EDA

```
library(tidyverse)
library(zoo)
library(ggplot2)
library(gridExtra)
library(scales)
library(lme4)
library(geepack)
```

```
Warning: package 'geepack' was built under R version 4.4.3
```

```
library(viridis)
```

input data

```
data <- read.csv("nursebp.csv", header = TRUE)

data$SNUM <- as.factor(data$SNUM)
data$PHASE <- as.factor(data$PHASE)
data$DAY <- as.factor(data$DAY)
data$POSTURE <- as.factor(data$POSTURE)
data$FH123 <- as.factor(data$FH123)

data <- data %>%
  mutate(
    # in hours
    hour_of_day = floor(time / 60),
    #  20-minute
    time_20 = floor(time / 20) * 20/60,
    time2 = time^2
  )
```

Number of unique subjects

```
n_subjects <- length(unique(data$SNUM))
n_subjects #
```

```
[1] 203
```

Average observations per subject

```
nrow(data)/n_subjects
```

```
[1] 47.15764
```

```
#
```

Missing values by column

```
missing_values <- sapply(data, function(x) sum(is.na(x)))

print(missing_values[missing_values > 0])
```

```
MNACT5    STR    HAP    TIR
   985    754    755    755
```

Summary statistics

```
num_vars <- c("SYS", "DIA", "HRT", "MNACT5", "STR", "HAP", "TIR", "AGE")
summary_stats <- data %>%
  select(all_of(num_vars)) %>%
  summary()
print(summary_stats)
```

```
      SYS              DIA               HRT               MNACT5     
 Min.   : 75.0   Min.   : 40.00   Min.   : 35.00   Min.   :  0.0  
 1st Qu.:108.0   1st Qu.: 63.00   1st Qu.: 71.00   1st Qu.:160.2  
 Median :117.0   Median : 71.00   Median : 80.00   Median :207.0  
 Mean   :118.2   Mean   : 71.38   Mean   : 80.03   Mean   :190.4  
 3rd Qu.:127.0   3rd Qu.: 79.00   3rd Qu.: 88.00   3rd Qu.:236.4  
 Max.   :200.0   Max.   :120.00   Max.   :144.00   Max.   :359.4  
                                                   NA's   :985    
      STR             HAP              TIR              AGE       
 Min.   :1.00   Min.   :1.000   Min.   :1.000   Min.   :24.00  
 1st Qu.:1.00   1st Qu.:2.000   1st Qu.:1.000   1st Qu.:33.00  
 Median :1.00   Median :3.000   Median :2.000   Median :38.00  
 Mean   :1.51   Mean   :3.099   Mean   :1.954   Mean   :37.82  
 3rd Qu.:2.00   3rd Qu.:4.000   3rd Qu.:3.000   3rd Qu.:43.00  
 Max.   :5.00   Max.   :5.000   Max.   :5.000   Max.   :50.00  
 NA's   :754    NA's   :755     NA's   :755                    
```

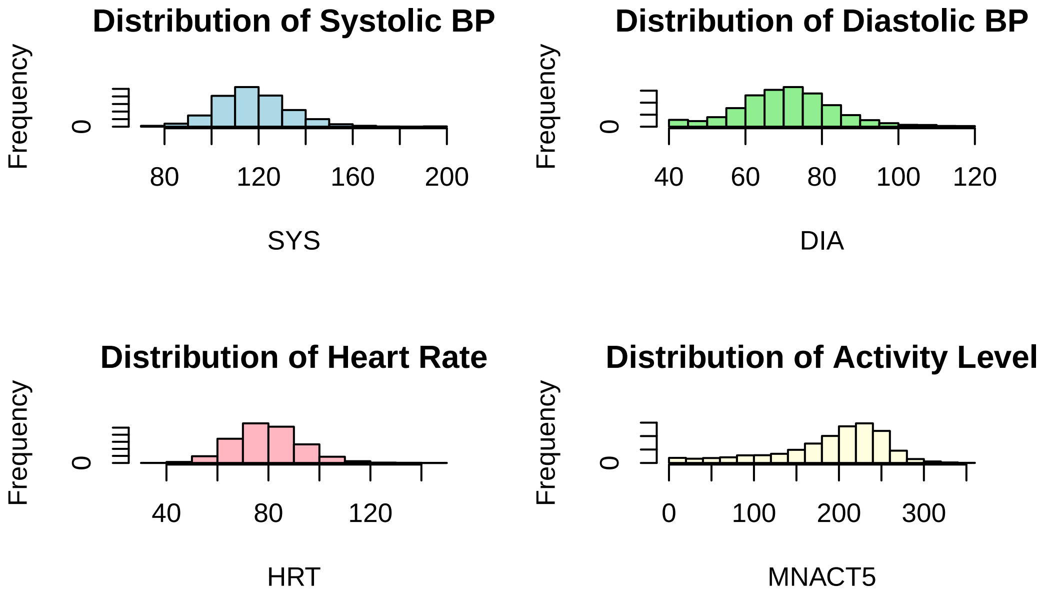
```
vars <- c("PHASE", "DAY", "POSTURE", "FH123")
for (var in vars) {
  cat(var)
  print(table(data[[var]]))
  cat("Percentages")
  print(round(prop.table(table(data[[var]])) * 100, 1))
}
```

```
PHASE
   F    L 
4737 4836 
Percentages
   F    L 
49.5 50.5 
DAY
  NW    W 
4116 5457 
```

```
Percentages
NW  W
43 57
POSTURE
        RECLINE     SIT   STAND
    586     631    4101    4255
Percentages
        RECLINE     SIT   STAND
    6.1     6.6    42.8    44.4
FH123
    NO    YES YESYES
  5298   3633    642
Percentages
    NO    YES YESYES
  55.3   38.0    6.7
```

#box plot

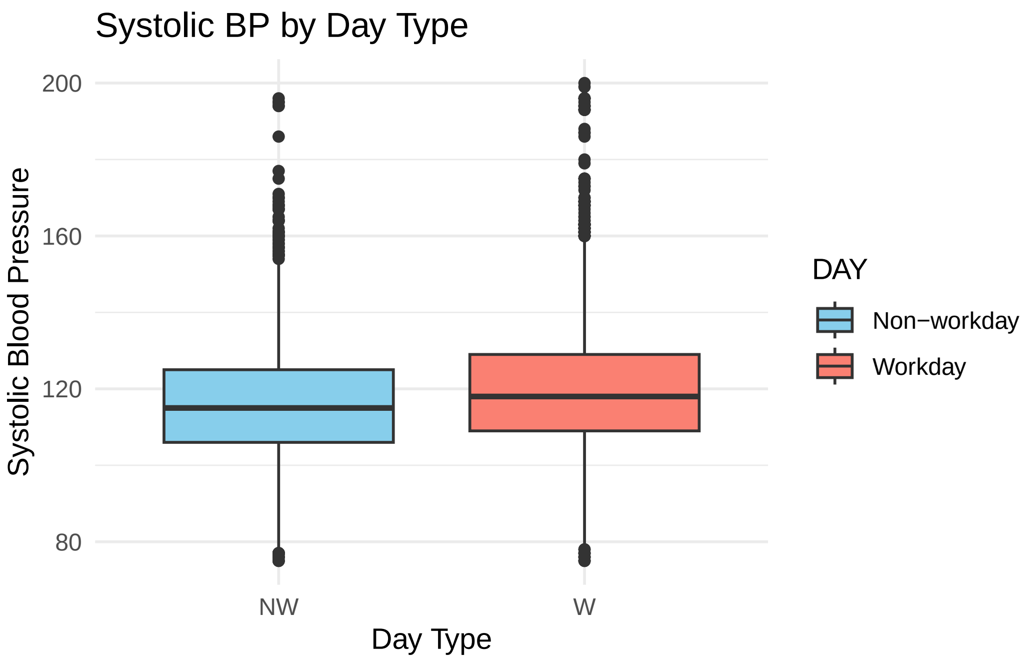
```
par(mfrow = c(2, 2))
hist(data$SYS, main = "Distribution of Systolic BP", xlab = "SYS", col = "lightblue")
hist(data$DIA, main = "Distribution of Diastolic BP", xlab = "DIA", col = "lightgreen")
hist(data$HRT, main = "Distribution of Heart Rate", xlab = "HRT", col = "lightpink")
hist(data$MNACT5, main = "Distribution of Activity Level", xlab = "MNACT5", col = "lightyello
```



```r
par(mfrow = c(1, 1))
```

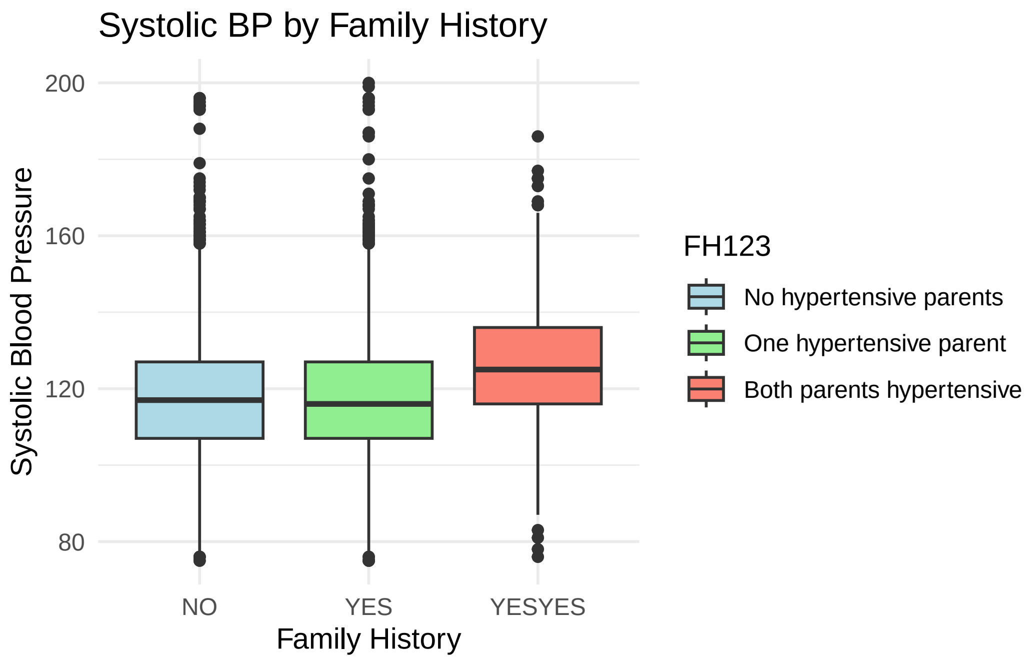
```r
bp_by_day <- ggplot(data, aes(x = DAY, y = SYS, fill = DAY)) +
  geom_boxplot() +
  labs(title = "Systolic BP by Day Type",
       x = "Day Type",
       y = "Systolic Blood Pressure") +
  scale_fill_manual(values = c("skyblue", "salmon"),
                    labels = c("Non-workday", "Workday")) +
  theme_minimal()

print(bp_by_day)
```



```r
bp_by_fh <- ggplot(data, aes(x = FH123, y = SYS, fill = FH123)) +
  geom_boxplot() +
  labs(title = "Systolic BP by Family History",
       x = "Family History",
       y = "Systolic Blood Pressure") +
  scale_fill_manual(values = c("lightblue", "lightgreen", "salmon"),
                   labels = c("No hypertensive parents",
                              "One hypertensive parent",
                              "Both parents hypertensive")) +
  theme_minimal()
```

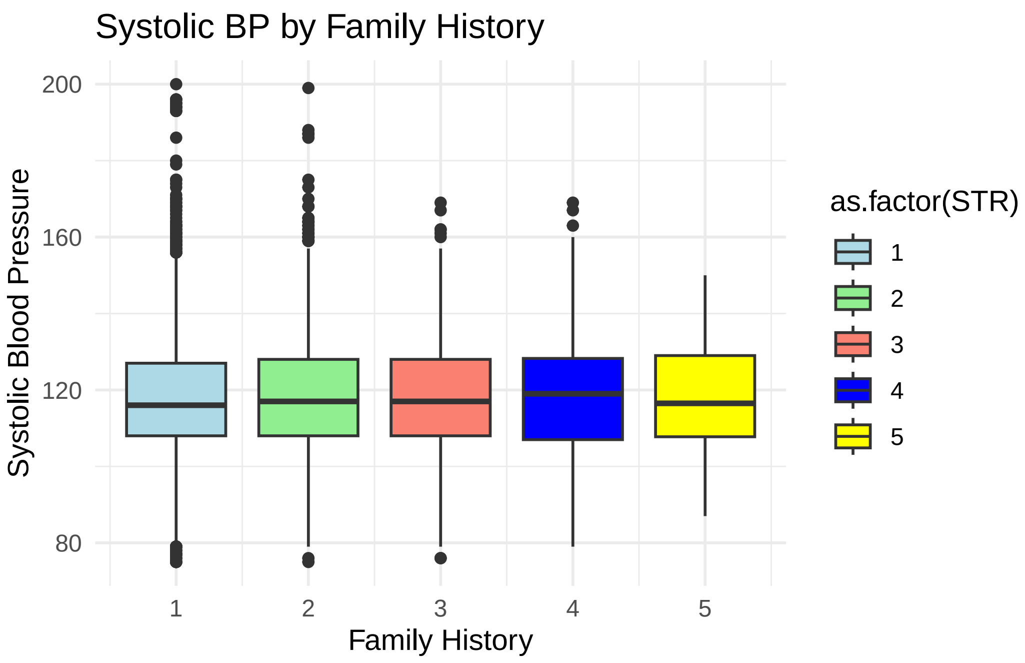
```
print(bp_by_fh)
```



```
bp_by_str <- ggplot(data, aes(x = STR, y = SYS, fill = as.factor(STR))) +
  geom_boxplot() +
  labs(title = "Systolic BP by Family History",
       x = "Family History",
       y = "Systolic Blood Pressure") +
  scale_fill_manual(values = c("lightblue", "lightgreen", "salmon","blue","yellow"),
                    labels = c("1","2","3","4","5")) +
  theme_minimal()
```

```
print(bp_by_str)
```

```
Warning: Removed 754 rows containing missing values or values outside the scale range
(`stat_boxplot()`).
```

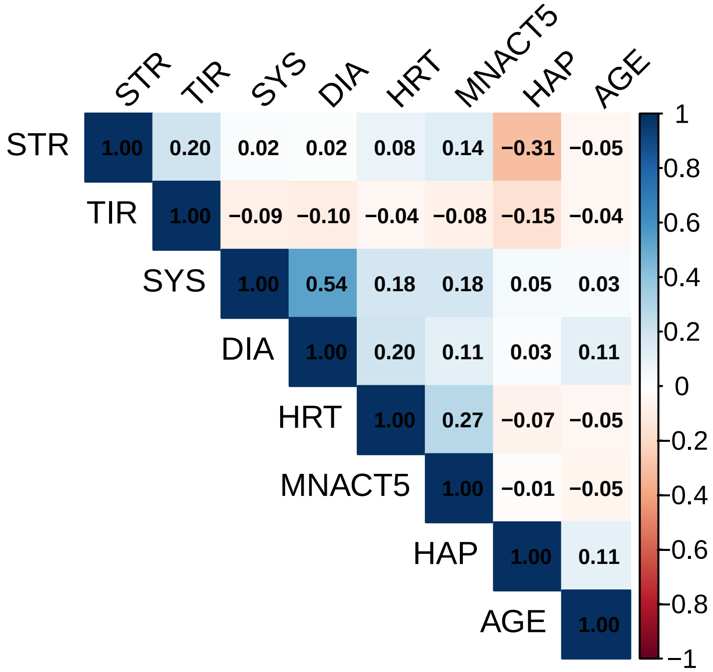


Correlation

```
corr_vars <- c("SYS", "DIA", "HRT", "MNACT5", "STR", "HAP", "TIR", "AGE")
correlation_matrix <- cor(data[, corr_vars], use = "pairwise.complete.obs")
print(correlation_matrix[1,])
```

```
        SYS         DIA         HRT      MNACT5         STR         HAP 
 1.00000000  0.53557471  0.18468989  0.18214753  0.02153487  0.04767398 
        TIR         AGE 
-0.08736763  0.03479532 
```

```
corrplot::corrplot(correlation_matrix,
                   method = "color",
                   type = "upper",
                   order = "hclust",
                   tl.col = "black",
                   tl.srt = 45,
                   addCoef.col = "black",
                   number.cex = 0.7)
```



#bars

```
fh_summary <- data %>%
  group_by(FH123) %>%
  summarise(
    mean_SYS = mean(SYS, na.rm = TRUE),
    sd_SYS = sd(SYS, na.rm = TRUE),
    n = n(),
    se_SYS = sd_SYS / sqrt(n)
  )

print(fh_summary)
```

```
# A tibble: 3 x 5
  FH123  mean_SYS sd_SYS     n se_SYS
  <fct>     <dbl>  <dbl> <int>  <dbl>
1 NO         118.   15.4  5298  0.212
2 YES        117.   15.4  3633  0.256
3 YESYES     126.   15.5   642  0.612
```

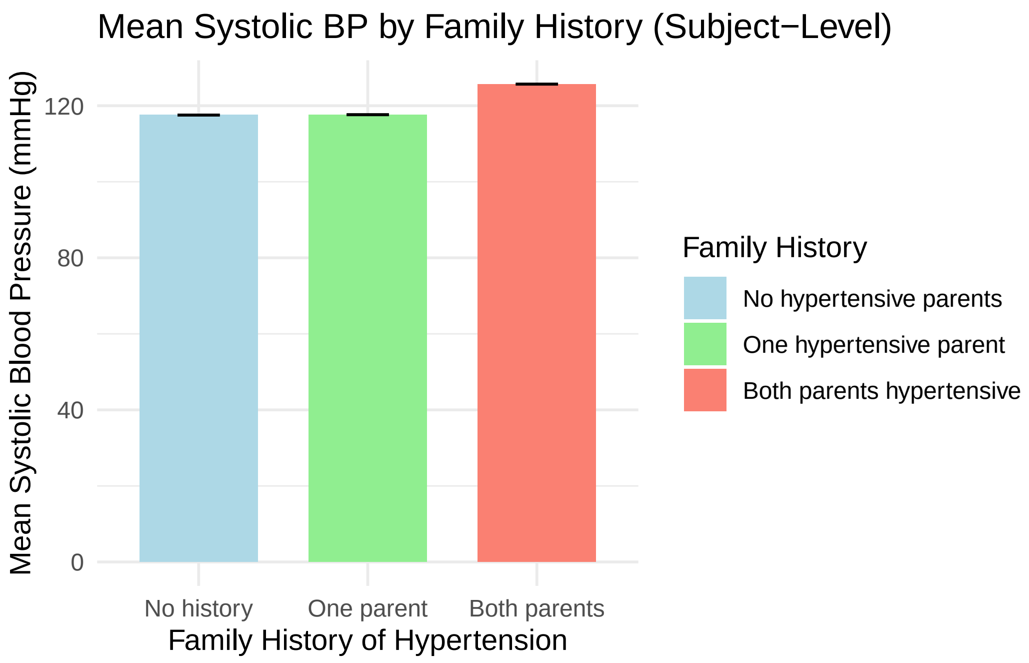
```
subject_fh_data <- data %>%
  group_by(SNUM, FH123) %>%
  summarise(mean_SYS = mean(SYS, na.rm = TRUE)) %>%
  ungroup()
```

```
`summarise()` has grouped output by 'SNUM'. You can override using the
`.groups` argument.
```

```
subject_fh_summary <- subject_fh_data %>%
  group_by(FH123) %>%
  summarise(
    mean_SYS = mean(mean_SYS, na.rm = TRUE),
    sd_SYS = sd(mean_SYS, na.rm = TRUE),#????
    n = n(),
    se_SYS = sd_SYS / sqrt(n)
  )
print(subject_fh_summary)
```

```
# A tibble: 3 x 5
  FH123  mean_SYS sd_SYS     n se_SYS
  <fct>     <dbl>  <dbl> <int>  <dbl>
1 NO         118.     NA   112     NA
2 YES        118.     NA    77     NA
3 YESYES     126.     NA    14     NA
```

```
fh_plot <- ggplot(subject_fh_summary, aes(x = FH123, y = mean_SYS, fill = FH123)) +
  geom_bar(stat = "identity", position = position_dodge(), width = 0.7) +
  geom_errorbar(aes(ymin = mean_SYS, ymax = mean_SYS),
              width = 0.25, position = position_dodge(0.7)) +
  labs(title = "Mean Systolic BP by Family History (Subject-Level)",
       x = "Family History of Hypertension",
       y = "Mean Systolic Blood Pressure (mmHg)") +
  scale_x_discrete(labels = c("No history", "One parent", "Both parents")) +
  scale_fill_manual(values = c("lightblue", "lightgreen", "salmon"),
                    name = "Family History",
                    labels = c("No hypertensive parents",
                               "One hypertensive parent",
                               "Both parents hypertensive")) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 0))
print(fh_plot)
```



#Systolic BP by Stress Level

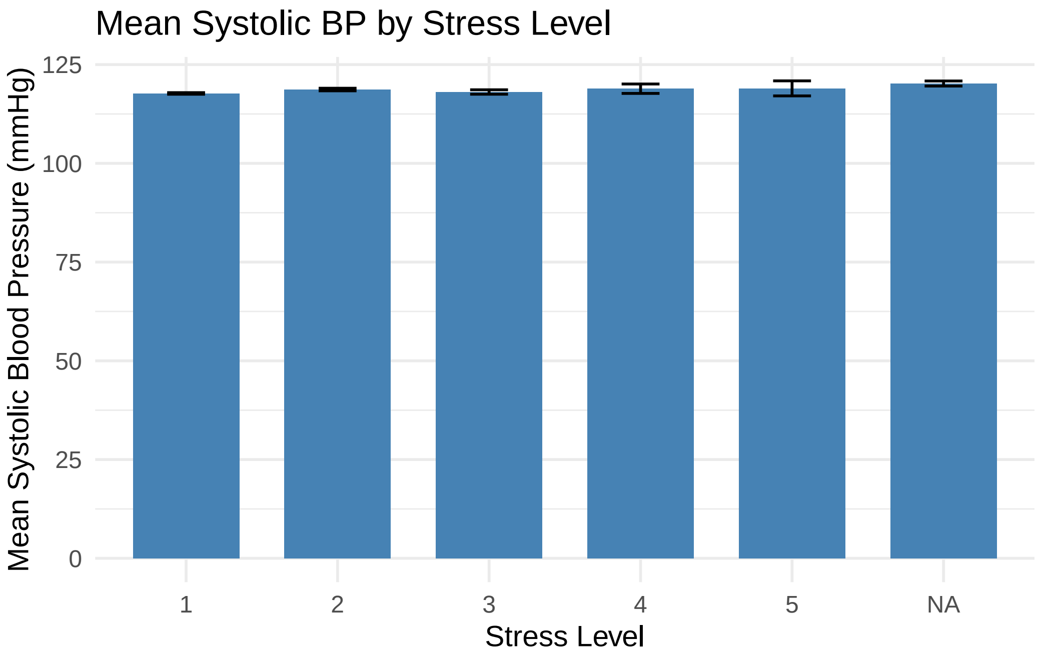
```
stress_summary <- data %>%
  group_by(STR) %>%
  summarise(
    mean_SYS = mean(SYS, na.rm = TRUE),
    sd_SYS = sd(SYS, na.rm = TRUE),
    n = n(),
    se_SYS = sd_SYS / sqrt(n)
  )

print(stress_summary)
```

```
# A tibble: 6 x 5
    STR mean_SYS sd_SYS     n se_SYS
  <int>    <dbl>  <dbl> <int>  <dbl>
1     1     118.   15.3  5599  0.204
2     2     119.   15.4  2243  0.326
3     3     118.   15.3   737  0.563
4     4     119.   16.2   184  1.19
5     5     119.   14.2    56  1.90
6    NA     120.   17.7   754  0.643
```

#stree level plot (no difference)

```
stress_plot <- ggplot(stress_summary, aes(x = factor(STR), y = mean_SYS)) +
  geom_bar(stat = "identity", fill = "steelblue", width = 0.7) +
  geom_errorbar(aes(ymin = mean_SYS - se_SYS, ymax = mean_SYS + se_SYS),
                width = 0.25) +
  labs(title = "Mean Systolic BP by Stress Level",
       x = "Stress Level",
       y = "Mean Systolic Blood Pressure (mmHg)") +
  theme_minimal()
print(stress_plot)
```



#Systolic BP by workday

```
workday_summary <- data %>%
  group_by(DAY) %>%
  summarise(
    mean_SYS = mean(SYS, na.rm = TRUE),
    sd_SYS = sd(SYS, na.rm = TRUE),
    n = n(),
    se_SYS = sd_SYS / sqrt(n)
  )
print("Systolic BP by Working Status:")
```

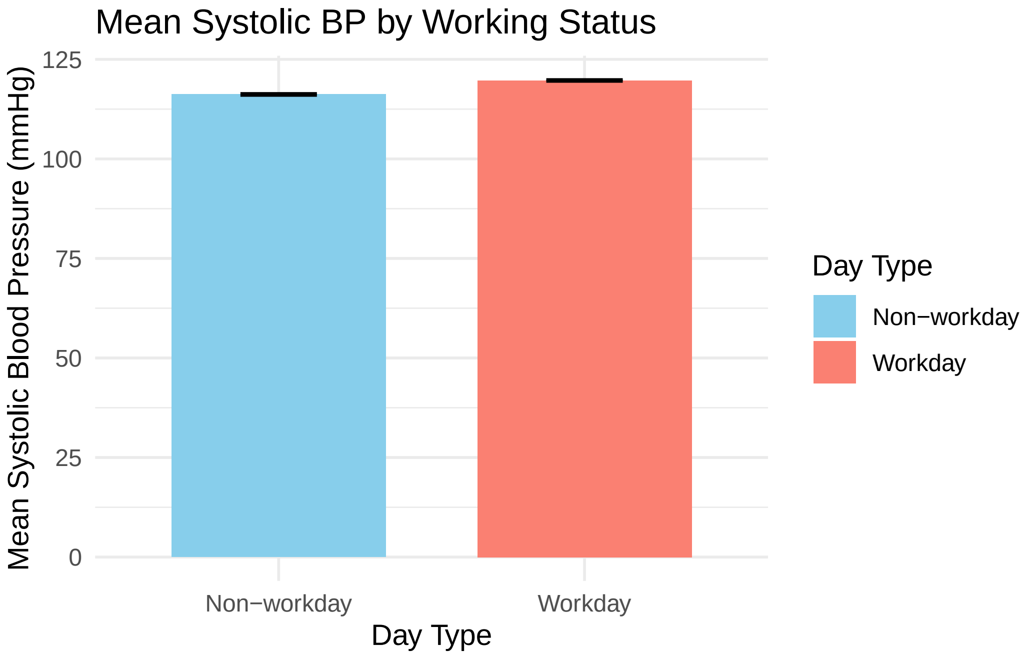
```
[1] "Systolic BP by Working Status:"
```

```
print(workday_summary)
```

```
# A tibble: 2 x 5
  DAY   mean_SYS sd_SYS     n se_SYS
  <fct>    <dbl>  <dbl> <int>  <dbl>
1 NW        116.   14.9  4116  0.232
2 W         120.   15.9  5457  0.215
```

#small difference in workday

```
workday_plot <- ggplot(workday_summary, aes(x = DAY, y = mean_SYS, fill = DAY)) +
  geom_bar(stat = "identity", position = position_dodge(), width = 0.7) +
  geom_errorbar(aes(ymin = mean_SYS - se_SYS, ymax = mean_SYS + se_SYS),
                width = 0.25, position = position_dodge(0.7)) +
  labs(title = "Mean Systolic BP by Working Status",
       x = "Day Type",
       y = "Mean Systolic Blood Pressure (mmHg)") +
  scale_x_discrete(labels = c("Non-workday", "Workday")) +
  scale_fill_manual(values = c("skyblue", "salmon"),
                    name = "Day Type",
                    labels = c("Non-workday", "Workday")) +
  theme_minimal()
print(workday_plot)
```



#Average change over the day

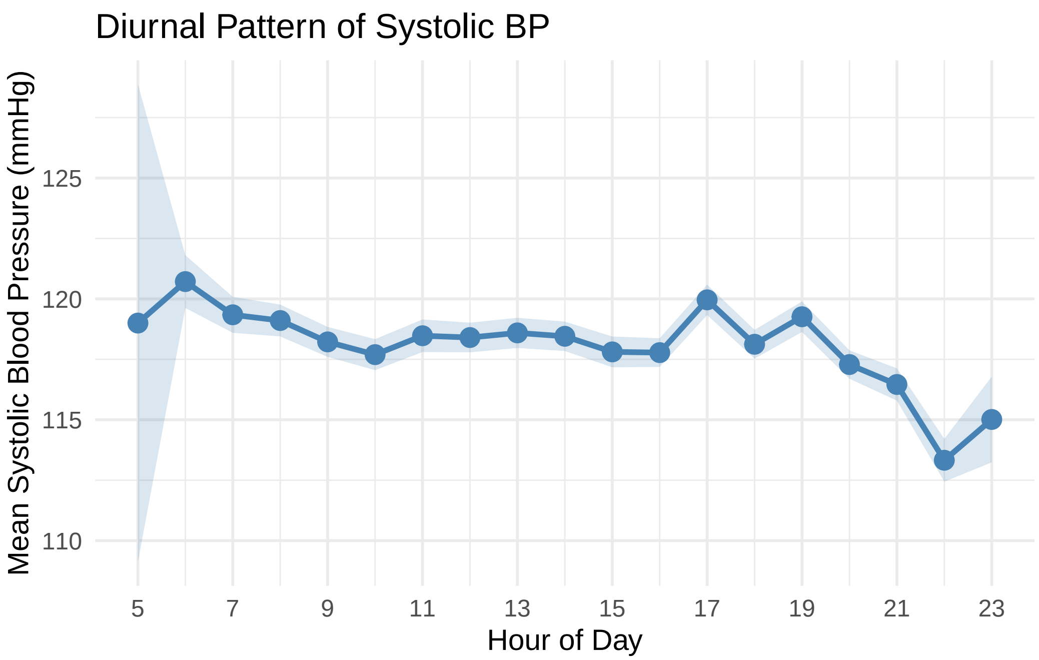
```
hourly_summary <- data %>%
  group_by(hour_of_day) %>%
  summarise(
    mean_SYS = mean(SYS, na.rm = TRUE),
    sd_SYS = sd(SYS, na.rm = TRUE),
    n = n(),
    se_SYS = sd_SYS / sqrt(n)
  ) %>%
  filter(n >= 5)
print(hourly_summary)
```

```
# A tibble: 19 x 5
   hour_of_day mean_SYS sd_SYS     n se_SYS
         <dbl>    <dbl>  <dbl> <int>  <dbl>
 1           5     119    24.2     6  9.88
 2           6     121.   13.9   162  1.09
 3           7     119.   15.5   436  0.744
 4           8     119.   15.2   532  0.659
 5           9     118.   15.0   584  0.619
 6          10     118.   15.8   608  0.641
 7          11     118.   17.0   633  0.674
 8          12     118.   15.4   630  0.613
 9          13     119.   15.9   649  0.623
10          14     118.   15.2   625  0.608
11          15     118.   16.2   645  0.636
12          16     118.   14.9   630  0.594
13          17     120.   15.9   643  0.627
14          18     118.   14.9   624  0.597
15          19     119.   16.0   642  0.631
16          20     117.   14.6   617  0.587
17          21     116.   15.5   540  0.667
18          22     113.   14.8   280  0.884
19          23     115.   16.6    87  1.77
```

```
time_plot <- ggplot(hourly_summary, aes(x = hour_of_day, y = mean_SYS)) +
  geom_line(size = 1, color = "steelblue") +
  geom_point(size = 3, color = "steelblue") +
  geom_ribbon(aes(ymin = mean_SYS - se_SYS, ymax = mean_SYS + se_SYS),
              alpha = 0.2, fill = "steelblue") +
  labs(title = "Diurnal Pattern of Systolic BP",
       x = "Hour of Day",
       y = "Mean Systolic Blood Pressure (mmHg)") +
  scale_x_continuous(breaks = seq(5, 23, 2)) +
  theme_minimal()
```

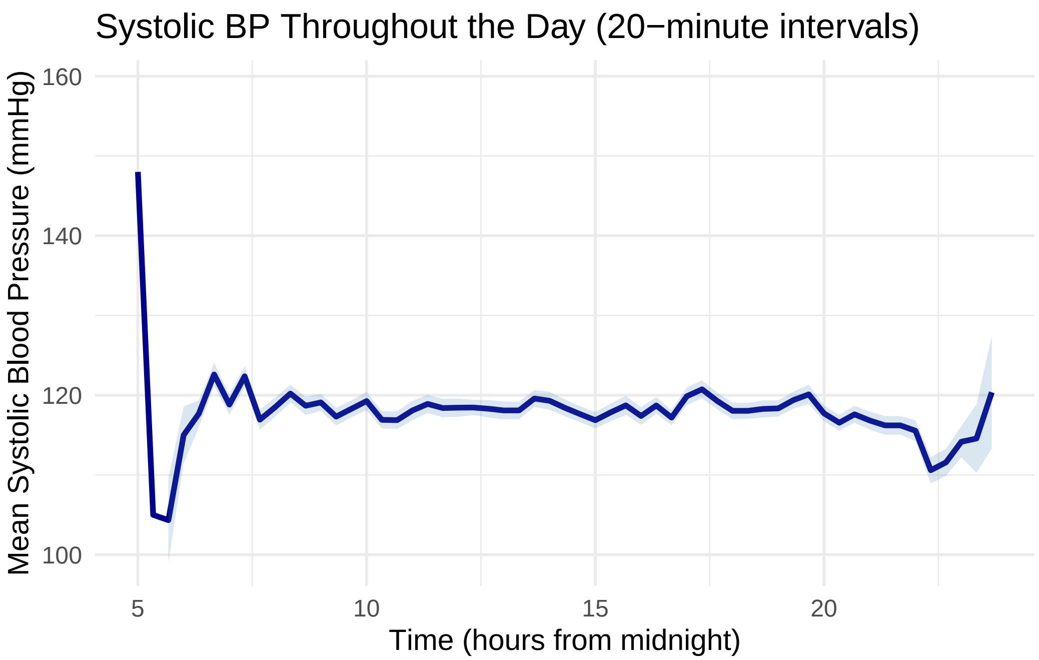
```
Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
i Please use `linewidth` instead.
```

```
print(time_plot)
```



```
time20_summary <- data %>%
  group_by(time_20) %>%
  summarise(
    mean_SYS = mean(SYS, na.rm = TRUE),
    sd_SYS = sd(SYS, na.rm = TRUE),
    n = n(),
    se_SYS = sd_SYS / sqrt(n)
  )


time20_plot <- ggplot(time20_summary, aes(x = time_20, y = mean_SYS)) +
  geom_line(size = 1, color = "darkblue") +
  geom_ribbon(aes(ymin = mean_SYS - se_SYS, ymax = mean_SYS + se_SYS),
              alpha = 0.2, fill = "steelblue") +
  labs(title = "Systolic BP Throughout the Day (20-minute intervals)",
       x = "Time (hours from midnight)",
       y = "Mean Systolic Blood Pressure (mmHg)") +
  theme_minimal()
print(time20_plot)
```

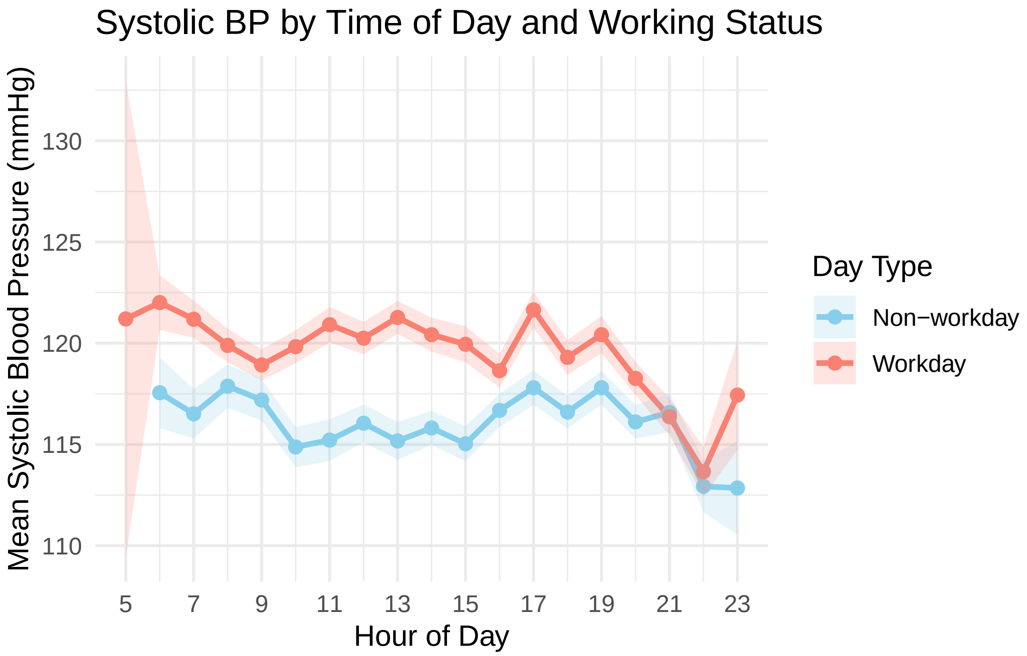


#workday ggplot

```
time_workday <- data %>%
  group_by(hour_of_day, DAY) %>%
  summarise(
    mean_SYS = mean(SYS, na.rm = TRUE),
    sd_SYS = sd(SYS, na.rm = TRUE),
    n = n(),
    se_SYS = sd_SYS / sqrt(n)
  ) %>%
  filter(n >= 5)
```

```
`summarise()` has grouped output by 'hour_of_day'. You can override using the
`.groups` argument.
```

```
time_day_plot <- ggplot(time_workday, aes(x = hour_of_day, y = mean_SYS, color = DAY, group =
  geom_line(size = 1) +
  geom_point(size = 2) +
  geom_ribbon(aes(ymin = mean_SYS - se_SYS, ymax = mean_SYS + se_SYS, fill = DAY),
              alpha = 0.2, color = NA) +
  labs(title = "Systolic BP by Time of Day and Working Status",
       x = "Hour of Day",
       y = "Mean Systolic Blood Pressure (mmHg)") +
  scale_x_continuous(breaks = seq(5, 23, 2)) +
  scale_color_manual(values = c("skyblue", "salmon"),
                     name = "Day Type",
                     labels = c("Non-workday", "Workday")) +
  scale_fill_manual(values = c("skyblue", "salmon"),
                    name = "Day Type",
                    labels = c("Non-workday", "Workday")) +
  theme_minimal()
print(time_day_plot)
```

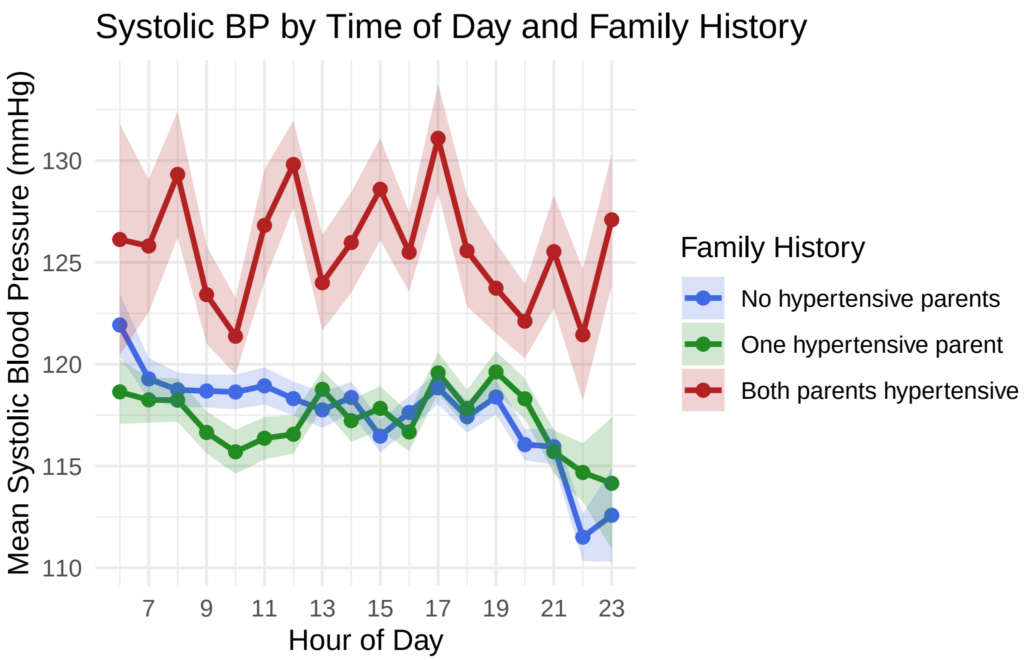


#Family history ggplot

```
time_fh_summary <- data %>%
  group_by(hour_of_day, FH123) %>%
  summarise(
    mean_SYS = mean(SYS, na.rm = TRUE),
    sd_SYS = sd(SYS, na.rm = TRUE),
    n = n(),
    se_SYS = sd_SYS / sqrt(n),
    .groups = "drop"
  ) %>%
  filter(n >= 5)

time_fh_plot <- ggplot(time_fh_summary, aes(x = hour_of_day, y = mean_SYS, color = FH123, gro
  geom_line(size = 1) +
  geom_point(size = 2) +
  geom_ribbon(aes(ymin = mean_SYS - se_SYS, ymax = mean_SYS + se_SYS, fill = FH123),
              alpha = 0.2, color = NA) +
  labs(title = "Systolic BP by Time of Day and Family History",
       x = "Hour of Day",
       y = "Mean Systolic Blood Pressure (mmHg)") +
  scale_x_continuous(breaks = seq(5, 23, 2)) +
  scale_color_manual(values = c("royalblue", "forestgreen", "firebrick"),
                    name = "Family History",
                    labels = c("No hypertensive parents",
                               "One hypertensive parent",
                               "Both parents hypertensive")) +
  scale_fill_manual(values = c("royalblue", "forestgreen", "firebrick"),
                    name = "Family History",
                    labels = c("No hypertensive parents",
                               "One hypertensive parent",
                               "Both parents hypertensive")) +
  theme_minimal()

print(time_fh_plot)
```



Between-Subject vs. Within-Subject Variation

```
subject_means <- data %>%
  group_by(SNUM) %>%
  summarise(mean_SYS = mean(SYS, na.rm = TRUE))

overall_mean <- mean(subject_means$mean_SYS)
between_subject_sd <- sd(subject_means$mean_SYS)

cat("Between-subject variation:\n")
```

```
Between-subject variation:
```

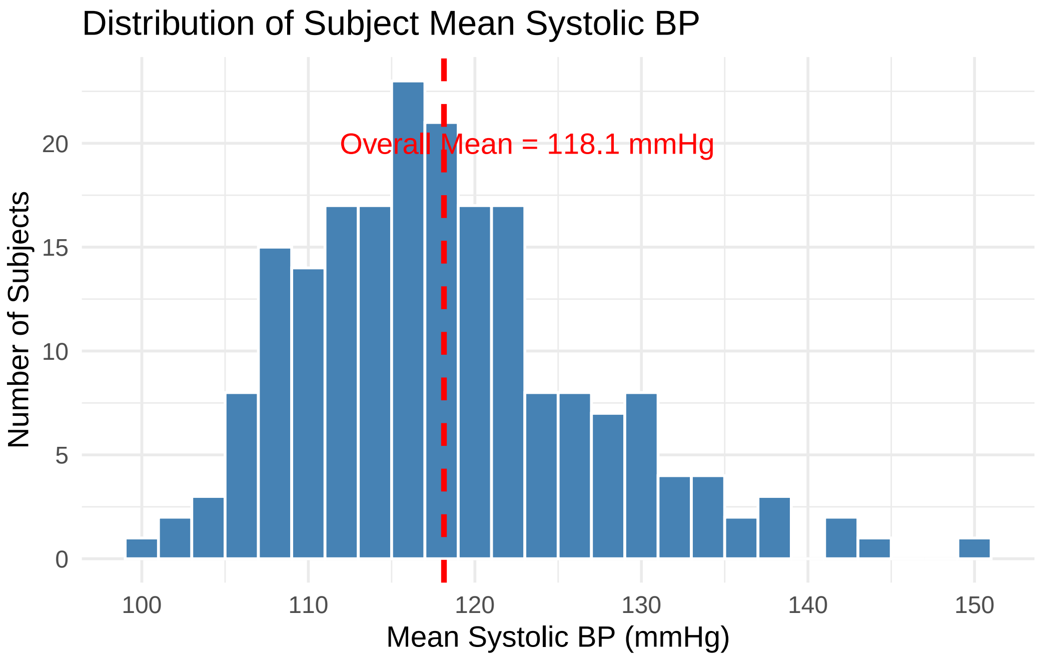
```
cat("Overall mean SYS:", overall_mean, "\n")
```

```
Overall mean SYS: 118.1433
```

```r
cat("SD of subject means:", between_subject_sd, "\n")
```

```
SD of subject means: 8.673331
```

```r
subject_hist <- ggplot(subject_means, aes(x = mean_SYS)) +
  geom_histogram(binwidth = 2, fill = "steelblue", color = "white") +
  geom_vline(xintercept = overall_mean, color = "red", linetype = "dashed", size = 1) +
  labs(title = "Distribution of Subject Mean Systolic BP",
       x = "Mean Systolic BP (mmHg)",
       y = "Number of Subjects") +
  annotate("text", x = overall_mean + 5, y = 20,
           label = paste("Overall Mean =", round(overall_mean, 1), "mmHg"),
           color = "red") +
  theme_minimal()
print(subject_hist)
```



```r
me_model <- lmer(SYS ~ time + DAY + HRT + MNACT5 + POSTURE + FH123 + TIR + (1 | SNUM),
                 data = data)
print(summary(me_model))
```

```
Linear mixed model fit by REML ['lmerMod']
```

```
Formula: SYS ~ time + DAY + HRT + MNACT5 + POSTURE + FH123 + TIR + (1 |
    SNUM)
   Data: data

REML criterion at convergence: 62880.5

Scaled residuals:
    Min      1Q  Median      3Q     Max
-4.9818 -0.5500 -0.0390  0.5233  6.5197

Random effects:
 Groups   Name        Variance Std.Dev.
 SNUM     (Intercept)  59.25    7.698
 Residual             157.00   12.530
Number of obs: 7899, groups:  SNUM, 183

Fixed effects:
                 Estimate Std. Error t value
(Intercept)     1.027e+02  3.394e+00  30.246
time            1.365e-04  6.003e-04   0.227
DAYW            2.518e+00  1.186e+00   2.124
HRT             1.013e-01  1.558e-02   6.504
MNACT5          3.338e-02  2.671e-03  12.496
POSTURERECLINE -3.923e+00  3.013e+00  -1.302
POSTURESIT     -1.992e-01  2.952e+00  -0.067
POSTURESTAND    8.528e-02  2.953e+00   0.029
FH123YES       -7.195e-03  1.253e+00  -0.006
FH123YESYES     7.186e+00  2.337e+00   3.075
TIR            -2.980e-01  1.825e-01  -1.632

Correlation of Fixed Effects:
            (Intr) time   DAYW   HRT    MNACT5 POSTURER POSTURESI POSTUREST
time        -0.100
DAYW        -0.182  0.017
HRT         -0.332 -0.069 -0.002
MNACT5      -0.098  0.077 -0.008 -0.193
POSTURERECL -0.865 -0.035  0.006  0.023  0.083
POSTURESIT  -0.871 -0.013  0.004  0.008  0.013  0.976
POSTURESTAN -0.858 -0.002  0.001 -0.023 -0.005  0.972    0.994
FH123YES    -0.140 -0.002 -0.061  0.019  0.000  0.000    0.000     0.000
FH123YESYES -0.087 -0.006  0.033  0.008  0.005  0.001   -0.001     0.000
TIR         -0.087 -0.372 -0.048  0.074  0.005  0.007    0.024     0.024
            FH123YES FH123YESY
```

```
time
DAYW
HRT
MNACT5
POSTURERECL
POSTURESIT
POSTURESTAN
FH123YES
FH123YESYES  0.206
TIR          0.013    0.013
```

```r
me_model2 <- lmer(SYS ~ time + time2 + DAY + HRT + MNACT5 + POSTURE + FH123 + TIR + (1 | SNU
                 data = data)
```

```
Warning: Some predictor variables are on very different scales: consider
rescaling
```

```r
print(summary(me_model2))
```

```
Linear mixed model fit by REML ['lmerMod']
Formula: SYS ~ time + time2 + DAY + HRT + MNACT5 + POSTURE + FH123 + TIR +
    (1 | SNUM)
   Data: data

REML criterion at convergence: 62900.6

Scaled residuals:
    Min      1Q  Median      3Q     Max
-5.0284 -0.5536 -0.0421  0.5222  6.4754

Random effects:
 Groups   Name        Variance Std.Dev.
 SNUM     (Intercept)  59.22    7.696
 Residual             156.93   12.527
Number of obs: 7899, groups:  SNUM, 183

Fixed effects:
                 Estimate Std. Error t value
(Intercept)     1.058e+02  3.718e+00  28.444
time           -7.939e-03  4.005e-03  -1.982
time2           4.607e-06  2.259e-06   2.039
```

```
DAYW            2.510e+00  1.185e+00   2.118
HRT             1.050e-01  1.568e-02   6.696
MNACT5          3.354e-02  2.672e-03  12.553
POSTURERECLINE -4.070e+00  3.013e+00  -1.351
POSTURESIT     -2.372e-01  2.952e+00  -0.080
POSTURESTAND    6.012e-02  2.952e+00   0.020
FH123YES       -3.328e-03  1.252e+00  -0.003
FH123YESYES     7.183e+00  2.337e+00   3.074
TIR            -3.831e-01  1.872e-01  -2.046

Correlation of Fixed Effects:
            (Intr) time   time2  DAYW   HRT    MNACT5 POSTURER POSTURESI
time        -0.418
time2        0.409 -0.989
DAYW        -0.168  0.006 -0.003
HRT         -0.254 -0.124  0.115 -0.003
MNACT5      -0.078 -0.017  0.029 -0.008 -0.188
POSTURERECL -0.799  0.018 -0.024  0.007  0.020  0.082
POSTURESIT  -0.797  0.004 -0.006  0.004  0.008  0.012  0.975
POSTURESTAN -0.785  0.004 -0.004  0.001 -0.023 -0.005  0.971    0.994
FH123YES    -0.127 -0.002  0.002 -0.061  0.019  0.000  0.000    0.000
FH123YESYES -0.079  0.000 -0.001  0.033  0.008  0.005  0.001   -0.001
TIR         -0.169  0.166 -0.223 -0.046  0.046 -0.002  0.012    0.025
            POSTUREST FH123YES FH123YESY
time
time2
DAYW
HRT
MNACT5
POSTURERECL
POSTURESIT
POSTURESTAN
FH123YES     0.000
FH123YESYES  0.000     0.206
TIR          0.024     0.013    0.013
fit warnings:
Some predictor variables are on very different scales: consider rescaling
```

table

#summary table

Variable	Min	Max	Mean	Median
SYS	75	200	118.2	117
DIA	40	120	71.4	71
HRT	35	144	80.0	80
MNACT5	0	359.4	190.4	207
STR	1	5	1.5	1
HAP	1	5	3.1	3
TIR	1	5	2.0	2
AGE	24	50	37.8	38

distribution table

Variable	Category	Count	Percentage
PHASE	L (luteal)	4,836	50.5%
	F (follicular)	4,737	49.5%
DAY	W (workday)	5,457	57.0%
	NW (non-workday)	4,116	43.0%
POSTURE	SIT	4,101	45.6%
	STAND	4,255	47.3%
	RECLINE	631	7.0%
FH123	NO	5,298	55.3%
	YES	3,633	38.0%
	YESYES	642	6.7%

#Family history table by nurse

Family History	Mean SYS	Count	SE
NO (no hypertensive parents)	117.6	112	0.79
YES (one hypertensive parent)	117.6	77	0.96
YESYES (both parents hypertensive)	125.7	14	2.40