
Viscom Project
Thank You!
Our Team
Our Aim
Description
Further Aspirations
Analysis
Applications
Sample Output
Conclusions

VISUAL COMMUNICATION END-TERM PROJECT

GROUP-F

PROJECT TOPIC

Collection and Analysis of eye-fixations on images with respect to colors and their relative positions.

DESCRIPTION OF PROJECT

EYE-TRACKER

SOFTWARE USED

APPROACH

EYE-TRACKER

The eye tracker used in our project is the TOBII Eye tracker.

SOFTWARE USED

OpenCV was used for image processing and generation of visuals.

Visual Studio along with **Tobii EyeTracker SDK** was used for building the computer application for recording the data.

RStudio was used to process data and generate graphs and pie charts.

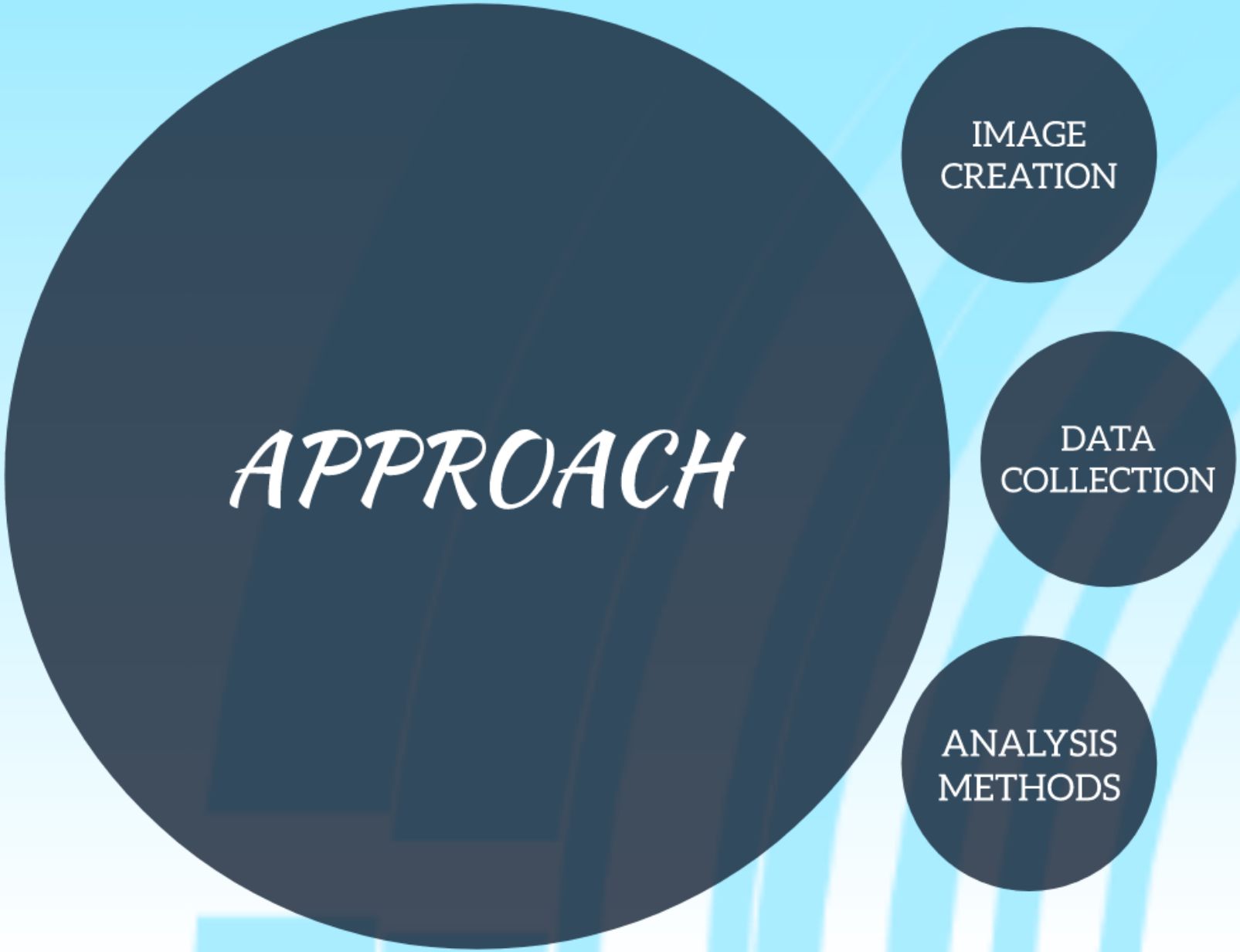
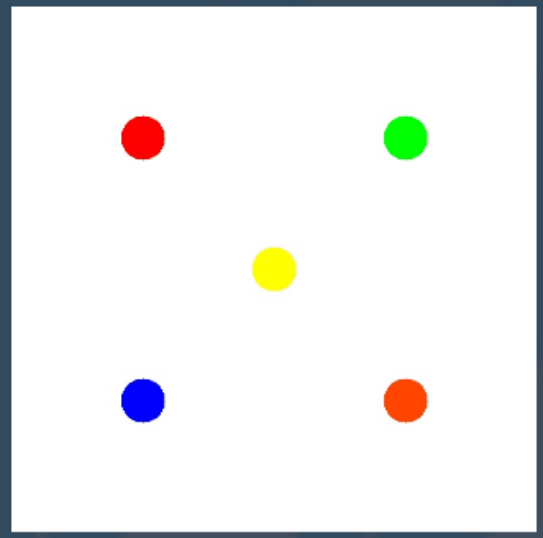

APPROACH
IMAGE CREATION
DATA COLLECTION
ANALYSIS METHODS

IMAGE CREATION

Five colors were taken and permuted over the 5 main areas of focus. Thus 5! = 120 images were created which were randomly partitioned in 4 sets of 30 each. In a set, an image was displayed for 3 sec and then a pause was given for 1 sec.



DATA COLLECTION

Each image was then shown to 25 people, and raw data obtained was in the form of gaze positions and corresponding time durations.

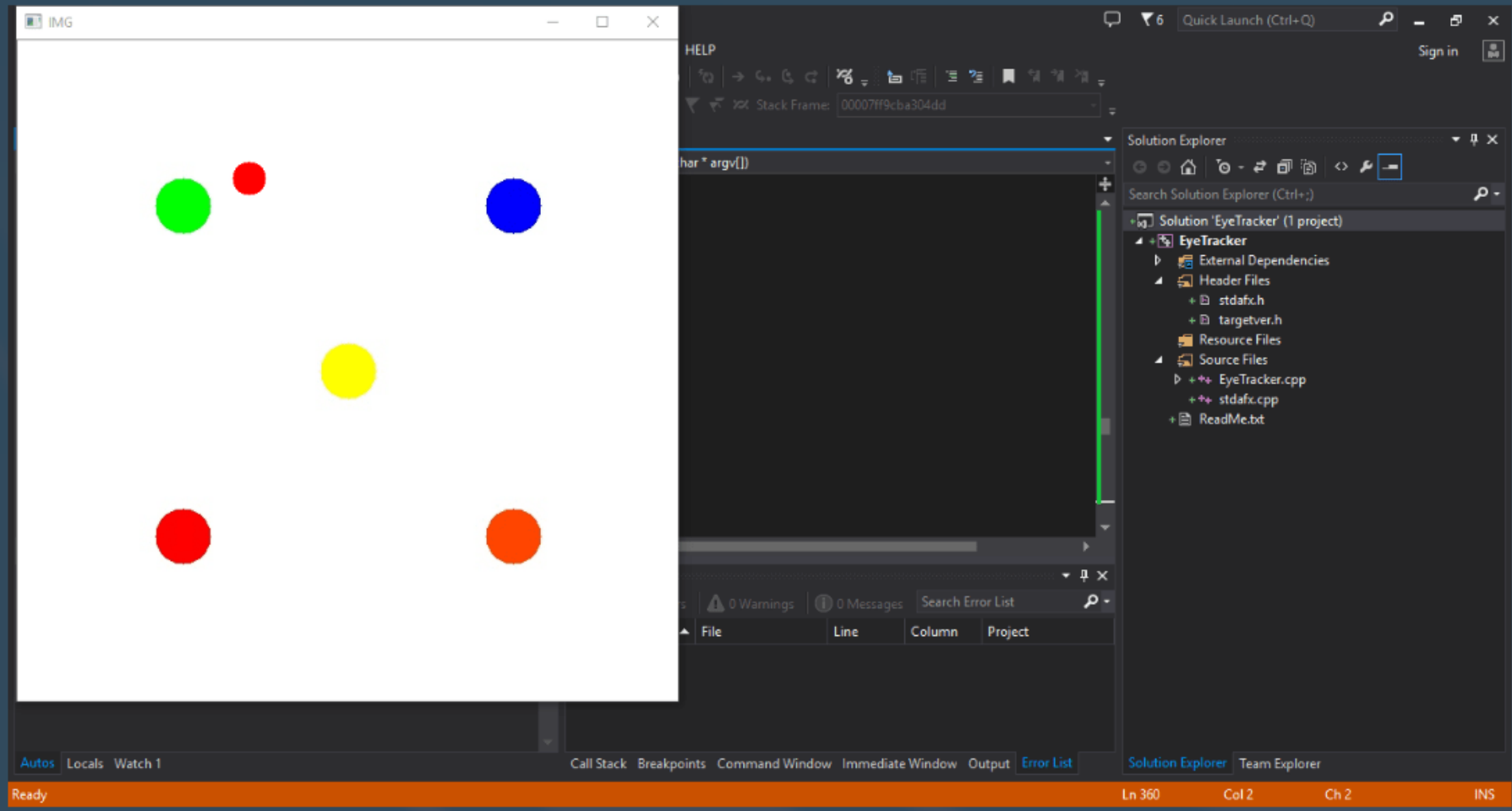
ANALYSIS METHODS

Readings were recorded and subsequently analyzed using R, RStudio and C++ programming. Different graphs, pie charts, heatmaps and gaze traces were generated.

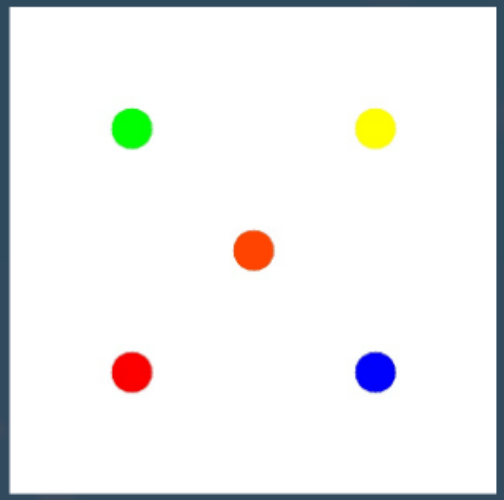
SOME SAMPLE OUTPUTS

SAMPLE WORKING

SOME OUTPUTS

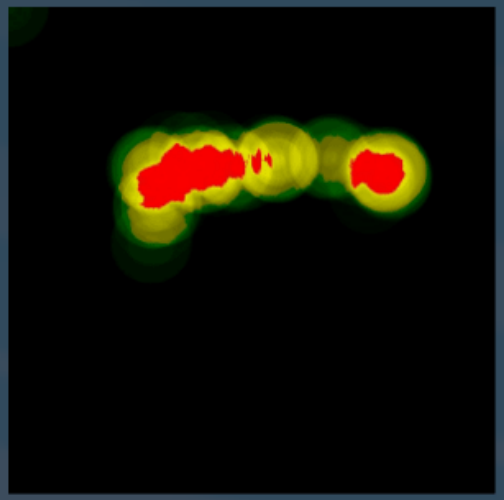


A SCREENSHOT



SAMPLE IMAGE

GAZE TRACE



HEAT MAP

LET'S SEE THE ANALYSIS!

COLOR ANALYSIS GRAPHS

COLOR ANALYSIS PIE-CHART

LOCATION ANALYSIS GRAPHS

LOCATION ANALYSIS PIE-CHART

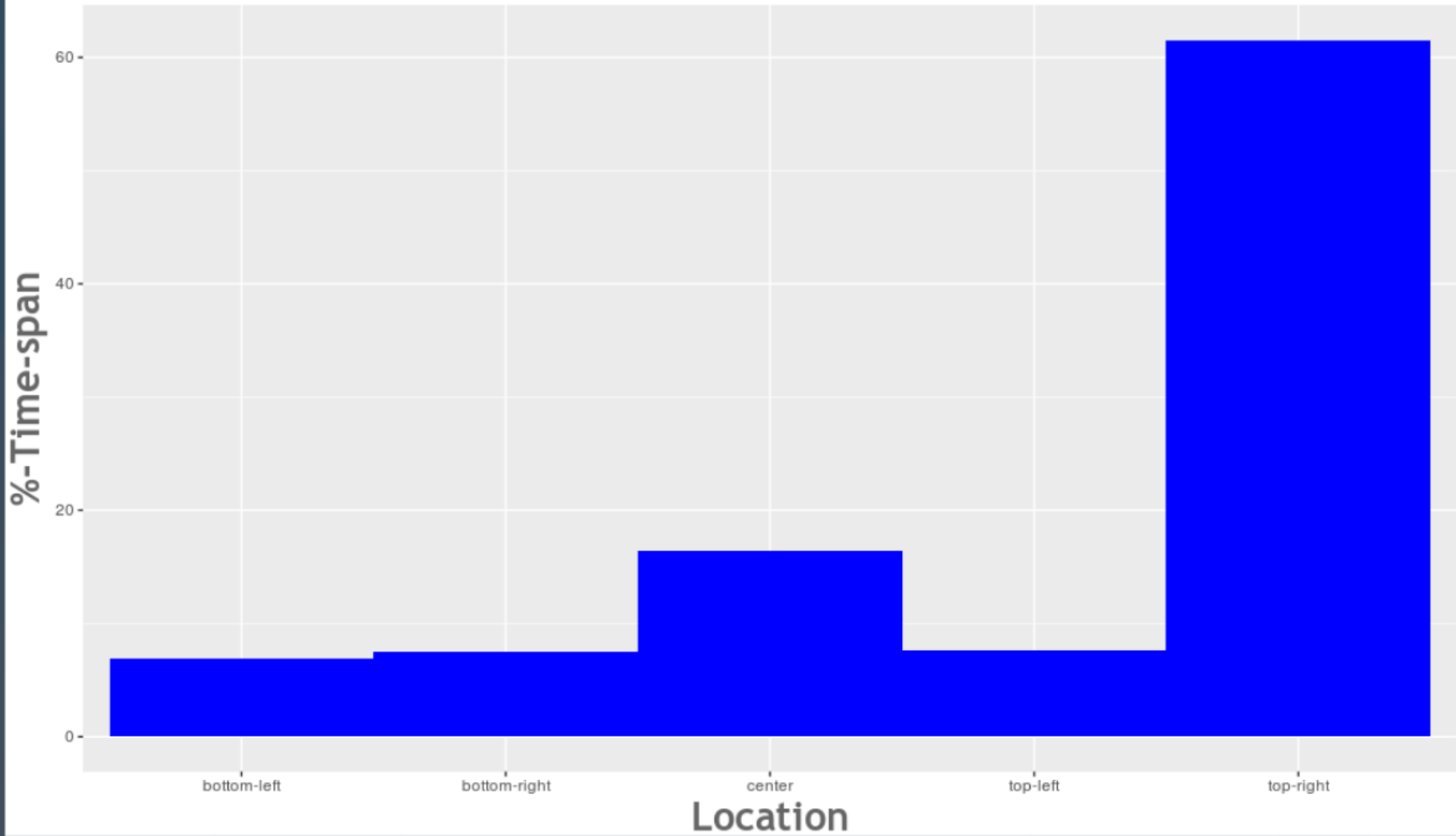
OVERALL

FOCUS POINTS

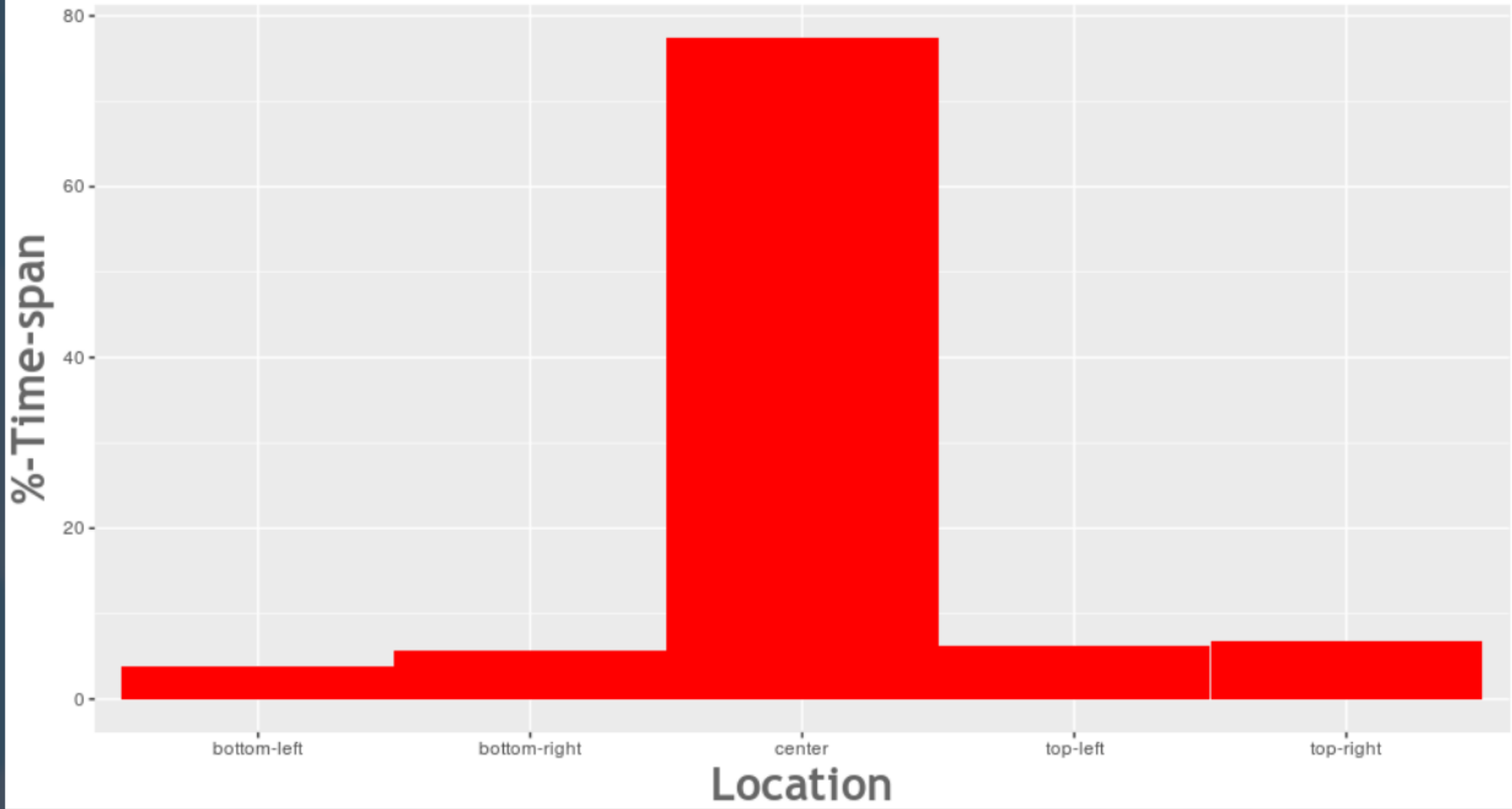
COLOR ANALYSIS GRAPHS

- BLUE
- RED
- GREEN
- YELLOW
- ORANGE
- OVERALL

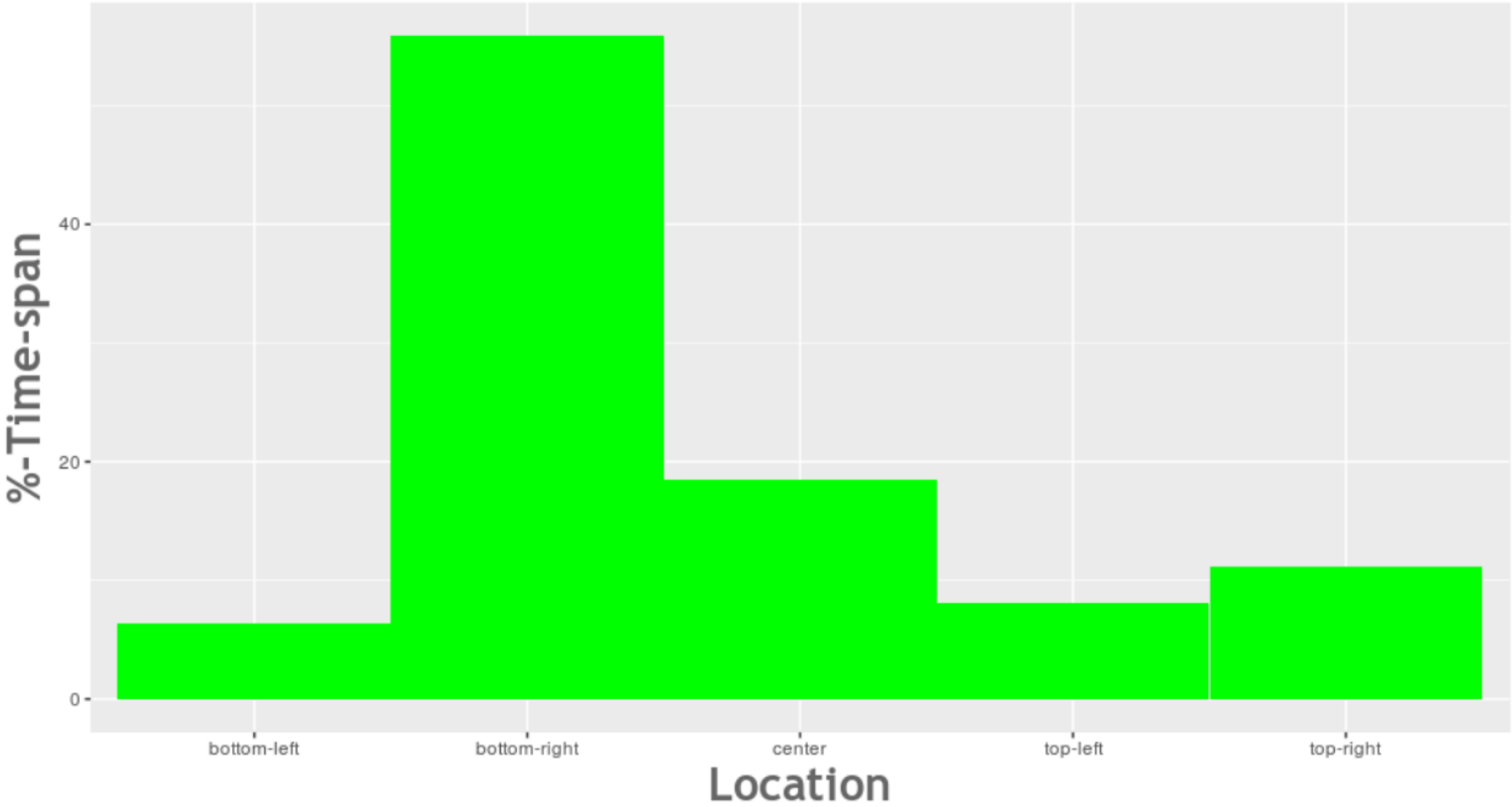
Bar-Plot for Location vs %-Time-span for Blue-Colored circle



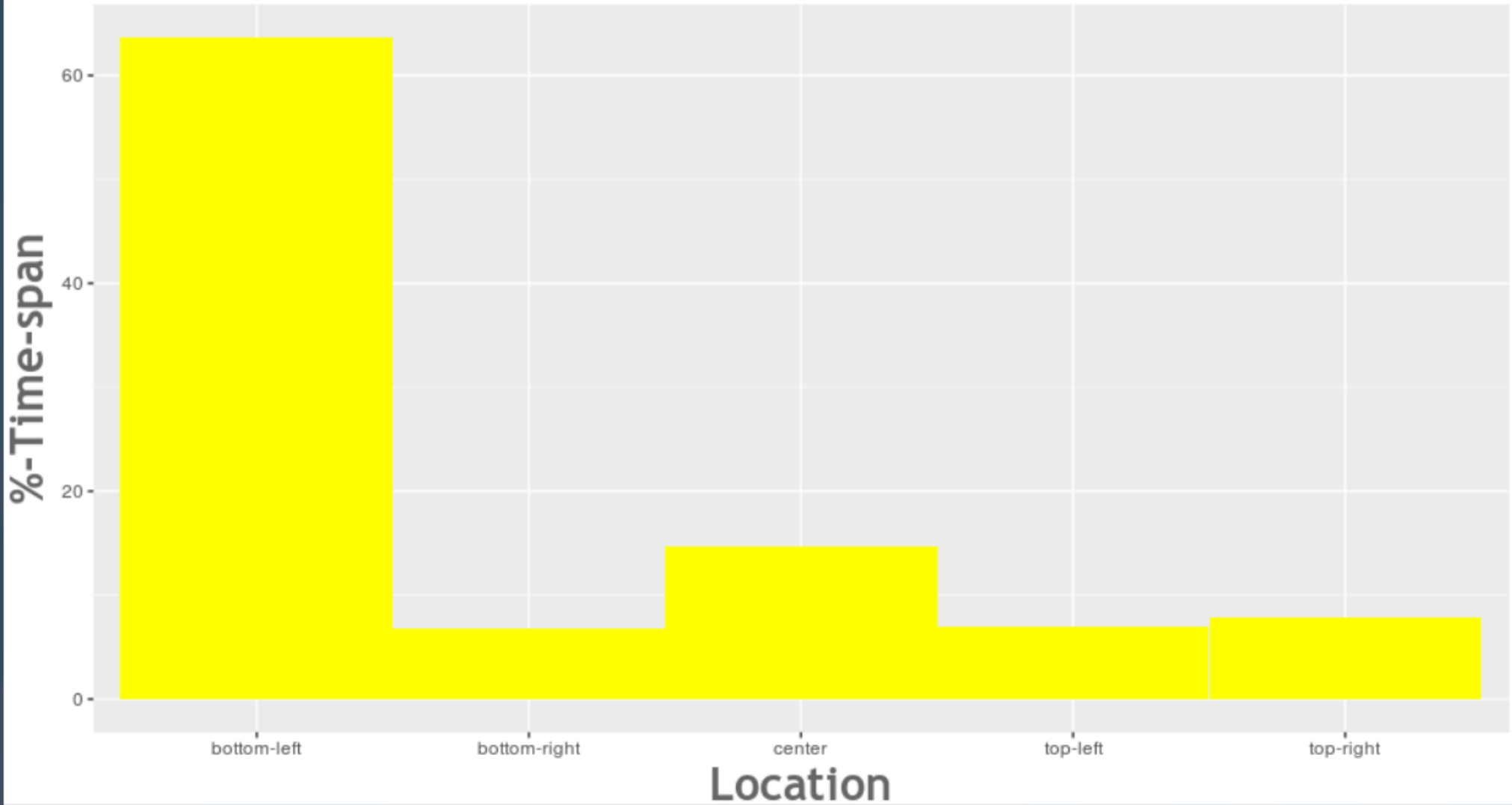
Bar-Plot for Location vs %-Time-span for Red-Colored circle



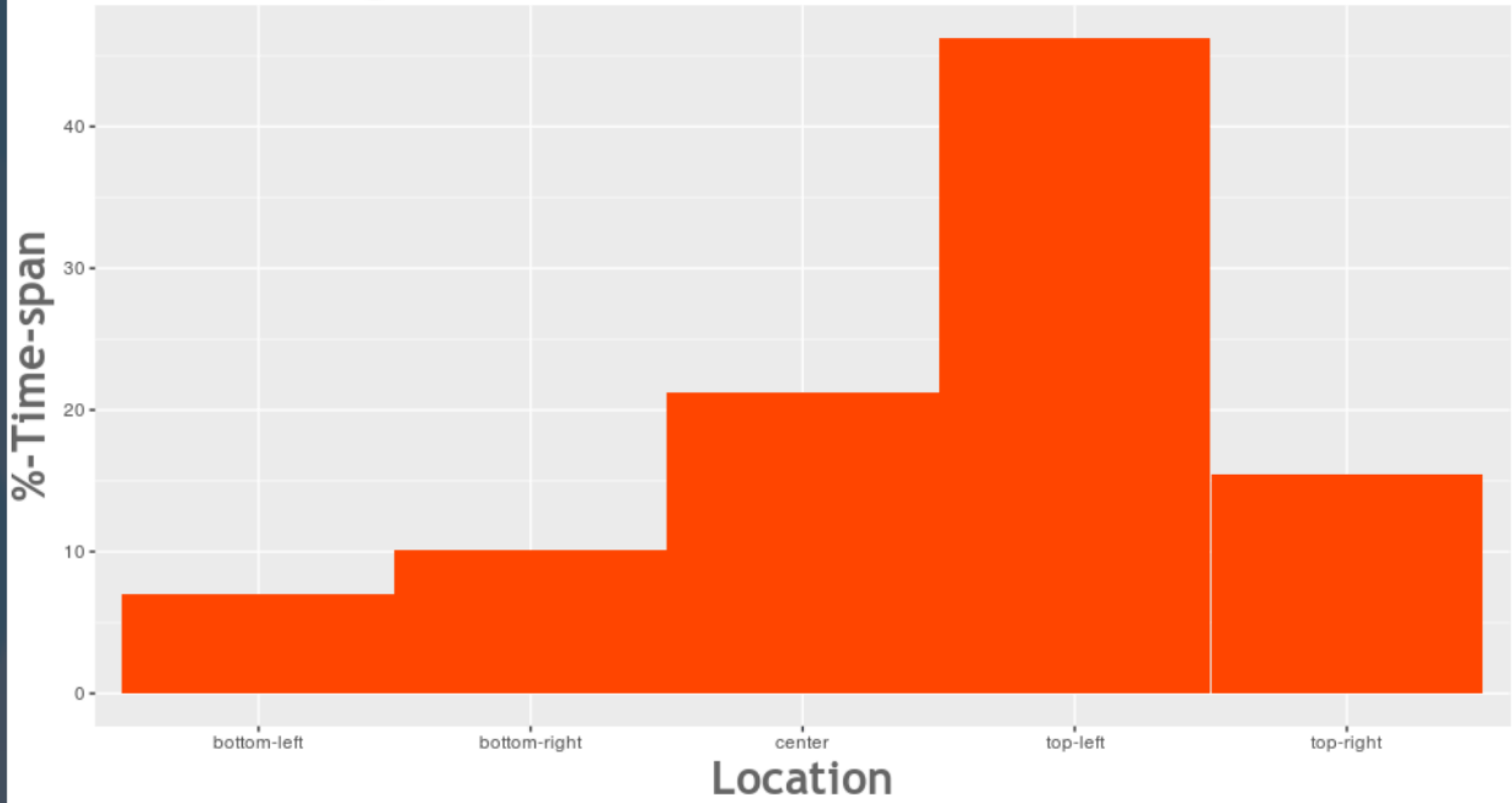
Bar-Plot for Location vs %-Time-span for Green-Colored circle

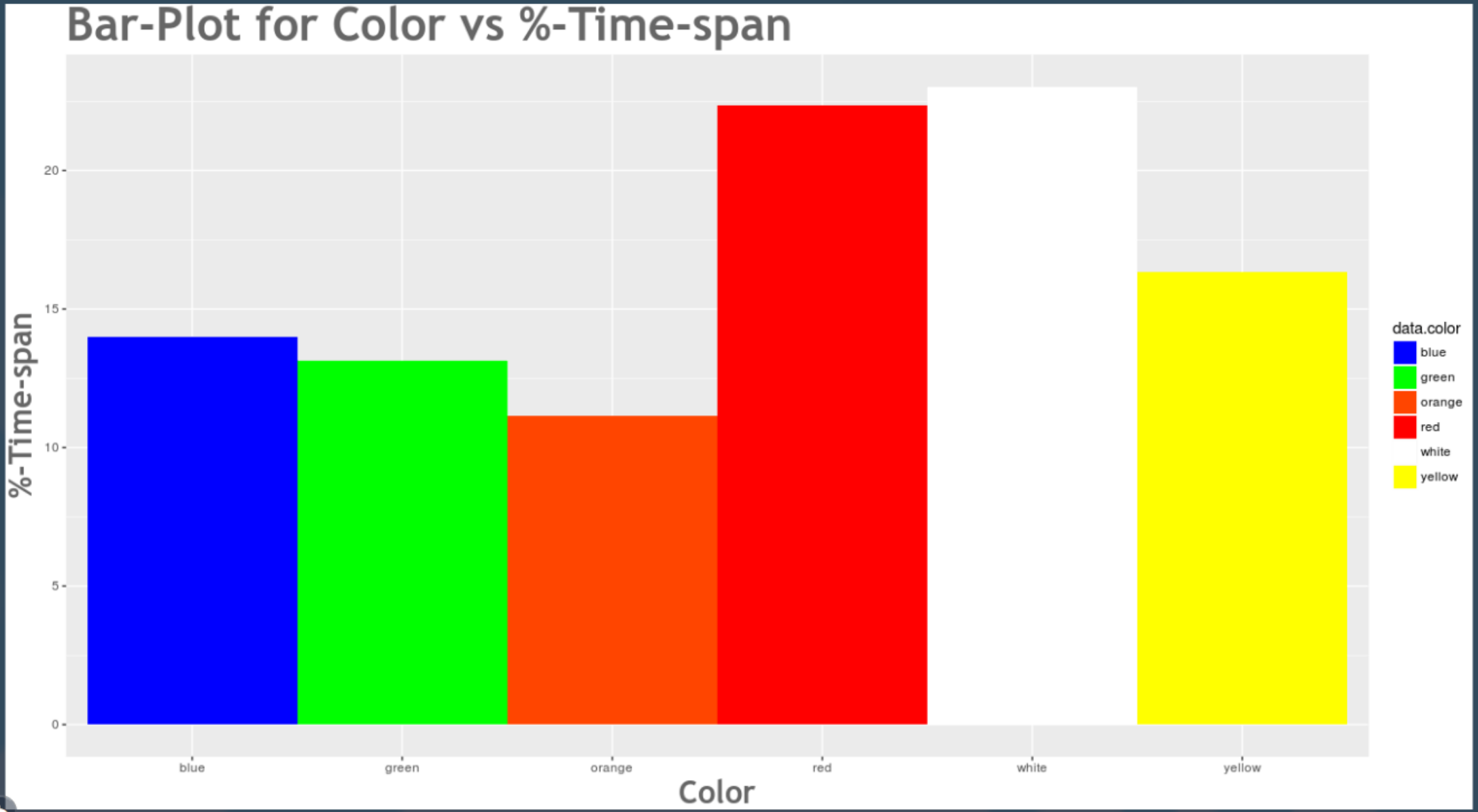


Bar-Plot for Location vs %-Time-span for Yellow-Colored circle



Bar-Plot for Location vs %-Time-span for Orange-Colored circle

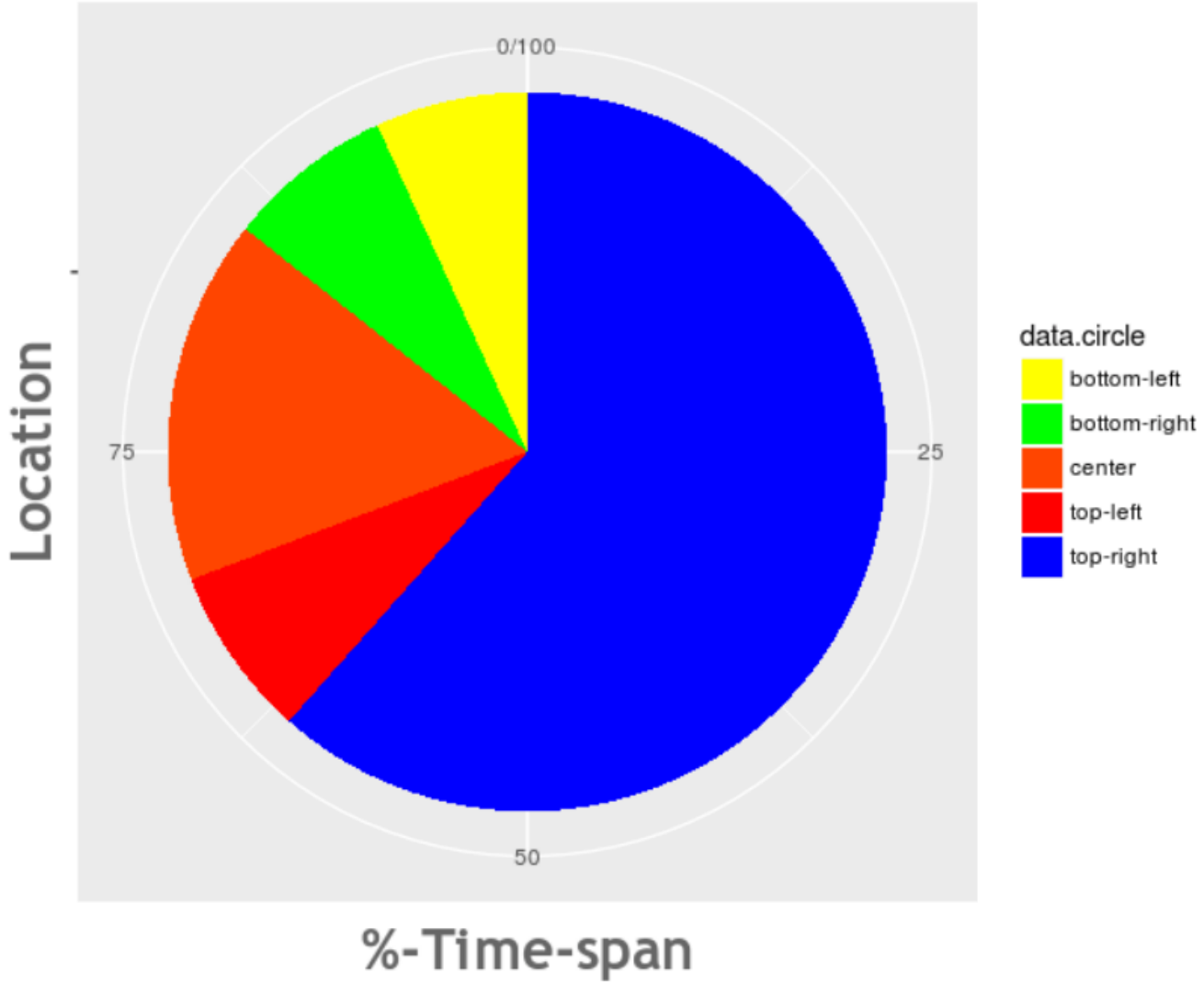



Bar-Plot for Color vs %-Time-span
%-Time-span
0
5
10
15
20
blue
green
orange
red
white
yellow
Color
data.color
blue
green
orange
red
white
yellow

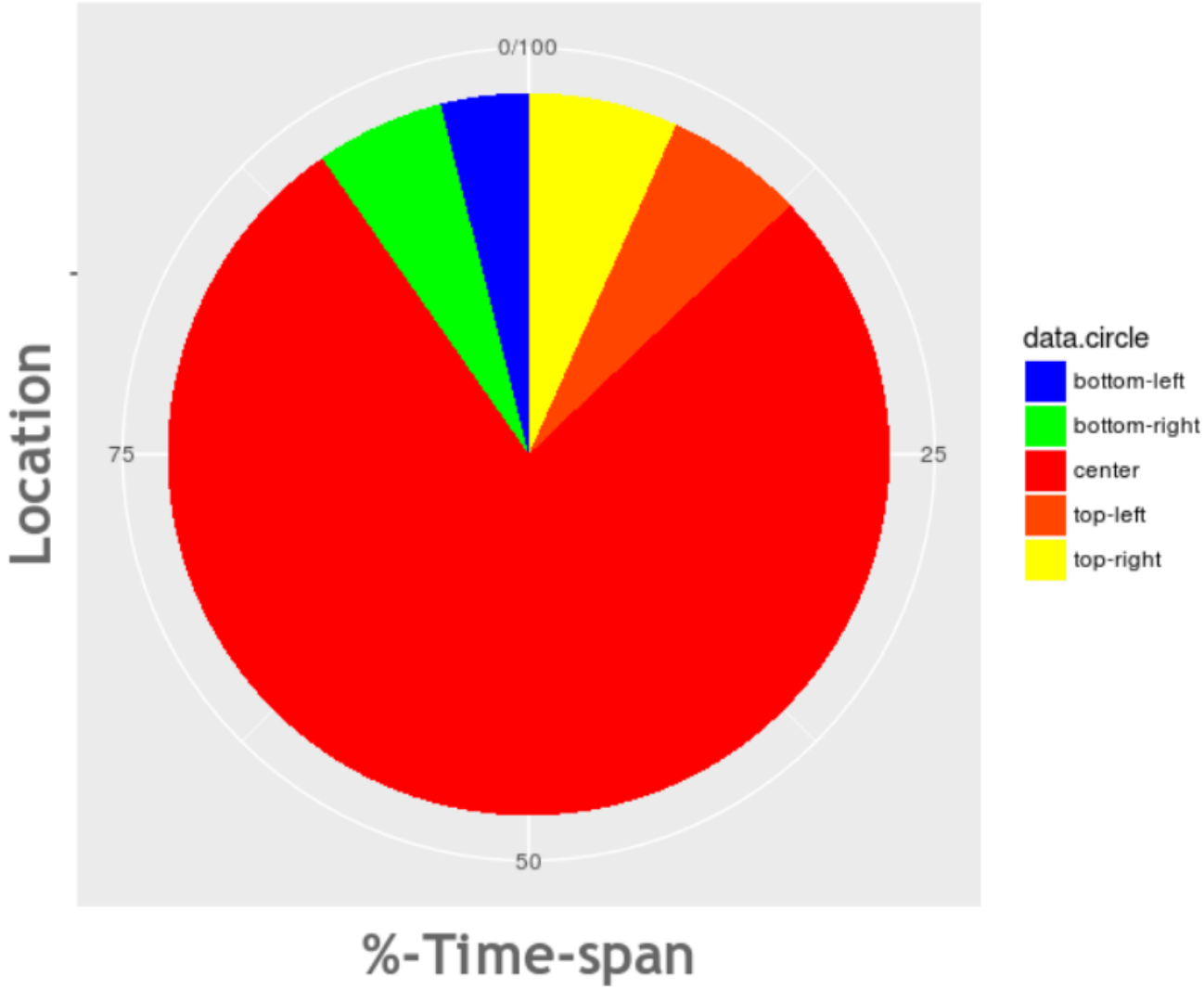
COLOR ANALYSIS PIE-CHARTS

- BLUE
- RED
- GREEN
- YELLOW
- ORANGE
- OVERALL

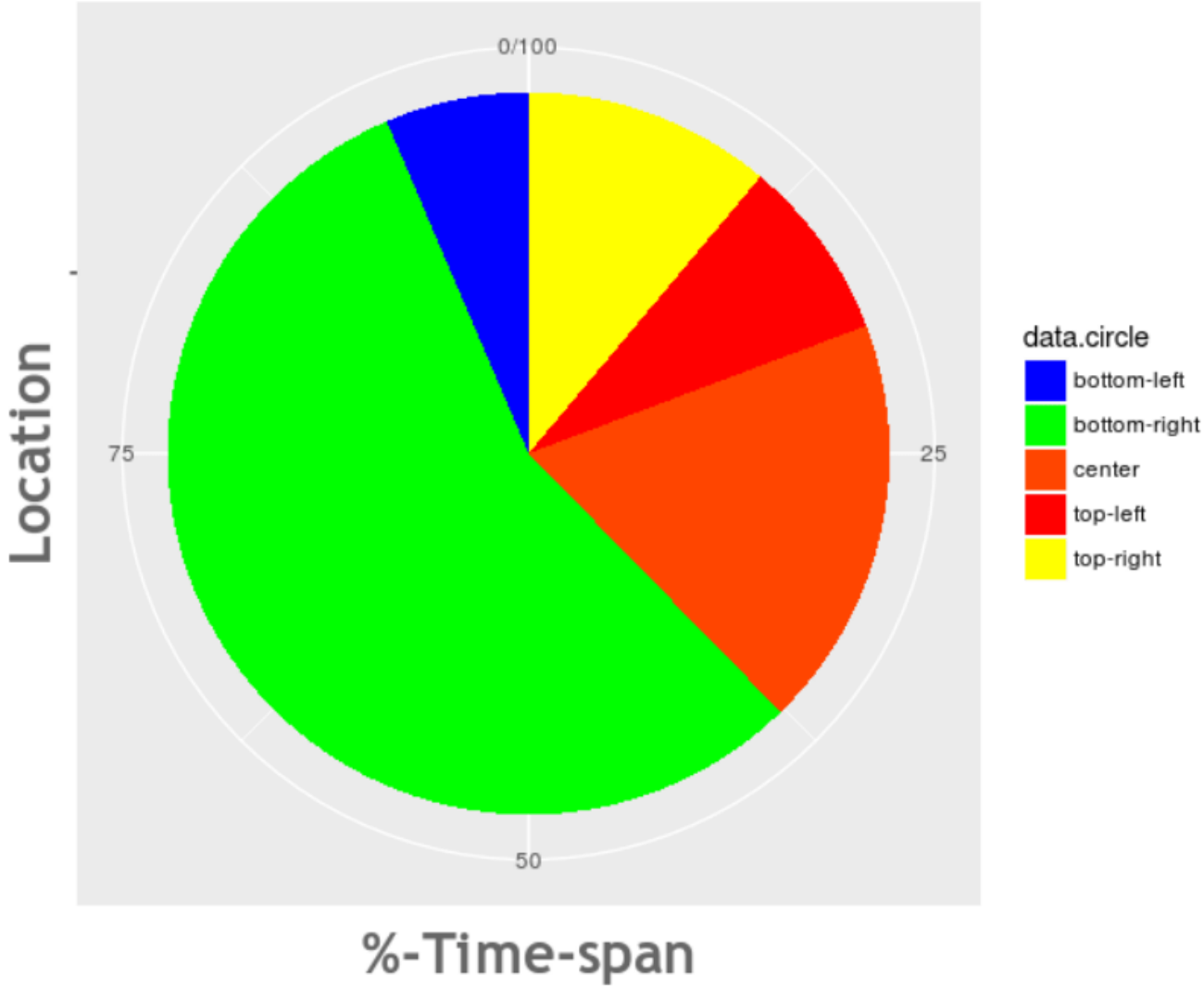
Pie-Plot for Location vs %-Time-span for Blue Color



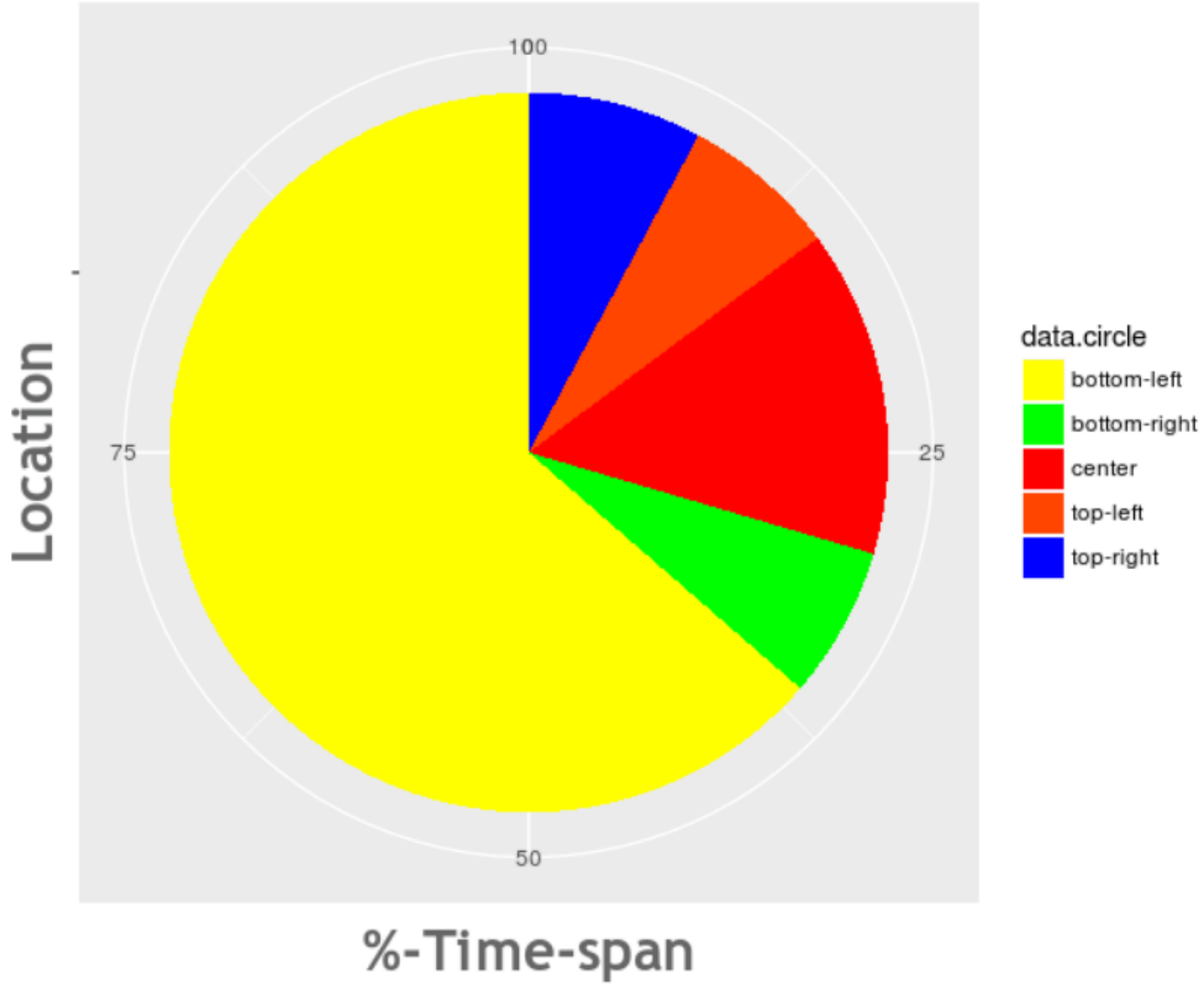
Pie-Plot for Location vs %-Time-span for Red Color



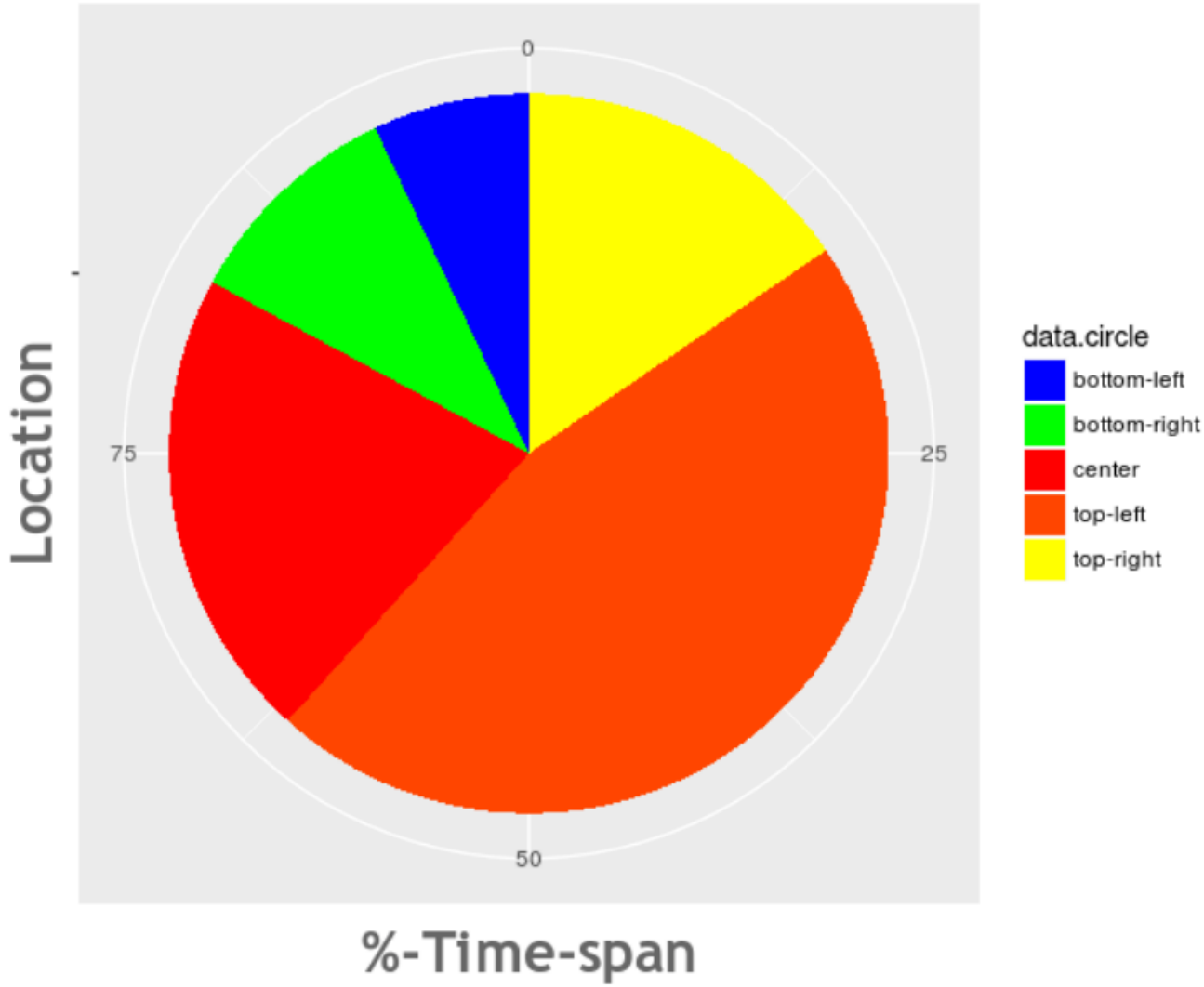
Pie-Plot for Location vs %-Time-span for Green Color



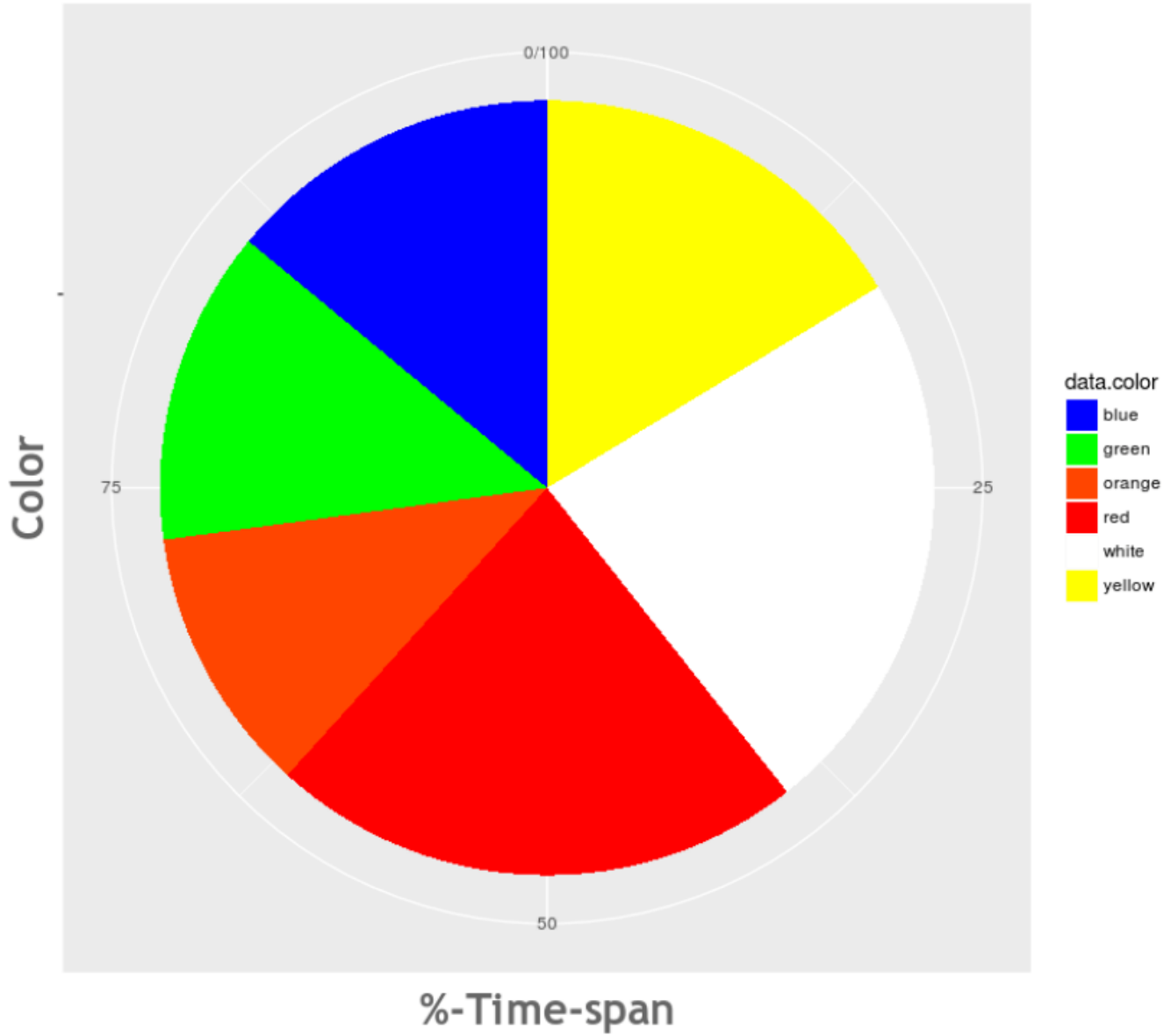
Pie-Plot for Location vs %-Time-span for Yellow Color



Pie-Plot for Location vs %-Time-span for Orange Color



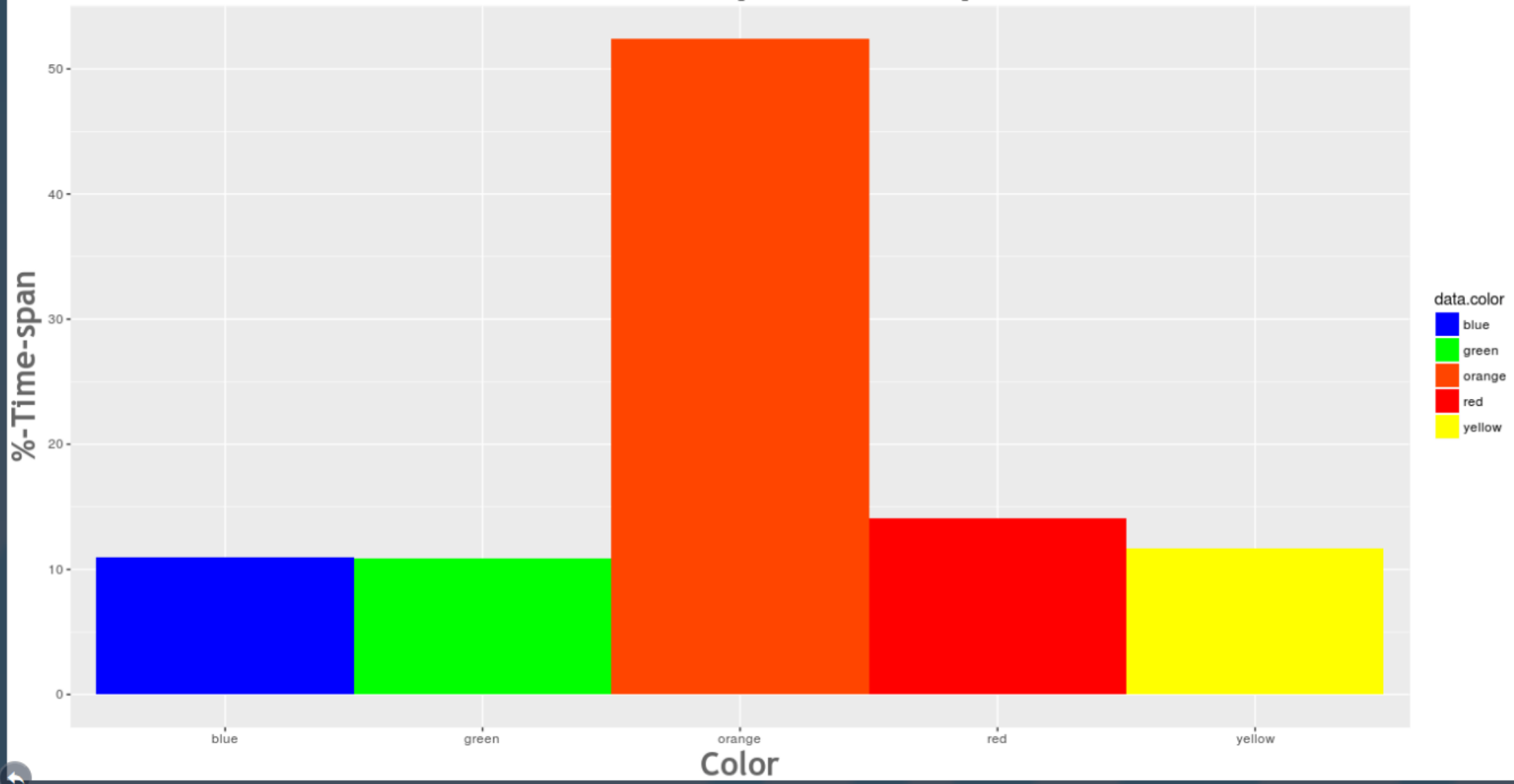
Pie-Plot for Color vs %-Time-span



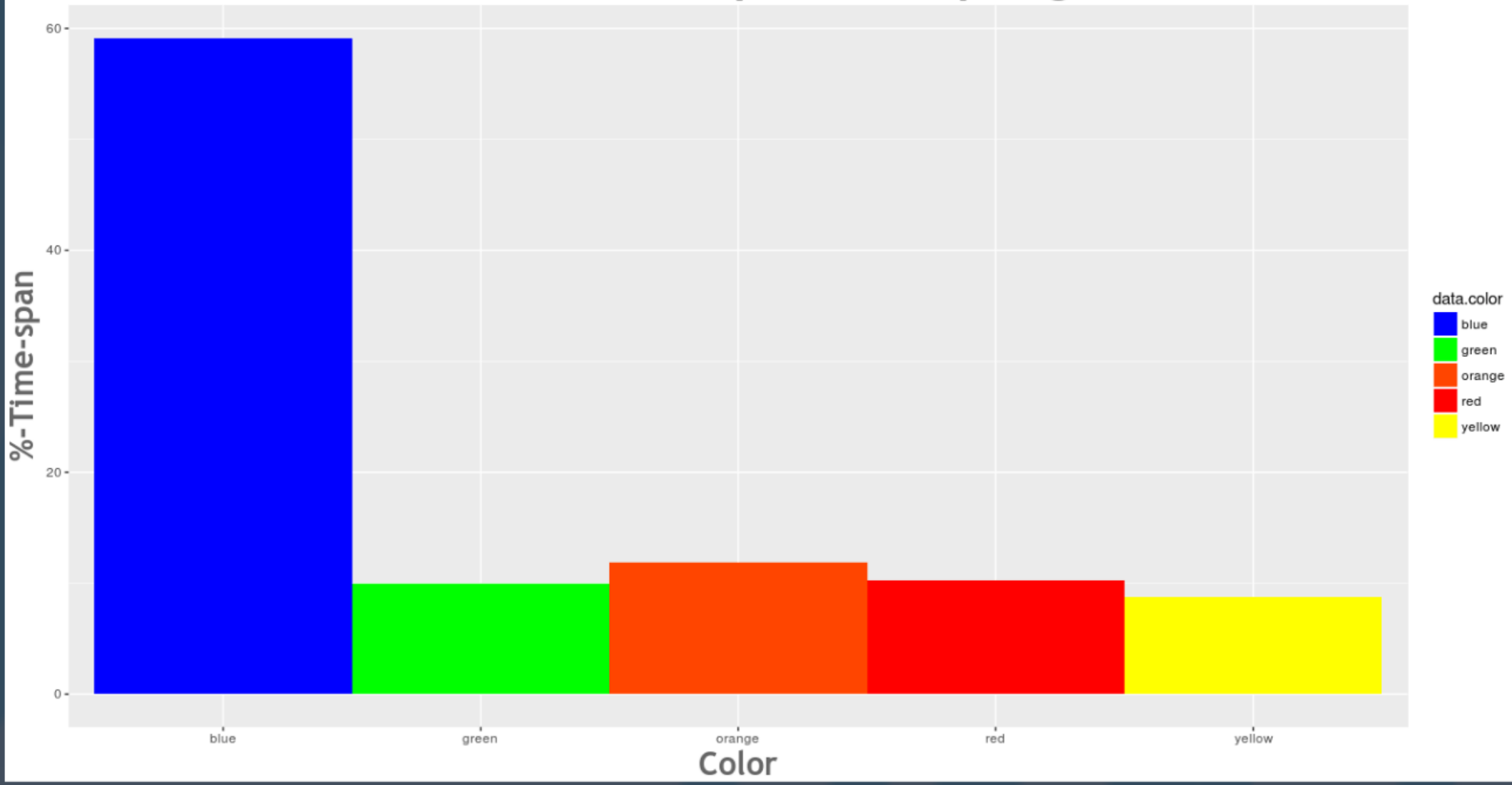
LOCATION ANALYSIS

- TOP LEFT
- TOP RIGHT
- CENTER
- BOTTOM LEFT
- BOTTOM RIGHT
- OVERALL

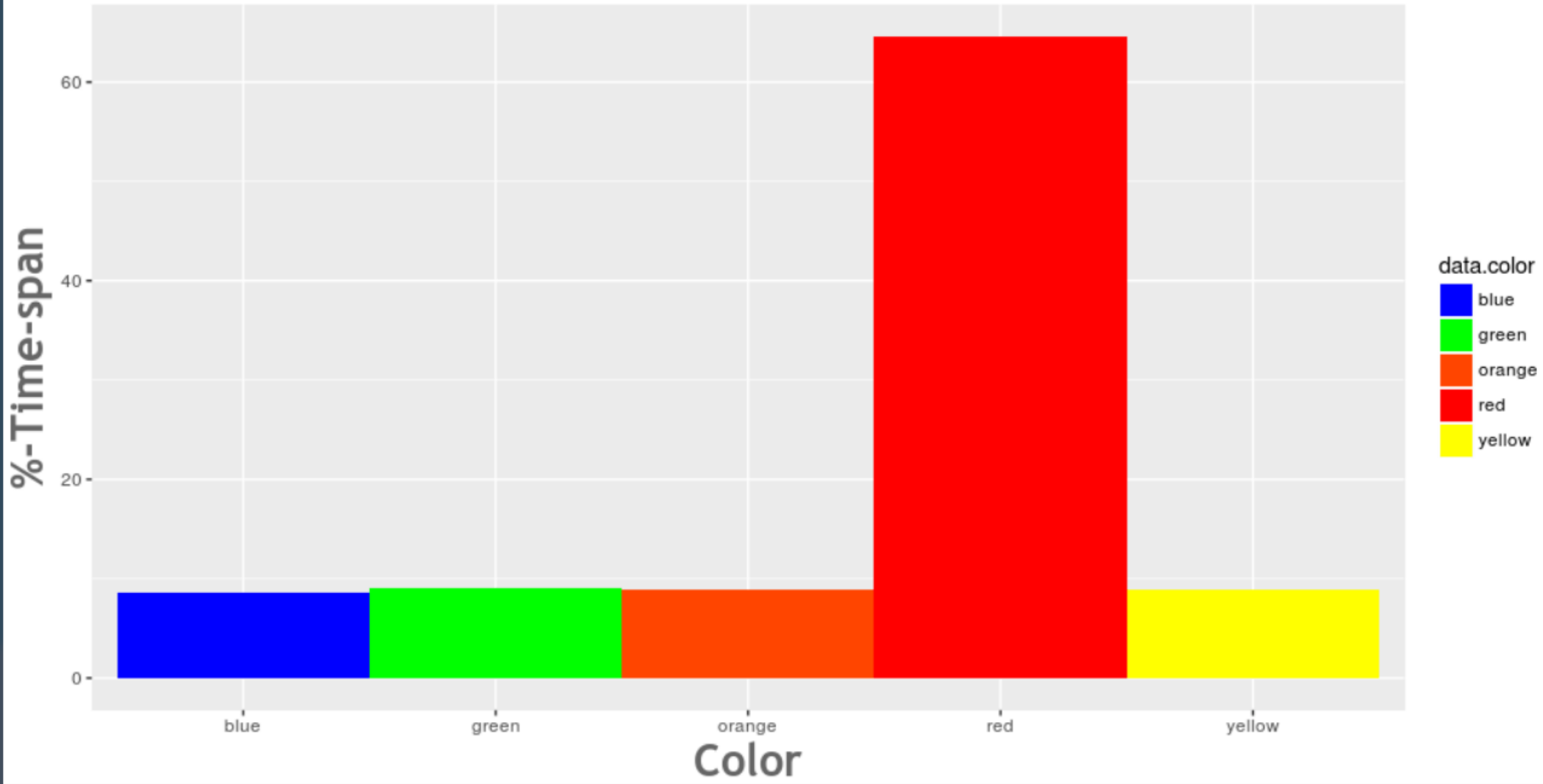
Bar-Plot for Color vs %-Time-span for Top-Left circle



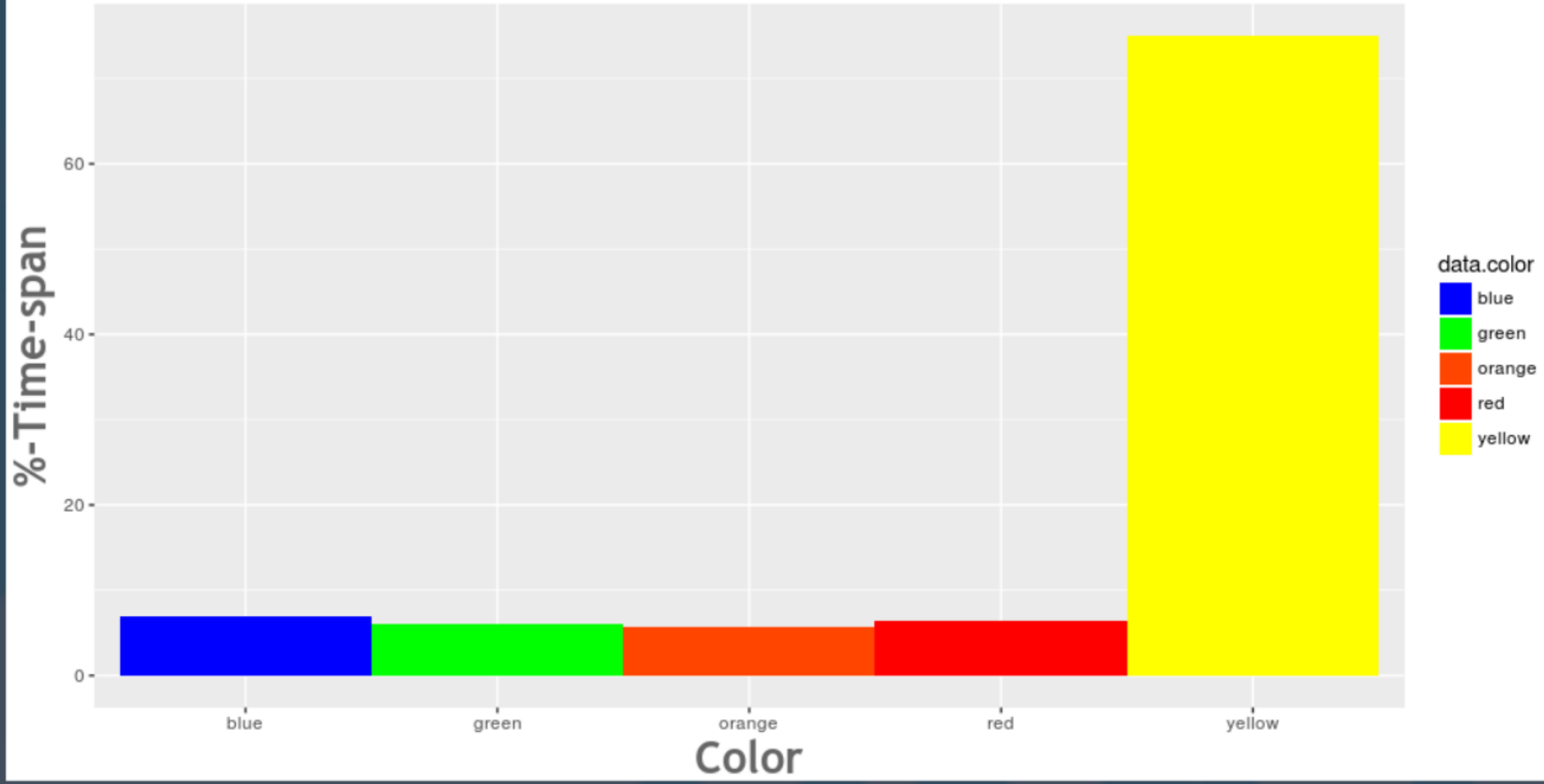
Bar-Plot for Color vs %-Time-span for Top-Right circle



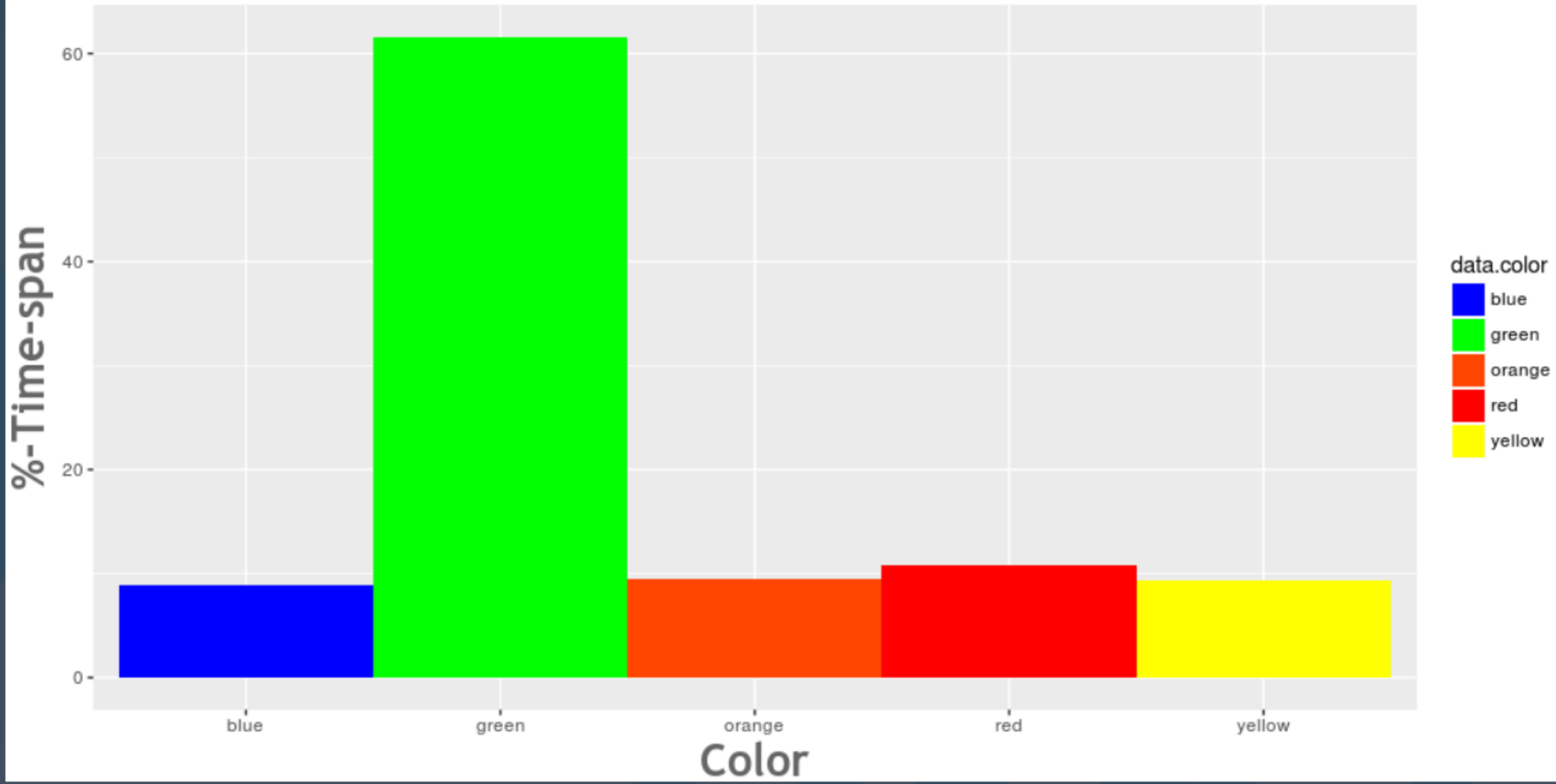
Bar-Plot for Color vs %-Time-span for Center circle



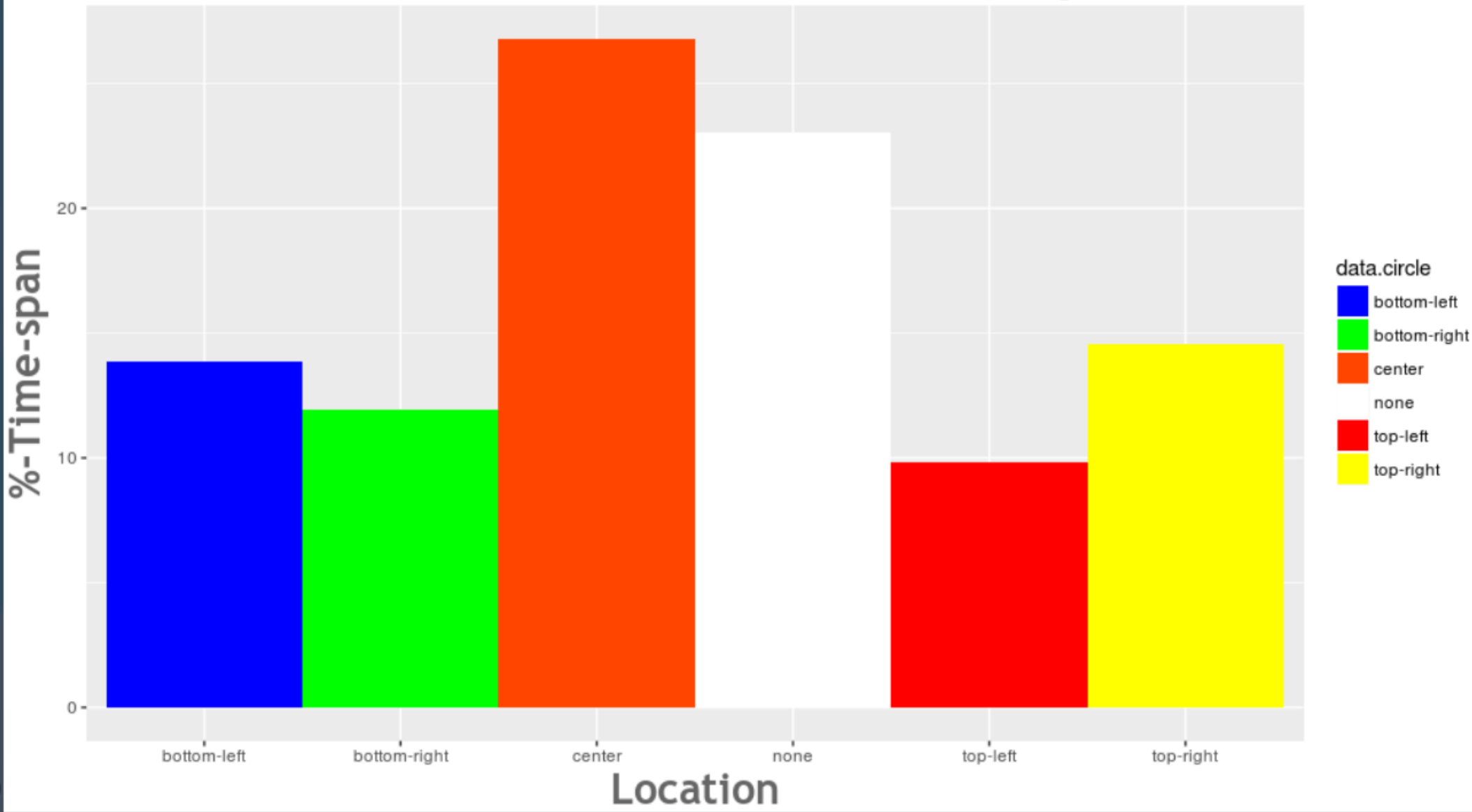
Bar-Plot for Color vs %-Time-span for Bottom-Left circle



Bar-Plot for Color vs %-Time-span for Bottom-Right circle



Bar-Plot for Location vs %-Time-span



LOCATION ANALYSIS PIE-CHARTS

TOP LEFT

TOP RIGHT

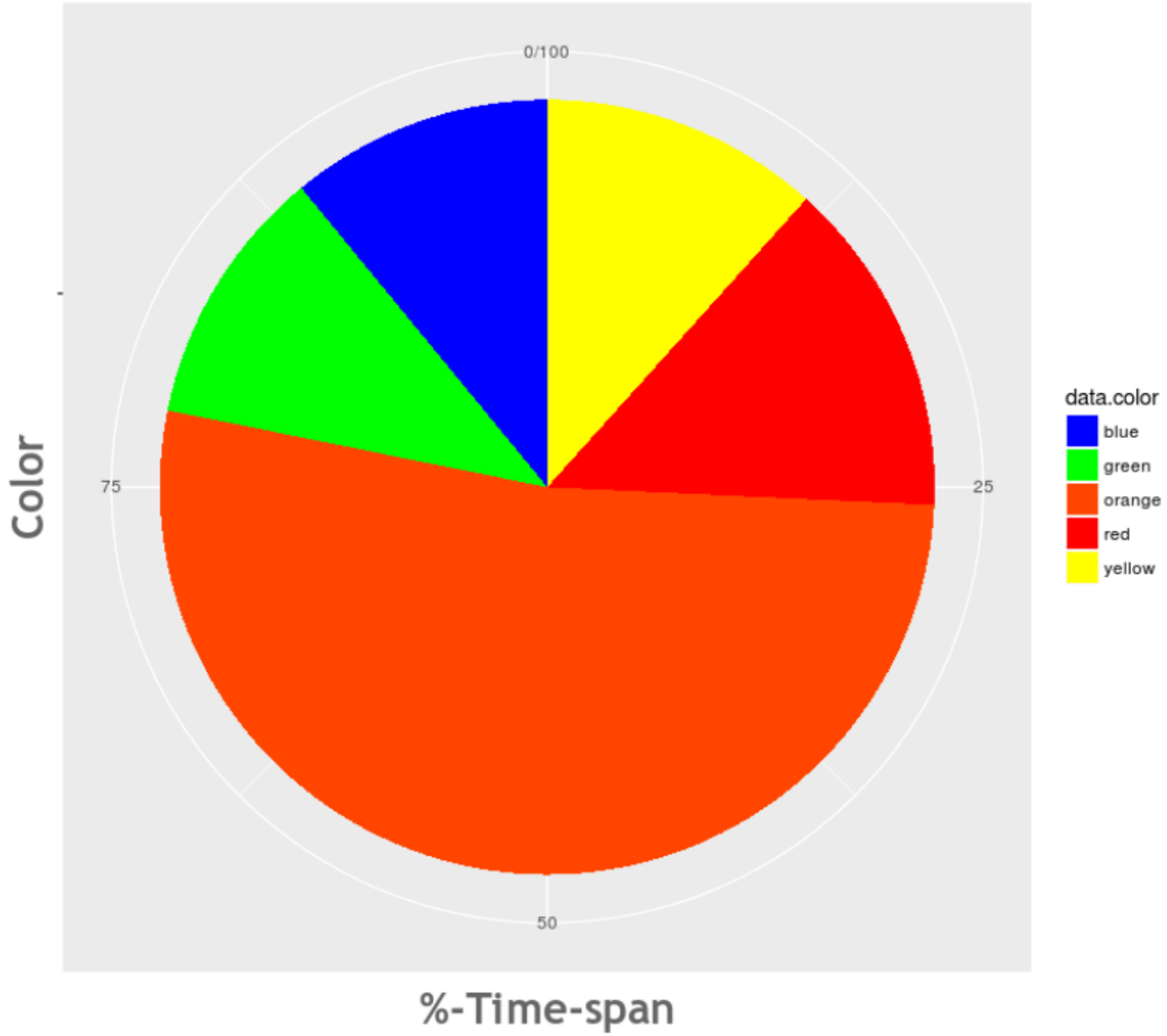
CENTER

BOTTOM LEFT

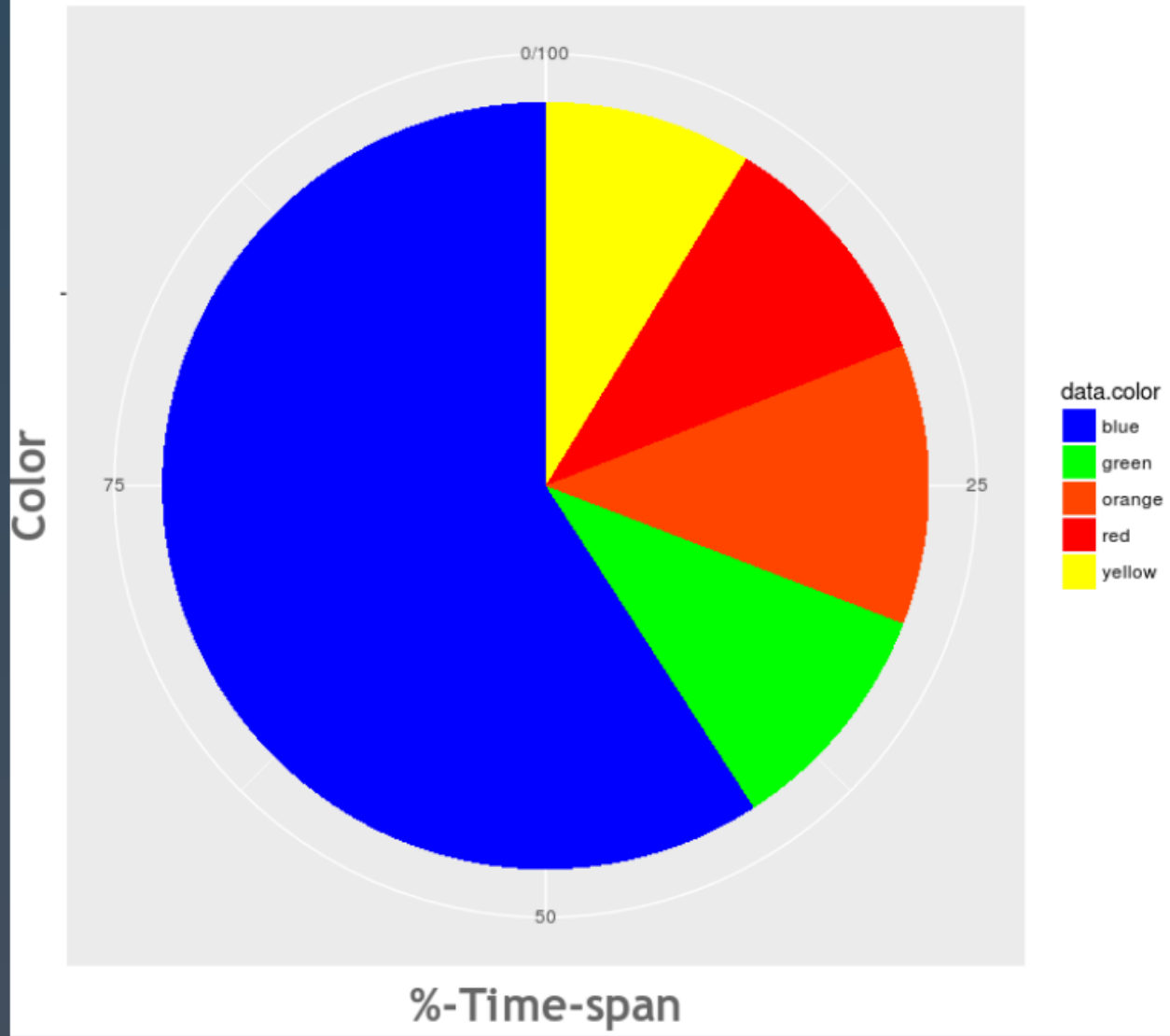
BOTTOM RIGHT

OVERALL

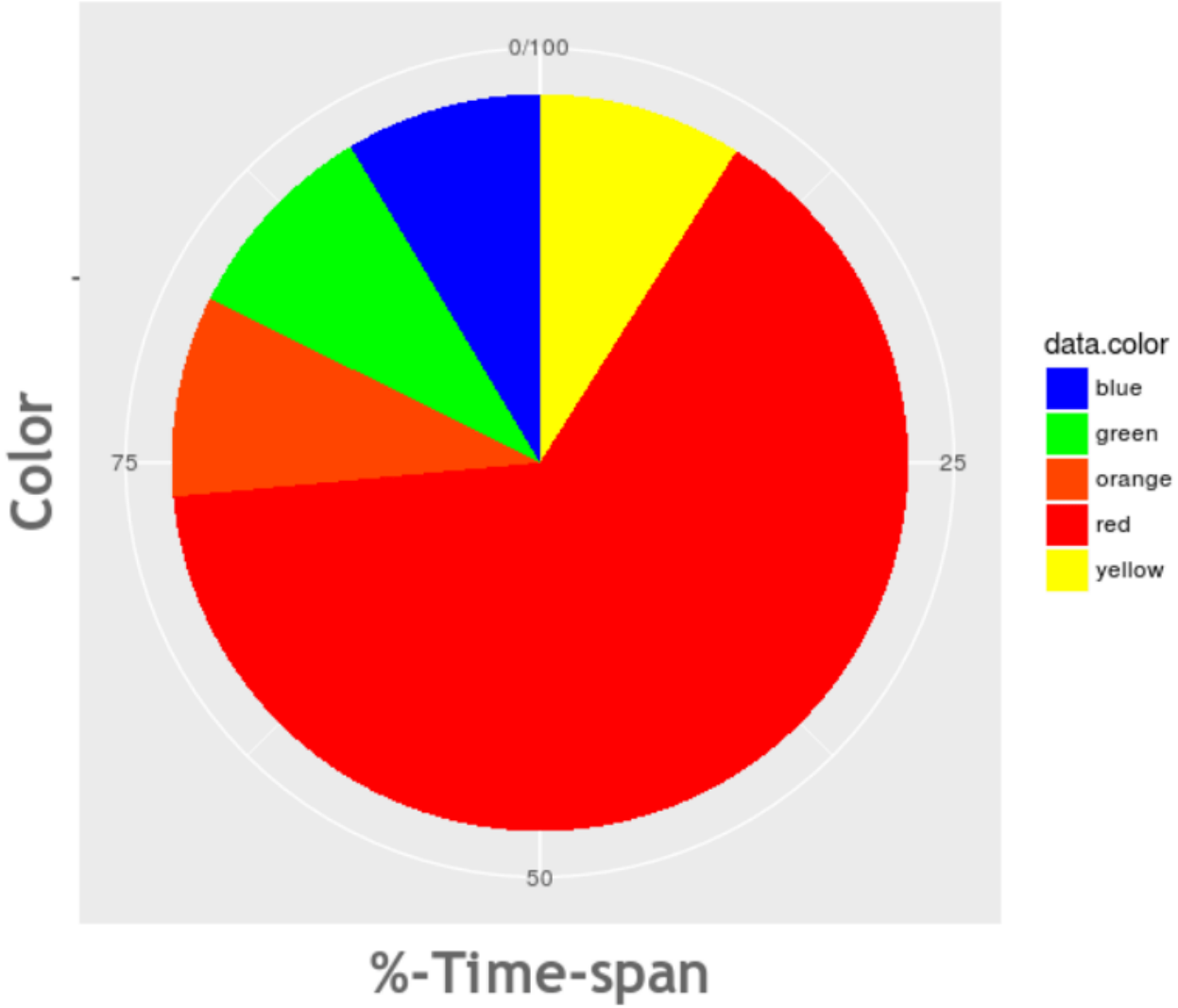
Pie-Plot for Color vs %-Time-span for Top-Left circle



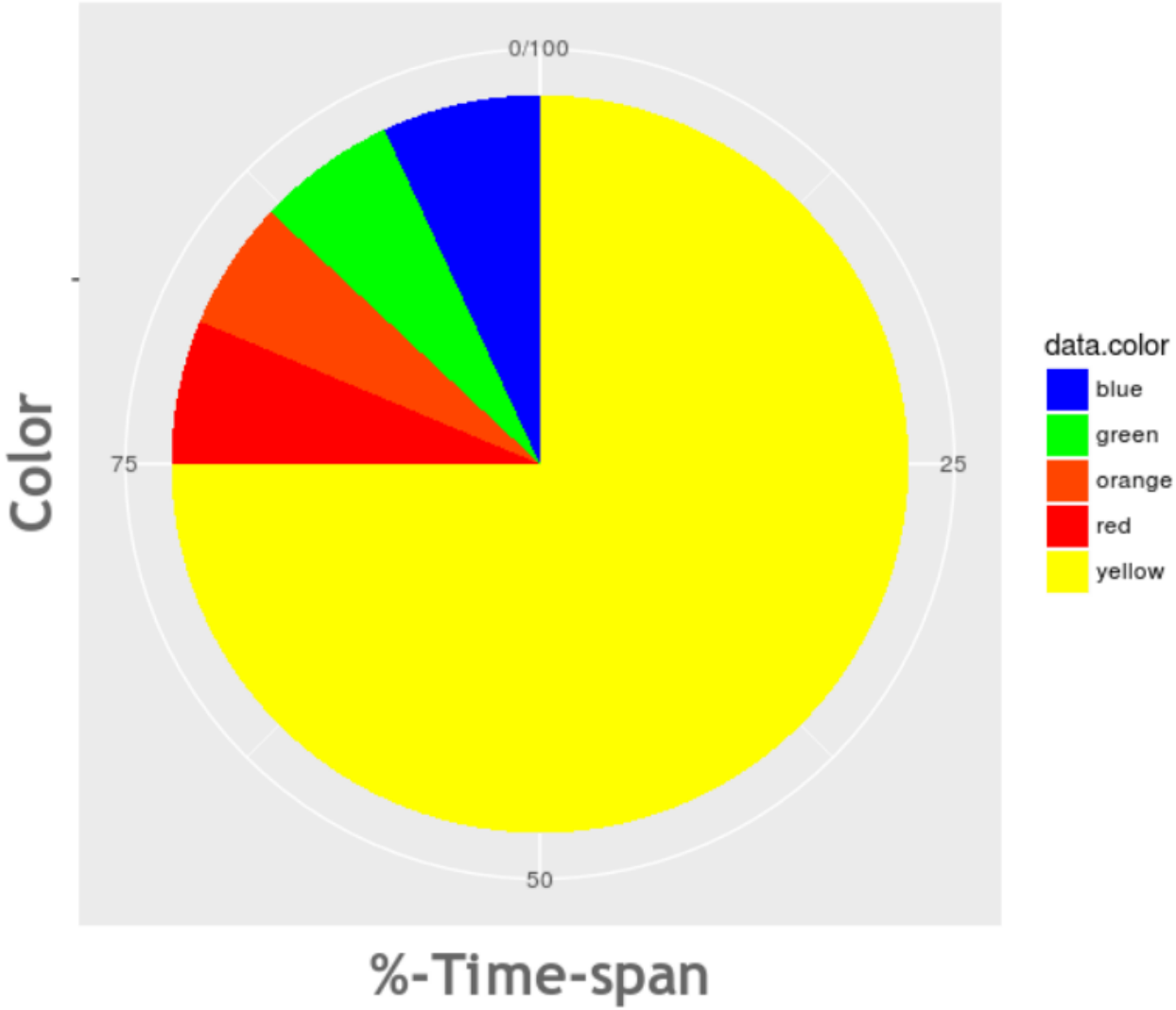
Pie-Plot for Color vs %-Time-span for Top-Right circle



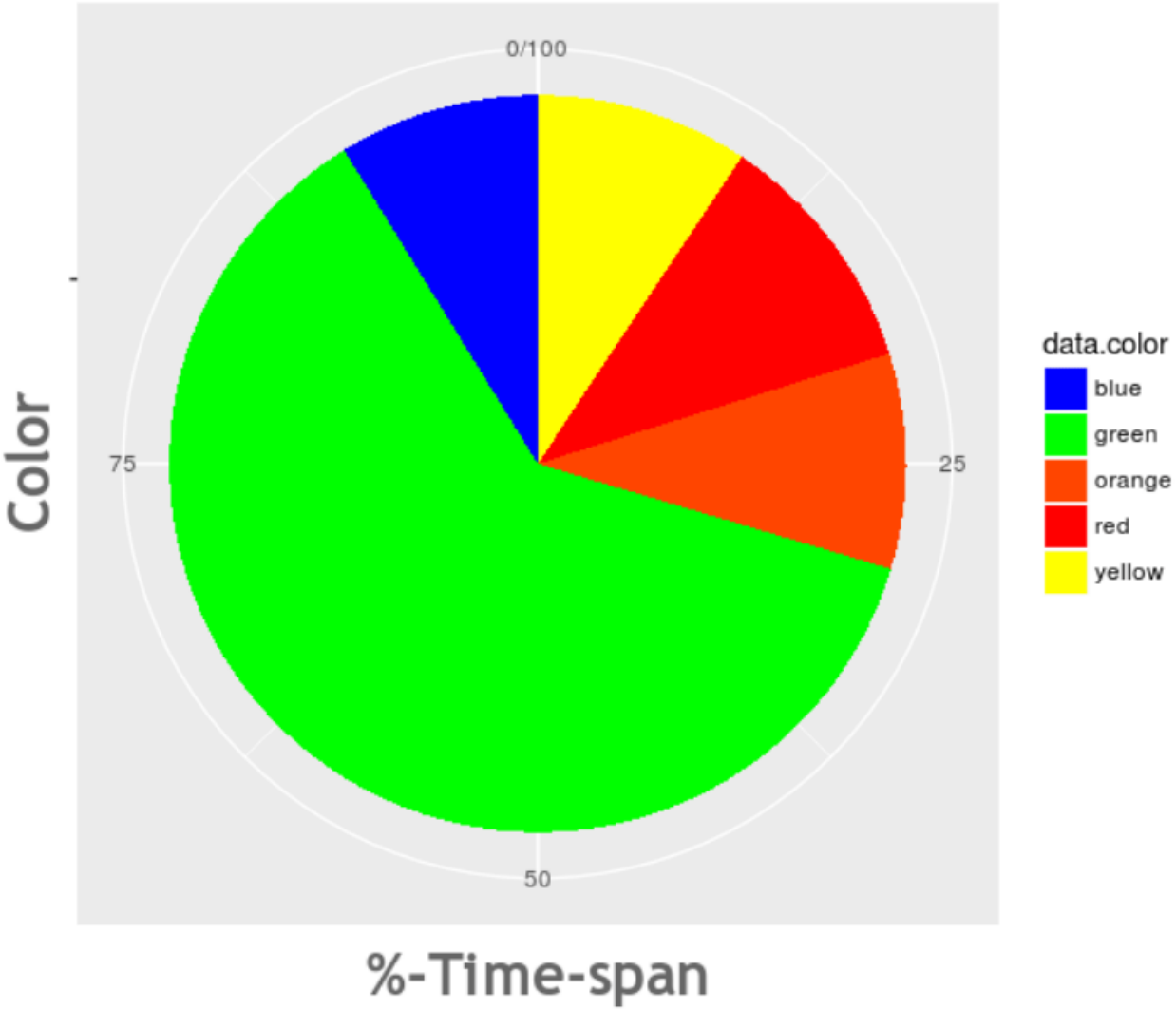
Pie-Plot for Color vs %-Time-span for Center circle



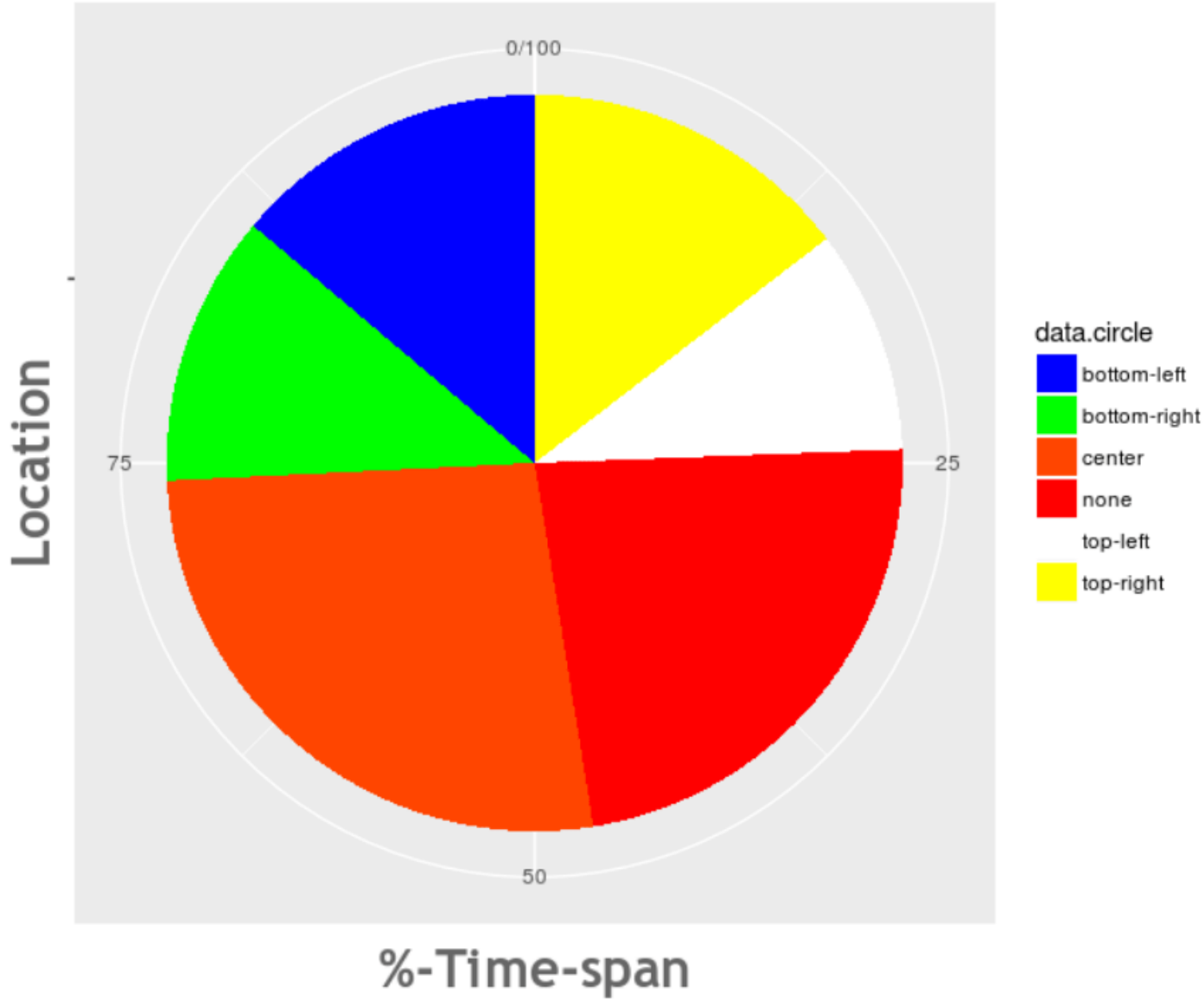
Pie-Plot for Color vs %-Time-span for Bottom-Left circle



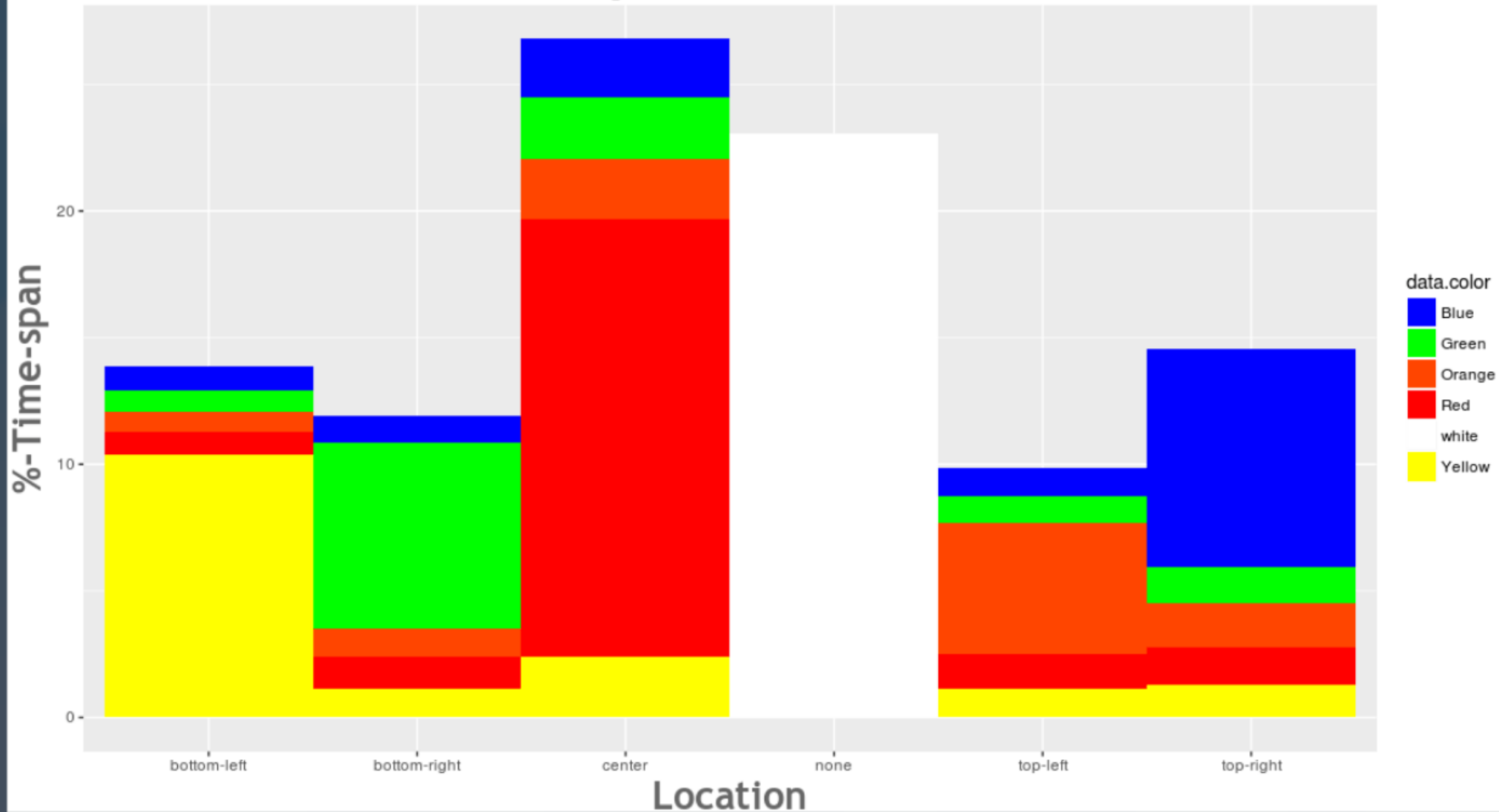
Pie-Plot for Color vs %-Time-span for Bottom-Right circle



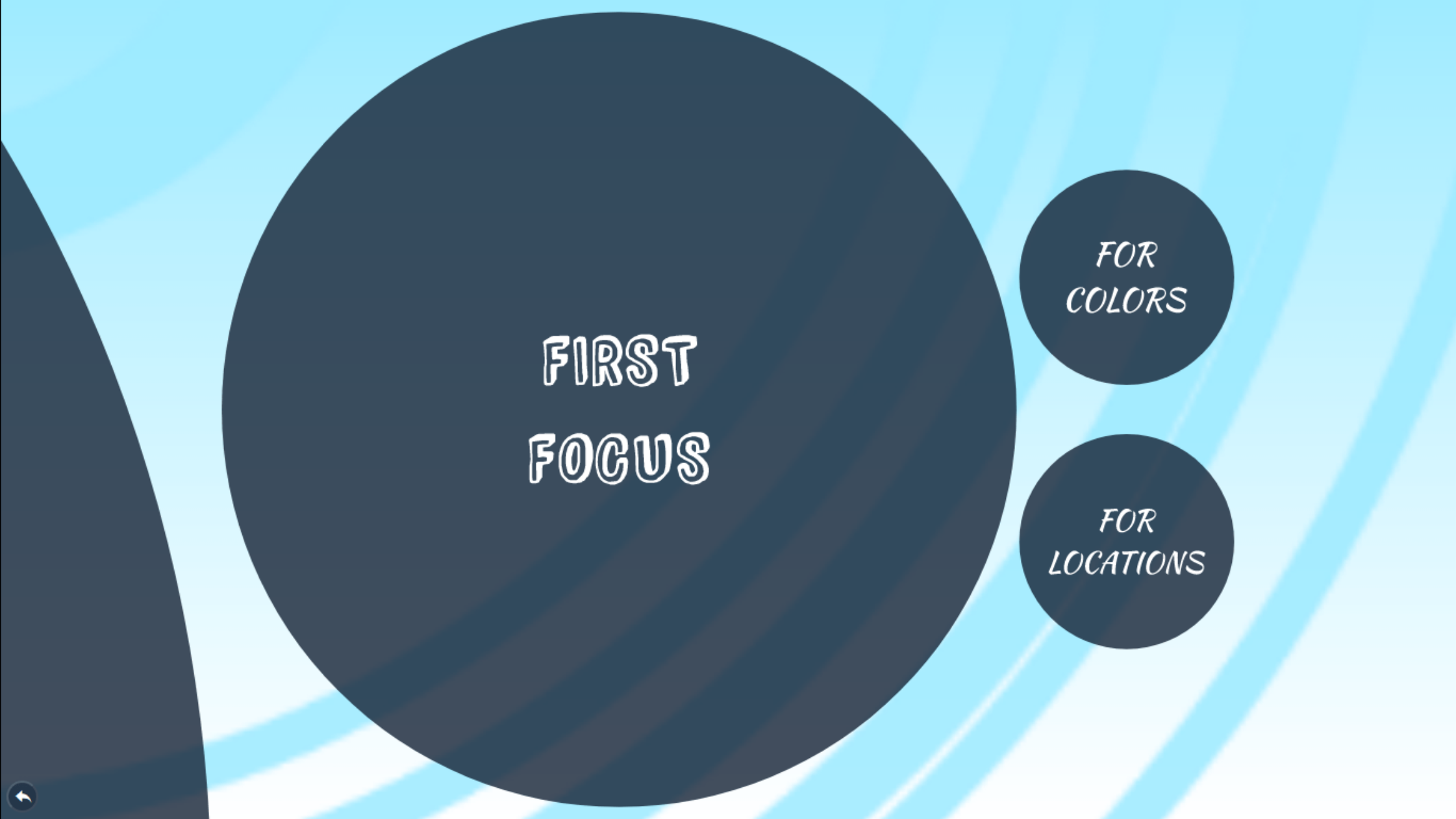
Pie-Plot for Location vs %-Time-span



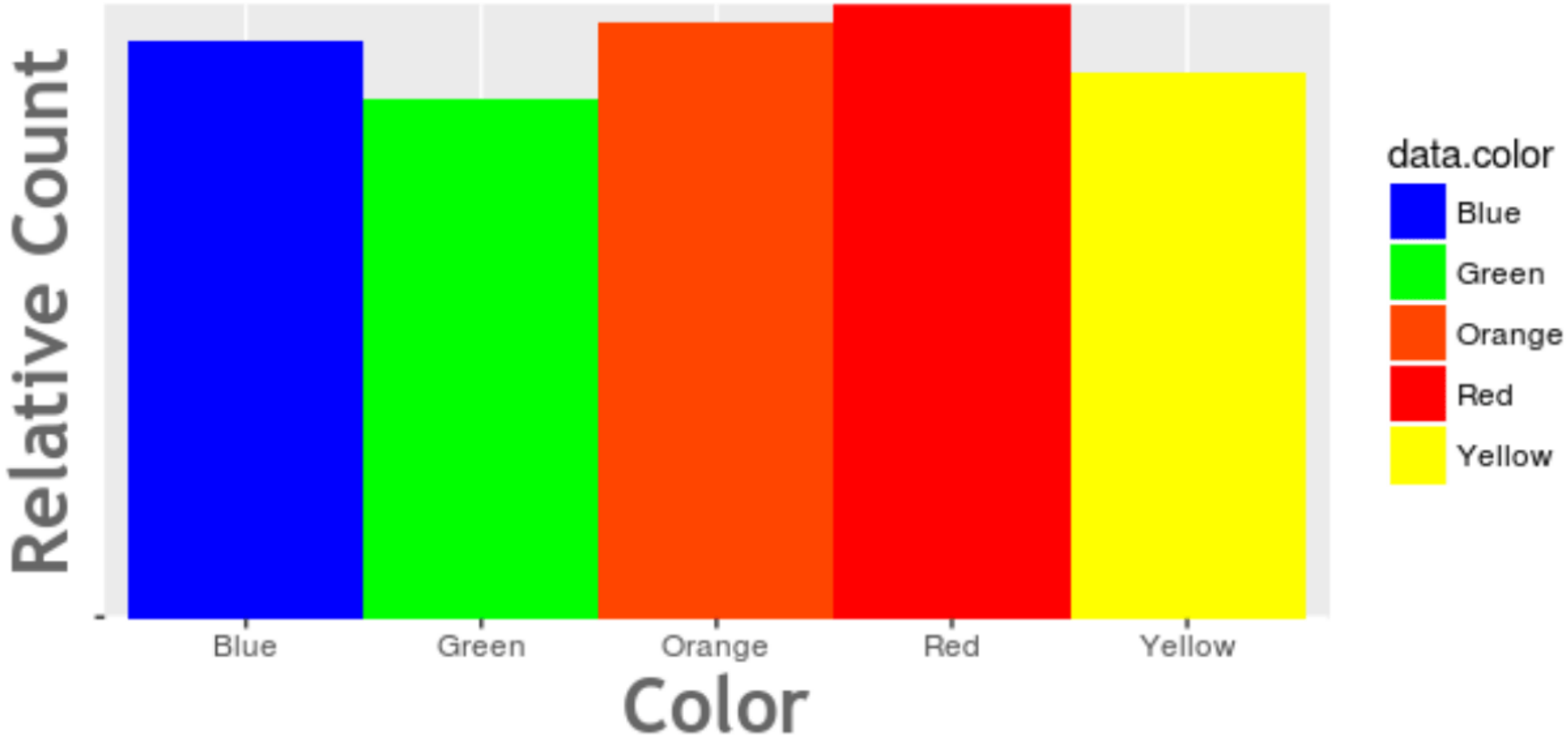
Bar-Plot for Location and Color vs Time-span



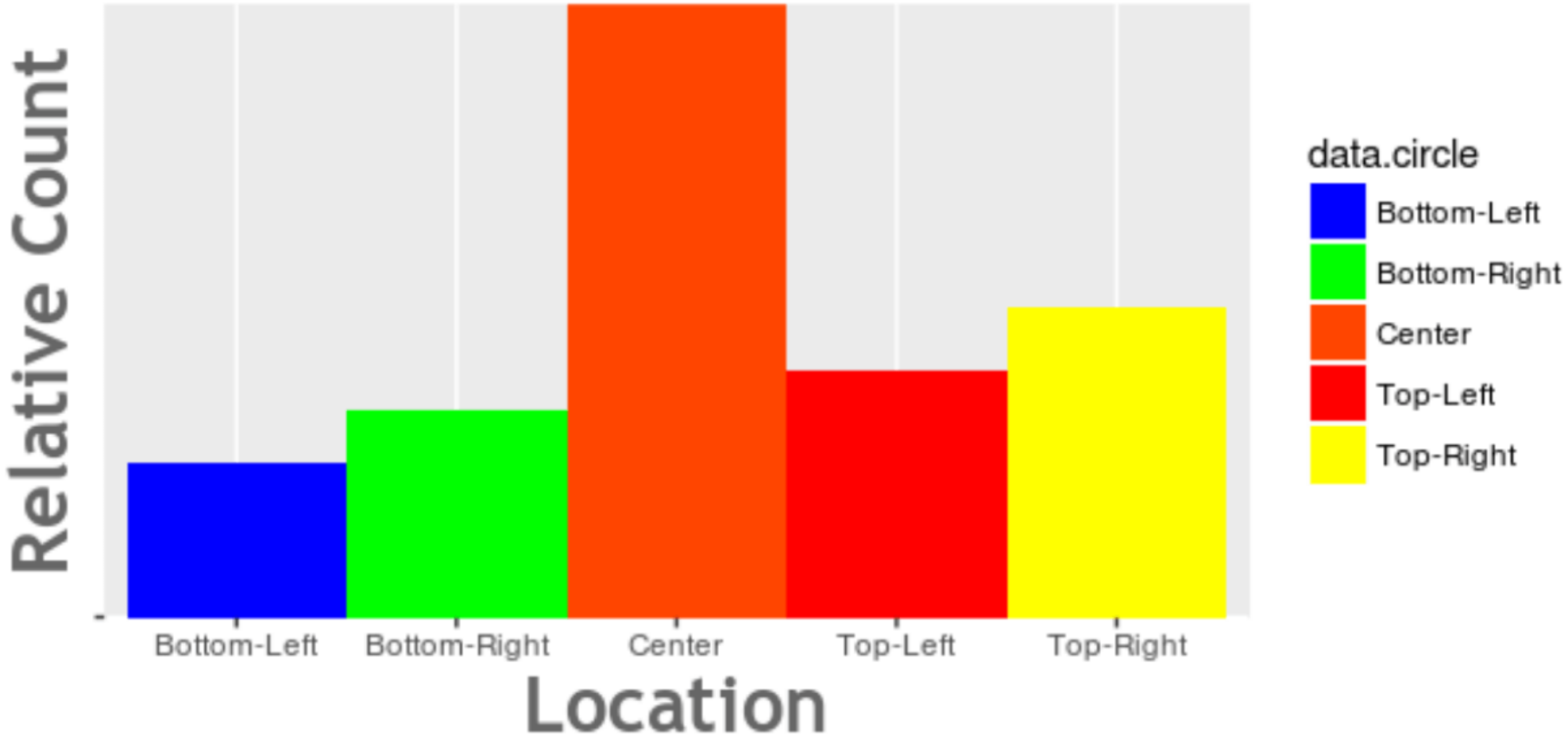

FOCUS
POINTS
FIRST
FOCUS
SECOND
FOCUS

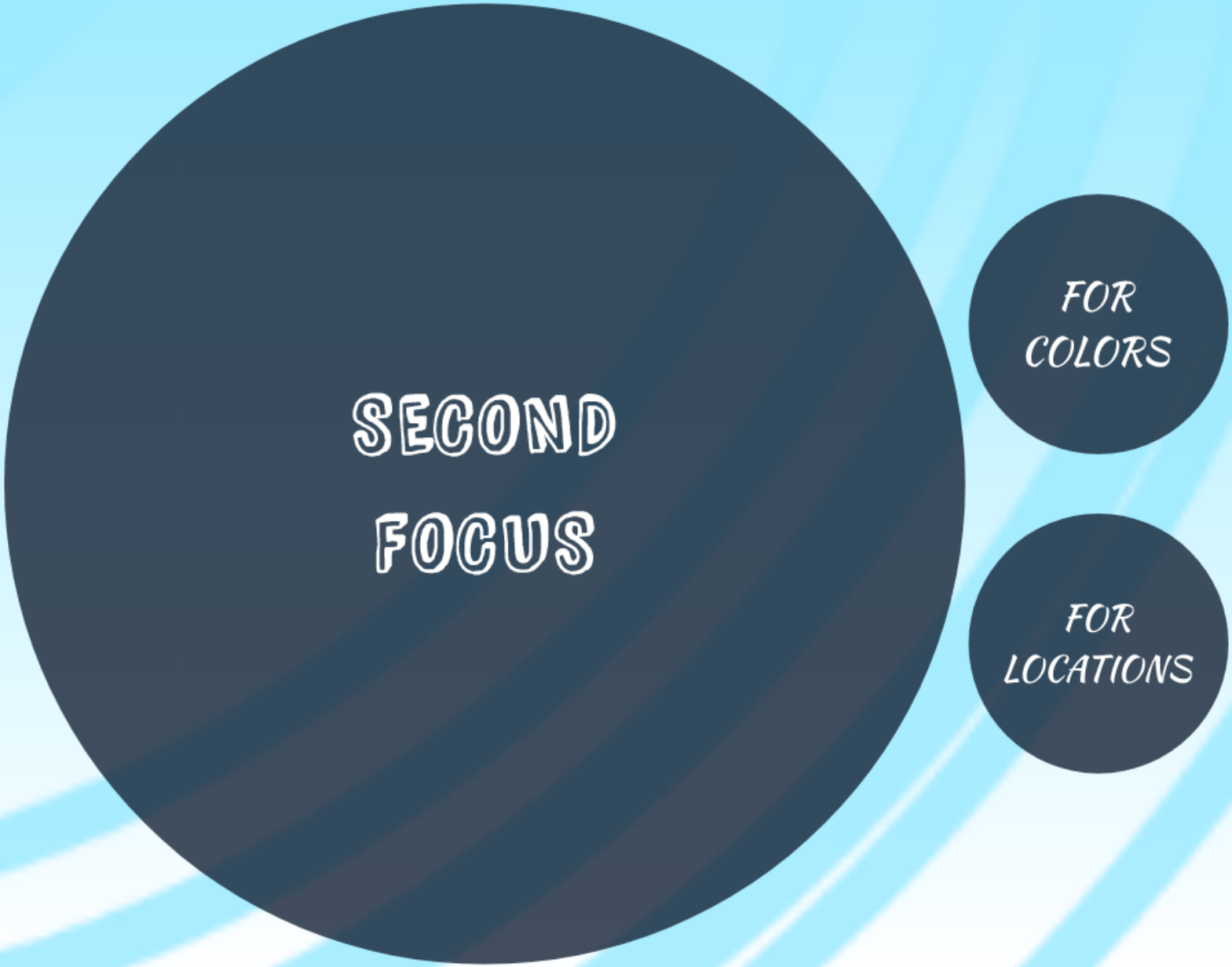

FIRST
FOCUS
FOR
COLORS
FOR
LOCATIONS

Bar-Plot for First-focus with respect to Color



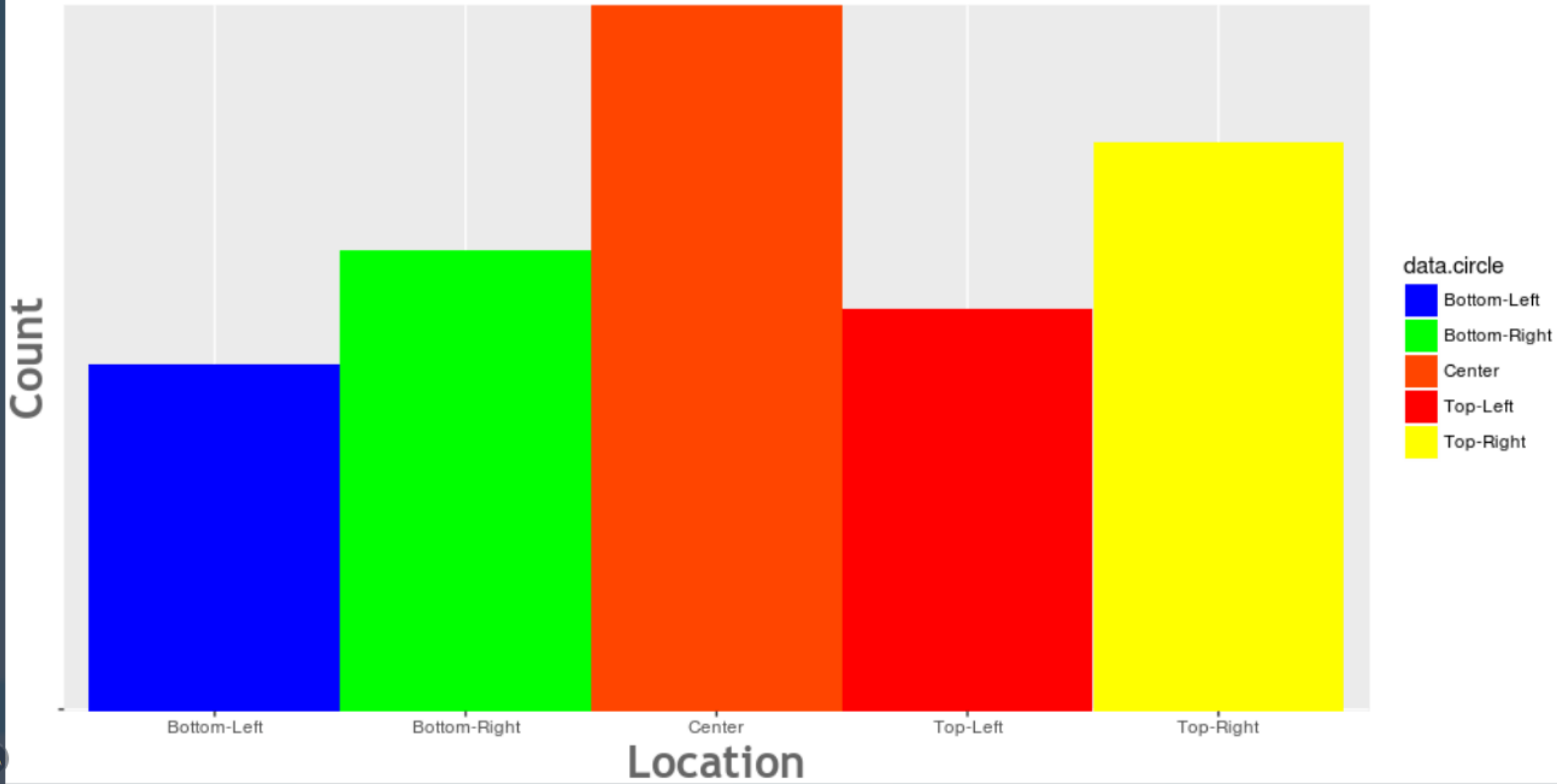
Bar-Plot for First-focus with respect to Location




SECOND
FOCUS
FOR
COLORS
FOR
LOCATIONS

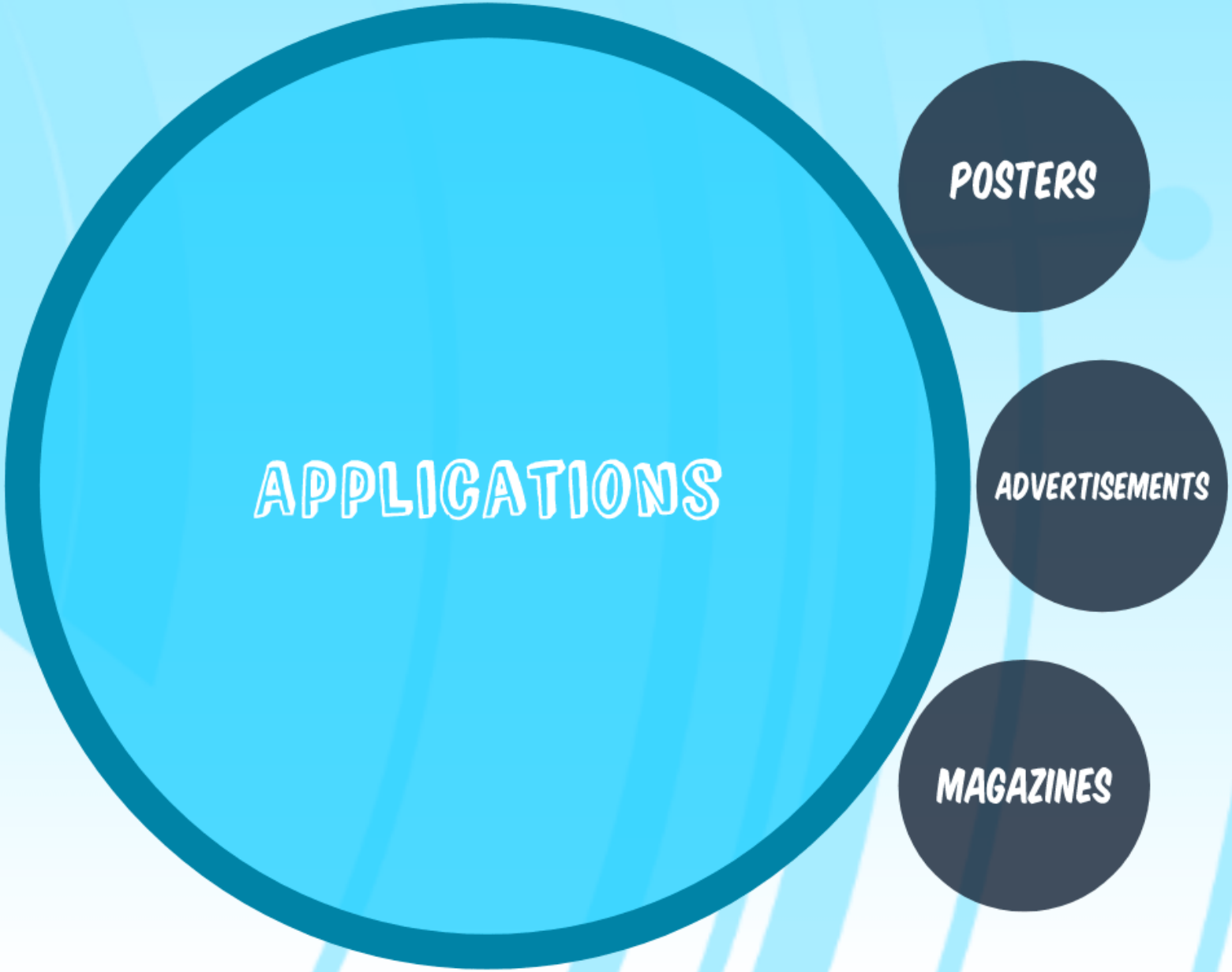
Bar-Plot for Second-focus with respect to Color

Bar-Plot for Second-focus with respect to Location



Conclusions

- Blue color is most viewed at top-right position.
- Red color is most viewed at center position.
- Green color is most viewed at bottom-right position.
- Yellow color is most viewed at bottom-left position.
- Orange color is most viewed at top-left position.
- It seems that first focus is more or less independent of colors.
- The first focus in an image is found to be predominantly at the center position.
- It seems that the second focus is more or less independent of colors.
- The second focus in an image is found to be at the center position.


APPLICATIONS
POSTERS
ADVERTISEMENTS
MAGAZINES

POSTERS

Results of this project can be used to design creative and visually attractive images. We can display the important message in a particular color and location, so that it is caught by the viewer easily.

ADVERTISEMENTS

Advertisements usually need to be catchy. So, with the help of this project, we can predict the position and other visual elements which will catch the eye of public.

MAGAZINES

An image is worth a thousand words. So, the image should be attractive enough so as to convey the message. This can be implemented using the conclusions drawn from this project.

FURTHER POSSIBLE WORK

- COLOURS, SHAPES AND LOCATIONS
- DATA COLLECTION
- MACHINE LEARNING

COLOURS, SHAPES AND LOCATIONS

Number of colours can be increased from 5 to as many as possible.

Shapes other than circle can be used with proper logic and reasoning.

Number of locations can be increased from 5 to as many as possible.

DATA COLLECTION

The number of people from whom data is collected can be increased from 100 to as much as possible.

More amount of data will ensure better accuracy and thus better results.

MACHINE LEARNING

On increase of input parameters and sample data, efficient machine learning algorithms can be used to not only generate statistical data but also PREDICT eye fixations on new images such as paintings, magazine articles, newspaper advertisements etc

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THANK YOU!