How to Create a Box Plot

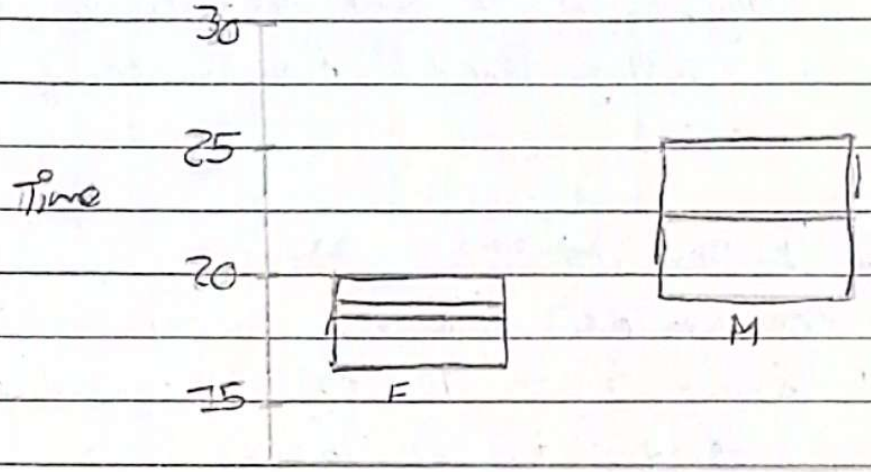
1 Identify key percentiles (Q_1, Q_2, Q_3)
2 Draw a box from 25th to 75th percentile
3 Draw whiskers extending to the smallest and largest non-outlier values
4 Mark outliers using circles
5 Mark far out values (extreme outliers) using asterisks.
6 Optionally, add a plus sign for the mean

Stroop Interference Case Study (Color-Naming Task)
Data collected from 16 men and 31 women naming colors as quickly as possible

The data for the women in sample are shown in Table 1.

14	17	18	19	20	21	29
15	17	18	19	20	22	
16	17	18	19	20	23	
16	17	18	20	20	24	
17	18	18	20	21	24	

From the data 25th percentile is 17, 50th percentile is 19 and 75th percentile is 20, For the men 25th percentile is 19, the 50th percentile is 22.5 and the 75th percentile is 25.5

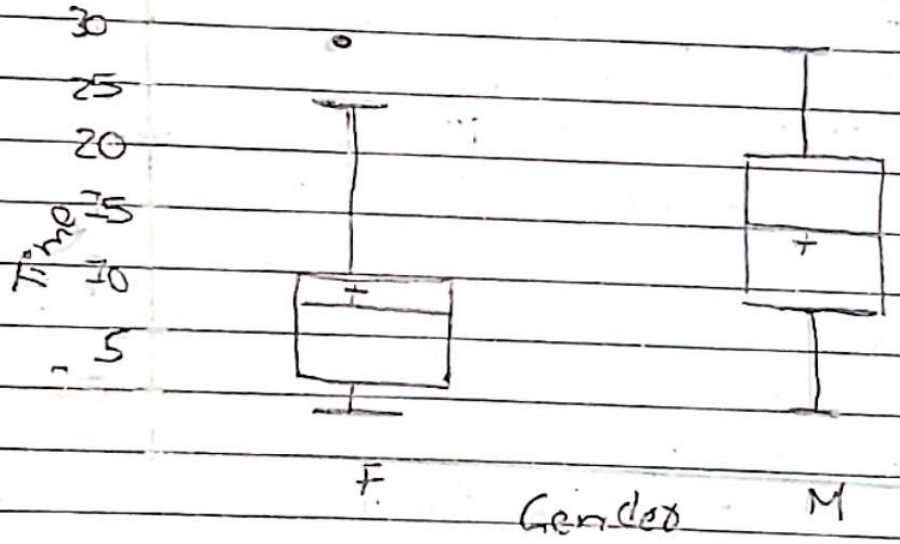


Box plot terms and values for women titles

Name	Formula	value
Upper Hinge	75th percentile	20
lower Hinge	25th percentile	17
H-Spread	75th percentile - 25th percentile	3
step	1.5 * H-spread	4.5
Upper inner fence	Upper Hinge + 1 step	24.5
lower inner fence	lower hinge - 1 step	12.5
Upper outer fence	Upper Hinge + 2 steps	29
lower outer fence	lower hinge - 2 steps	8

Upper Adjacent	largest value below upper inner fence	24
lower Adjacent	smaller value above lower inner fence	14
outside value	A value beyond an inner fence but not beyond an outer fence	29
far out value	A value beyond an outer fence	None

continuing with the box plots, we put whiskers above and below each box to give additional information about the spread of the data. Whiskers are drawn from the upper and lower hinges to the upper and lower adjacent values (24 and 14 for the women's data)



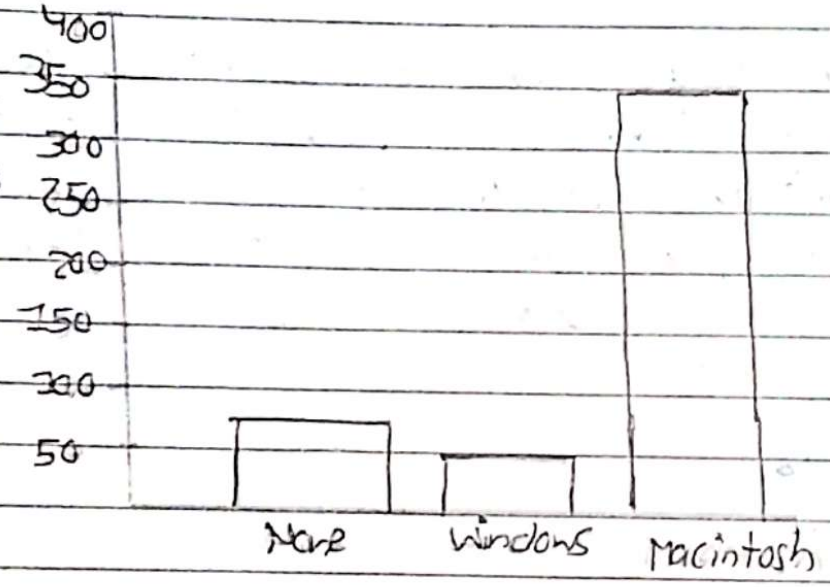
Summary of Box charts

Key Points

- Box Charts are useful for visually representing data, especially categorical data and changes over time
- They can display frequency counts, percentages and means but are not ideal for distributions.

When to use Bar charts

1 Comparing Categorical Data
Example iMac Buyers
A bar Chart compared how many buyers are previous Mac users, windows users or new users

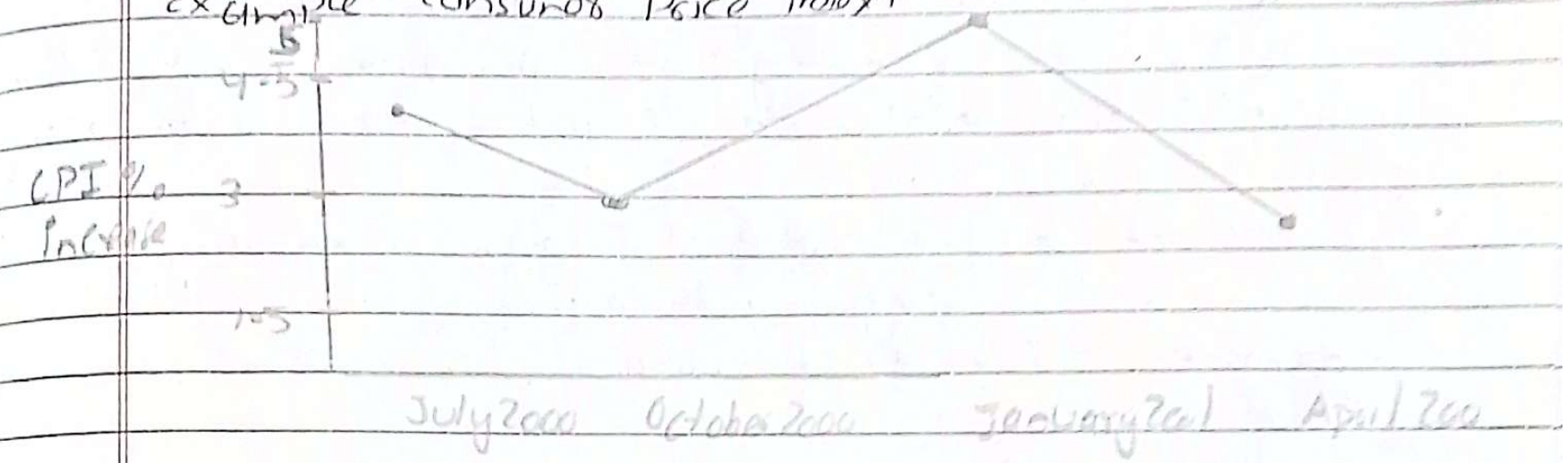


Use bar charts for comparing categories, trends and years

Summary of line graphs
Line graphs are similar to bar graphs but use points connected by lines instead of bars They are best for showing trends over time and comparing changes across different categories

When to use line graphs
1 Tracking change over time
2 comparing Multiple time series
3 highlighting trends and patterns

Example Consumer Price Index



When not to use Line Graphs

For categorical Data

Rule of thumb :- If the x-axis categories don't have a natural order like time, rankings, or measurements) do not use a line graph

Key takeways

- Use line graphs for time trends, comparisons and continuous data
- Avoid line graphs for purely categorical data - use bar charts instead.
- Misuse of line graphs can create misleading impressions.