Salt_Baseball

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```
library(readr)
library(tidyverse)
SaltSens <- read_csv("ex6-28.txt", quote = "'")
Baseballs <- read_csv("exp07-9.txt", quote = "'")
print(SaltSens)
```

```
## # A tibble: 10 x 2
##    Before After
##     <dbl> <dbl>
##  1  22.9   6.11
##  2   7.74 -4.02
##  3  15.5   8.04
##  4   9.97  3.29
##  5   1.44 -0.77
##  6   9.39  6.99
##  7  11.4  10.2
##  8   1.86  2.09
##  9  -6.71 11.4
## 10   6.42 10.7
```

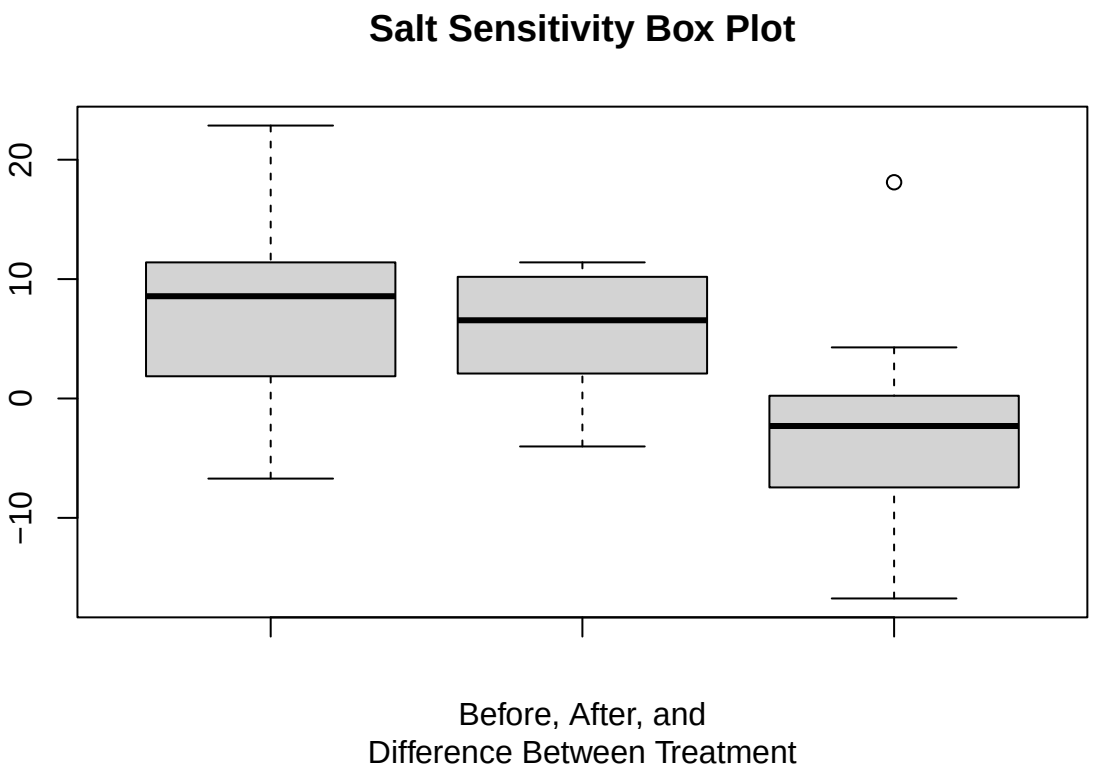
```
print(Baseballs)
```

```
## # A tibble: 40 x 1
##    coefficient
##          <dbl>
##  1        84.8
##  2        88.1
##  3        85.1
##  4        88
##  5        86.6
##  6        85.3
##  7        85.1
##  8        91.4
##  9        83.4
## 10        87.2
## # i 30 more rows
```

Salt Sensitivity

Q1

```
#Q1
SaltSens$Diff <- SaltSens$After - SaltSens$Before
boxplot(SaltSens$Before, SaltSens$After, SaltSens$Diff, main = "Salt Sensitivity Box Plot",
        xlab = "Before, After, and\nDifference Between Treatment")
```



Q2-A

H0: Treatment After - Treatment Before = 0 (Difference = 0)

HA: Treatment After - Treatment Before =/= 0 (Difference =/= 0)

Q2-B

```
#Q2B
t.test(SaltSens$Diff)
```

```
##
##  One Sample t-test
##
## data:  SaltSens$Diff
## t = -0.86098, df = 9, p-value = 0.4116
```

```
## alternative hypothesis: true mean is not equal to 0
## 95 percent confidence interval:
##  -9.373261  4.205261
## sample estimates:
## mean of x
##    -2.584
```

Q2-C

After running the paired t-test, I got a p-value of 0.4116. Because this value is above our set alpha of 0.05, we fail to reject the null hypothesis that there is no difference between before and after treatments.

Q3

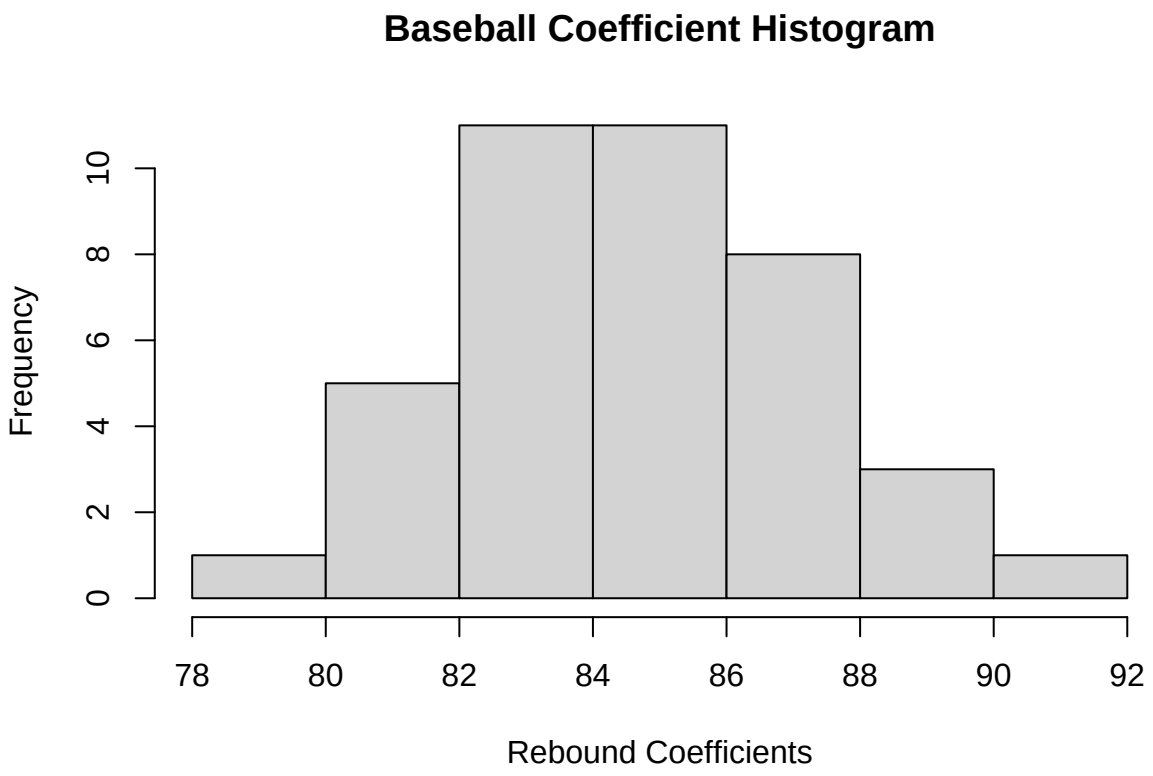
```
#Q3
wilcox.test(SaltSens$After, SaltSens$Before, paired = TRUE)
```

```
##
##  Wilcoxon signed rank exact test
##
## data:  SaltSens$After and SaltSens$Before
## V = 16, p-value = 0.2754
## alternative hypothesis: true location shift is not equal to 0
```

Baseballs

Q4

```
#Q4
hist(Baseballs$coefficient, main = "Baseball Coefficient Histogram",
     xlab = "Rebound Coefficients")
```



Q5

```
#Q5
mean(Baseballs$coefficient)
```

```
## [1] 84.7975
```

```
sd(Baseballs$coefficient)
```

```
## [1] 2.683997
```

Mean: 84.7975

Standard Deviation: 2.683997

Q6

```
#Q6
t.test(Baseballs$coefficient, mu = 85, alternative = "less")
```

```
##
##  One Sample t-test
##
## data:  Baseballs$coefficient
```

```
## t = -0.47717, df = 39, p-value = 0.318
## alternative hypothesis: true mean is less than 85
## 95 percent confidence interval:
##      -Inf 85.51252
## sample estimates:
## mean of x
##   84.7975
```

Q7-A

```
#Q7A
((40-1) * (2.683997 * 2.683997))/(2*2)
```

```
## [1] 70.23744
```

((40-1) * (2.683997 * 2.683997))/(2*2)

Test Statistic: 70.23744

Q7-B

```
#Q7B
1-pchisq(70.23744, df = 39)
```

```
## [1] 0.001582504
```

1-pchisq(70.23744, df = 39)

p-value: 0.001582504