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Sprawozdanie 1

Lista 1

Zad 1

Detergent

```
Detergent.df <- data.frame(Detergent)
Detergent.df %>% group_by(Temperature) %>% summarise(n = sum(Freq))
```

```
## # A tibble: 2 x 2
##   Temperature     n
##   <fct>       <dbl>
## 1 High          369
## 2 Low           639
```

```
Detergent.df %>% filter(Water_softness == "Soft") %>% group_by(Temperature) %>% summar
```

```
## # A tibble: 2 x 2
##   Temperature     n
##   <fct>       <dbl>
## 1 High          104
## 2 Low           222
```

```
Detergent.df %>% filter(Water_softness == "Medium") %>% group_by(Temperature) %>% summ
```

```
## # A tibble: 2 x 2
##   Temperature     n
##   <fct>       <dbl>
## 1 High          126
## 2 Low           218
```

```
Detergent.df %>% filter(Water_softness == "Hard") %>% group_by(Temperature) %>% summar
```

```
## # A tibble: 2 x 2
##   Temperature     n
##   <fct>       <dbl>
## 1 High          139
## 2 Low           199
```

Preference

```
# Detergent.df %>% group_by(Preference) %>% summarise(n = sum(Freq))
Detergent.df %>% filter(Water_softness == "Soft") %>% group_by(Preference) %>% summari
```

```
## # A tibble: 2 x 2
##   Preference     n
##   <fct>      <dbl>
## 1 Brand X      168
## 2 Brand M      158
```

```
Detergent.df %>% filter(Water_softness == "Medium") %>% group_by(Preference) %>% summa
```

```
## # A tibble: 2 x 2
##   Preference     n
##   <fct>      <dbl>
## 1 Brand X      169
## 2 Brand M      175
```

```
Detergent.df %>% filter(Water_softness == "Hard") %>% group_by(Preference) %>% summari
```

```
## # A tibble: 2 x 2
##   Preference     n
##   <fct>      <dbl>
## 1 Brand X      171
## 2 Brand M      167
```

Zad 2

```
ftable(Detergent, col.vars = "Temperature", row.vars = "Water_softness")
```

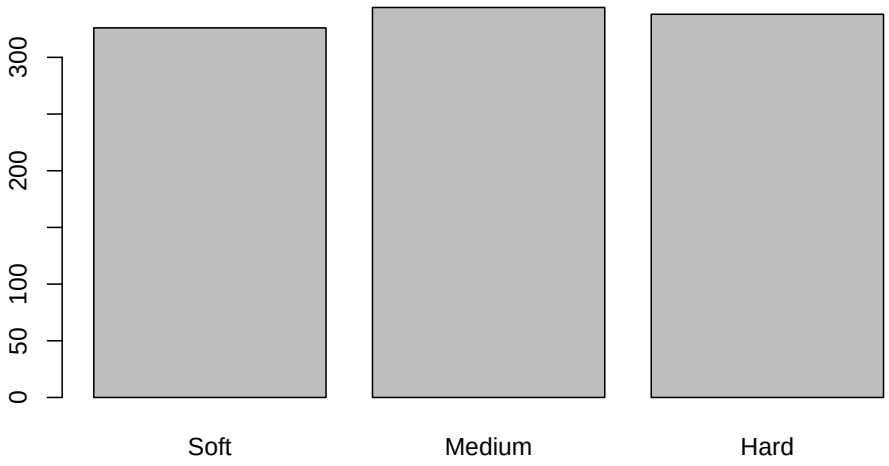
```
##                Temperature High Low
## Water_softness
## Soft                         104 222
## Medium                       126 218
## Hard                         139 199
```

```
structable(Temperature ~ Water_softness, Detergent) %>% addmargins()
```

```
##               Temperature
## Water_softness High Low  Sum
##         Soft    104 222  326
##         Medium  126 218  344
##         Hard    139 199  338
##         Sum     369 639 1008
```

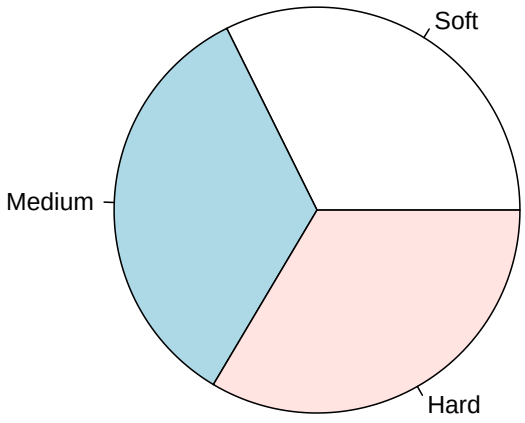
Zad 3

```
A <- apply(Detergent, "Water_softness", sum)
barplot(A)
```



Rysunek 1. Wykresy słupkowy dla mniennej Water Softness.

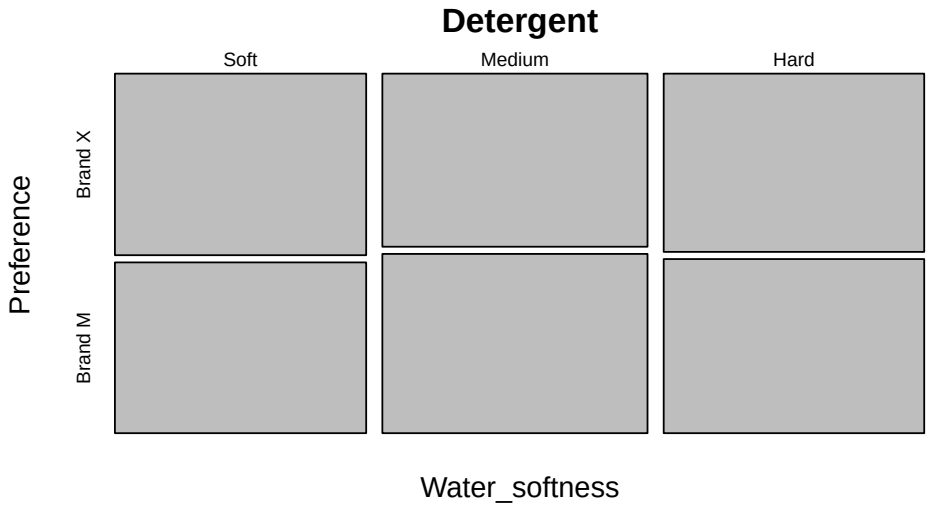
```
par(mar = c(2, 2, 2, 2))
pie(A)
```



Rysunek 2. Wykresy kołowy dla mniennej Water Softness.

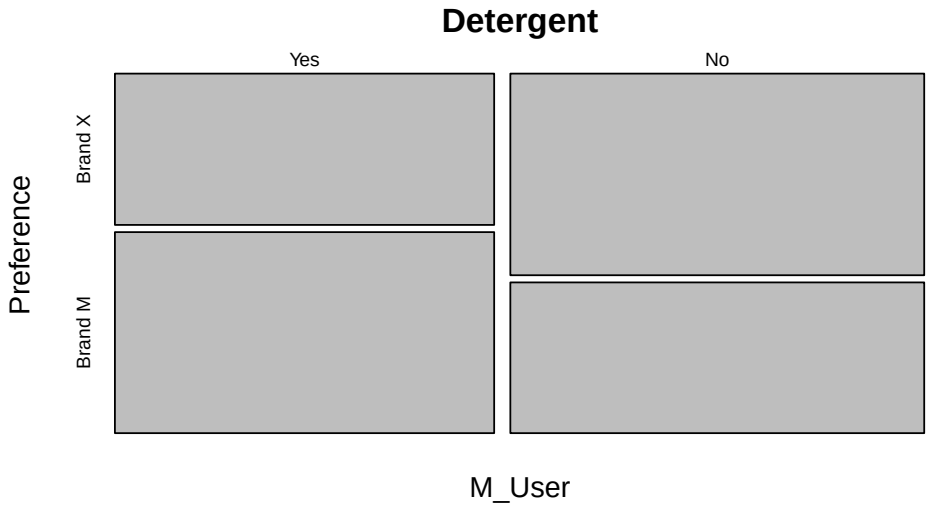
Zad 4

```
par(mar = c(2, 2, 2, 2))
mosaicplot(~Water_softness+Preference, data = Detergent)
```



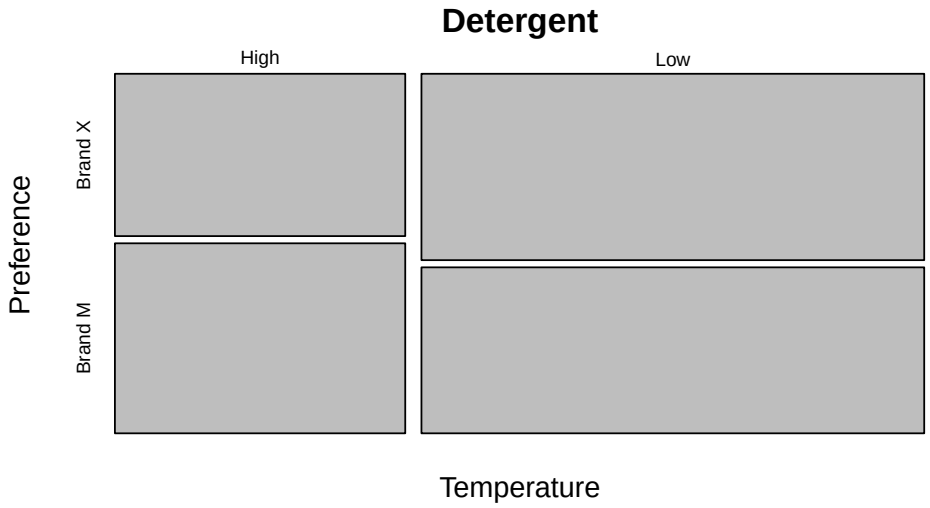
Rysunek 3. Wykres mozajkowy dla Preference i Water softness

```
par(mar = c(2, 2, 2, 2))
mosaicplot(~M_User+Preference, data = Detergent)
```



Rysunek 4. Wykres mozajkowy dla Preference i M User.

```
par(mar = c(2, 2, 2, 2))
mosaicplot(~Temperature+Preference, data = Detergent)
```



Rysunek 5. Wykres mozajkowy dla Preference i Temperature.