

Graphs for Analysis

- Univariate (single feature)
- Bivariate (two features)
- Multivariate. (more than two)

Univariate \Rightarrow single feature.

Categorical

A list of 200 people Vacation Survey.

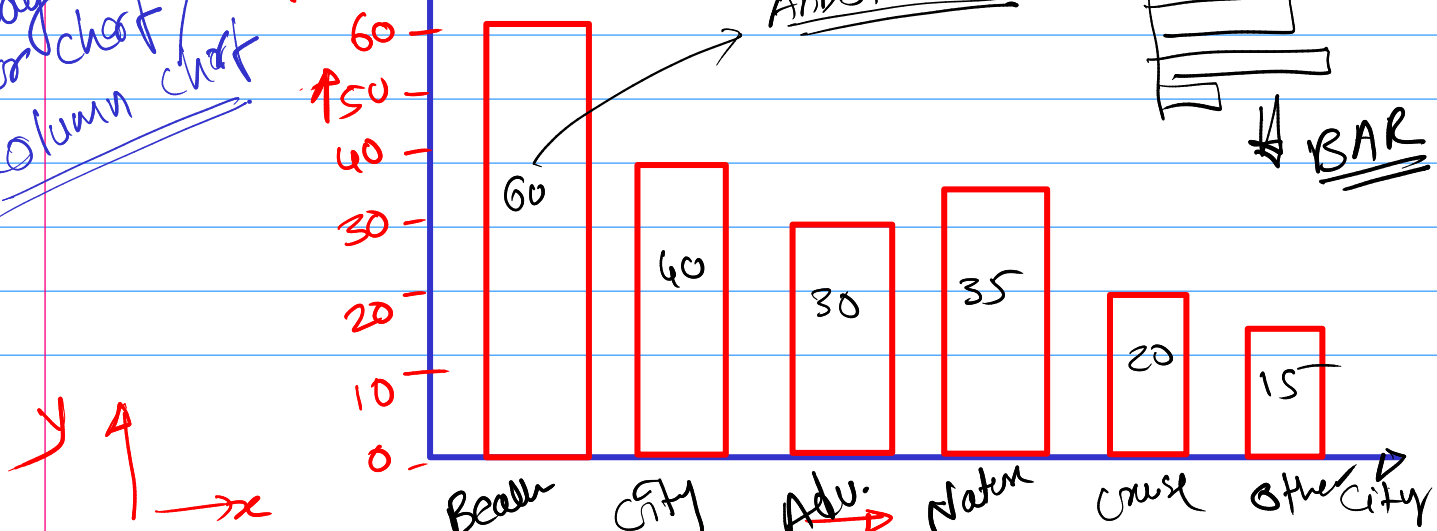
| Type of Vacation. | <u>Frequency</u> = (Count) |
|-------------------|----------------------------|
| Beach | 60 |
| City | 40 |
| Adventure | 30 |
| Nature | 35 |
| Cruise | 20 |
| Other | 15 |

← Frequency distribution Table.
divide

Always Bar chart / Column chart

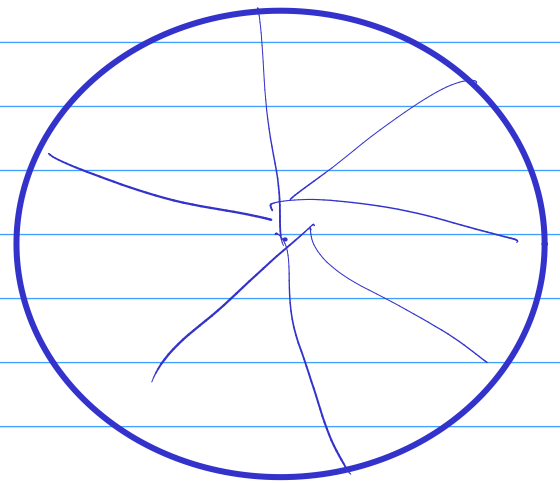
Frequency

Annotation



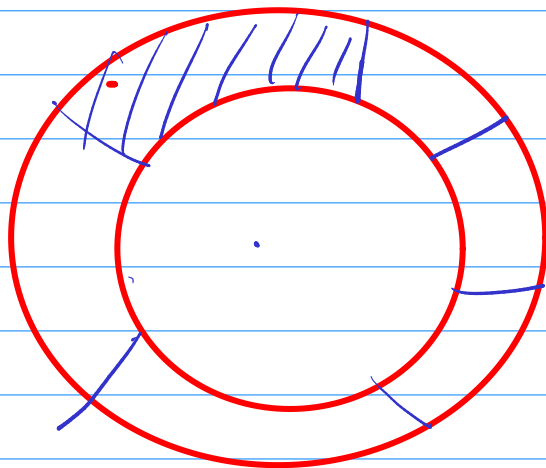
Relative frequency (for percentage)

| <u>Vacation</u> | <u>freq</u> | <u>relative freq.</u> |
|-----------------|-------------|----------------------------|
| Beach | 60 | $60/200 \times 100 = 30\%$ |
| City | 40 | 20% |
| Adv. | 30 | 15% |
| Nature | 35 | 17.5% |
| Cruise | 20 | 10% |
| Other | 15 | 7.5% |
| | | <u>100%</u> |



Pie chart

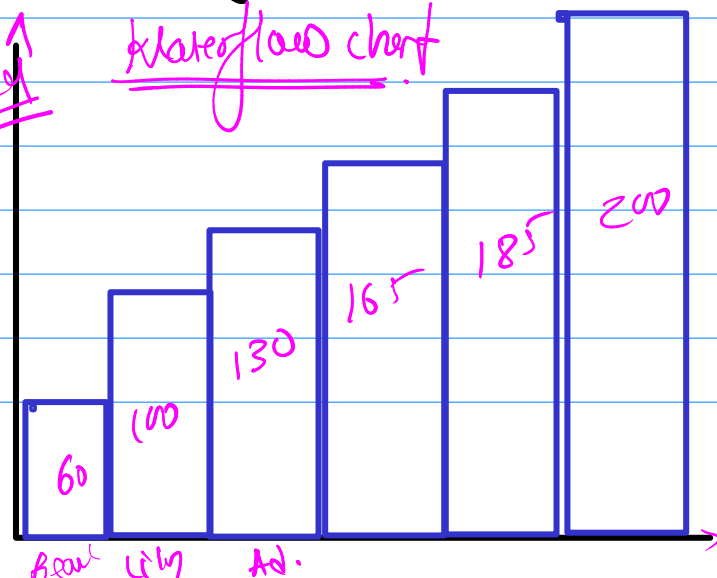
Donut chart



Cumulative frequency (adding the old no.)

| <u>Vacation</u> | <u>freq.</u> | <u>cumulative freq.</u> |
|-----------------|--------------|-------------------------|
| Beach | 60 | 60 |
| City | 40 | 100 |
| Adv. | 30 | 130 |
| Nature | 35 | 165 |
| Cruise | 20 | 185 |
| Other | 15 | 200 |

Waterflow chart



Numerical feature

Age → Feature Engg.

Age
17
10
9
4
= 57
80

200 people

Numerical

Age-group

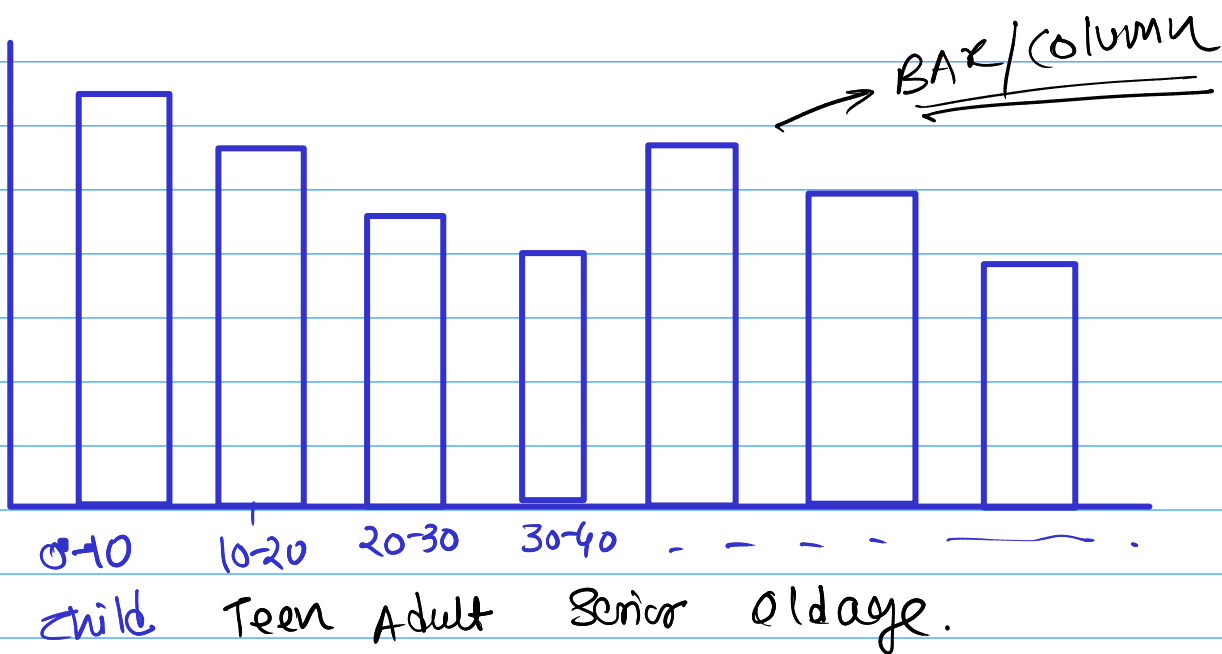
Age

0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80

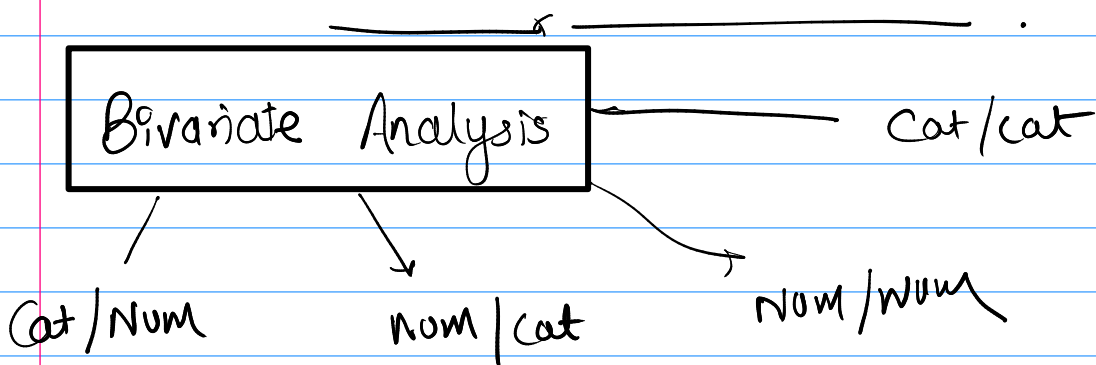
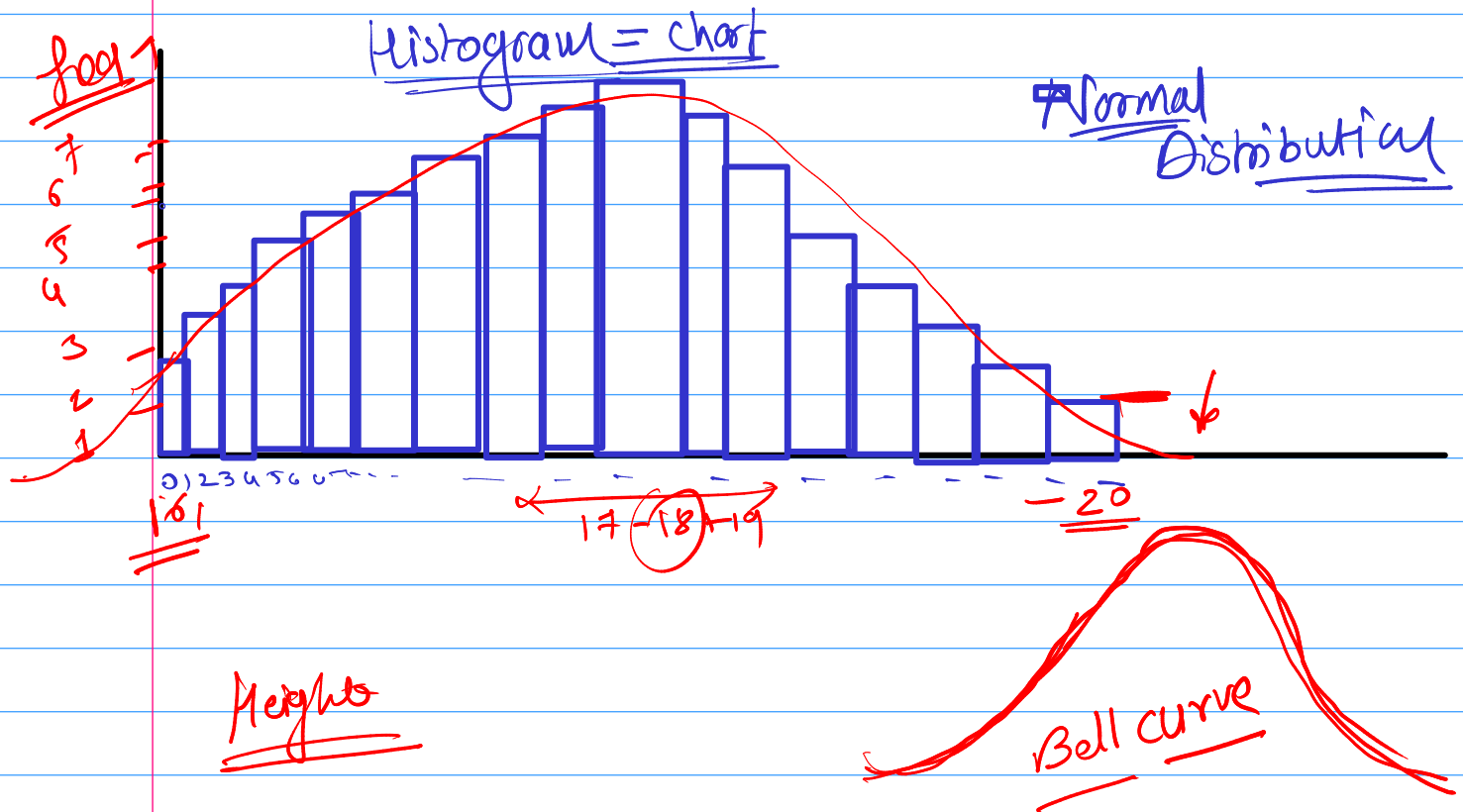
Categorical.

Age-group

Child (0-17)
Teen (18-25)
Adult (25-40)
Senior (40-60)
Old Age (60+)



Distribution of Numerical feature.



Cat & Cat

| <u>Gender</u> | <u>class</u> |
|---------------|--------------|
| Male | 1st year |
| Female | 2nd year |
| | 3rd year. |

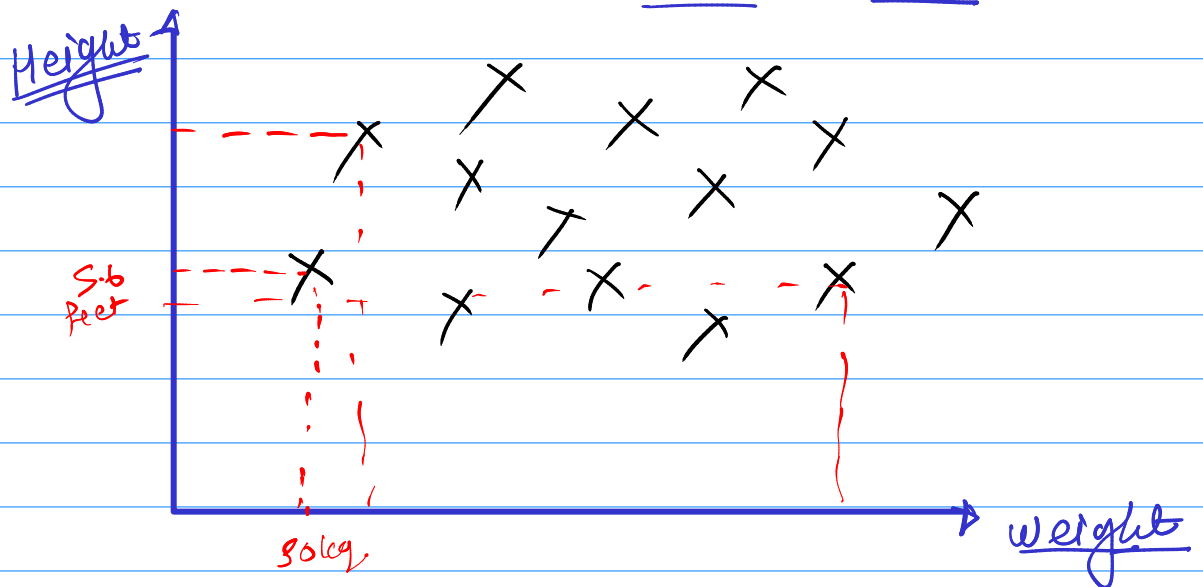
→ BD College
300 student.

Contingency Table / Cross Tab = Cat & Cat

| | 1 st year | 2 nd year | 3 rd year |
|--------|----------------------|----------------------|----------------------|
| male | 30 | 85 | 37 |
| female | 75 | 90 | 86 |

Numerical & Numerical

⇒ Scatter plot

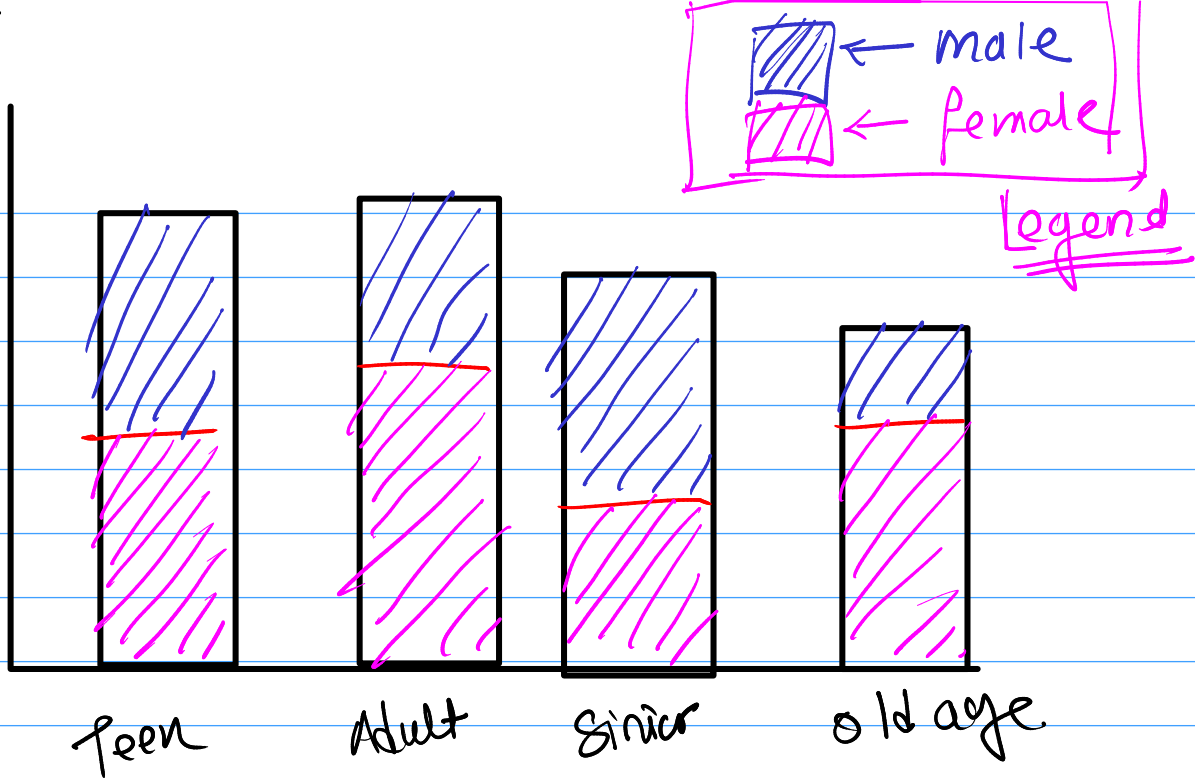


Cat & Num or Num & Cat

Cross Tab / Contingency Table

| | <u>Age group</u> | Teen | Adult | Senior | old age |
|---------------|------------------|------|-------|--------|---------|
| <u>Gender</u> | male | 70 | 31 | 90 | 23 |
| | female | 21 | 41 | 87 | 34 |

Stack Bar/
Column
Chart



female male.

Stack
Chart

