

Chapter 2: Descriptive Statistics: (9) Tabular and Graphical Presentations

2.1 Summarizing Qualitative Data (labels or names)

* We summarize qualitative data by tabular and graphical methods

Frequency distribution: is a tabular summary of data showing the number (frequency) of items in each several non overlapping classes (categories).

Relative frequency

$$\text{Relative frequency of a class} = \frac{\text{frequency of the class}}{n}$$

where n is the number of observations (sample size)

$$\text{Percent frequency of a class} = \text{relative frequency} \times 100.$$

- * Note that:
- (1) Sum of the frequencies in any frequency distribution = n
 - (2) Sum of relative frequencies in any relative frequency distribution = 1
 - (3) Sum of the percentages in a percent frequency distribution = 100

Example: The following table is a frequency distribution that summarizes how 50 persons are distributed across five soft drinks. Uploaded By: Jibreel Bornat

soft drink | frequency

Fanta	19
Cola	8
Fup	5
Pepsi	13
Sprite	5

- (a) * Find the sample size (number of observations)
(b) * Find the relative frequency of each category (class)
(c) * Find the percent frequency for each category.

frequency distribution

Soft Drink	frequency	Relative Frequency	Percent Frequency (10)
Fanta	19	$\frac{19}{50} = \frac{38}{100} = 0.38$	$0.38 \times 100 = 38$
Cola	8	$\frac{8}{50} = \frac{16}{100} = 0.16$	$0.16 \times 100 = 16$
7 up	5	$\frac{5}{50} = \frac{10}{100} = 0.10$	$0.10 \times 100 = 10$
Pepsi	13	$\frac{13}{50} = \frac{26}{100} = 0.26$	$0.26 \times 100 = 26$
Sprite	5	$\frac{5}{50} = \frac{10}{100} = 0.10$	$0.10 \times 100 = 10$
<u>$n = 50$</u>		total = 1.00	total = <u>100</u>

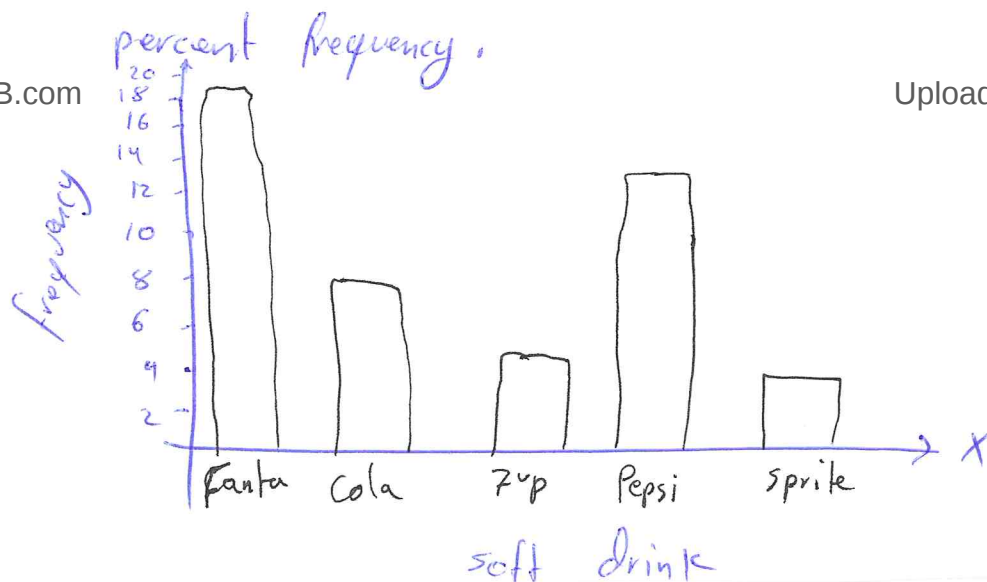
① number of observations ($n=50$)

Bar Graphs (qualitative data)

A bar graph or bar chart is a graphical device for depicting data summarized in a frequency, relative frequency or percent frequency distribution.

Horizontal axis: we specify the labels that are used for the classes (categories).

Vertical axis: we specify a frequency, relative frequency or percent frequency.



Pie Chart

provides another graphical device for presenting relative frequency and percent frequency distributions for qualitative data. (11)

To construct a pie chart:

- 1) draw a circle
- 2) divide a circle into parts

$$\text{Fanta: } 0.38 \times 360^\circ = 136.8^\circ$$

$$\text{Cola: } 0.16 \times 360^\circ = 57.6^\circ$$

$$\text{Zup: } 0.10 \times 360^\circ = 36.0^\circ$$

$$\text{Pepsi: } 0.26 \times 360^\circ = 93.6^\circ$$

$$\text{Sprite: } 0.10 \times 360^\circ = 36.0^\circ$$

