

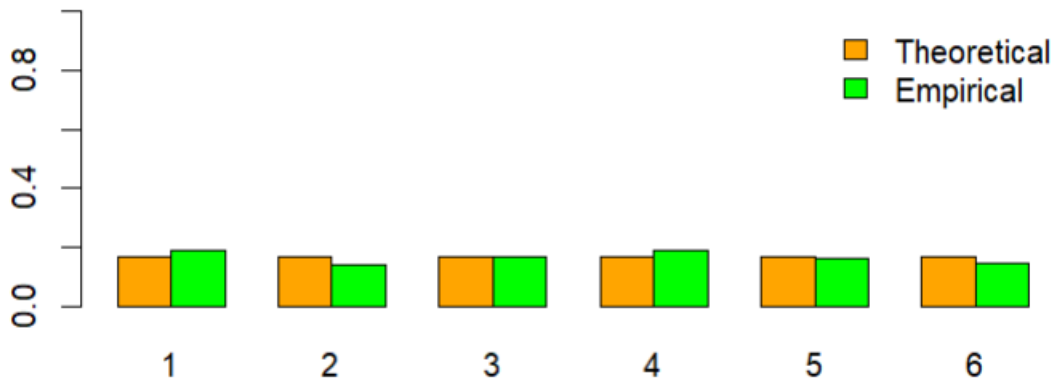
```
# Simulate die rolls
simulated_rolls <- sample(1:6, size = 1000, replace = TRUE)

# Calculate empirical probabilities
empirical_probabilities <- table(simulated_rolls) / length(simulated_rolls)

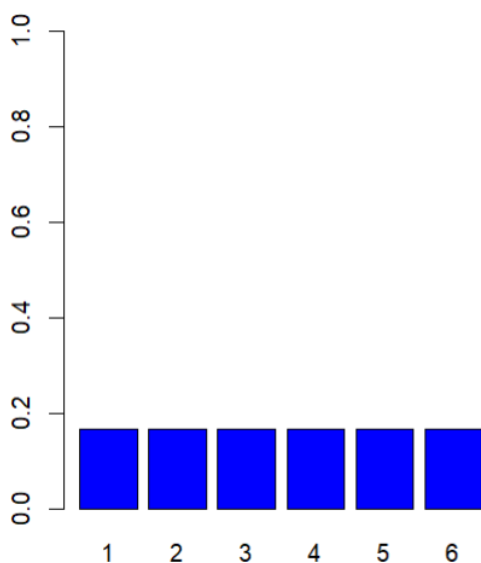
# Theoretical probabilities (assuming a fair six-sided die)
theoretical_probabilities <- rep(1/6, 6)

# Plot both theoretical and empirical probabilities on the same panel
barplot(rbind(theoretical_probabilities, empirical_probabilities), beside = TRUE, names.arg = 1:6,
        ylim = c(0, 1), col = c("orange", "green"), main = "Theoretical and Empirical Probabilities",
        legend.text = c("Theoretical", "Empirical"), args.legend = list(x = "topright", bty = "n"))
```

Theoretical and Empirical Probabilities



Theoretical Probabilities



Empirical Probabilities

