Lecture 6 Module 3: Tables

Exercises

Let's clear the environment:

```
rm( list = ls() )
```

Let's load the objects for this module:

```
load( "Module 3 R Objects.Rdata")

ls()
```

```
## [1] "large.survey.response.character.string.vector"
## [2] "location.character.string.vector"
## [3] "one.week.cereal.brand.character.string.vector"
```

Exercises

Exercise 1: Constructing a frequency count table

The vector `one.week.cereal.brand.character.string.vector` contains data on cereal brands sold during one week.

First, construct a frequency count table for the cereal brands using this character string vector, save it in a variable, and display it directly.

Next, create a factor from this character string variable, and save it in a variable.

Then use this factor to construct a new table of the sample frequency count frequencies for this data.

Solution

Exercise 2: Constructing a sample relative proportions table

Construct a sample relative proportions table for the cereal brands using the frequency count table you created in Exercise 1. Save this table in a variable, and display it directly.

Solution

Exercise 3: Rounding the relative proportions table numbers

Use the `round()` function so that the numbers displayed in the relative proportions table have 3 decimal places.

Solution

Exercise 4: Re-ordering the levels

Using character string indexing on the levels of the frequency count table that you created in Exercise 1 to create a new frequency count table displaying the brands in the order "Krispee Yummm!!", "Healthy Kale and Tofu", and "Sugar Bomz".

Then create a new factor with the levels pre-specified in the order "Krispee Yummm!!", "Healthy Kale and Tofu", and "Sugar Bomz". Save this factor in a variable, and use it to create another frequency count table, again displaying the brand names in this order.

Finally, sort the table in *ascending order*, so that the brand with the least sales is reported first, and the brand with the most sales is reported last.

Solution

Exercise 5: Table and Pie Charts

Construct a pie chart of the relative proportions of the cereal brands using the frequency count table you constructed in Problem 1.

Then construct a pie chart of the relative proportions of the cereal brands using the frequency count table you constructed in Problem 1, displayed in descending order.

Solution

Solutions to the Exercises

Exercise 1: Constructing a frequency count table

The vector `one.week.cereal.brand.character.string.vector` contains data on cereal brands sold during one week.

First, construct a frequency count table for the cereal brands using this character string vector, save it in a variable, and display it directly.

Next, create a factor from this character string variable, and save it in a variable.

Then use this factor to construct a new table of the sample frequency count frequencies for this data.

Solution

Here's the table constructed from the character string vector:

```
one.week.cereal.brand.frequency.count.table <-
  table(
    one.week.cereal.brand.character.string.vector
    )

one.week.cereal.brand.frequency.count.table
```

```
## one.week.cereal.brand.character.string.vector
## Healthy Kale and Tofu       Krispee Yummm!!            Sugar Bomz
##                    41                   117                   173
```

Next we can create the factor:

```
one.week.cereal.brand.factor <-
  factor(
    one.week.cereal.brand.character.string.vector
  )
```

And finally we can construct another frequency count table:

```
one.week.cereal.brand.frequency.count.table <-
  table(
    one.week.cereal.brand.factor
  )

one.week.cereal.brand.frequency.count.table
```

```
## one.week.cereal.brand.factor
## Healthy Kale and Tofu       Krispee Yummm!!            Sugar Bomz
##                    41                   117                   173
```

Exercise 2: Constructing a sample relative proportions table

Construct a sample relative proportions table for the cereal brands using the frequency count table you created in Exercise 1. Save this table in a variable, and display it directly.

Solution

```
one.week.cereal.brand.relative.proportions.table <-
  proportions(
    one.week.cereal.brand.frequency.count.table
  )

one.week.cereal.brand.relative.proportions.table
```

```
## one.week.cereal.brand.factor
## Healthy Kale and Tofu       Krispee Yummm!!            Sugar Bomz
##             0.1238671             0.3534743             0.5226586
```

Exercise 3: Rounding the relative proportions table numbers

Use the `round()` function so that the numbers displayed in the relative proportions table have 3 decimal places.

Solution

```
round(
  one.week.cereal.brand.relative.proportions.table,
  digits = 3
)
```

```
## one.week.cereal.brand.factor
## Healthy Kale and Tofu       Krispee Yummm!!            Sugar Bomz
##                 0.124                 0.353                 0.523
```

Exercise 4: Re-ordering the levels

Using character string indexing on the levels of the frequency count table that you created in Exercise 1 to create a new frequency count table displaying the brands in the order "Krispee Yummm!!", "Healthy Kale and Tofu", and "Sugar Bomz".

Then create a new factor with the levels pre-specified in the order "Krispee Yummm!!", "Healthy Kale and Tofu", and "Sugar Bomz". Save this factor in a variable, and use it to create another frequency count table, again displaying the brand names in this order.

Finally, sort the table in *ascending order*, so that the brand with the least sales is reported first, and the brand with the most sales is reported last.

Solution

```
reordered.one.week.cereal.brand.frequency.count.table <-
  one.week.cereal.brand.frequency.count.table[
    c(
      "Krispee Yummm!!",
      "Healthy Kale and Tofu",
      "Sugar Bomz"
    )
  ]
```

```
reordered.one.week.cereal.brand.factor <-
  factor(
    one.week.cereal.brand.character.string.vector,
    levels =
      c(
        "Krispee Yummm!!",
        "Healthy Kale and Tofu",
        "Sugar Bomz"
      )
  )

table(
  reordered.one.week.cereal.brand.factor
)
```

```
## reordered.one.week.cereal.brand.factor
##       Krispee Yummm!! Healthy Kale and Tofu            Sugar Bomz
##                   117                    41                   173
```

```
ascending.order.one.week.cereal.brand.frequency.count.table <-
  sort( one.week.cereal.brand.frequency.count.table )

ascending.order.one.week.cereal.brand.frequency.count.table
```

```
## one.week.cereal.brand.factor
## Healthy Kale and Tofu       Krispee Yummm!!            Sugar Bomz
##                    41                   117                   173
```

Exercise 5

Construct a pie chart of the relative proportions of the cereal brands using the frequency count table you constructed in Problem 1.

Then construct a pie chart of the relative proportions of the cereal brands using the frequency count table you constructed in Problem 1, displayed in decreasing order.

Solution

```
pie(
  sort(
    one.week.cereal.brand.frequency.count.table,
    decreasing = TRUE
  ),
  main = "Pie chart of frequency counts for cereal brand sales",
  clockwise = TRUE
)
```