How to Make a Circular Waffle Chart in R with GGPlot: A step by step guide

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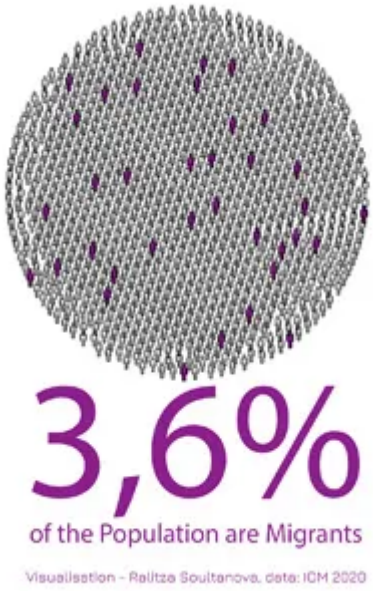


What is a circular waffle chart and when to use it?

Circular waffle charts, also known as Plum Pudding Charts, present an interesting way to visualize your data. While they are not as common as traditional bar or line graphs, they offer an appealing alternative in certain contexts.

These charts are particularly useful when you need to represent a percentage and a part-to-whole relationship. They are most effective in scenarios involving just two categories, especially when there is a significant discrepancy in the percentages between them.

In observance of International Migration Day on December 18th, I chose to use a circular waffle chart to illustrate the percentage of the global migrant population.

The aim was to emphasize that the majority of people stay in their country of origin, highlighting the relative infrequency of international migration.

According to the International Association of Migration, only 3.6% of the world's population are migrants.

The R code

For creating the plot, I used R programming language, along with the `ggplot` and `ggimage` libraries.

Begin by installing and then loading these necessary libraries. You'll need:

- `ggplot2` for its powerful data visualization capabilities, which rely on the grammar of graphics.
- `ggimage` for incorporating human shapes into the visual representation.

```
require(ggplot2) # check if library installed
require(ggimage)

library(ggplot2) # load the library
library(ggimage)
```

Create and load the data

As stated previously 3,6% of the world population are migrants.

I created a random sample of 1000 observations, ensuring that they conform to a fixed probability of 3.6%.
Then used this site for the coordinates of 1000 circles in a circle and downloaded them locally.

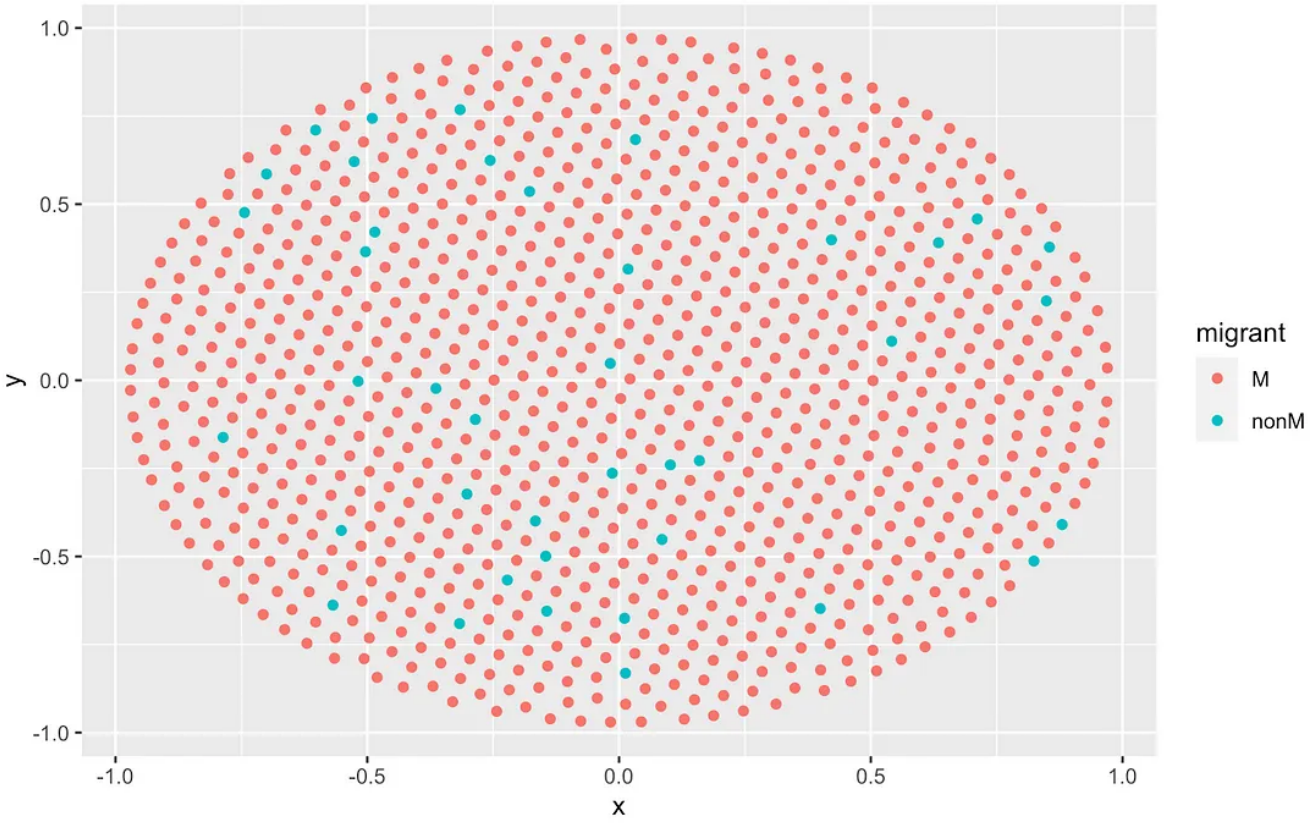
```
# create migrants sample
migrant <- sample(c("M", "nonM"), 1000, replace = TRUE, prob = c(0.964, 0.036))

# load coordinates
coor <- read.table("cci1000.txt")
```

```
#merge the migrants and coordinates data frames
df <- cbind(coor, migrant)
```

The basic circular waffle chart

From here the basic plot is just two lines of code.

```
#basic plot
ggplot(df, aes(x, y, color=migrant))+
  geom_point()
```

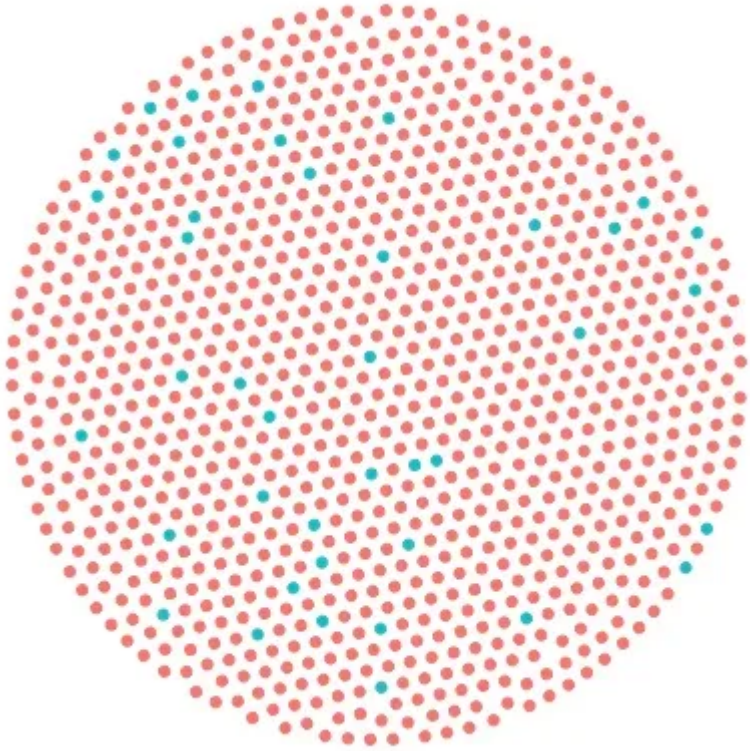


basic waffle chart plot

We can customise it and make more visually appealing. Per example remove the legend and the background.

```
ggplot(df, aes(x, y, color=migrant))+
  geom_point()+
```

```
    theme_void()+
    theme(legend.position = "none")
```

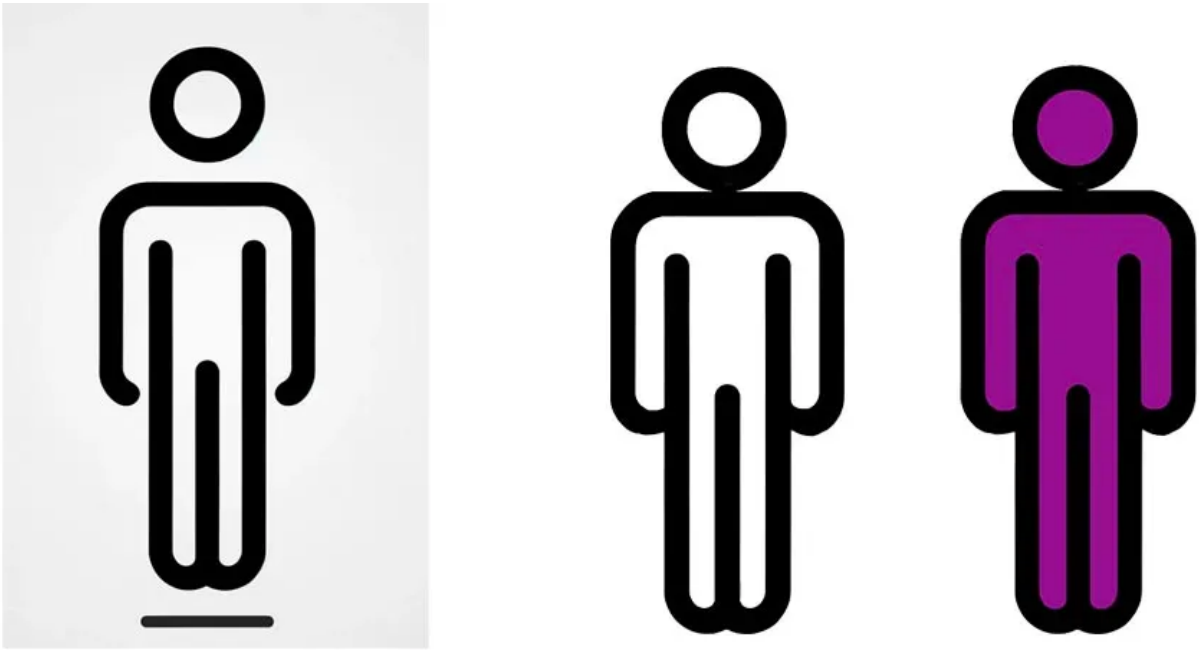


plot without disturbing elements

Plot with human figures

I decided to incorporate a human figure into the storyline. To visualize this character, you could find a royalty-free image, sketch it by hand, or design it on your own. My choice was to craft it using DALL-E.

This is the image I finalized after numerous iterations. Afterwards, I cleaned up the background, made some minor adjustments, and created a coloured version with Photoshop.

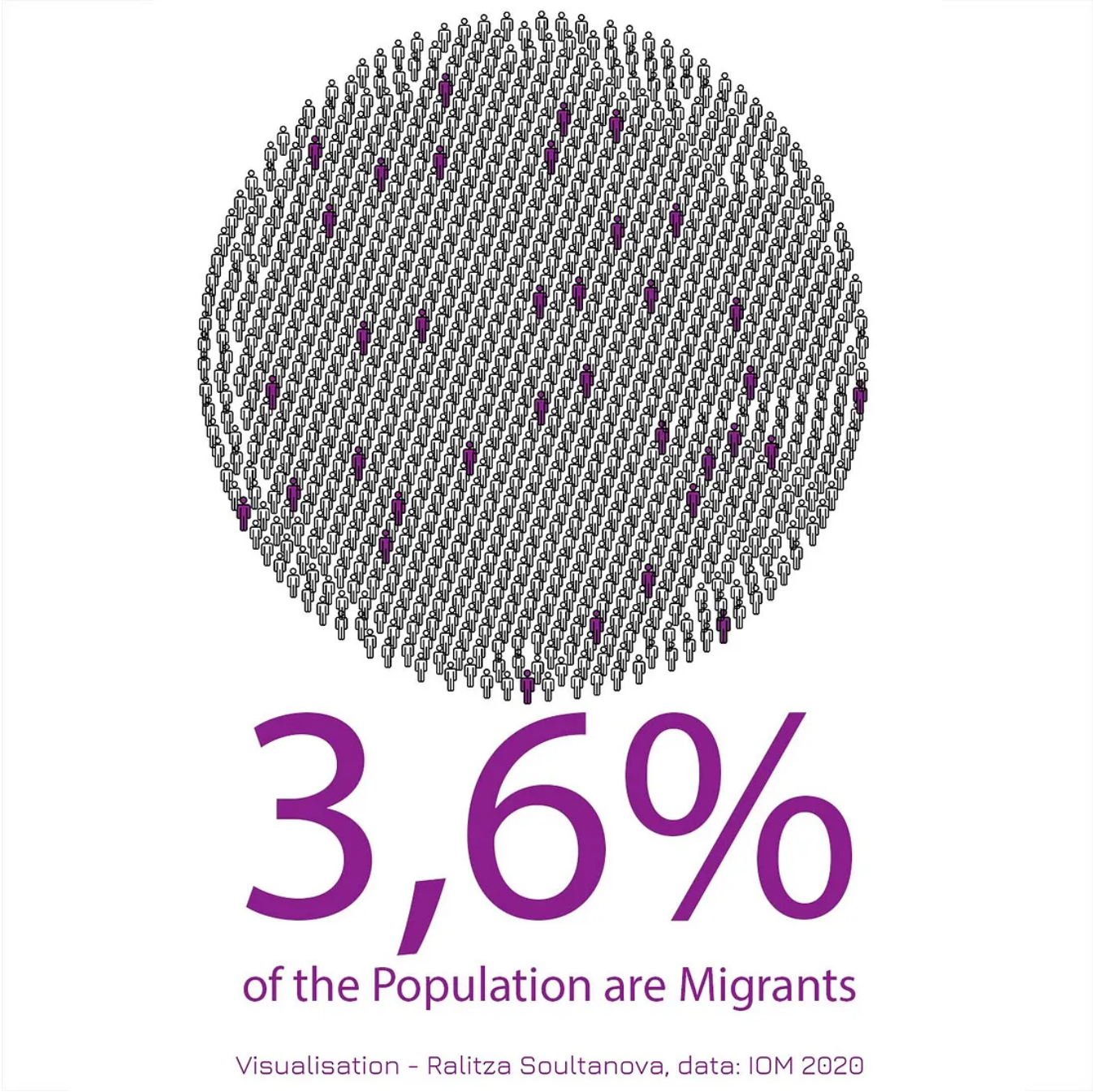


The ggimage package is what you'll need to create a plot that features human figures, replacing the dots from the previous plot.

```
ggplot(df, aes(x, y)) +
geom_image(aes(image = ifelse(migrant == "M", "human.png", "human_mig.png")),
    size = 0.02) +
theme_void()
```

This is the plot with human figures.

You can further customise it in R or in any other graphical software. I used Photoshop in order to add the caption and the title.



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