Boxplots in SPSS

Cheatsheet

2024-07-17

About

The **boxplot** is a visual representation of a dataset's distribution, showing the median, quartiles, and outliers. It is useful for comparing distributions between groups and identifying outliers within a single group.

Assumed knowledge

- You have SPSS installed, ideally version 28.0 or later.
- You can follow instructions to select, click and drag elements in SPSS.

Data structure

Your data should be **structured** in a way that makes it *easy* to plot. The ideal structure is **long**, i.e. one where each column represents a variable and each row an observation (Figure 1). You can either reshape your data in R or **move cells manually** in a spreadsheet program to achieve the desired structure. For boxplots comparing more than one group of data, a **categorical variable** representing the group should be present in the data.

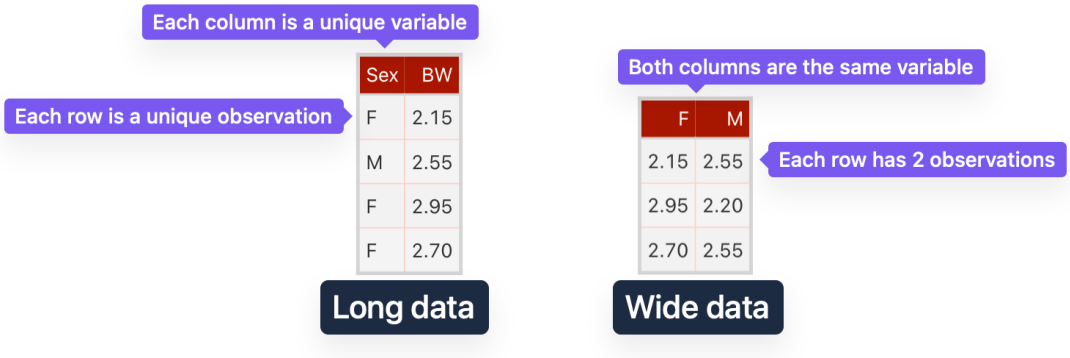

Figure 1: Long data (left) where each column is a different variable – e.g. `Sex` is categorical and `BW` is the measured, continuous response – is preferred over wide data (right), as it makes it easier to manipulate data when plotting.

Data

For this cheatsheet we will use part of the possums dataset used in BIOL2022 labs.

Import data

Open SPSS and import the data file:

- `File` > `Open` > `Data...`
- Select the downloaded file `possum_bw.xlsx`
- Check that the data is correctly identified and click `OK`

Plot

1. Go to `Graphs` > `Chart Builder...`
    - If a warning box appears on "measurement level", click `OK` (should be safe to ignore and you can fix issues later).
2. Select boxplot from the gallery at the bottom of the window.
3. Drag the boxplot icon to the canvas.
4. Drag the variable `Sex` to the `X-Axis` box.
5. Drag the variable `BW` to the `Y-Axis` box.
6. Click `OK` to generate the plot.

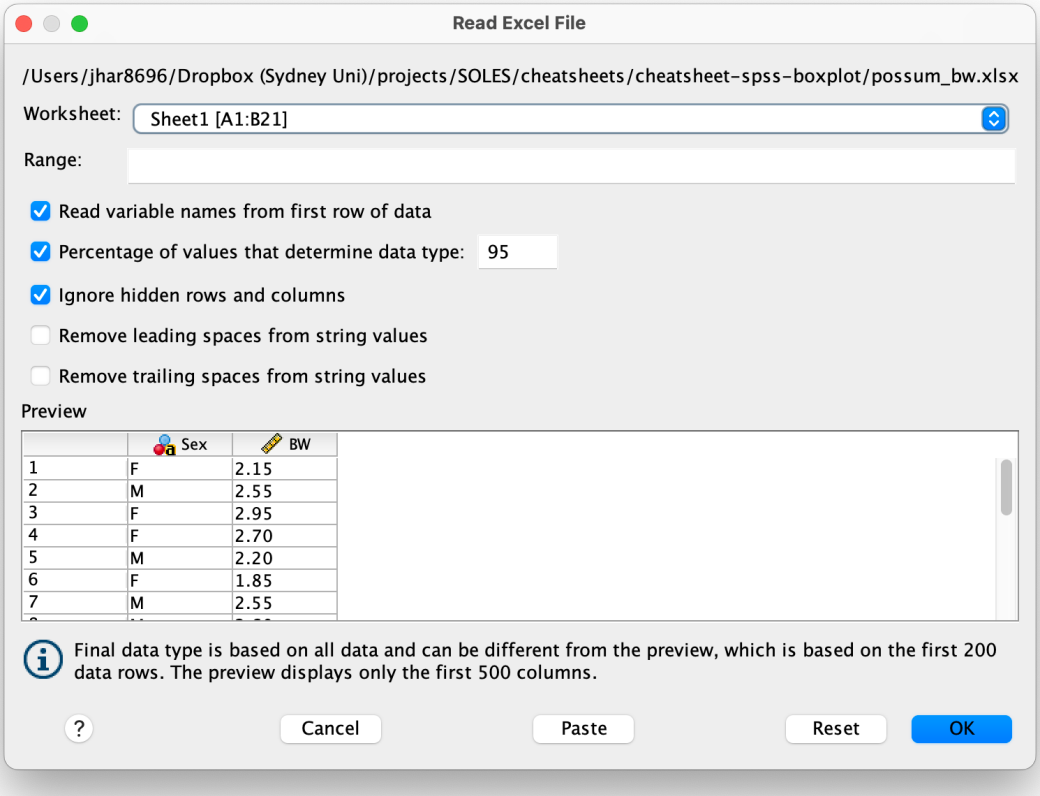

Figure 2: Before importing your file, make your selections and look at the preview window to ensure the data is correctly identified.

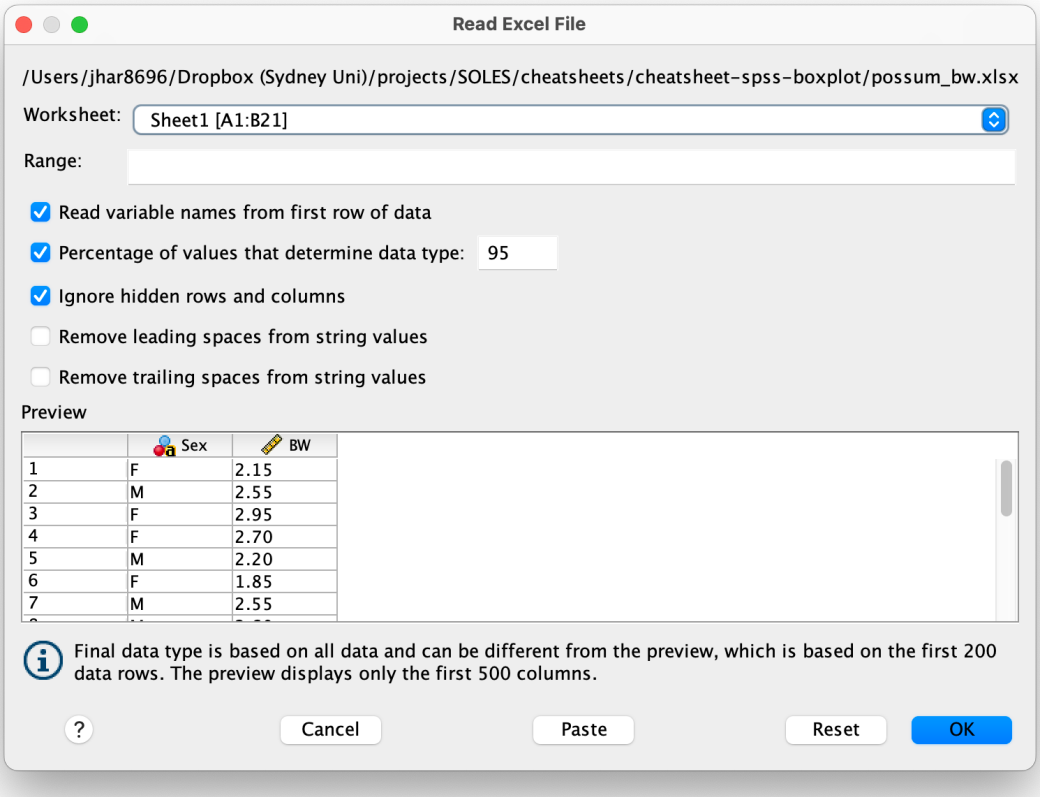

Figure 3: Boxplot in SPSS

Chart Editor

To make changes to the plot, double-click on the plot to open the `Chart Editor` (Figure 4). Here you can make changes to the plot, such as:

- **Titles**: Click on the title to edit it.
- **Axis labels**: Click on the axis labels to edit them.
- **Colours**: Click on the elements you want to change and select a new colour.
- **Outliers**: Click on the outliers to select them and change their appearance.
- **Error bars**: Click on the error bars to change their appearance.
- **Legend**: Click on the legend to change its appearance.

You get the idea! Almost anything you click on can be edited. Play around with the options to customise your plot.

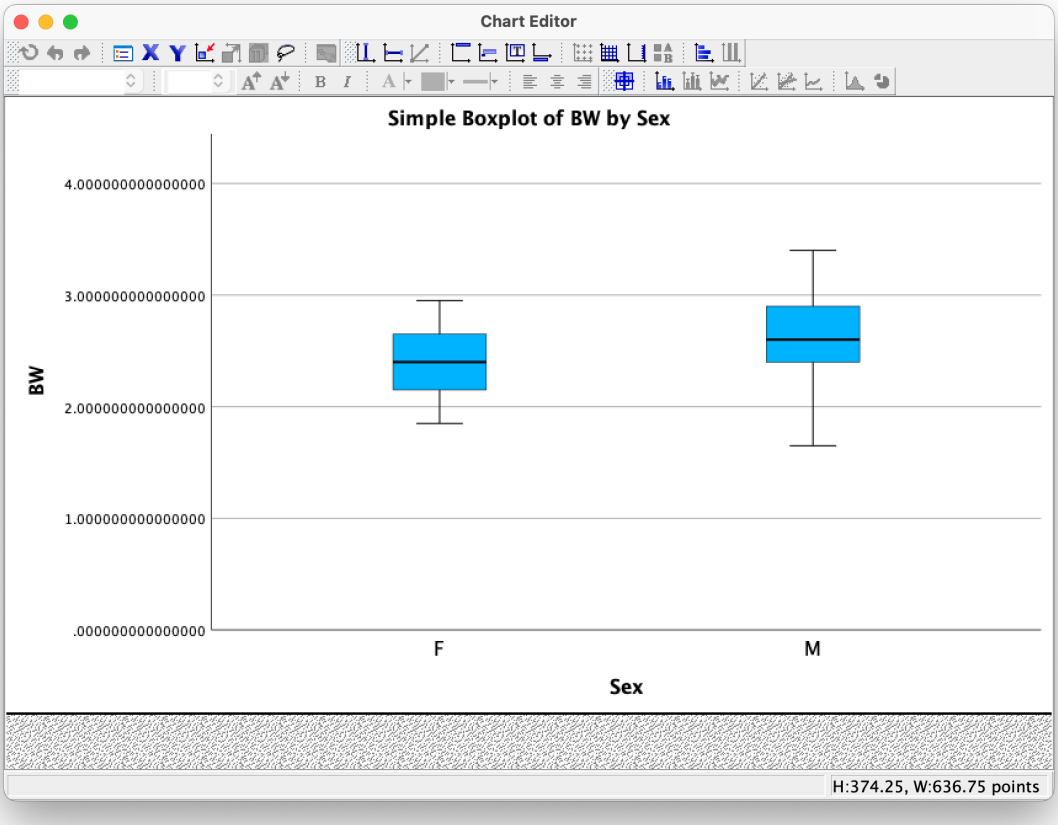

Figure 4: Chart Editor in SPSS. Most elements of the plot can be edited by clicking on them.

More resources