

## code

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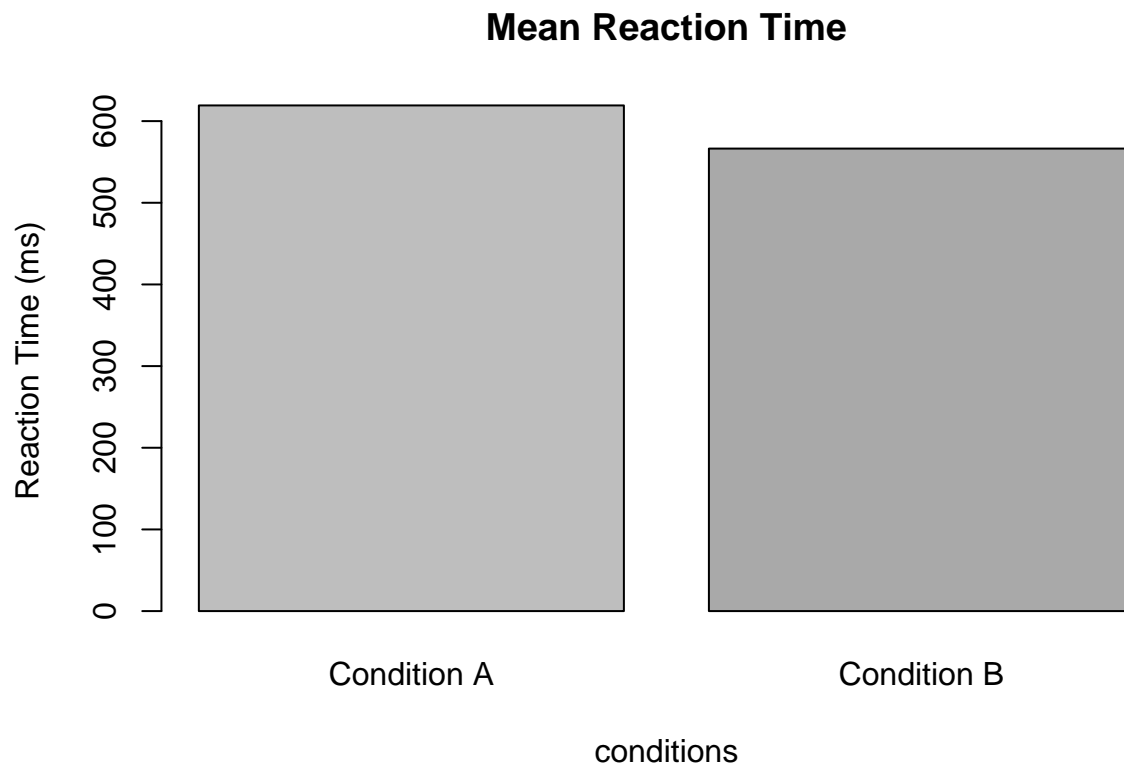
```
rt <- read.csv("RT_dataset.csv") #add your file path
```

## mean RT per condition

```
mean_A <- mean(rt$reaction_time_ms[rt$condition == "A"])
mean_B <- mean(rt$reaction_time_ms[rt$condition == "B"])
means <- c(mean_A, mean_B)
names(means) <- c("Condition A", "Condition B")
```

## Bar plot

```
barplot(means,
        ylab = "Reaction Time (ms)",
        xlab = "conditions",
        main = "Mean Reaction Time",
        col = c("gray", "darkgray"))
```

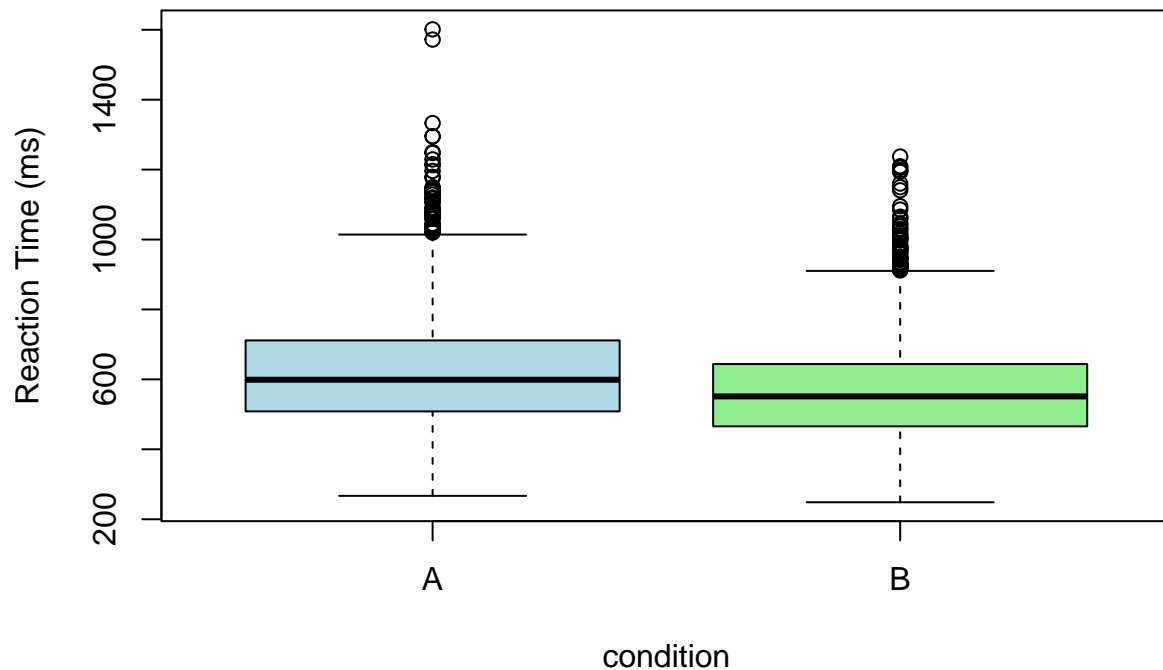


```
# OBSERVATIONS:  
# Bar plot shows Participants responded slower in condition B than condition A,  
# but it only shows means, we cant information about outliers,  
# variance and distribution shape
```

## boxplot

```
boxplot(reaction_time_ms ~ condition,  
        data = rt,  
        ylab = "Reaction Time (ms)",  
        main = "Box Plot-RT",  
        col = c("lightblue", "lightgreen"))
```

## Box Plot-RT



### *# OBSERVATIONS:*

*# We can observe that median reaction time for condition A is  
# higher than for condition B, but we  
# cant tell information about the distribution shape*

## violin plot

```
# install.packages("ggplot2")
library(ggplot2)

ggplot(rt, aes(x = condition, y = reaction_time_ms)) +
  geom_violin(fill = "lightgray") +
  stat_summary(fun = median, geom = "point", size = 3, color = "red") +
  ylab("Reaction Time (ms)") +
  ggtitle("Violin Plot")
```

## Violin Plot



```
# OBSERVATIONS:
# It shows the full distribution of the reaction time and
# also shows median, Condition A has more broader and more skewed
# distribution while Condition B has more concentrated and more symmetrical shape.
```

```
#learning curve graph across trials
```

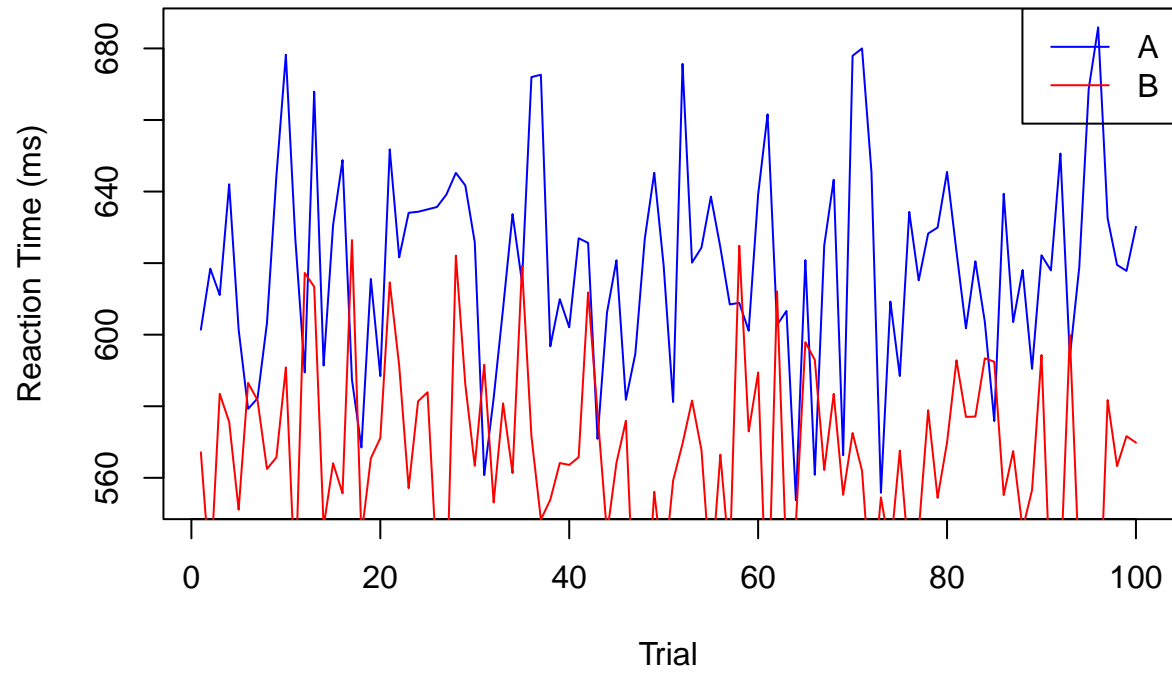
```
#trial means per condition
```

```
trials <- unique(rt$trial)
mean_trial_A <- numeric(length(trials))
mean_trial_B <- numeric(length(trials))
for (t in trials) {
  mean_trial_A[t] <- mean(rt$reaction_time_ms[rt$trial==t & rt$condition=="A"])
  mean_trial_B[t] <- mean(rt$reaction_time_ms[rt$trial==t & rt$condition=="B"])
}
```

## Plot

```
plot(trials, mean_trial_A, type="l", col="blue",
     xlab="Trial", ylab="Reaction Time (ms)",
     main="Learning Curve Across Trials")
lines(trials, mean_trial_B, col="red")
legend("topright", legend=c("A","B"), col=c("blue","red"), lty=1)
```

## Learning Curve Across Trials



### # OBSERVATIONS:

- # Reaction time decreases across trials for both conditions,
- # condition B remains consistently faster than Condition A,
- # which suggests Condition A is much tougher than Condition B