Learning to Visualize Data: A Step-by-Step Guide to Creating Bubble Charts in R

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A **bubble chart** is a type of chart that allows you to visualize three variables in a dataset at once.

The first two variables are used as (x,y) coordinates on a scatterplot and the third variable is used to depict size.

You can use the following basic syntax to create a bubble chart in R:

library(ggplot2)

#create bubble chart
ggplot(df, aes(x=x_var, y=y_var, size=size_var)) +
geom_point(alpha=0.5) +
scale_size(range=c(2, 10), name='Legend Name')

The following example shows how to use this syntax to create a bubble chart in practice.

Note: The **alpha** argument specifies that the circles in the chart should be partially transparent. The **range** argument allows you to set the minimum and maximum radius values for the circles in the chart.

Example: Create a Bubble Chart in R

Suppose we have the following data frame in R that contains information about various basketball players:

#create data frame
df <- data.frame(team=c('A', 'A', 'A', 'B', 'B', 'B', 'C', 'C', 'C'),
points=c(8, 11, 13, 13, 15, 18, 22, 27, 32),
assists=c(4, 3, 6, 5, 4, 7, 8, 11, 6),
minutes=c(9, 12, 15, 20, 36, 30, 31, 40, 43))

#view data frame
df

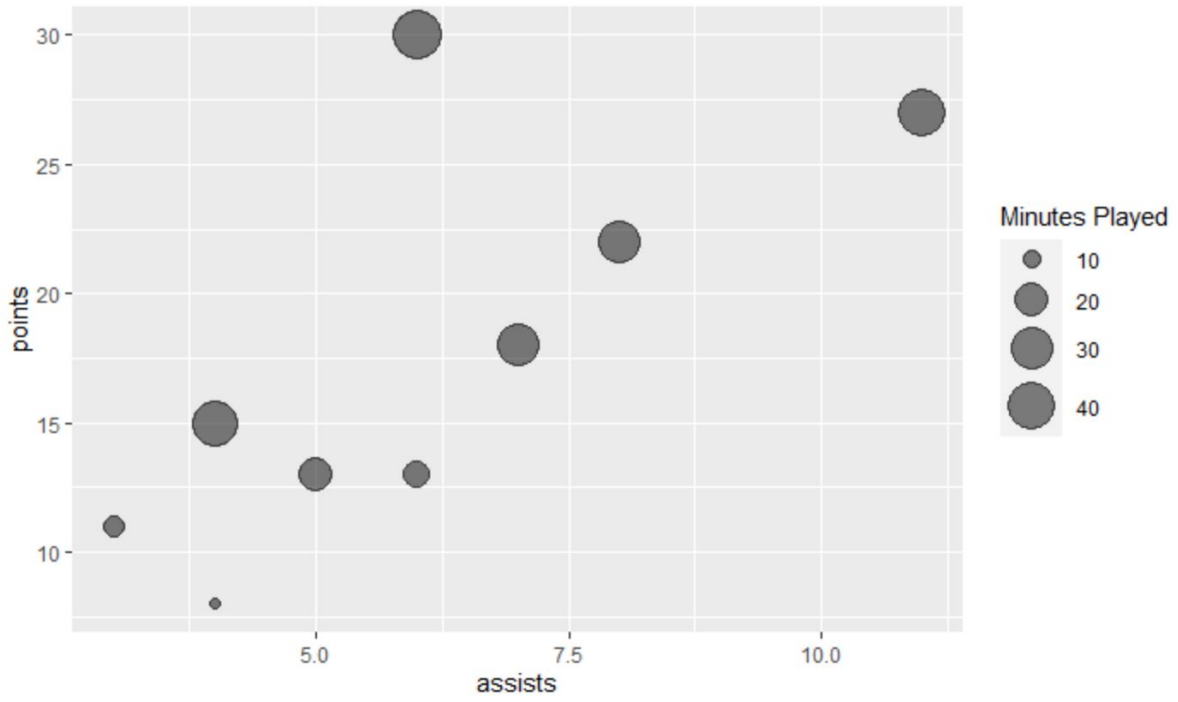
team points assists minutes
1 A 8 4 9
2 A 11 3 12
3 A 13 6 15
4 B 13 5 20
5 B 15 4 36
6 B 18 7 30

7 C 22 8 31
8 C 27 11 40
9 C 32 6 43

We can use the following syntax to create a bubble chart that displays **assists** on the x-axis, **points** on the y-axis, and uses **minutes** to determine the size of the circles:

library(ggplot2)

#create bubble chart
ggplot(df, aes(x=assists, y=points, size=minutes)) +
geom_point(alpha=0.5) +
scale_size(range=c(2, 10), name='Minutes Played')

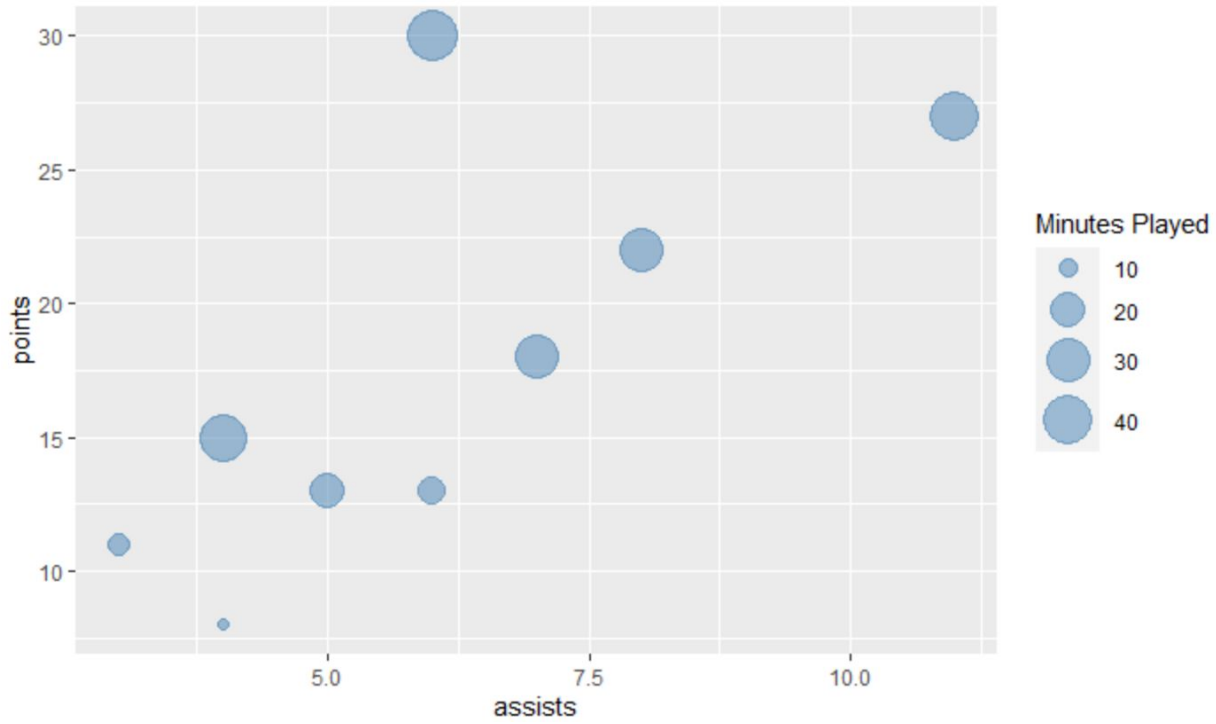


You can change the color of all of the circles by using the **color** argument within the **geom_point()** function:

library(ggplot2)

#create bubble chart with blue circles
ggplot(df, aes(x=assists, y=points, size=minutes)) +
geom_point(alpha=0.5, color='steelblue') +

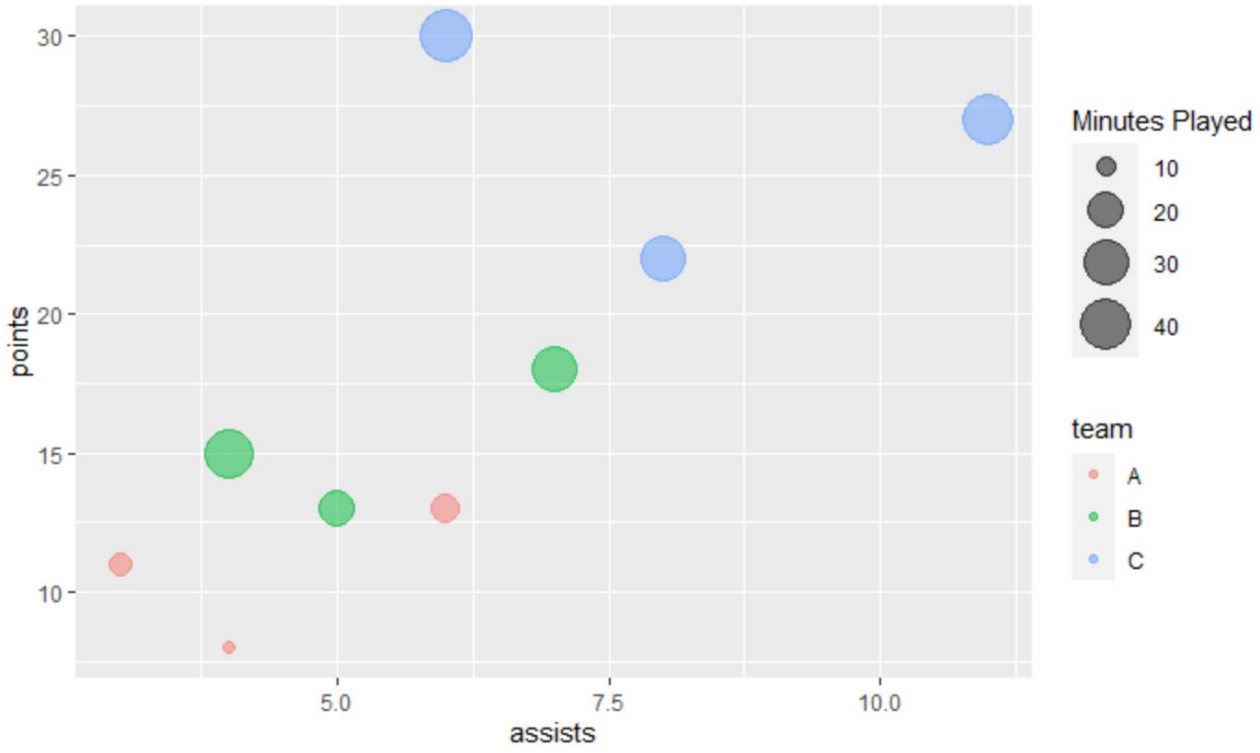
scale_size(range=c(2, 10), name='Minutes Played')



Alternatively, you can use the **color** argument within **aes()** to make the color of each circle based on the value of another variable in the data frame:

library(ggplot2)

#create bubble chart and color circles based on value of team variable
ggplot(df, aes(x=assists, y=points, size=minutes, color=team)) +
geom_point(alpha=0.5) +
scale_size(range=c(2, 10), name='Minutes Played')



The color of each circle in the plot is now dependent on the value for the **team** variable.

Note: Feel free to play around with the minimum and maximum values in the **range** argument to increase or decrease the size of the circles in the plot.

Additional Resources

The following tutorials explain how to create other common charts in R: