

Data Visualization in R

Learning data basics:

Once you are more comfortable navigating the R workspace you can start playing around with visualizing your data. But what kind of data do you have? What is the best way to represent your data? If this is your first time collecting data or if you are unsure how to organize your data please watch the “Data Basics” video that came with this worksheet. You will learn the various ways data can present itself and the best ways to organize your data to load into R.

This video will teach you how to:

- Organize your data into a data matrix
- Describe the difference between an observation and a variable
- Identify different types of variables
- Establish the relationships between variables

Loading your data into R:

Now that your data is organized, lets import it into R Studio. There are many ways to load your data into R. Before we begin, make sure that your data is saved as an excel file and in an easy to find location on your computer.

To load your data into R:

- First, open up R Studio.
- Under the “Environment” tab on the top right of your screen, select “Import Dataset”.
- From the drop down menu, select “From Excel...”
- A new window will appear, select “Browse...”, navigate to your file on your computer and select it.
- You should see your data pop up in the “Data Preview” window.
- Double check you have selected the right file, then select “Import” at the bottom right portion of the window.

After your data has successfully been loaded into R, use the following link to learn functions that will help you identify and work with your data in R.

<https://www.statmethods.net/input/contents.html>

Visualizing your data in R:

With your data imported into R it is time to start visualizing your data. But what is the best figure for your type of data? Below is a quick guide for some simple figure types and the variable types that are used to make them.

Figure Type	Variable Type	What does it show?
Pie Chart/Bar Chart	One Categorical	Shows frequencies or percentages
Histogram	One Numerical	Shows distributions
Box Plot	One Numerical/One Categorical	Shows spread of values
Dot Plot/Scatter Plot	Two Numerical	Shows relationship between two variables

Building your figure:

When you have decided which figure you'd like to make, select one of the links below to learn more. For general information on creating figures and saving them under different file types, start here: <https://www.statmethods.net/graphs/creating.html>

Pie Charts and Bar Charts:

Pie Chart - <https://www.statmethods.net/graphs/pie.html>

Bar Chart - <https://www.statmethods.net/graphs/bar.html>

Histograms and density plots:

Histograms - <https://www.statmethods.net/graphs/density.html>

Box plots:

Box Plot - <https://www.statmethods.net/graphs/boxplot.html>

(Some functions may not work due to packages that are no longer available in R.)

Scatter plots:

Scatter Plots - <https://www.statmethods.net/graphs/scatterplot.html>

(Some functions may not work due to packages that are no longer available in R.)

Making your figures look professional:

Setting graphical parameters - <https://www.statmethods.net/advgraphs/parameters.html>

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Manipulating axes and text - <https://www.statmethods.net/advgraphs/axes.html>

(Some functions may not work due to packages that are no longer available in R.)

To learn more about graphing in R, here are some useful resources:

<https://flowingdata.com/2012/12/17/getting-started-with-charts-in-r/>

<https://flowingdata.com/2012/05/15/how-to-visualize-and-compare-distributions/>

<https://flowingdata.com/2014/02/27/how-to-read-histograms-and-use-them-in-r/>