

SNS COLLEGE OF TECHNOLOGY

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with ‘A’ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Department of Computer Science and Engineering

Course Code & Title : 23AD0201 - Data Science Fundamentals

III YEAR / VI SEMESTER - EEE

Unit 2 - DESCRIPTIVE ANALYTICS

Topic : Interpreting distributions, graphs and averages

K.Karthikeyan AP /CSE,SNSCT

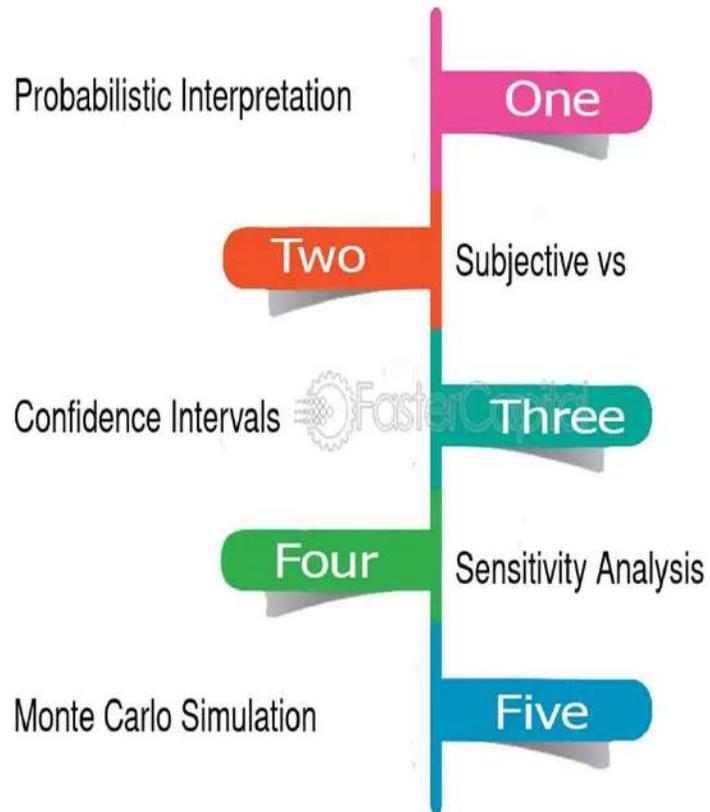
Interpreting Probability Distributions



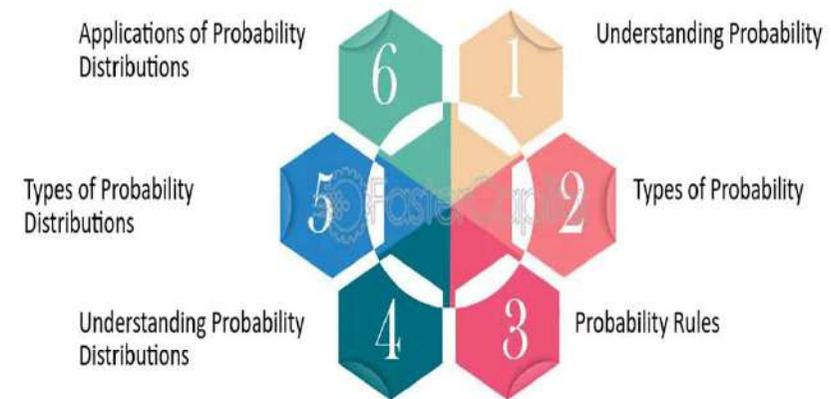
Interpreting the Probability Distribution



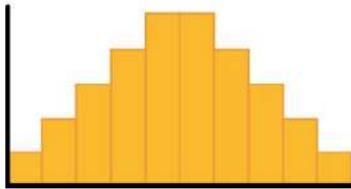
Interpreting Probability Measures in Model Risk Assessment



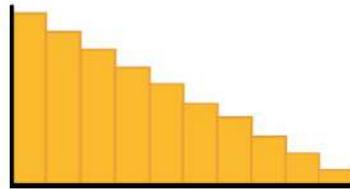
Probability and Probability Distributions



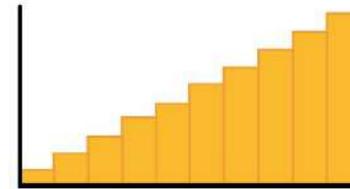
Symmetric (normal) vs skewed and uniform distributions



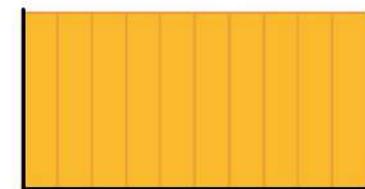
Normal distribution
(unimodal, symmetric,
the “bell curve”)



**Right-skewed
distribution**
(Positively-skewed)

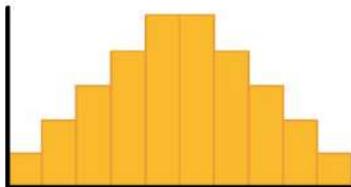


**Left-skewed
distribution**
(Negatively-skewed)

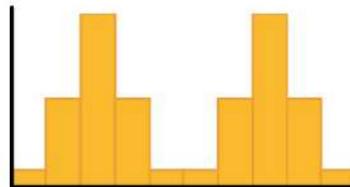


Uniform distribution
(equal spread,
no peaks)

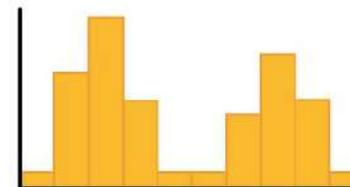
Unimodal vs bimodal distributions



Normal distribution
(unimodal, symmetric,
the “bell curve”)



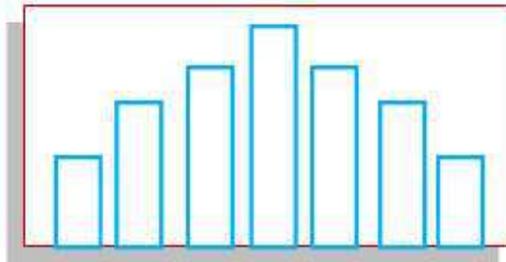
**Symmetric bimodal
distribution**
(two modes)



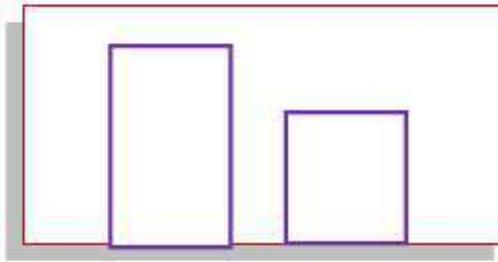
**Non-symmetric
bimodal distribution**
(two modes)



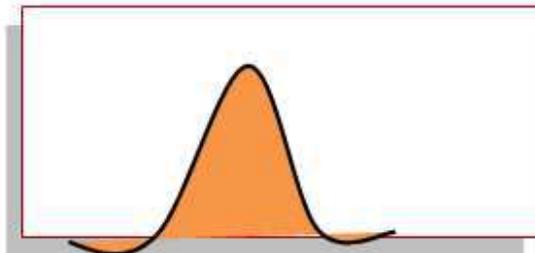
Uniform distribution



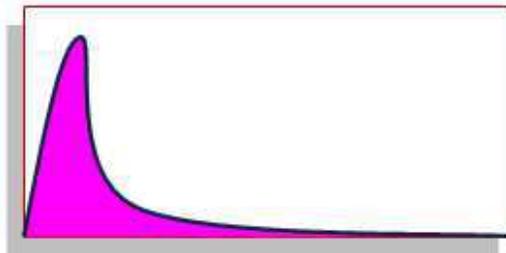
Binomial distribution



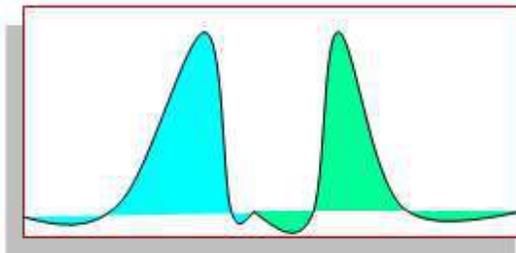
Bernoulli distribution



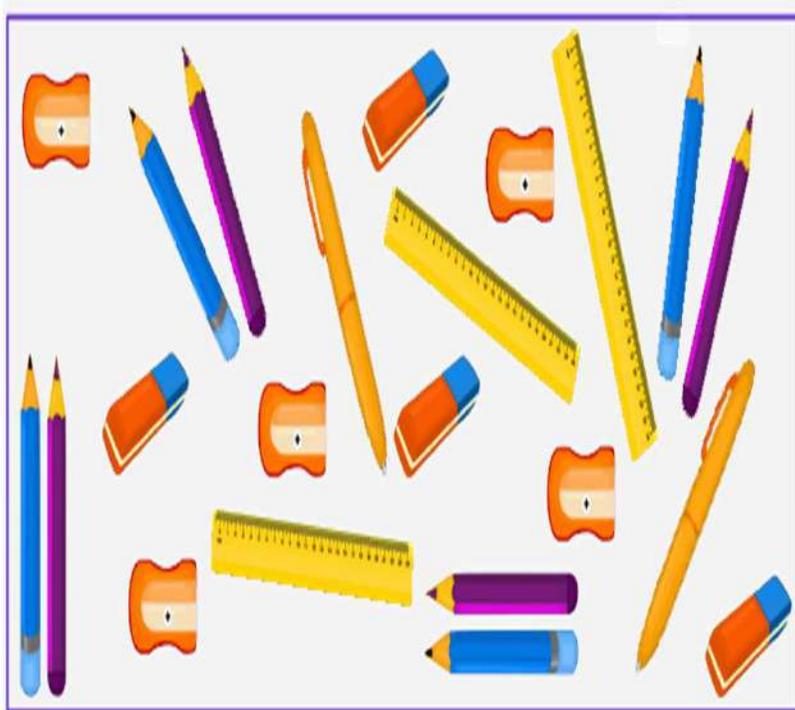
Normal distribution



Log normal distribution

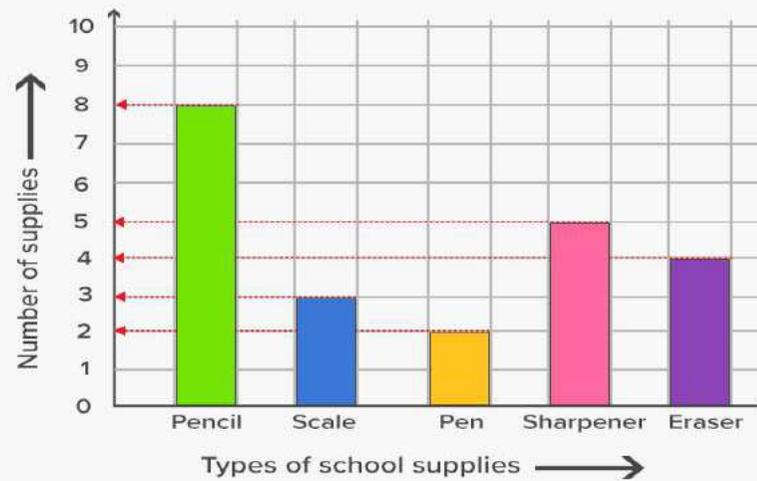


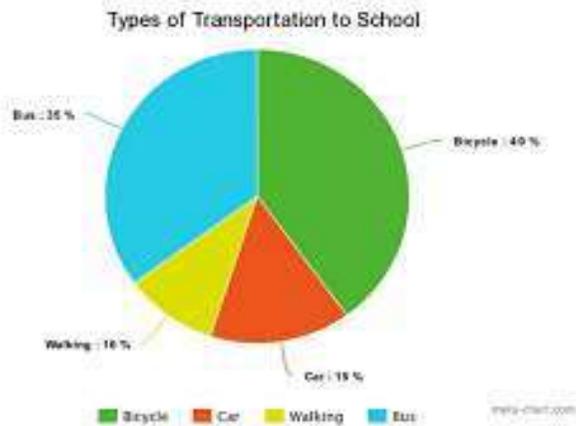
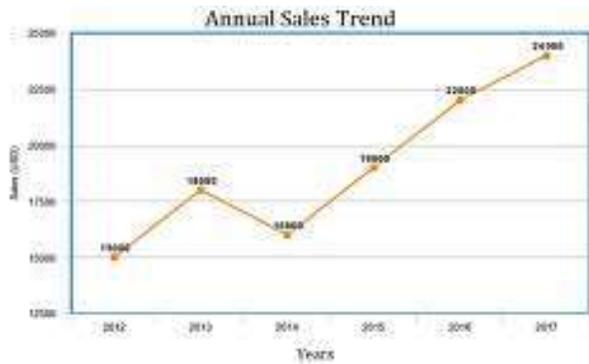
Negative and positive skew



Types of school supplies	Number of school Supplies

Pencil	Scale	Pen	Sharpener	Eraser





What's the

4, 5, 6, 8, 10, 18, 306

"average"?

I

To revise the four forms of average;
Focus on using data.

Revision: Averages

Mean

The mean one because it takes the most working out!

M Add them all. Divide by number of values.

Mode

Starts with m o therefore...

M The most occurring value.

There can be more than one or no mode!

Median

The same number of letters as 'middle'

M Put values in order. The median is the middle value.

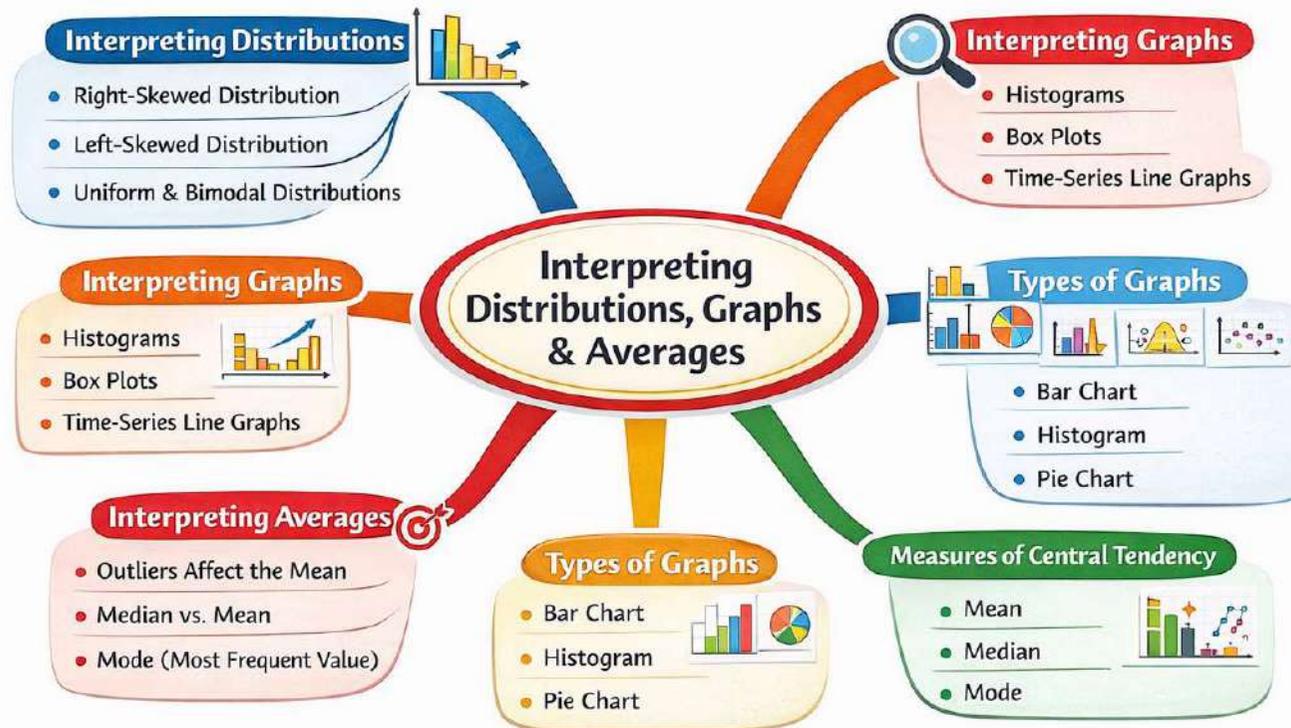
You might need to work out the number in between!

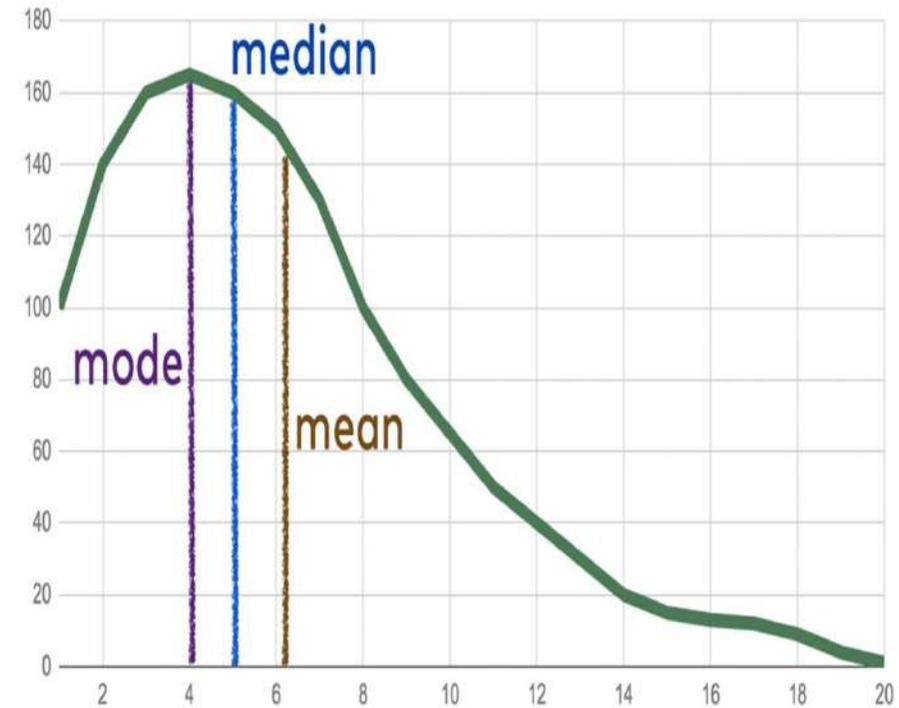
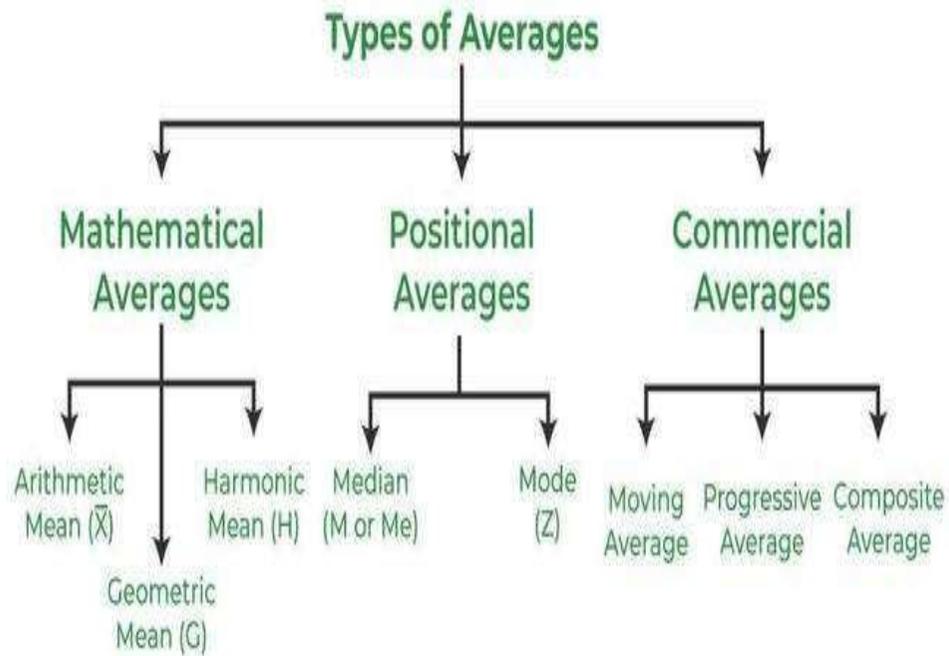
Range

The difference between the values.

M Find the highest, then subtract the lowest.

MIND MAP





Fun Activity: Graph & Guess!

Time: 10–15 minutes

Mode: Pair / Group

Steps:

1. Give a small dataset (e.g., test scores).
2. Students draw a bar graph / histogram.
3. Guess mean, median, and mode (before calculation).
4. Calculate actual averages.
5. Interpret the graph (symmetry / skewness).

Fun Element:

Points for closest guess and correct interpretation 

Outcome:

- Interpret distributions
- Read graphs
- Understand averages



ASSESSMENT

Interpreting Distributions, Graphs & Averages – MCQs

1. Interpreting Distributions

1. A distribution with a long tail to the right is called:

- A. Symmetric
- B. Left-skewed
- C. Right-skewed
- D. Uniform

Answer: C

2. In a right-skewed distribution, the relationship between mean and median is:

- A. Mean = Median
- B. Mean < Median
- C. Mean > Median
- D. Mean = Mode

Answer: C

REFERENCE BOOKS

1.Allen B. Downey, “Think Stats: Exploratory Data Analysis in Python”, Green Tea Press, 2014.

2.Sanjeev J. Wagh, Manisha S. Bhende, Anuradha D. Thakare, “Fundamentals of Data Science”, CRC Press, 2022.

3.Chirag Shah, “A Hands-On Introduction to Data Science”, Cambridge University Press, 2020.

4.Vineet Raina, Srinath Krishnamurthy, “Building an Effective Data Science Practice: A Framework to Bootstrap and Manage a Successful Data Science Practice”, A press, 2021.

