UNIT 5: STATISTICAL ANALYSIS WITH EXCEL

3. SAMPLING AND SAMPLING DISTRIBUTIONS

- **Definition**: Sampling is selecting a subset from a population, and sampling distributions describe the distribution of a statistic over many samples.
- **Method**: Use **Data Analysis Toolpak > Sampling** to generate samples.
- **Example**: Calculating the mean of different samples drawn from a population.
- **Direction**: Enable Data Analysis Toolpak via **File > Options > Add-ins > Analysis ToolPak**.

4. INTERVAL ESTIMATION

- **Definition**: Provides a range (interval) within which a population parameter is expected to lie.
- **Confidence Interval**: =CONFIDENCE.NORM(alpha, standard_dev, size)
- **Example**: Estimating the true mean of a population with a confidence interval of 95%.
- **Shortcut**: **Alt + M + S** for more statistical functions.

5. HYPOTHESIS TESTING

- **Definition**: A method to test an assumption regarding a population parameter.
- **t-Test Example**: =T.TEST(array1, array2, tails, type)
- **z-Test Example**: =Z.TEST(array, x, sigma)
- **Method**: Use **Data Analysis > t-Test or z-Test** options.

6. ANOVA (Analysis of Variance)

- **Definition**: Tests differences between means across multiple groups.
- **Example**: Comparing the effectiveness of different teaching methods on student performance.
- **Method**: Use **Data Analysis Toolpak > ANOVA**.
- **Shortcut**: **Alt + N + C** for charting the results.

7. SIMPLE LINEAR REGRESSION

- **Definition**: A method to model the relationship between two variables by fitting a linear equation to the data.
- **Formula**: =LINEST(known_y's, known_x's, const, stats)
- **Example**: Predicting sales based on advertising spend.
- **Direction**: Go to **Data > Data Analysis > Regression**.

8. INTRODUCTION TO TABULAE FOR DATA VISUALIZATION

- **Definition**: Tabulae (tables) is a way to visually analyze data.
- **Creating a Table**: Use **Alt + N + T** to create tables for structured data presentation.
- **Example**: Visualizing sales data across different regions.
- **Shortcut**: **Alt + N + C** to create related charts.

DIRECTIONS TO HANDLE THE TOPICS

- **Formulas and Functions**: Use the **Formula** tab or shortcut **Alt + M**.
- **Data Analysis Tools**: Ensure the **Analysis Toolpak** is enabled. Access it via **Alt + T + A**.
- **Visualization**: Use **Alt + N + C** for charts and **Alt + N + T** for tables to visualize data.