Teesside University

Accessibility Help Guide: Diagrams and Charts

What it helps with:

Diagrams are great for visualising data or illustrating relationships in some domain. Process flows and cycles, statistical charts, organigrams, decision trees and other types of content can be laid out on a two-dimensional plane – often labelled, grouped and arranged, colour coded and linked by lines or arrows. Such visualisation is an important complementary alternative to the textual mode of communication.

Not everyone, however, is fully capable of processing visual information. The percentage of the population with decreasing eyesight or visual impairments is growing. Also, since diagrams and charts are essentially images, these media provide serious accessibility issues to some users from an accessibility point of view.

If the data in a diagram or chart is crucial to the content, then you must provide a text description of the image. In some cases, a numeric table replicating the chart data could provide additional accessibility.

Accessible Charts:

There will be many instances where you might need to visualise data in a chart. For example, creating a chart showing the percentage of people who listed each type of cola as being their favorite would be more accessible if a numeric table was also used.

Not only does this provide the user with an alternate way of reading the data, but also allows the data to be read by assistive technology such as screen readers and speech input software:

Percentage of people who listed each type of cola as being their favourite
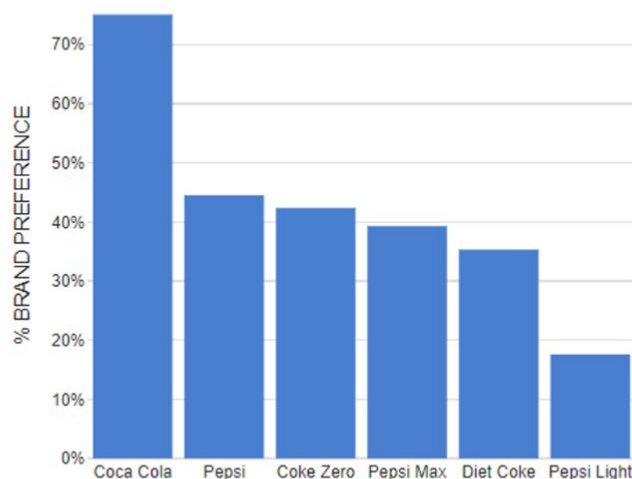
Percentage of people who listed each type of cola as being their favourite:

|	%
Coca-Cola	75
Pepsi	44
Coke zero	42
Pepsi Max	39
Diet Coke	35
Pepsi Lite	17

You can also create an alt text description which might look like this:

"The chart identifies that Coca-Cola was the most popular drink with 75% of respondents listing this as their favourite. Pepsi was next with 44%, then Coke zero with 42%, Pepsi Max with 39%, Diet Coke with 35% and final Pepsi Lite with 17%."

# The importance of colour and contrast.

Below is an image of an inaccessible bar chart showing preferred computer operating systems by number of users. Solid sections of red and green are used, both of similar brightness, and therefore may not be distinguishable for colorblind users.

In addition, the only key to the chart refers to the colours, thus information is only conveyed by colour:
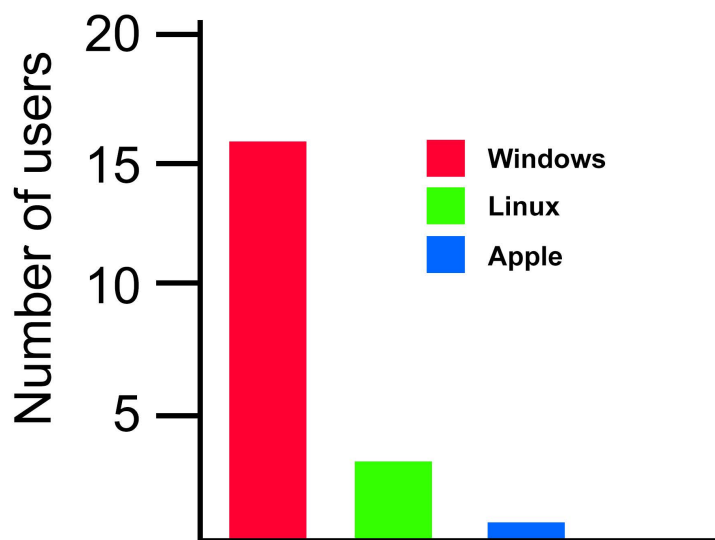
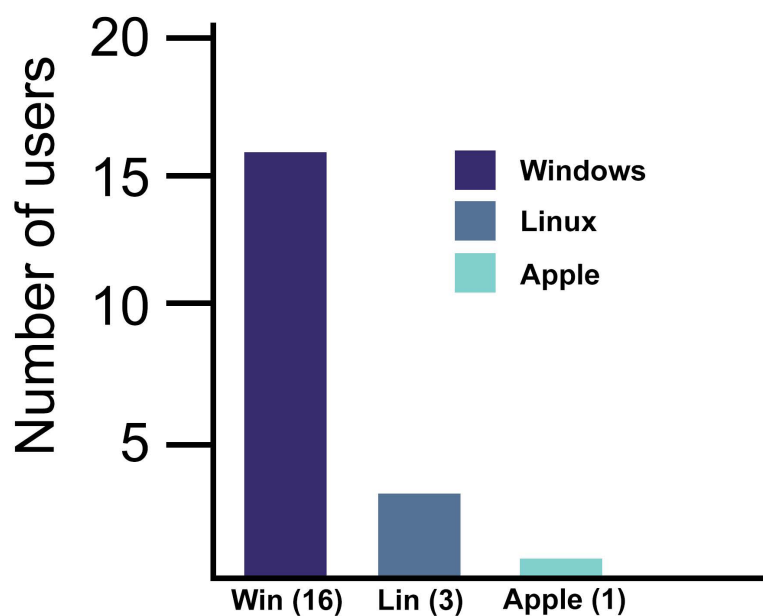Preferred Operating System
Total Users = 20

In greyscale
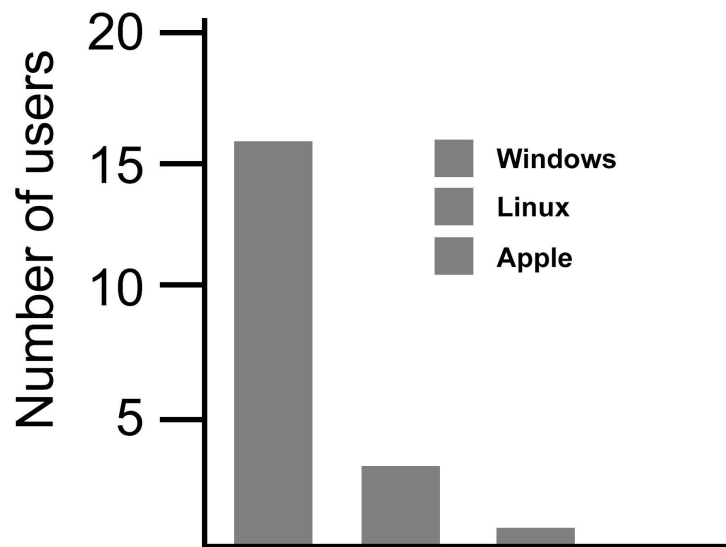
Preferred Operating System
Total Users = 20

Accessible Version of Bar Chart:

The data from the first table has been remade as a bar chart, but the colours have been changed to shades of blue. Colourblind users can use the different levels of darkness to tell the platforms apart. A numerical table has been added, as well as labels for each platform at the bottom of the chart, so that viewers do not even have to refer to the key.

Preferred Operating System
Total Users = 20

Preferred Operating System by number of users:

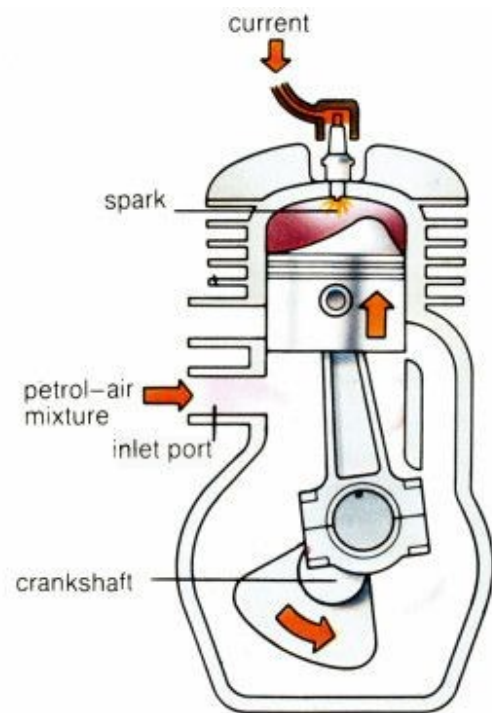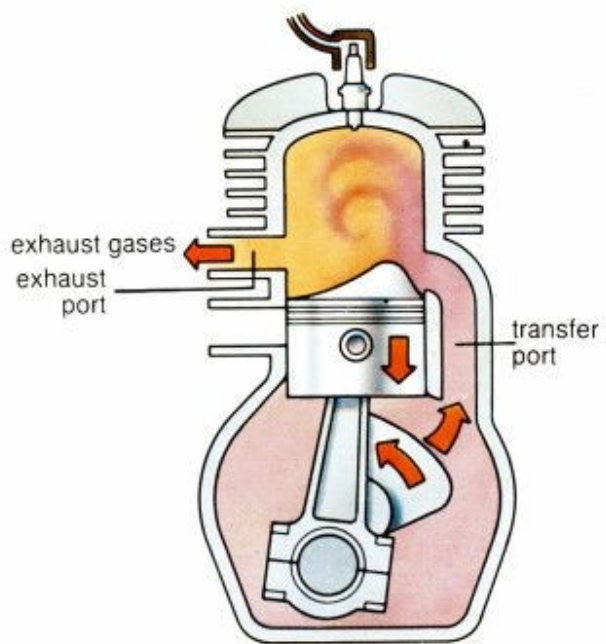|	Number of users
Windows	16
Linux	3
Apple	1

As with bar charts, using line charts and scatter diagrams can be particularly problematic for learners with visual impairments. Care needs to be taken with colours and contrasts used, and ensure that a supporting numeric table is also provided as an alternative.

Accessible Diagrams

As with images and charts, diagrams must also be accessible and must always include alternate text to ensure they can be used by people with various disabilities such as people using screen readers and speech input software.

Adding alternate text for diagrams provides a text alternative to non-text content. For example, an engineering diagram must also include a text alternative. This can be presented using an alt tag or within the description above or below the diagram. In some cases, where the diagram cannot be described succinctly, a link to a separate page containing the description can be provided.

Consider diagram below explaining how an internal combustion engine works to an engineering student. Alt tags should be used, in addition to text alternative explaining the diagram.

exhaust gases
exhaust port
transfer port

current
spark
petrol–air mixture
inlet port
crankshaft

Further Information:

https://www.elsevier.com/connect/making-charts-accessible-for-people-with-visual-impairments

https://eatsupport.tees.ac.uk/staff/knowledgebase/making-images-accessible/

This document has been checked for accessibility on 21st August 2020.