Project - Sleep Analysis

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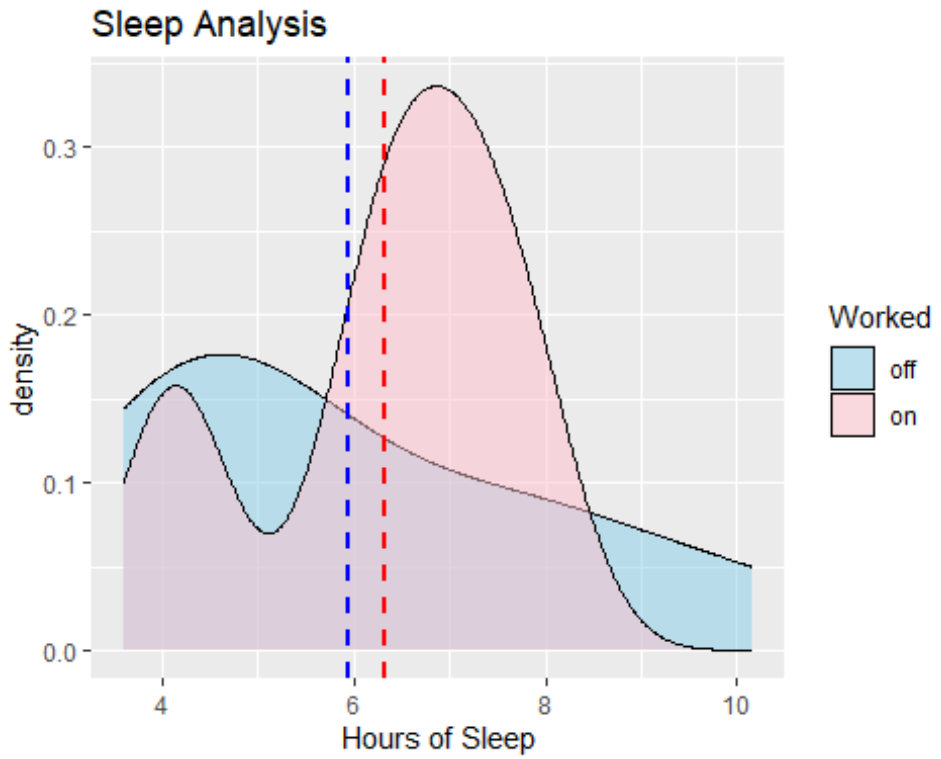
Sleep Analysis

```
library(readxl)
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)

# Read data
sleepdata <- read_excel("C:/Users/nhiay/Documents/Data Science/Project/Sleep
Analysis Data.xlsx")

shift_data <- sleepdata %>%
  filter(Worked %in% c("on", "off")) %>%
  t.test(Sleep ~ Worked, data = ., alternative = "two.sided", paired = TRUE)
shift_data

##
##  Paired t-test
##
## data:  Sleep by Worked
## t = -0.44859, df = 8, p-value = 0.6656
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  -2.251548  1.518214
## sample estimates:
## mean difference
##      -0.3666667

# Calculate means
mean_on <- mean(sleepdata$Sleep[sleepdata$Worked == "on"])
mean_off <- mean(sleepdata$Sleep[sleepdata$Worked == "off"])
```

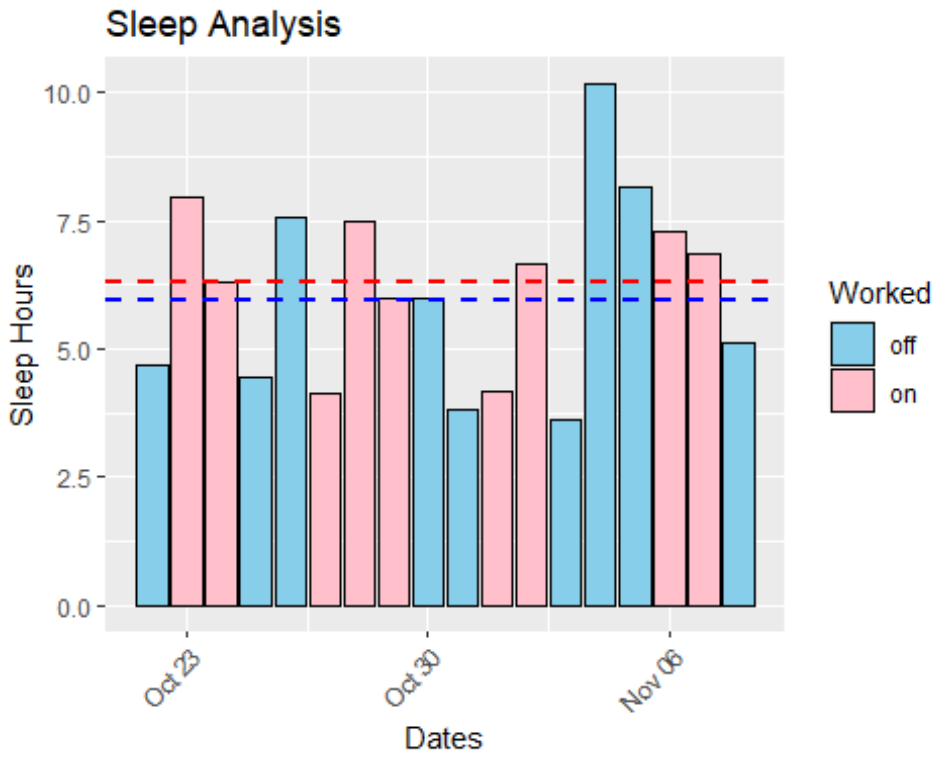
```r
# Plot with mean lines
ggplot(data = sleepdata, aes(x = Sleep, fill = Worked)) +
  geom_density(alpha = 0.5) +
  labs(title = "Sleep Analysis", x = "Hours of Sleep") +
  scale_fill_manual(values = c("on" = "pink", "off" = "skyblue")) +

  # Add mean lines
  geom_vline(xintercept = mean_on, linetype = "dashed", color = "red", size =
1) +
  geom_vline(xintercept = mean_off, linetype = "dashed", color = "blue", size
= 1)
```

```
## 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.
```




```r
ggplot(data = sleepdata, aes(x = Date, y = Sleep, fill = Worked)) +
  geom_bar(stat = "identity", position = "stack", color = "black") +
  labs(title = "Sleep Analysis", x = "Dates", y = "Sleep Hours") +
  scale_fill_manual(values = c("on" = "pink", "off" = "skyblue")) +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +  # Rotate x-axis
labels
  geom_hline(yintercept = mean_on, linetype = "dashed", color = "red", size =
1) +
```

```
  geom_hline(yintercept = mean_off, linetype = "dashed", color = "blue", size
= 1)
```




```
# Ho: mu1 > mu2
# Ha: mu1 < mu2

# Fail to reject the null hypothesis. At 5% s.l. there is not enough evidence
to suggest that the mean total sleep on off days is less than the mean total
of sleep on on days.
```