

Sampling Distributions

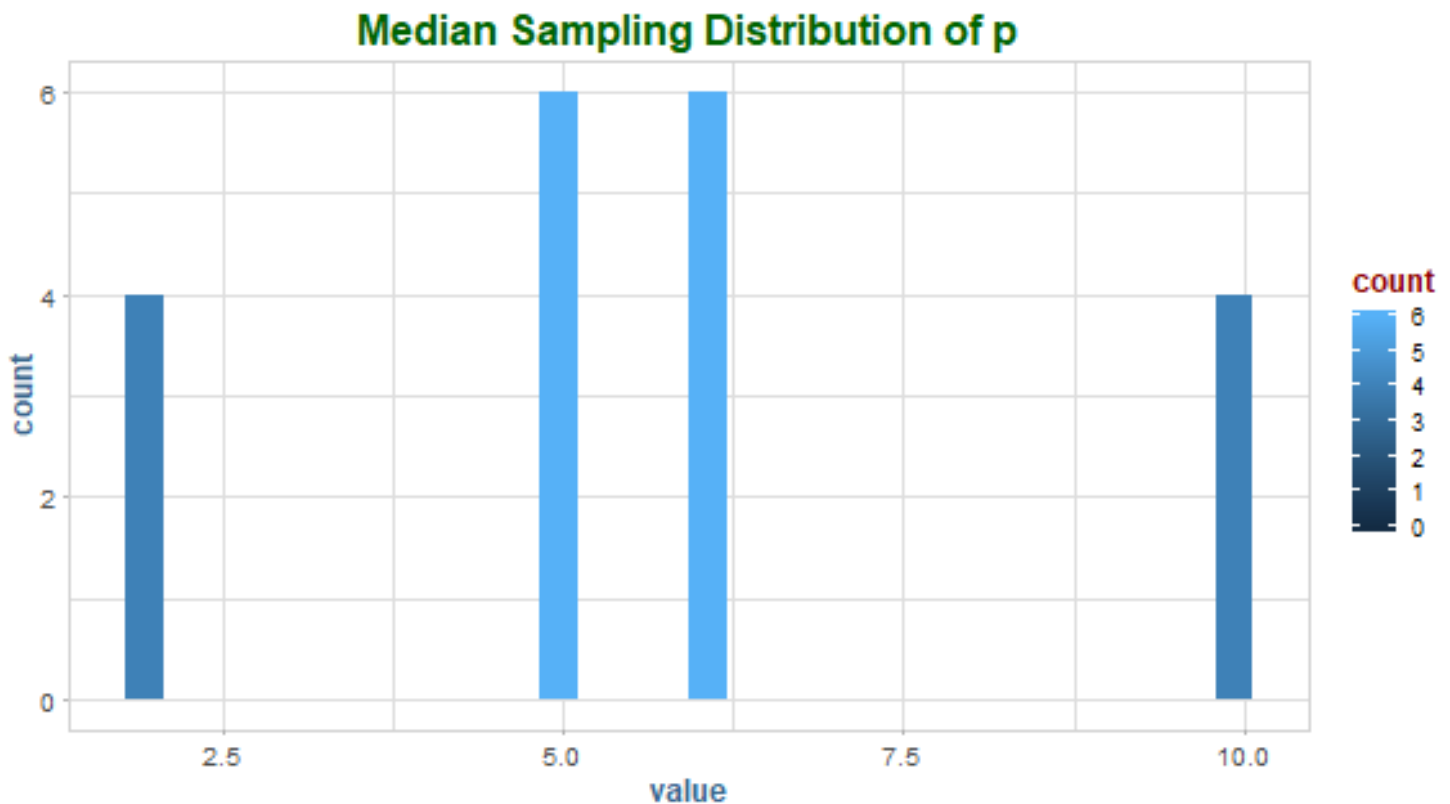
4.1

Consider the population {1, 2, 5, 6, 10, 12}.

Find (and plot) the sampling distribution of medians for samples of size 3 without replacement.

```
p <- c(1, 2, 5, 6, 10, 12)
c <- combinations(v = p, n = 6, r = 3)
m <- apply(c, 1, median)

ggplot(data.table(value = m), aes(value, fill = ..count..)) +
  geom_histogram(bins = 30) +
  labs(title = "Median Sampling Distribution of p")
```



Compare the median of the population to the mean of the medians.

Median of $p = 5.5$. Mean of Medians of $p = 5.7$

4.2

Consider the population {3, 6, 7, 9, 11, 14}.

For samples of size 3 without replacement, find (and plot) the sampling distribution for the minimum.

What is the mean of the sampling distribution?

The statistic is an estimate of some parameter - what is the value of that parameter?

```
p <- c(3, 6, 7, 9, 11, 14)
```