

# Weighted Dice Simulation

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## Simulation

```
source("../roll.R")
ls()
```

```
## [1] "roll" "roll2"
```

```
replicate(20, roll())
```

```
## [1] 6 12 7 3 7 8 10 7 6 8 5 8 7 7 8 3 7 7 5 7
```

```
N <- 10000
rolls <- replicate(N, roll())
table(rolls)
```

```
## rolls
##      2      3      4      5      6      7      8      9      10     11     12
## 288  570  861 1041 1434 1688 1392 1060  837  554  275
```

```
options("digits")
```

```
## $digits
## [1] 7
```

```
options(digits = 2)
table(rolls)/N
```

```
## rolls
##      2      3      4      5      6      7      8      9      10     11     12
## 0.029 0.057 0.086 0.104 0.143 0.169 0.139 0.106 0.084 0.055 0.028
```

```
table(rolls)/N * 36
```

```
## rolls
##      2      3      4      5      6      7      8      9      10     11     12
## 1.04 2.05 3.10 3.75 5.16 6.08 5.01 3.82 3.01 1.99 0.99
```

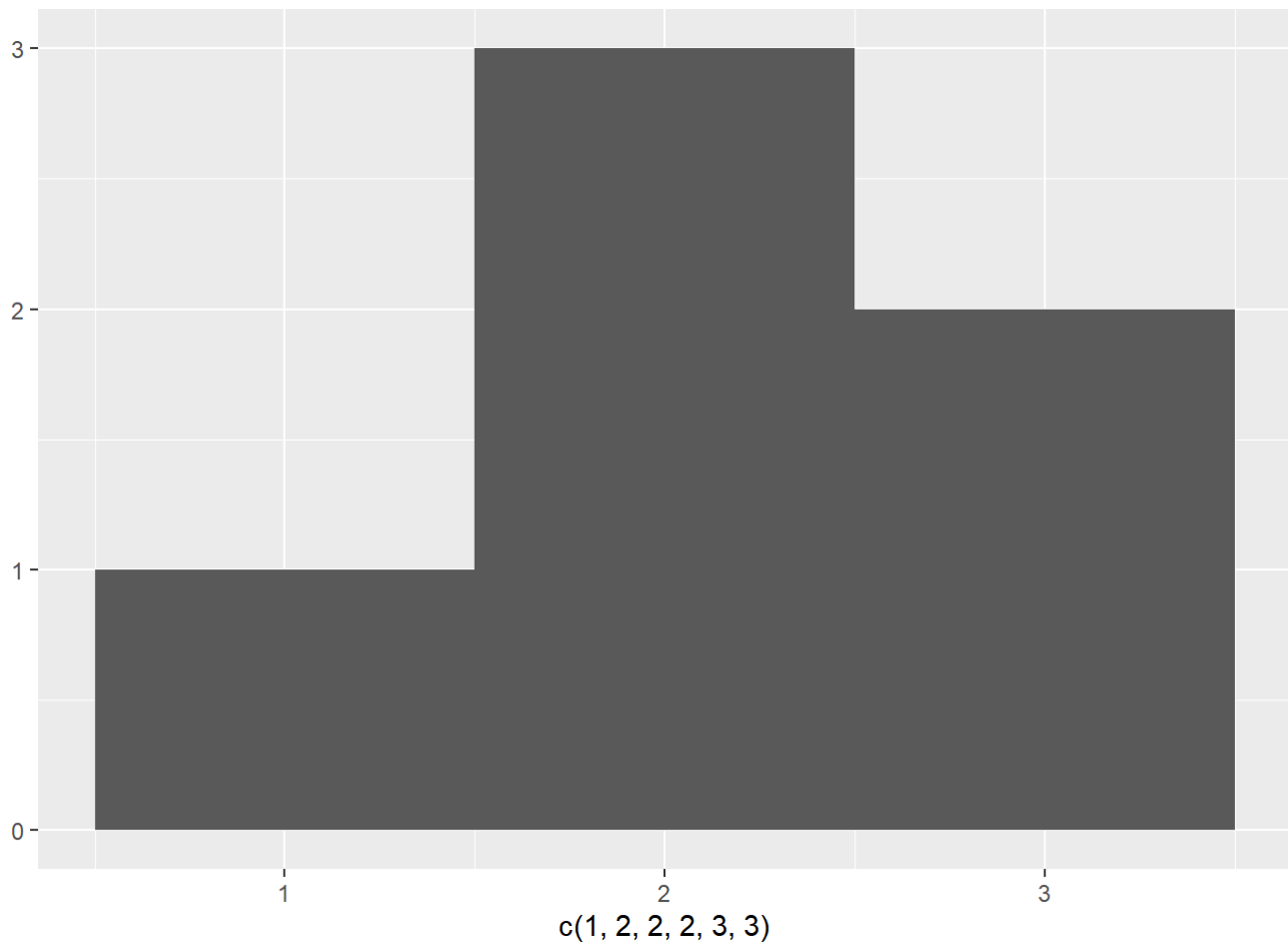
```
options(digits = 1)
table(rolls)/N * 36
```

```
## rolls  
## 2 3 4 5 6 7 8 9 10 11 12  
## 1 2 3 4 5 6 5 4 3 2 1
```

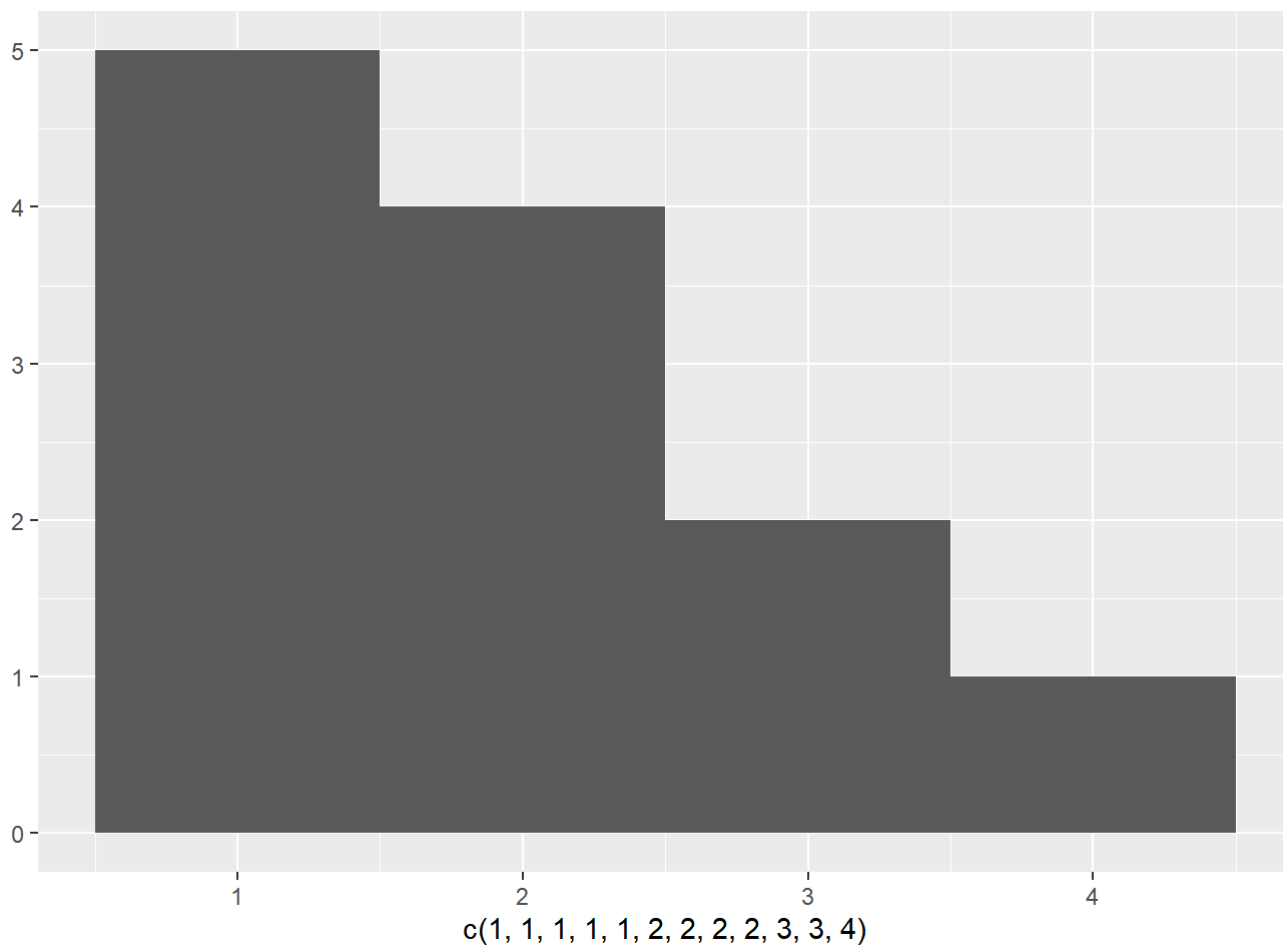
```
options(digits = 7)
```

## histogram

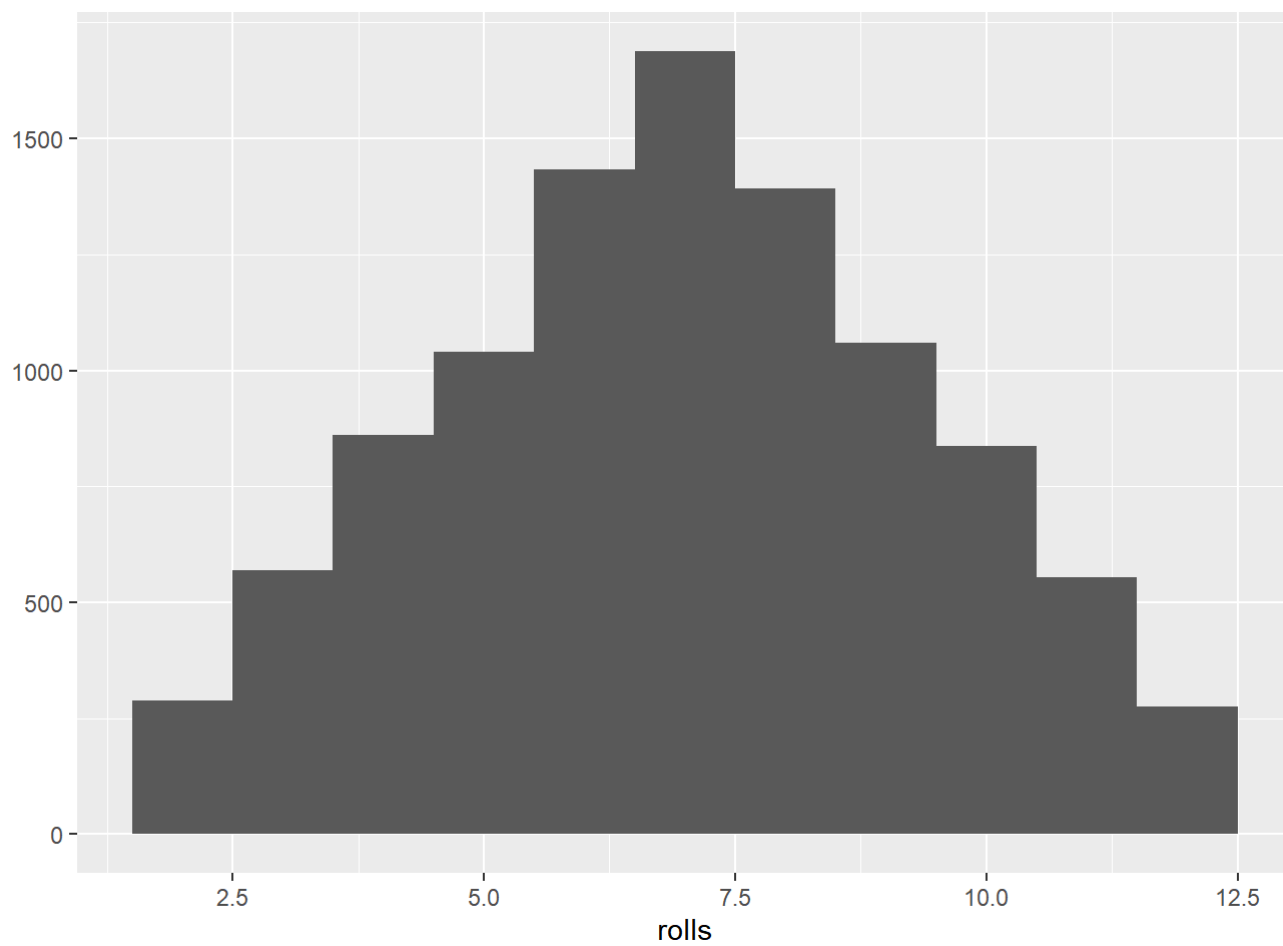
```
library(ggplot2)  
qplot(c(1, 2, 2, 2, 3, 3), binwidth = 1)
```



```
qplot(c(1, 1, 1, 1, 1, 2, 2, 2, 2, 3, 3, 4), binwidth = 1)
```



```
qplot(rolls, binwidth = 1)
```



# Weighted Dice

```
# roll_w <- roll
# fix(roll.w)
roll_w <-
function() {
die <- 1:6
dice <- sample(die, size = 2, replace = TRUE, prob = c(rep(1/8, 5), 3/8))
sum(dice)
}
roll_w
```

```
## function() {
## die <- 1:6
## dice <- sample(die, size = 2, replace = TRUE, prob = c(rep(1/8, 5), 3/8))
## sum(dice)
## }
```

```
replicate(20, roll_w())
```

```
## [1] 10 8 12 12 8 11 9 12 12 12 3 7 12 4 8 7 11 12 11 7
```

```
N <- 10000
rolls_w <- replicate(N, roll_w())
table(rolls_w)
```

```
## rolls_w
##      2      3      4      5      6      7      8      9     10     11     12
##  151   296   506   586   828  1562  1374  1229  1100   933  1435
```

```
options("digits")
```

```
## $digits
## [1] 7
```

```
options(digits = 2)
table(rolls_w)/N
```

```
## rolls_w
##      2      3      4      5      6      7      8      9     10     11     12
## 0.015 0.030 0.051 0.059 0.083 0.156 0.137 0.123 0.110 0.093 0.143
```

```
table(rolls_w)/N * 64
```

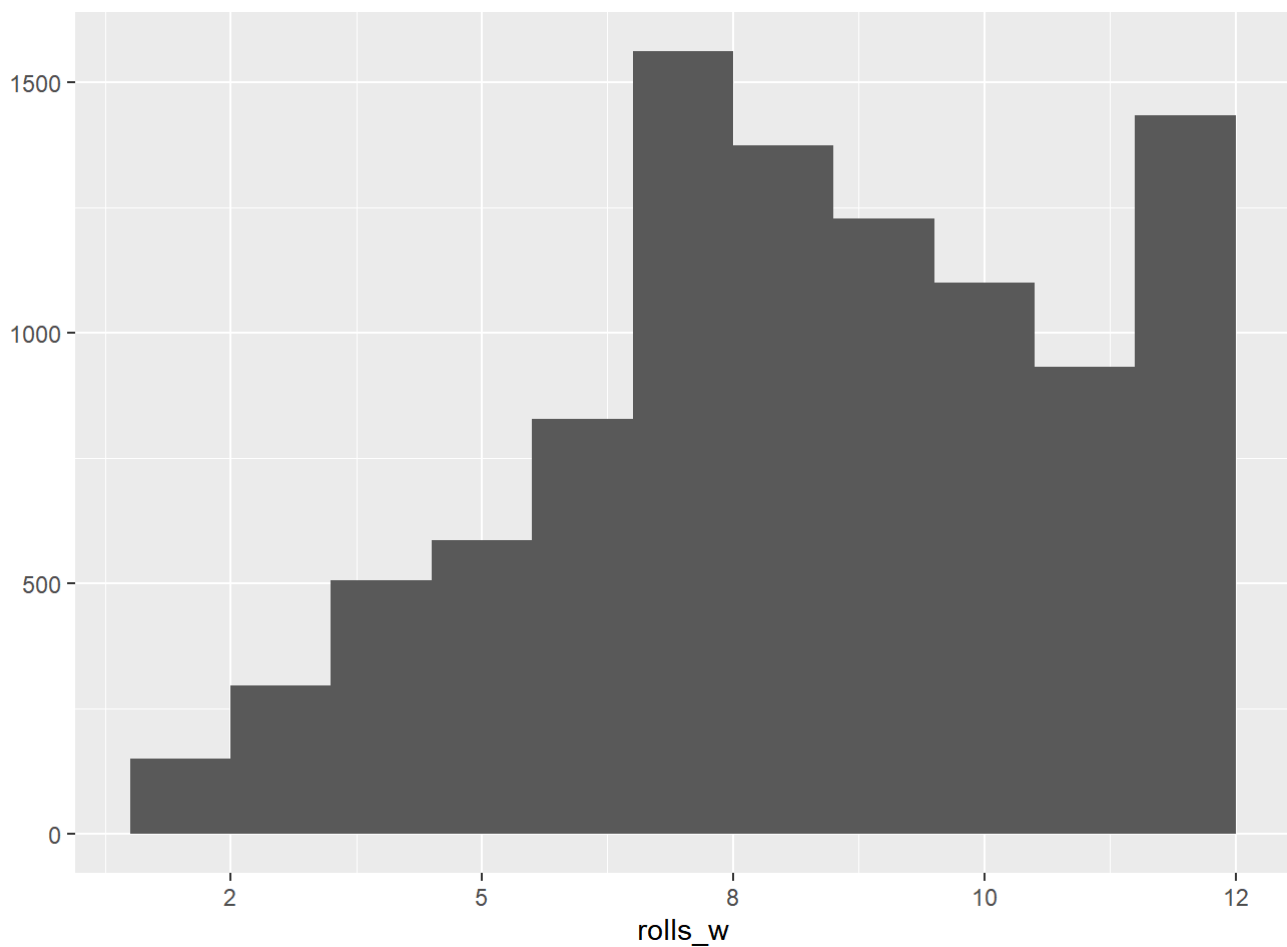
```
## rolls_w
##      2      3      4      5      6      7      8      9     10     11     12
##  0.97  1.89  3.24  3.75  5.30 10.00  8.79  7.87  7.04  5.97  9.18
```

```
options(digits = 1)
table(rolls_w)/N * 64
```

```
## rolls_w
##  2  3  4  5  6  7  8  9 10 11 12
##  1  2  3  4  5 10  9  8  7  6  9
```

## histogram

```
qplot(rolls_w, binwidth = 1)
```



## dump

```
dump(list = "roll_w", file = "./roll_w.R")
```