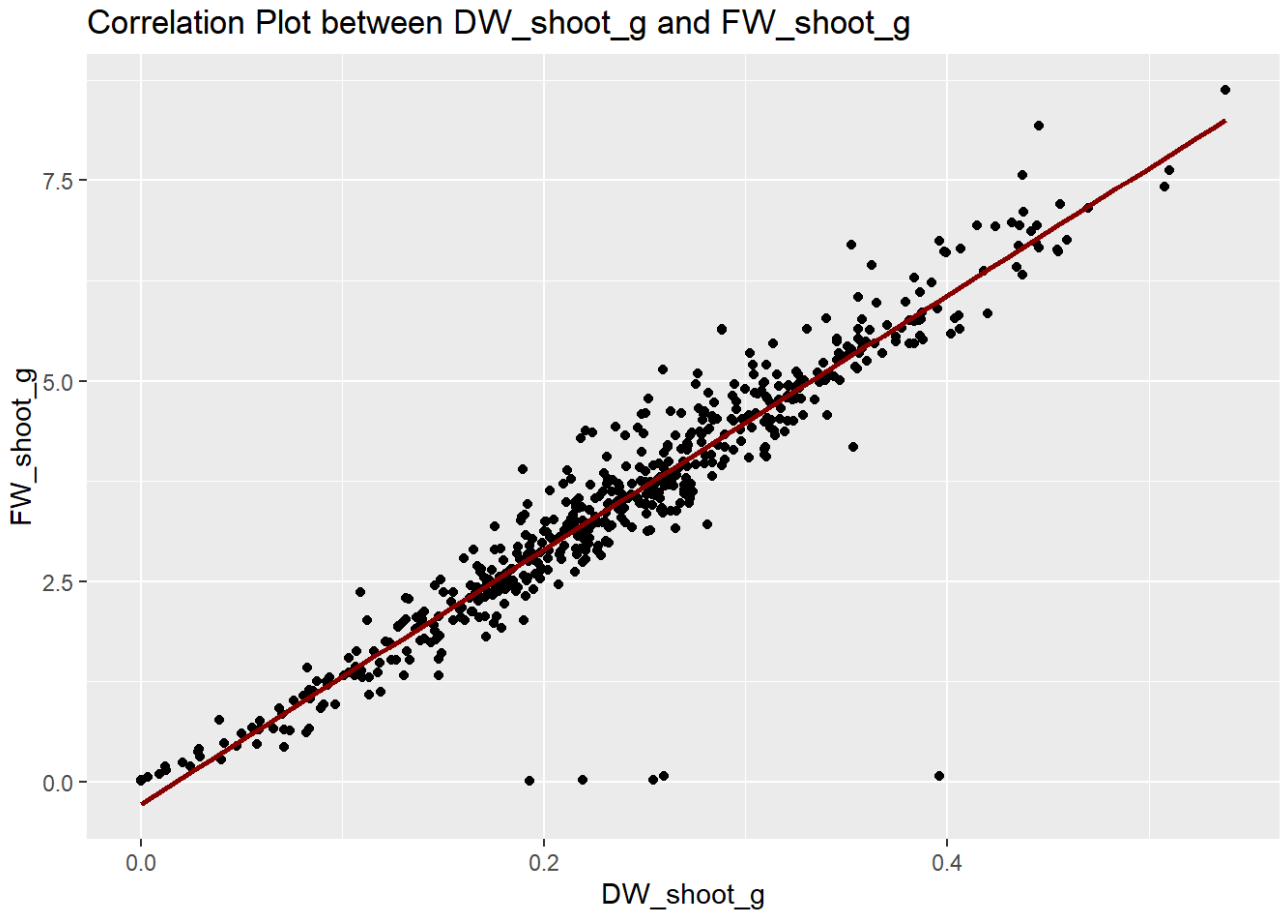
```
for (i in 1:(length(variables) - 1)) {
  for (j in (i + 1):length(variables)) {
    calculate_correlation_plot(endpoint, variables[i], variables[j])
  }
}
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

```
## Warning: Removed 7 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: Removed 7 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 578 rows containing missing values (`geom_text()`).
```

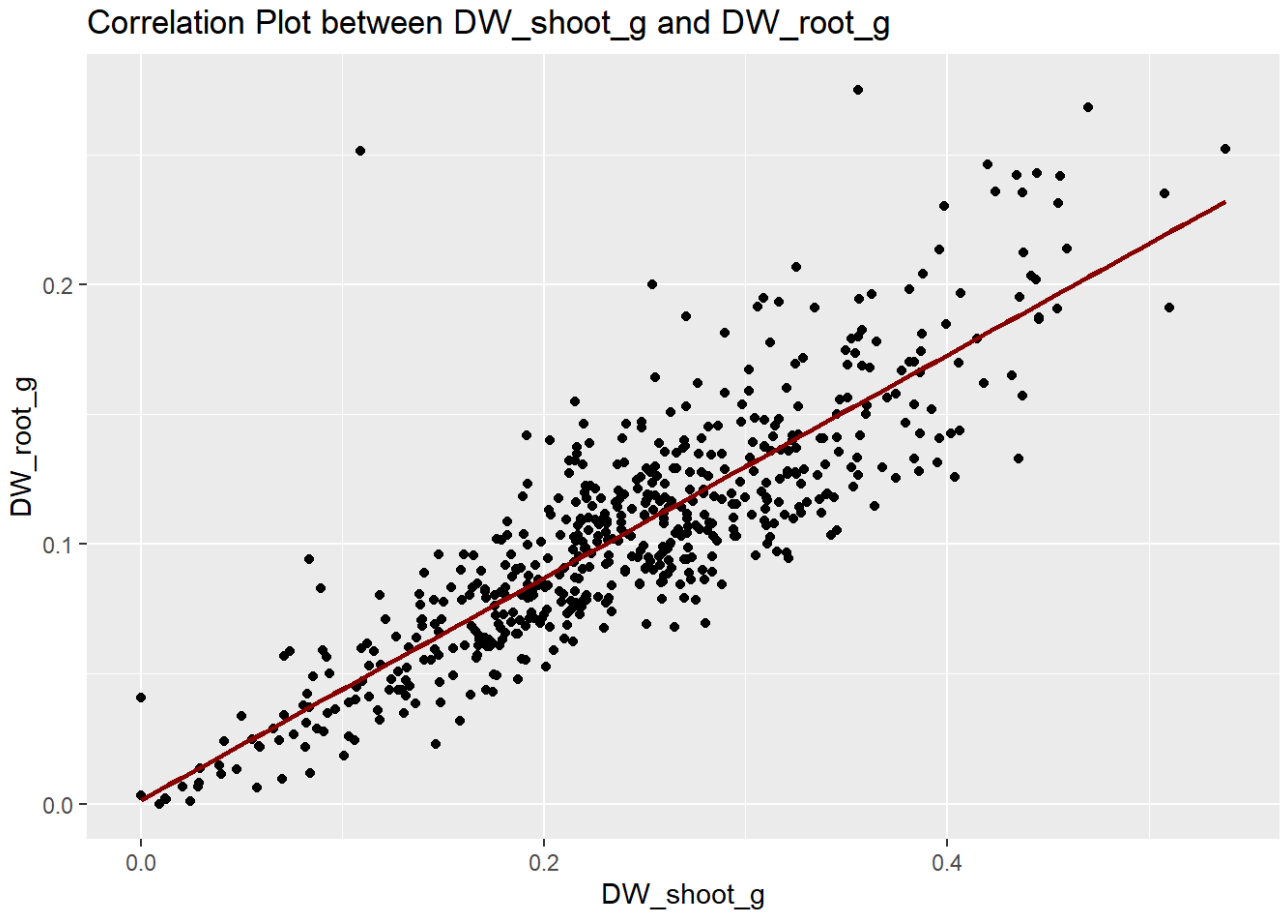



```
## `geom_smooth()` using formula = 'y ~ x'
```

```
## Warning: Removed 7 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: Removed 7 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 578 rows containing missing values (`geom_text()`).
```

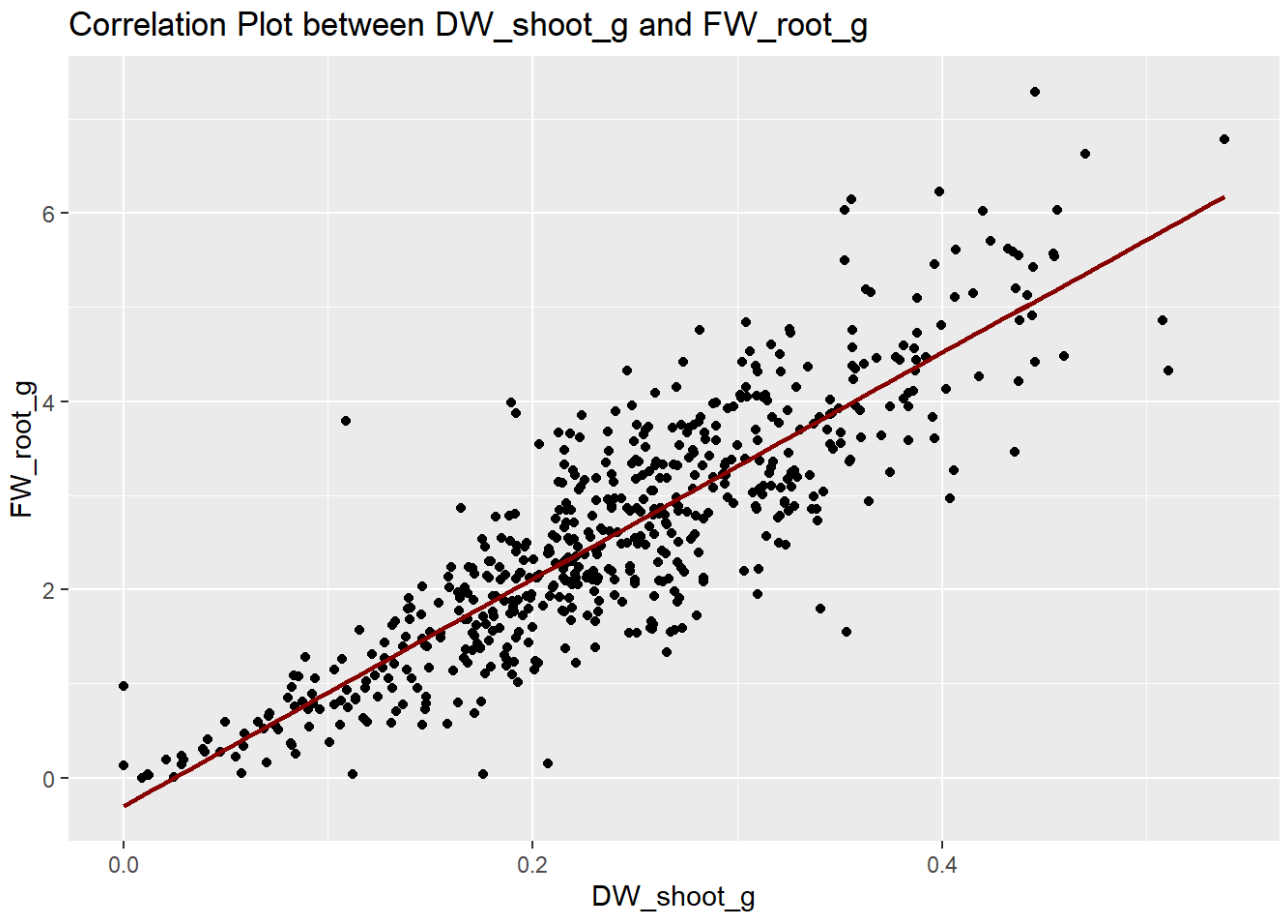



```
## `geom_smooth()` using formula = 'y ~ x'
```

```
## Warning: Removed 8 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: Removed 8 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 578 rows containing missing values (`geom_text()`).
```

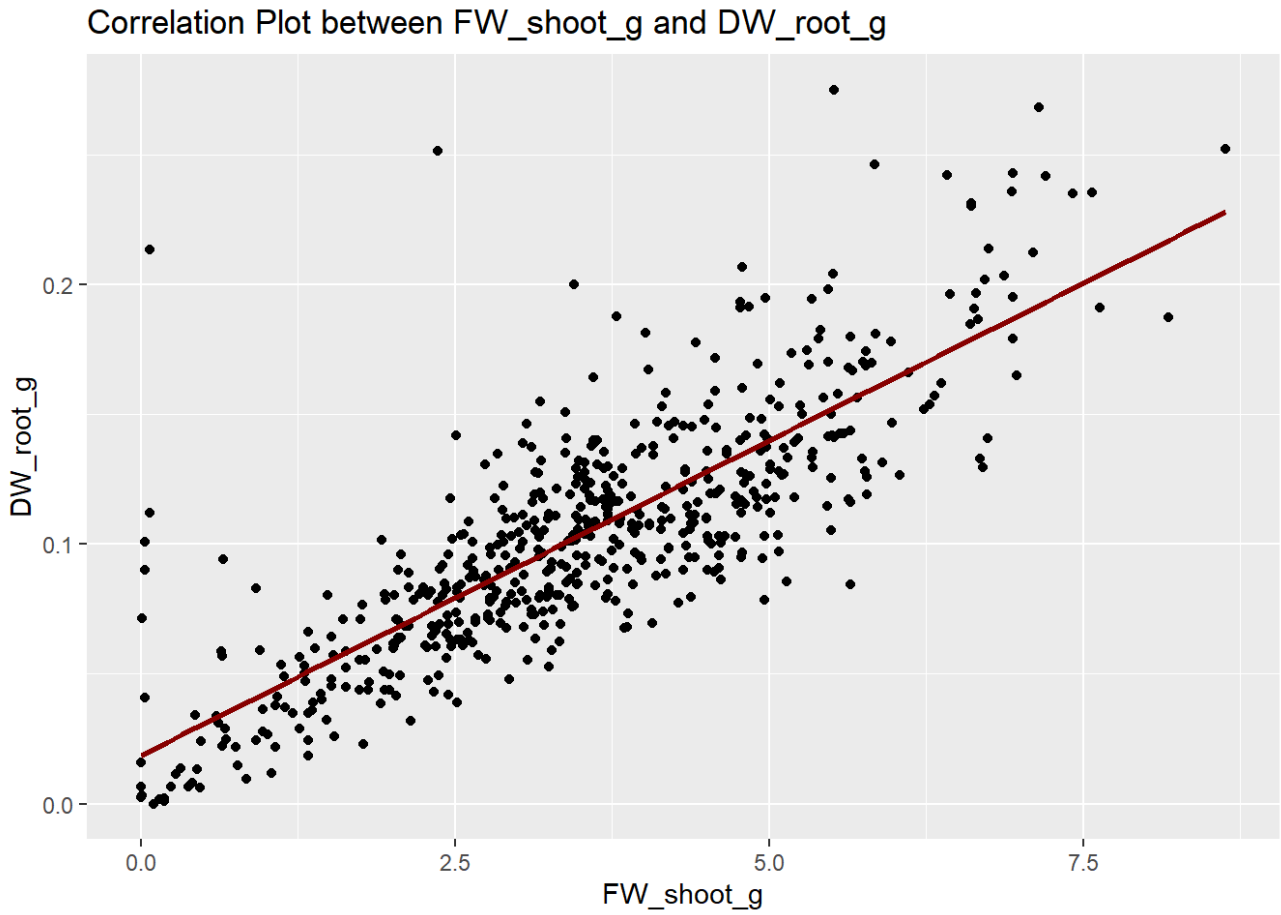



```
## `geom_smooth()` using formula = 'y ~ x'
```

```
## Warning: Removed 5 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: Removed 5 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 578 rows containing missing values (`geom_text()`).
```

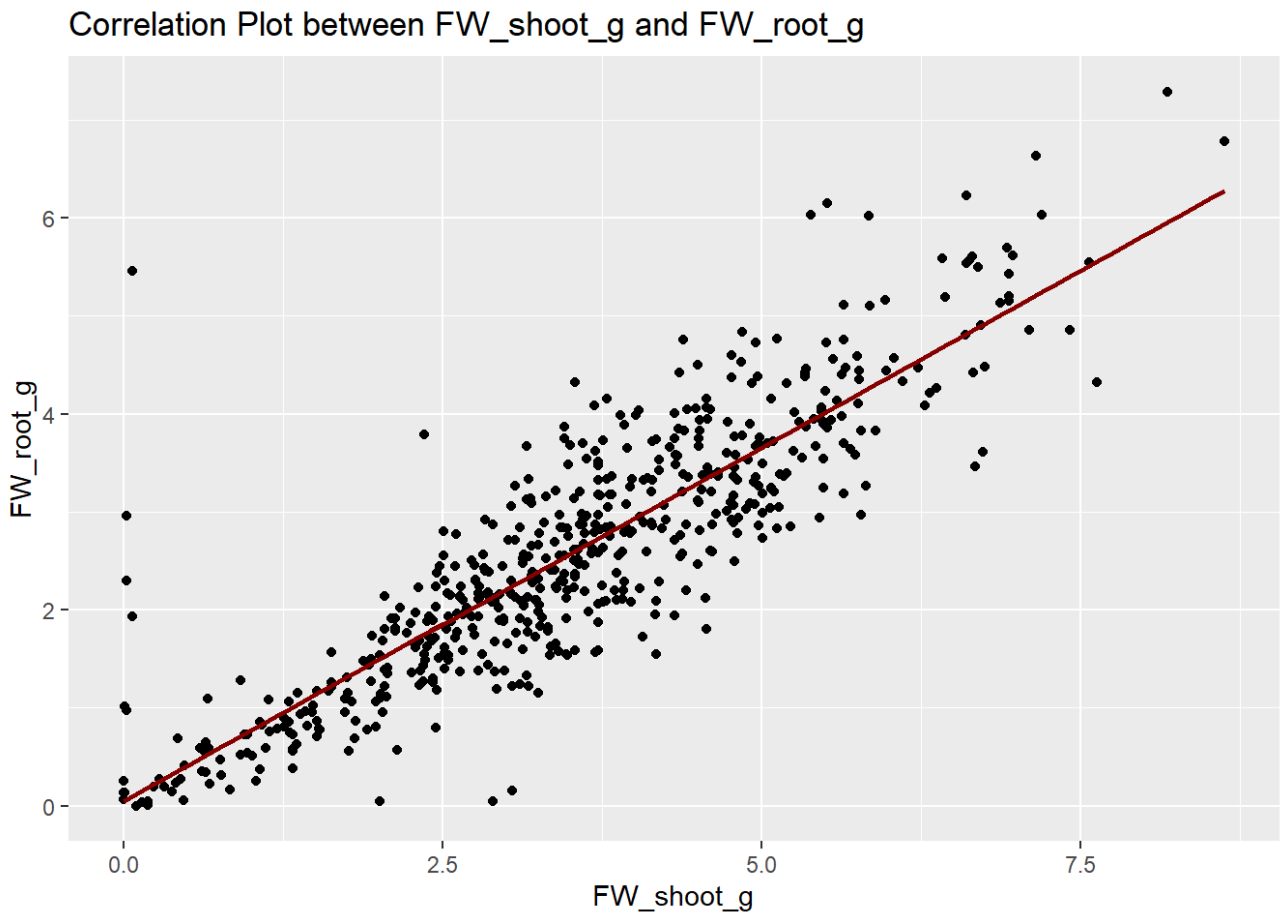



```
## `geom_smooth()` using formula = 'y ~ x'
```

```
## Warning: Removed 6 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: Removed 6 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 578 rows containing missing values (`geom_text()`).
```

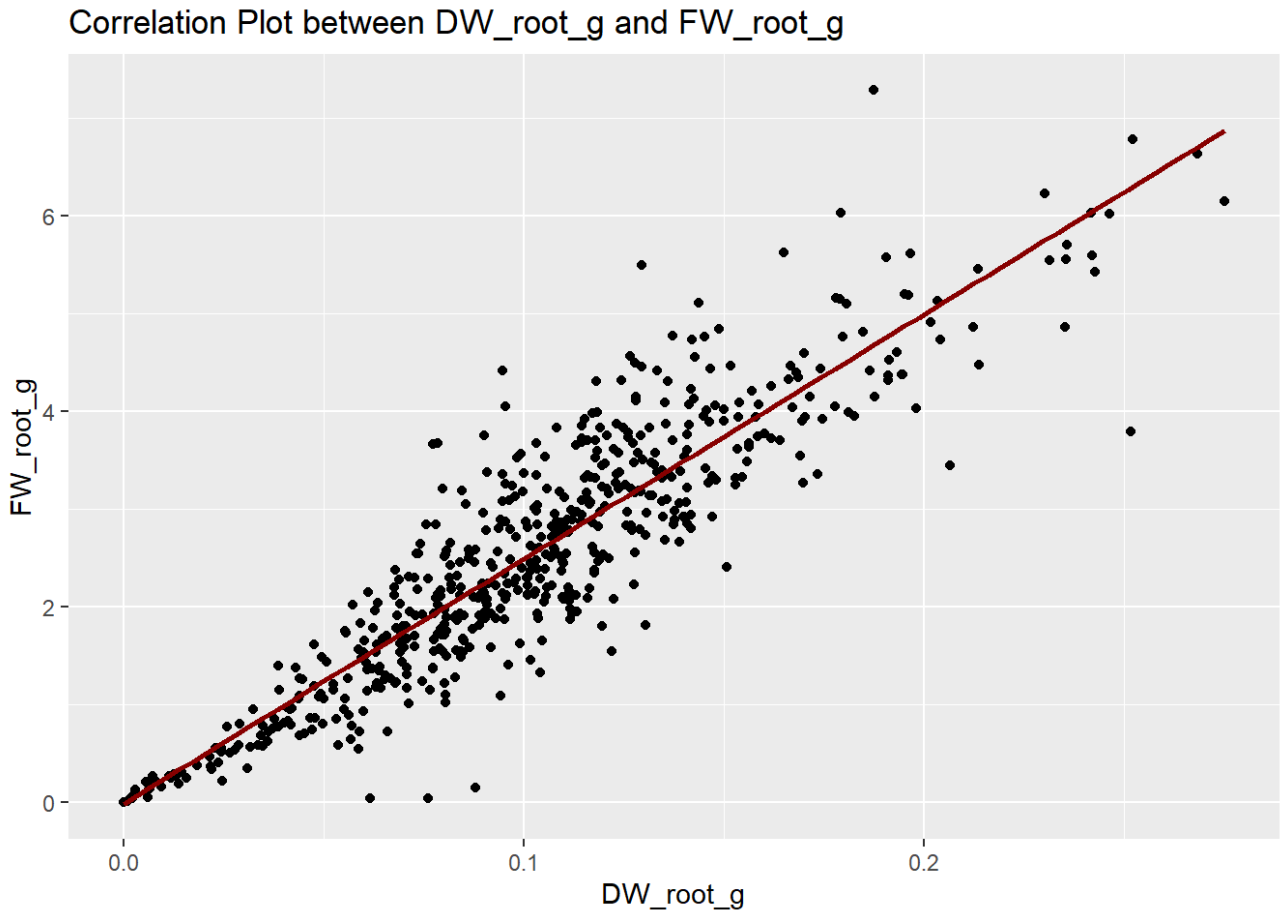



```
## `geom_smooth()` using formula = 'y ~ x'
```

```
## Warning: Removed 2 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: Removed 2 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 578 rows containing missing values (`geom_text()`).
```

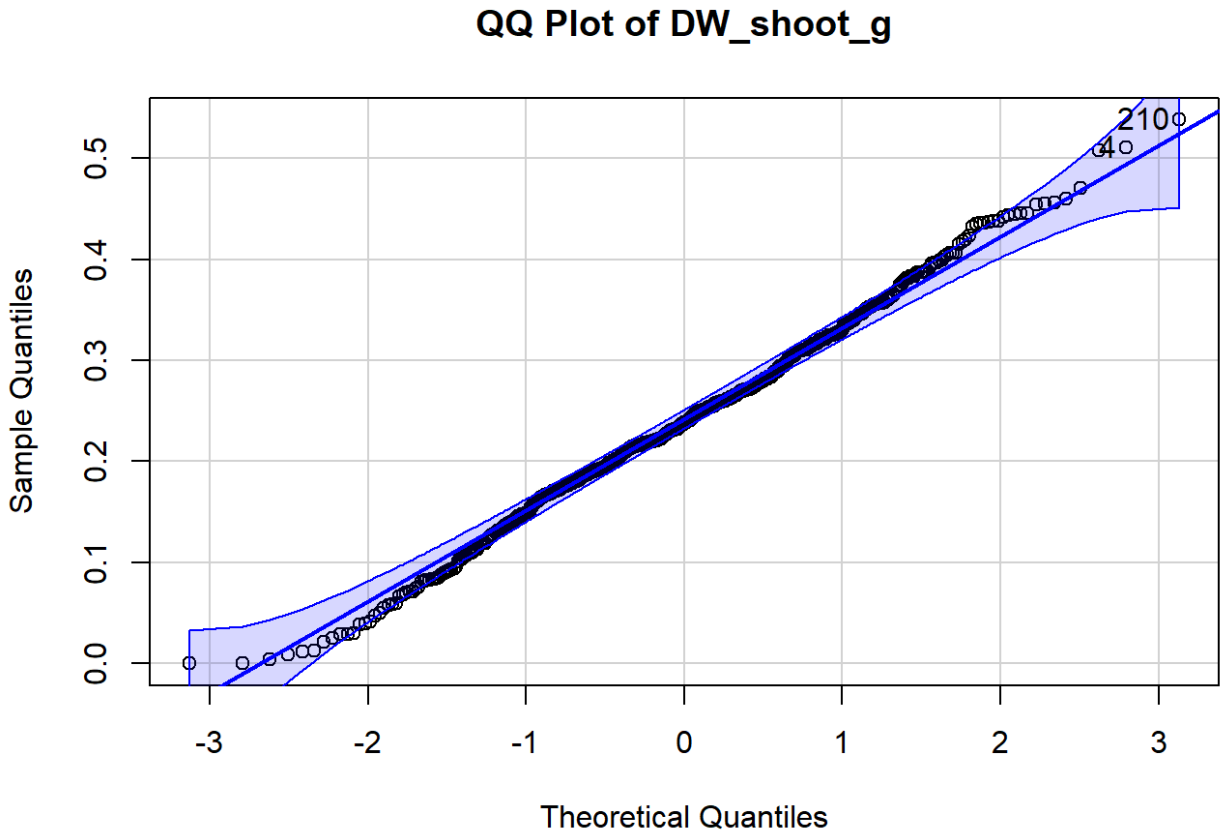


B. Normality hypothesis and outlier detection

Test for normality hypothesis and plot density histogram. The red curve is the normal distribution, the blue dotted curve is the data density curve.

```
normality_results <- normality_test_histogram(endpoint)
```

```
## Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
## ℹ Please use `linewidth` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

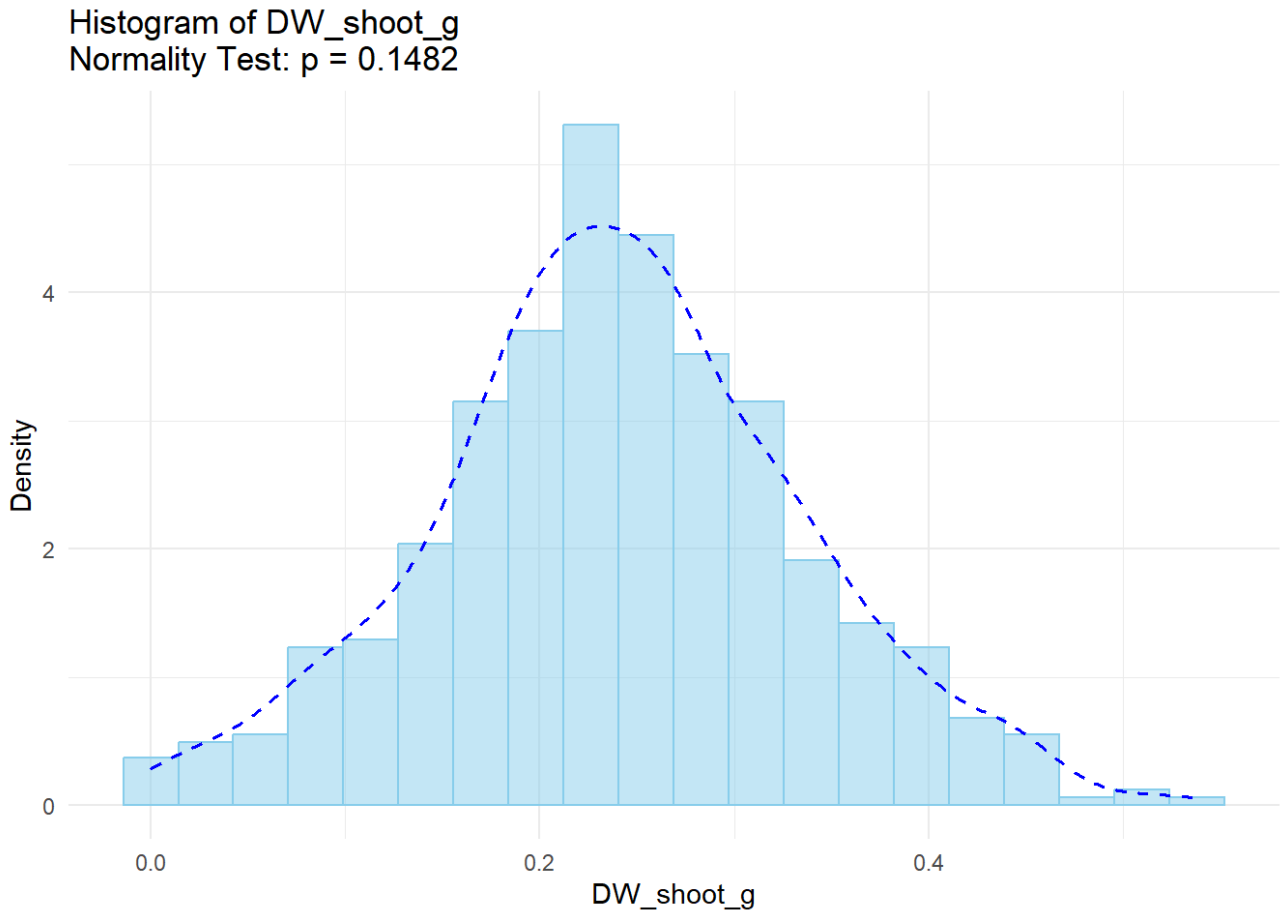



```
## Warning: The dot-dot notation (`..density..`) was deprecated in ggplot2 3.4.0.
## ℹ Please use `after_stat(density)` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

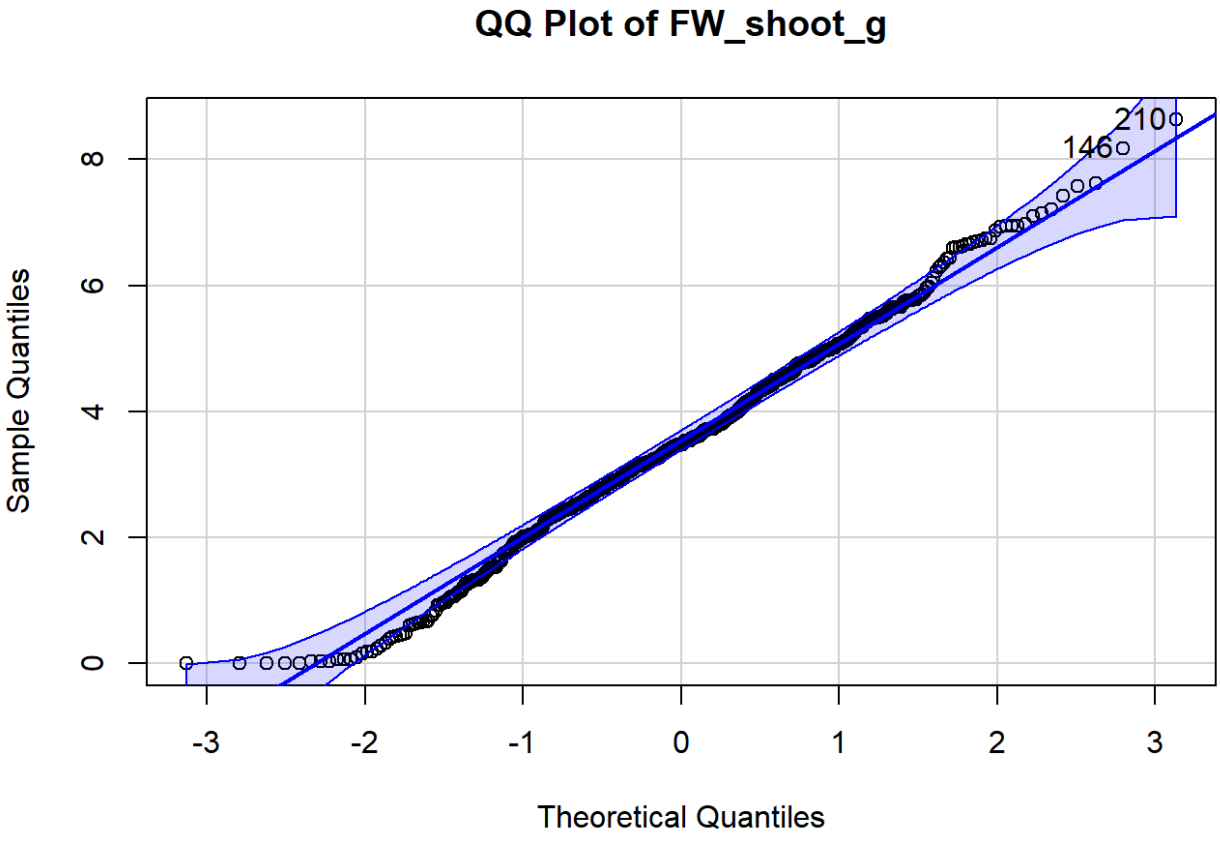
```
## Warning: Removed 6 rows containing non-finite values (`stat_bin()`).
```

```
## Warning: Removed 6 rows containing non-finite values (`stat_density()`).
```

```
## Warning: Removed 101 rows containing missing values (`geom_function()`).
```



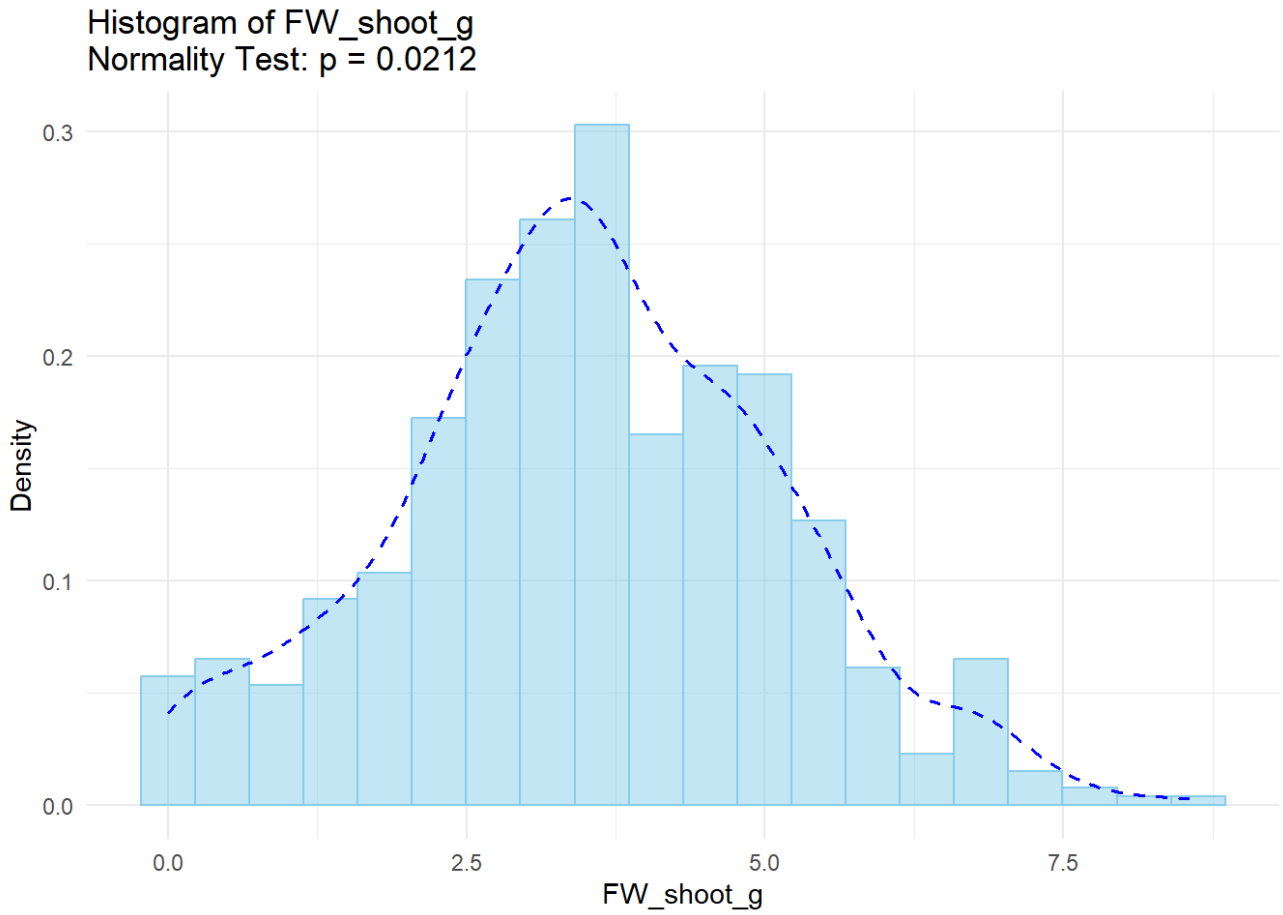

```
## [1] 210   4
```



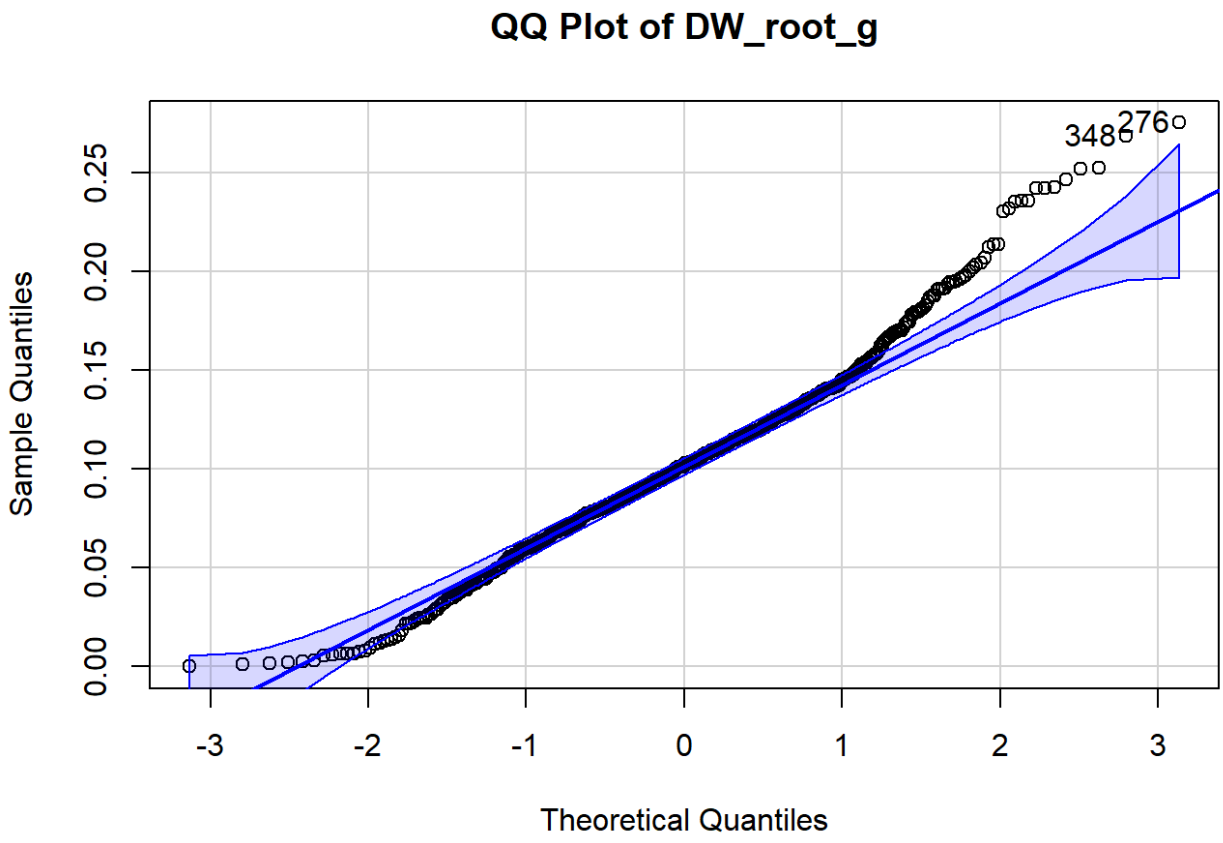

```
## Warning: Removed 4 rows containing non-finite values (`stat_bin()`).
```

```
## Warning: Removed 4 rows containing non-finite values (`stat_density()`).
```

```
## Warning: Removed 101 rows containing missing values (`geom_function()`).
```



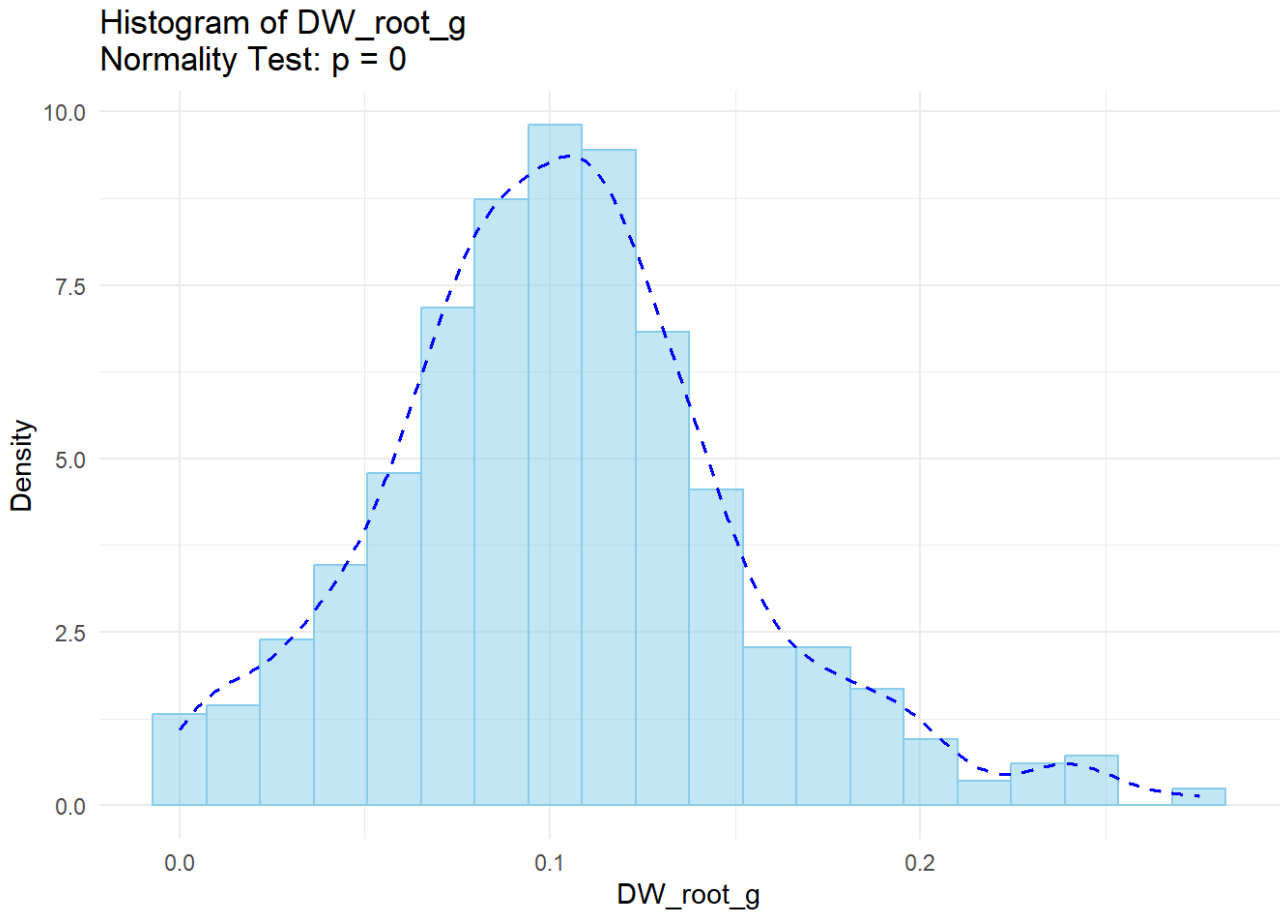

```
## [1] 210 146
```



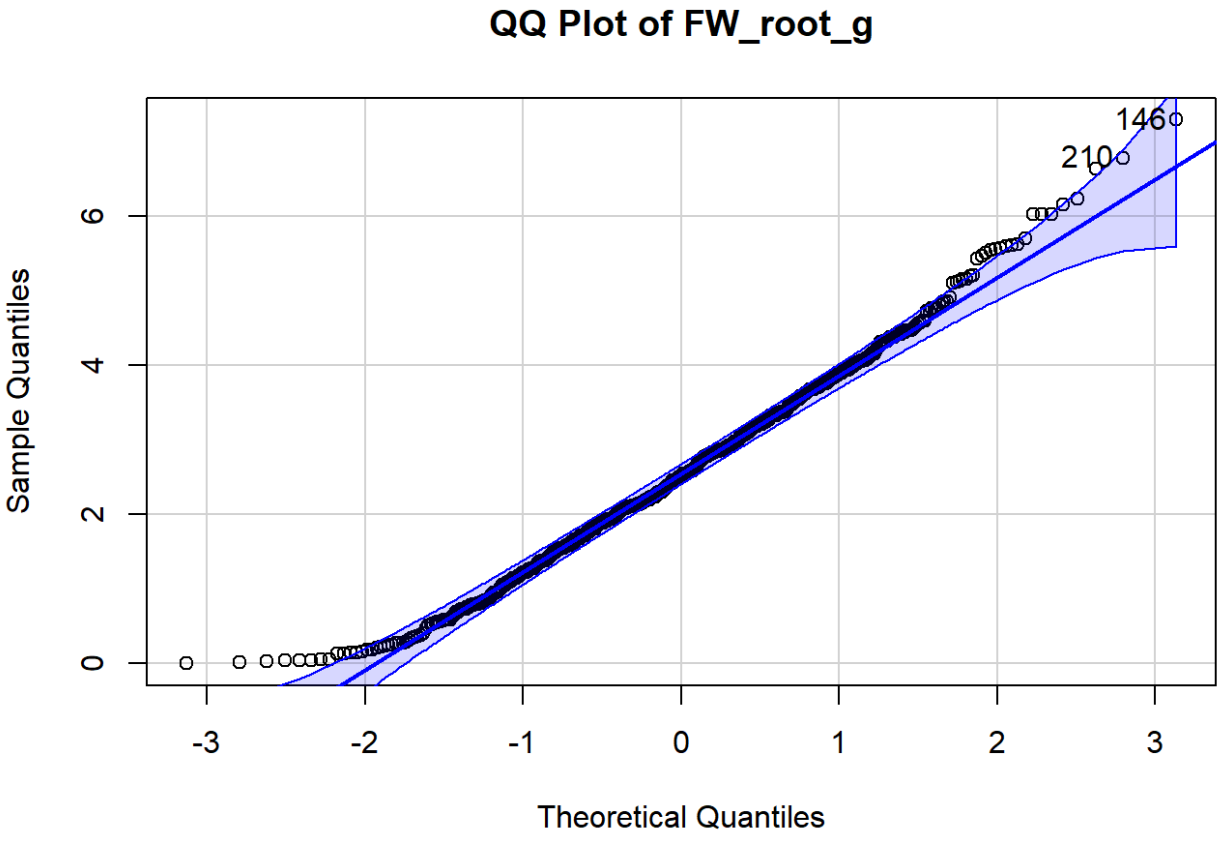

```
## Warning: Removed 1 rows containing non-finite values (`stat_bin()`).
```

```
## Warning: Removed 1 rows containing non-finite values (`stat_density()`).
```

```
## Warning: Removed 101 rows containing missing values (`geom_function()`).
```



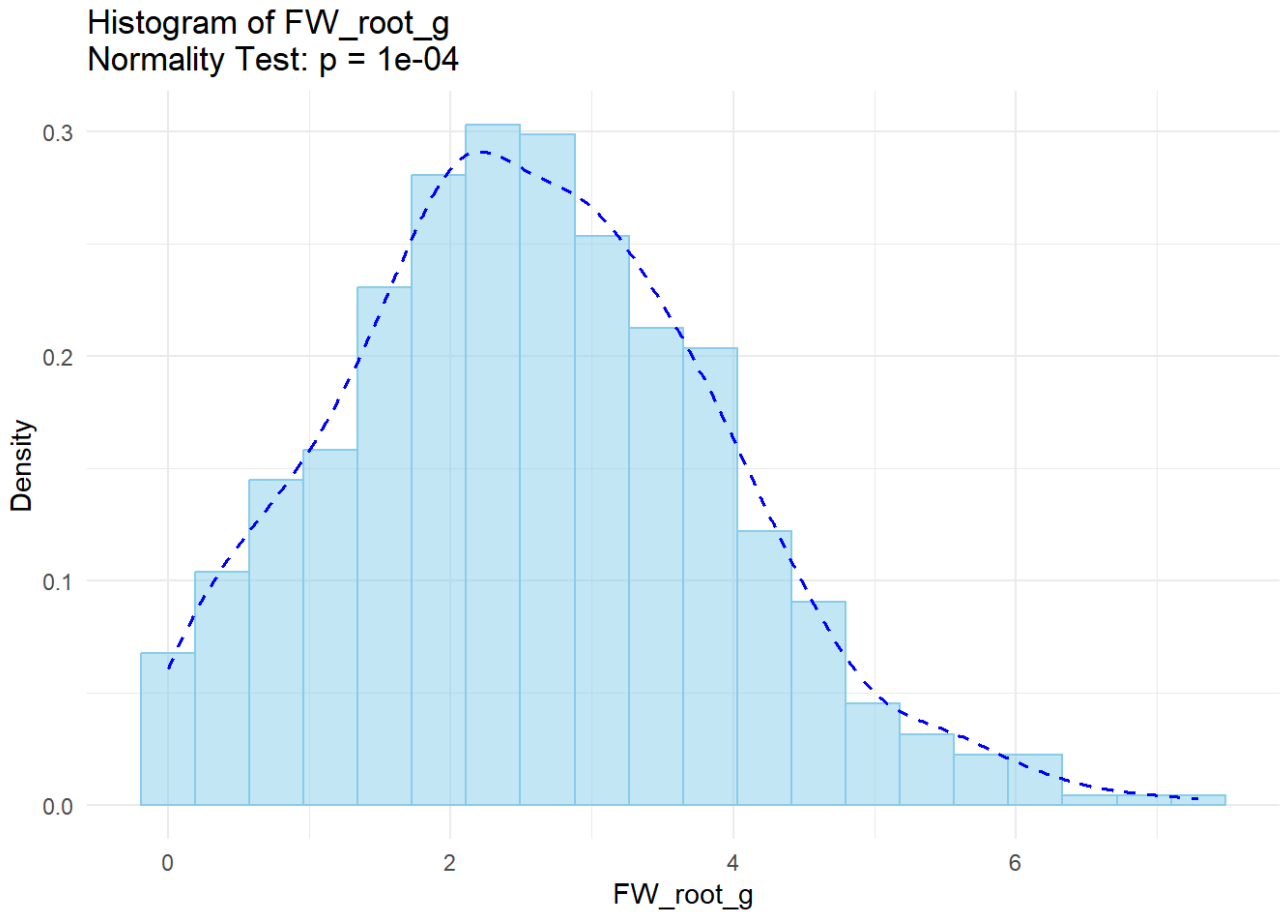

```
## [1] 276 348
```




```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```

```
## Warning: Removed 2 rows containing non-finite values (`stat_density()`).
```

```
## Warning: Removed 101 rows containing missing values (`geom_function()`).
```




```
## [1] 146 210
```

Remove the outliers, replacing them with NULL values and normality visual verification.

The function detect_replace_ouliers_by_genotype checks for outlying values, using the Tukey method.

Then run the function on all variables of the dataset.

```
endpoint_clean <- endpoint
# Run the function on the dataset for all the variables
endpoint_clean <- detect_replace_outliers_by_genotype(endpoint_clean)
```

Boxplots after outlier detection

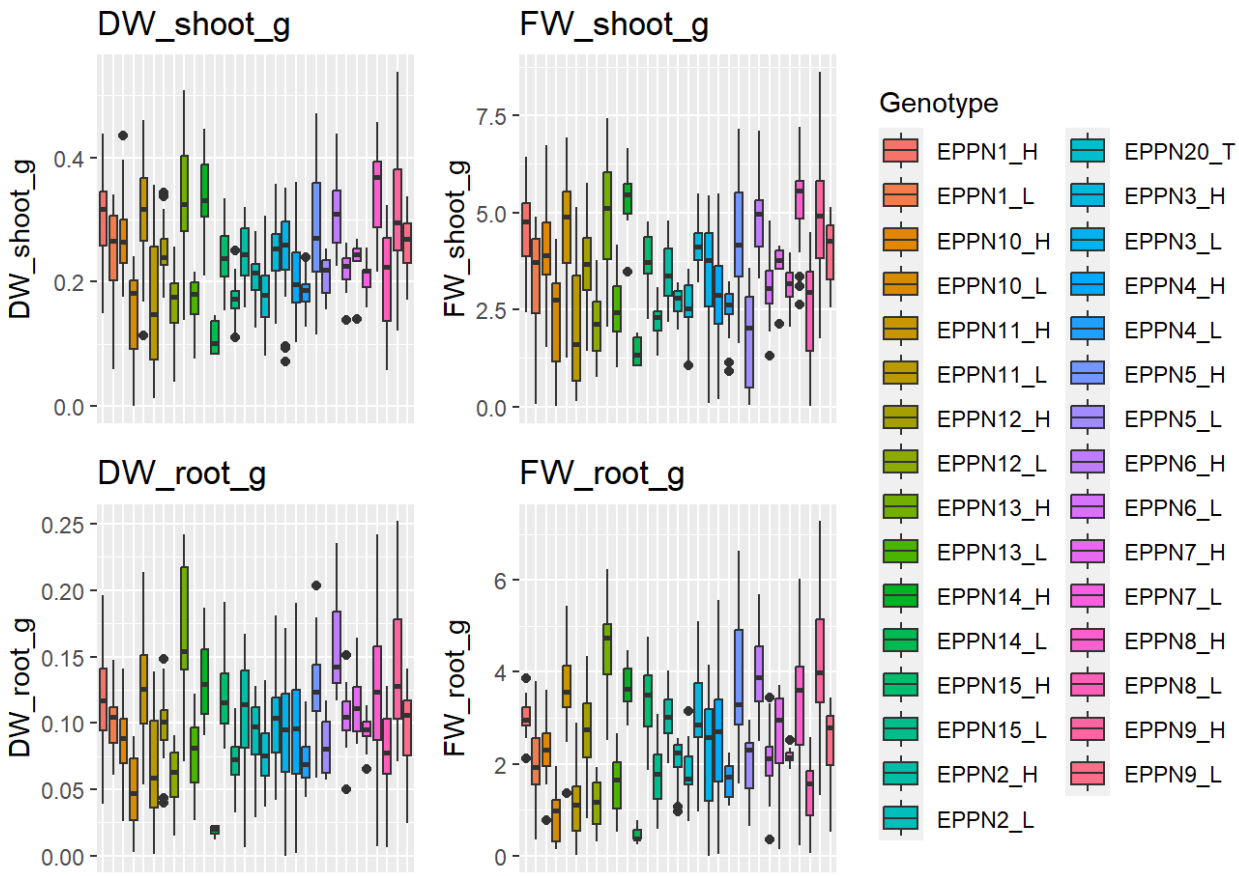
```
create_boxplots(endpoint_clean, variables, "Genotype")
```

```
## Warning: Removed 38 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 34 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 26 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 34 rows containing non-finite values (`stat_boxplot()`).
```

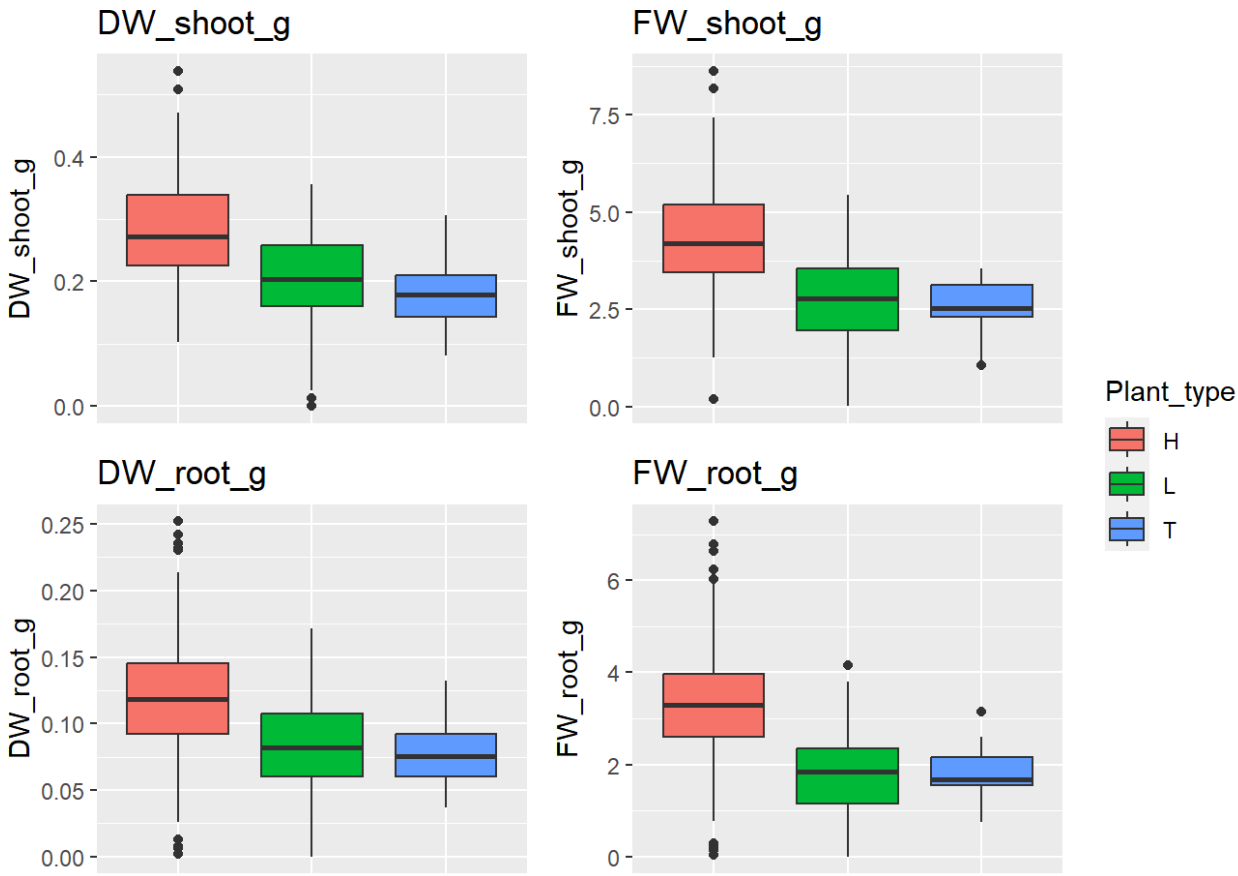



```
create_boxplots(endpoint_clean, variables, "Plant_type")
```

```
## Warning: Removed 38 rows containing non-finite values (`stat_boxplot()`).
## Removed 34 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 26 rows containing non-finite values (`stat_boxplot()`).
```

```
## Warning: Removed 34 rows containing non-finite values (`stat_boxplot()`).
```



Violin and sina plots after outlier detection

```
create_violin_plots(endpoint_clean, variables, "Genotype")
```

```
## Warning: The `size` argument of `element_line()` is deprecated as of ggplot2 3.4.0.
## ℹ Please use the `linewidth` argument instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

```
## Warning: Removed 38 rows containing non-finite values (`stat_ydensity()`).
```

```
## Warning: Removed 38 rows containing non-finite values (`stat_sina()`).
```

```
## Warning: Removed 34 rows containing non-finite values (`stat_ydensity()`).
```

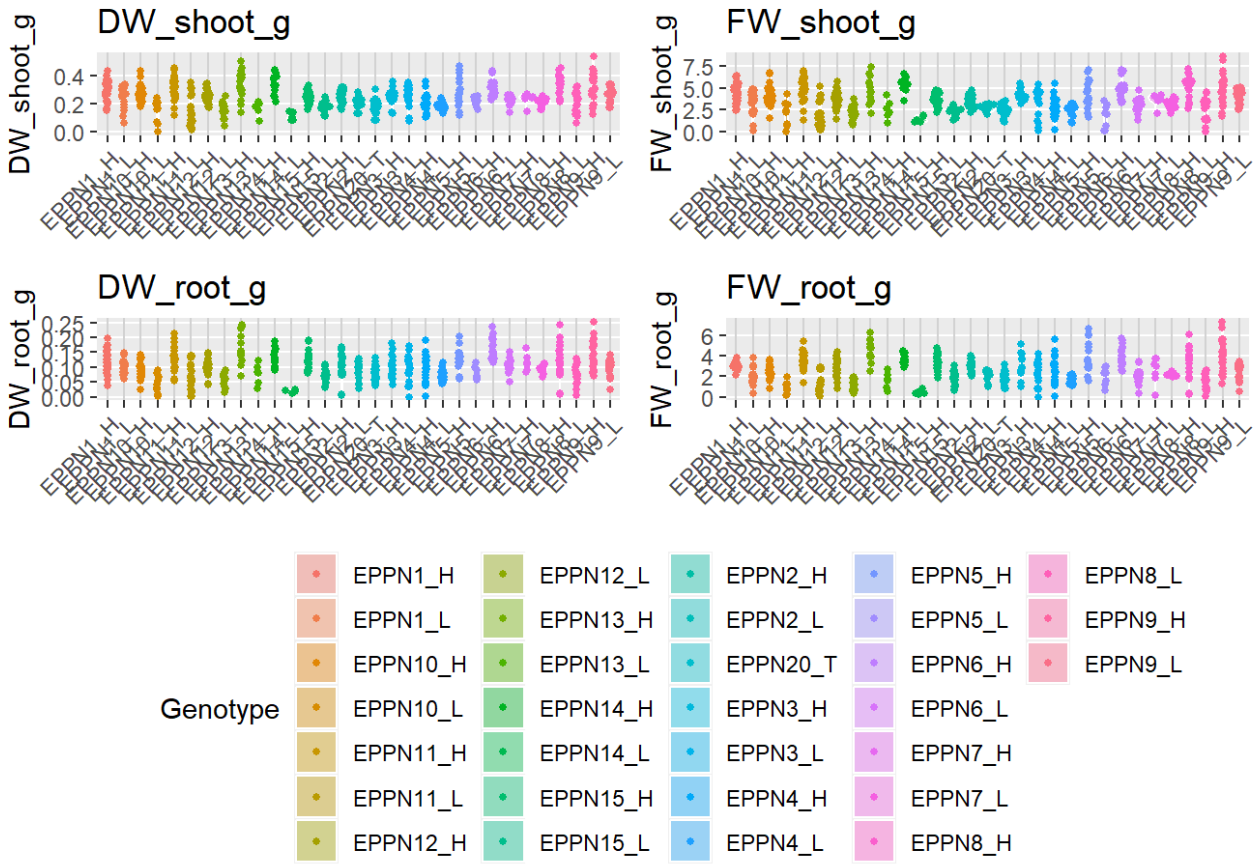
```
## Warning: Removed 34 rows containing non-finite values (`stat_sina()`).
```

```
## Warning: Removed 26 rows containing non-finite values (`stat_ydensity()`).
```

```
## Warning: Removed 26 rows containing non-finite values (`stat_sina()`).
```

```
## Warning: Removed 34 rows containing non-finite values (`stat_ydensity()`).
```

```
## Warning: Removed 34 rows containing non-finite values (`stat_sina()`).
```




```
create_violin_plots(endpoint_clean, variables, "Plant_type")
```

```
## Warning: Removed 38 rows containing non-finite values (`stat_ydensity()`).
```

```
## Warning: Removed 38 rows containing non-finite values (`stat_sina()`).
```

```
## Warning: Removed 34 rows containing non-finite values (`stat_ydensity()`).
```

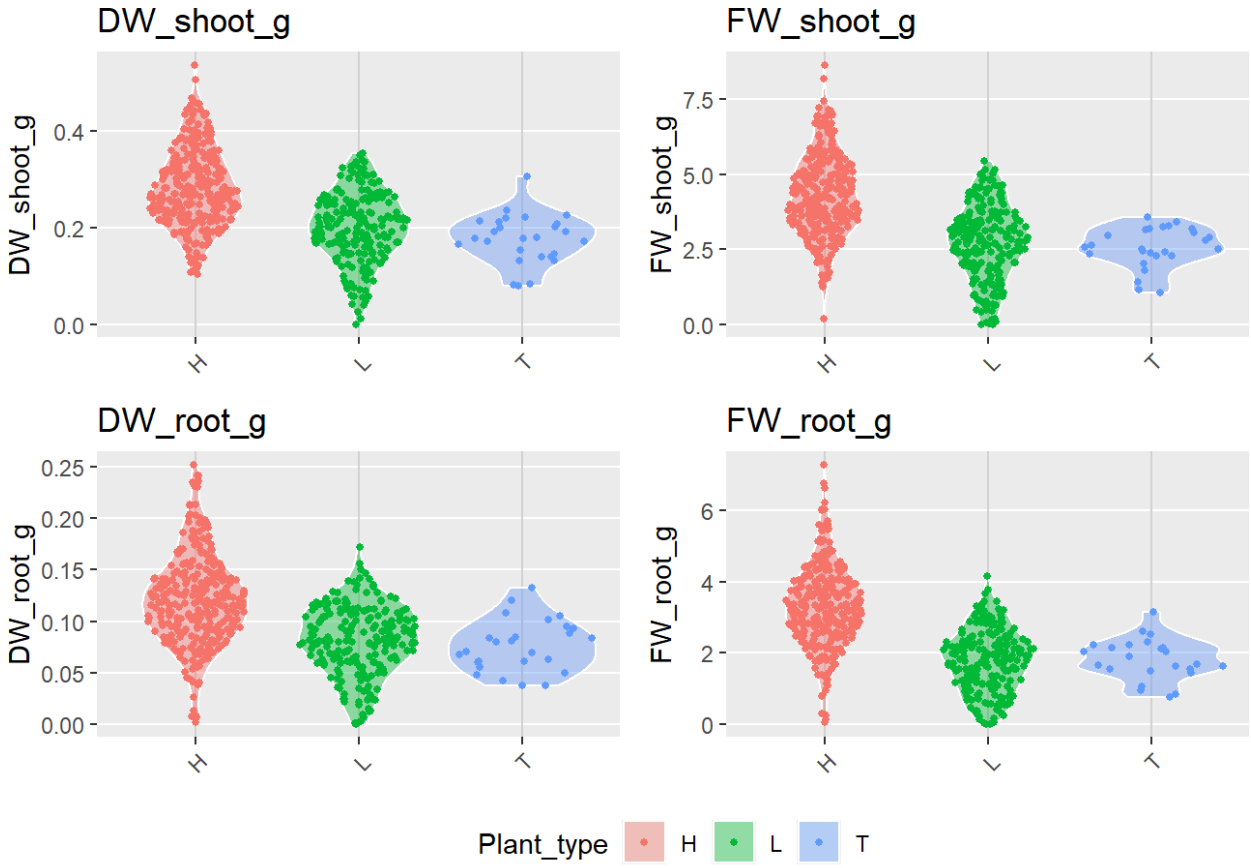
```
## Warning: Removed 34 rows containing non-finite values (`stat_sina()`).
```

```
## Warning: Removed 26 rows containing non-finite values (`stat_ydensity()`).
```

```
## Warning: Removed 26 rows containing non-finite values (`stat_sina()`).
```

```
## Warning: Removed 34 rows containing non-finite values (`stat_ydensity()`).
```

```
## Warning: Removed 34 rows containing non-finite values (`stat_sina()`).
```



Exploration statistics for the variables after outlier detection

```
skim(endpoint_clean[variables])
```

Data summary

Name	endpoint_clean[variables]
Number of rows	578
Number of columns	4
_____	
Column type frequency:	
numeric	4
_____	
Group variables	None

Variable type: numeric

skim_variable	n_missing	complete_rate	mean	sd	p0	p25	p50	p75	p100	hist
DW_shoot_g	38	0.93	0.25	0.09	0.00	0.19	0.24	0.30	0.54	▁▃▇▂▁
FW_shoot_g	34	0.94	3.59	1.51	0.01	2.61	3.53	4.60	8.63	▂▇▇▂▁
DW_root_g	26	0.96	0.10	0.04	0.00	0.07	0.10	0.13	0.25	▂▇▇▂▁

skim_variable	n_missing	complete_rate	mean	sd	p0	p25	p50	p75	p100	hist
FW_root_g	34	0.94	2.61	1.28	0.00	1.73	2.55	3.40	7.29	▂▇▇▂▁

```
for (var in variables) {
  cat("\nSummary for:", var, "\n")
  endpoint_clean %>%
    group_by(Genotype) %>%
    summarize(mean    = mean(get(var), na.rm = TRUE),
              std.dev = sd(get(var), na.rm = TRUE),
              n_missing  = sum(is.na(get(var)))) %>%
    arrange(desc(mean)) %>%
    print(n = Inf)
}
```

```
##
## Summary for: DW_shoot_g
## # A tibble: 31 × 4
##    Genotype  mean std.dev n_missing
##    <fct>    <dbl>   <dbl>     <int>
##  1 EPPN8_H  0.345  0.0744         3
##  2 EPPN14_H 0.342  0.0710         0
##  3 EPPN13_H 0.333  0.102          0
##  4 EPPN11_H 0.313  0.0807         1
##  5 EPPN6_H  0.312  0.0617         1
##  6 EPPN9_H  0.311  0.100          0
##  7 EPPN1_H  0.297  0.0715         0
##  8 EPPN5_H  0.286  0.105          0
##  9 EPPN10_H 0.271  0.0633         2
## 10 EPPN9_L  0.265  0.0517         1
## 11 EPPN12_H 0.250  0.0471         3
## 12 EPPN1_L  0.247  0.0759         0
## 13 EPPN3_H  0.245  0.0580         2
## 14 EPPN2_H  0.245  0.0474         2
## 15 EPPN15_H 0.240  0.0473         1
## 16 EPPN3_L  0.239  0.0830         1
## 17 EPPN7_H  0.230  0.0459         1
## 18 EPPN6_L  0.220  0.0343         4
## 19 EPPN5_L  0.209  0.0382         1
## 20 EPPN2_L  0.208  0.0437         3
## 21 EPPN7_L  0.207  0.0279         2
## 22 EPPN8_L  0.207  0.0783         0
## 23 EPPN4_H  0.204  0.0698         2
## 24 EPPN4_L  0.186  0.0313         4
## 25 EPPN20_T 0.177  0.0509         0
## 26 EPPN15_L 0.171  0.0369         2
## 27 EPPN13_L 0.164  0.0551         1
## 28 EPPN12_L 0.161  0.0583         0
## 29 EPPN11_L 0.157  0.102          0
## 30 EPPN10_L 0.151  0.0812         0
## 31 EPPN14_L 0.110  0.0298         1
##
## Summary for: FW_shoot_g
## # A tibble: 31 × 4
##    Genotype  mean std.dev n_missing
##    <fct>    <dbl>   <dbl>     <int>
##  1 EPPN14_H  5.42   0.823         2
##  2 EPPN8_H   5.23   1.25          3
##  3 EPPN9_H   4.96   1.75          1
##  4 EPPN13_H  4.94   1.52          0
##  5 EPPN6_H   4.94   1.13          1
##  6 EPPN11_H  4.62   1.45          0
##  7 EPPN1_H   4.56   1.06          0
##  8 EPPN5_H   4.32   1.63          0
##  9 EPPN3_H   4.20   0.641         4
## 10 EPPN10_H  4.17   1.16          1
## 11 EPPN9_L   4.05   0.859         2
## 12 EPPN15_H  3.73   0.657         1
## 13 EPPN12_H  3.70   0.974         1
## 14 EPPN7_H   3.56   0.744         1
```

```
## 15 EPPN2_H   3.43   0.706         2
## 16 EPPN1_L   3.38   1.32          0
## 17 EPPN3_L   3.32   1.59          0
## 18 EPPN7_L   3.11   0.528         1
## 19 EPPN6_L   3.07   0.827         2
## 20 EPPN4_H   2.86   1.21          1
## 21 EPPN2_L   2.73   0.356         4
## 22 EPPN20_T  2.56   0.664         1
## 23 EPPN8_L   2.53   1.31          0
## 24 EPPN13_L  2.52   1.11          0
## 25 EPPN4_L   2.49   0.666         2
## 26 EPPN10_L  2.30   1.38          0
## 27 EPPN15_L  2.20   0.488         3
## 28 EPPN12_L  2.09   0.894         0
## 29 EPPN11_L  1.92   1.47          0
## 30 EPPN5_L   1.77   1.38          0
## 31 EPPN14_L  1.42   0.399         1
##
## Summary for: DW_root_g
## # A tibble: 31 × 4
##    Genotype   mean std.dev n_missing
##    <fct>     <dbl>   <dbl>     <int>
##  1 EPPN13_H 0.169  0.0517          0
##  2 EPPN6_H  0.156  0.0342          1
##  3 EPPN9_H  0.140  0.0483          0
##  4 EPPN14_H 0.132  0.0305          1
##  5 EPPN11_H 0.126  0.0404          1
##  6 EPPN5_H  0.125  0.0381          2
##  7 EPPN15_H 0.122  0.0295          1
##  8 EPPN8_H  0.119  0.0622          0
##  9 EPPN1_H  0.118  0.0364          0
## 10 EPPN7_H  0.115  0.0295          1
## 11 EPPN2_H  0.109  0.0429          0
## 12 EPPN6_L  0.104  0.0240          3
## 13 EPPN3_H  0.103  0.0363          0
## 14 EPPN1_L  0.102  0.0219          2
## 15 EPPN12_H 0.0988 0.0260          3
## 16 EPPN9_L  0.0963 0.0284          0
## 17 EPPN4_H  0.0947 0.0454          0
## 18 EPPN7_L  0.0939 0.0131          2
## 19 EPPN3_L  0.0920 0.0455          0
## 20 EPPN10_H 0.0898 0.0270          1
## 21 EPPN2_L  0.0886 0.0303          1
## 22 EPPN5_L  0.0825 0.0225          0
## 23 EPPN8_L  0.0770 0.0323          0
## 24 EPPN13_L 0.0764 0.0349          0
## 25 EPPN20_T 0.0761 0.0250          1
## 26 EPPN4_L  0.0724 0.0194          2
## 27 EPPN15_L 0.0721 0.0213          1
## 28 EPPN11_L 0.0686 0.0450          0
## 29 EPPN12_L 0.0588 0.0226          1
## 30 EPPN10_L 0.0477 0.0304          0
## 31 EPPN14_L 0.0188 0.00501         2
##
## Summary for: FW_root_g
## # A tibble: 31 × 4
```

```
##    Genotype  mean std.dev n_missing
##    <fct>    <dbl>   <dbl>     <int>
##  1 EPPN13_H 4.52    0.984         1
##  2 EPPN9_H  4.06    1.48          0
##  3 EPPN6_H  3.96    0.880         2
##  4 EPPN5_H  3.84    1.51          0
##  5 EPPN14_H 3.69    0.516         2
##  6 EPPN11_H 3.63    0.838         2
##  7 EPPN15_H 3.39    0.757         1
##  8 EPPN8_H  3.23    1.58          0
##  9 EPPN3_H  3.12    1.06          1
## 10 EPPN2_H  3.05    0.595         2
## 11 EPPN1_H  3.00    0.365         7
## 12 EPPN12_H 2.74    0.854         1
## 13 EPPN4_H  2.68    1.36          0
## 14 EPPN7_H  2.52    1.27          0
## 15 EPPN9_L  2.50    0.745         0
## 16 EPPN10_H 2.34    0.646         2
## 17 EPPN3_L  2.27    1.20          0
## 18 EPPN7_L  2.17    0.156         3
## 19 EPPN2_L  2.05    0.550         2
## 20 EPPN6_L  2.04    0.756         1
## 21 EPPN1_L  2.03    0.776         0
## 22 EPPN5_L  2.02    0.810         0
## 23 EPPN20_T 1.81    0.570         2
## 24 EPPN15_L 1.76    0.682         0
## 25 EPPN4_L  1.62    0.380         2
## 26 EPPN13_L 1.58    0.796         0
## 27 EPPN8_L  1.43    0.705         0
## 28 EPPN11_L 1.20    0.929         1
## 29 EPPN12_L 1.13    0.545         1
## 30 EPPN10_L 0.865   0.594         0
## 31 EPPN14_L 0.468   0.207         1
```

2. Exploration of the timeseries data

In this part, we look at the timeseries, S_timeseries and T_timeseries datasets, also using several functions, located in the functions.R script.

Number of data observations per day for the traits of the timeseries datasets

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```

A. Exploration of the timeseries dataframe

Scatter plots by Genotype

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```

Scatterplots for all genotypes by Plant type (Hybride, Line, EPPN20_T) with smooth line.

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```

Scatter plots for all genotypes by water treatment

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```

B. Exploration of the S_timeseries dataframe

Scatter plots by Genotype

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```

Scatterplots for all genotypes by Plant type (Hybride, Line, EPPN20_T) with smooth line.

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```

Scatter plots for all genotypes by water treatment

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```

C. Exploration of the T_timeseries dataframe

Scatter plots by Genotype

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```

Scatterplots for all genotypes by Plant type (Hybride, Line, EPPN20_T) with smooth line.

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```

Scatter plots for all genotypes by water treatment

```
print(paste0("No data for", platform))
```

```
## [1] "No data forUCL"
```