

# Assignment ANOVA Test (F- Test)

1. Study Hours and Test Scores
  - Columns: Study\_Hours (Categorical: "<5", "5-10", ">10"), Test\_Score (Continuous)
  - Data Simulation: Use np.random.normal to create different mean scores for each study hour group.
2. Brand Preference for Soft Drinks
  - Columns: Brand (Categorical: "Brand A", "Brand B", "Brand C"), Satisfaction\_Score (Continuous)
  - Data Simulation: Assign different normal distributions for satisfaction scores per brand.
3. Age Group and Fitness Levels
  - Columns: Age\_Group (Categorical: "<30", "30-50", ">50"), Fitness\_Level (Continuous score or ranking)
  - Data Simulation: Use different mean fitness levels for each age group.
4. Productivity Based on Work Shifts
  - Columns: Shift (Categorical: "Morning", "Afternoon", "Night"), Productivity (Continuous)
  - Data Simulation: Assign each shift a distinct productivity score range.
5. Impact of Diet Type on Weight Loss
  - Columns: Diet\_Type (Categorical: "Low-carb", "Low-fat", "Mediterranean"), Weight\_Loss (Continuous)
  - Data Simulation: Generate different mean weight losses for each diet type.
6. Customer Satisfaction Across Branches
  - Columns: Branch (Categorical: "Branch 1", "Branch 2", "Branch 3"), Satisfaction\_Score (Continuous)
  - Data Simulation: Create satisfaction scores with varying means for each branch.
7. Teaching Method and Test Scores
  - Columns: Teaching\_Method (Categorical: "Online", "In-person", "Hybrid"), Test\_Score (Continuous)
  - Data Simulation: Set different average scores based on the teaching method.
8. Treatment Effect on Blood Pressure
  - Columns: Treatment\_Dose (Categorical: "Low", "Medium", "High"), Blood\_Pressure (Continuous)

## Assignment ANOVA Test (F- Test)

- Data Simulation: Generate blood pressure scores for each dosage with different mean values.
9. Employee Satisfaction by Department
- Columns: Department (Categorical: "HR", "Sales", "Engineering"), Satisfaction\_Score (Continuous)
  - Data Simulation: Assign different satisfaction scores by department.
10. Engagement Across Social Media Platforms
- Columns: Platform (Categorical: "Facebook", "Instagram", "Twitter"), Engagement (Continuous)
  - Data Simulation: Set engagement values with distinct mean values for each platform
11. Exam Scores Across Class Sections
- Columns: Class\_Section (Categorical: "Section A", "Section B", "Section C"), Exam\_Score (Continuous)
  - Data Simulation: Generate random scores by section with slight mean differences.
12. Response Time and Traffic Density
- Columns: Traffic\_Level (Categorical: "Low", "Moderate", "High"), Response\_Time (Continuous)
  - Data Simulation: Set response times for each traffic level with different averages.
13. Exercise Type and Muscle Gain
- Columns: Exercise\_Type (Categorical: "Strength", "Cardio", "Mixed"), Muscle\_Gain (Continuous)
  - Data Simulation: Use normal distributions to model different mean gains.
14. Advertising Medium and Sales
- Columns: Ad\_Medium (Categorical: "TV", "Radio", "Social Media"), Sales (Continuous)
  - Data Simulation: Simulate sales based on each advertising type.
15. Temperature and Machine Efficiency
- Columns: Temperature (Categorical: "Low", "Medium", "High"), Efficiency (Continuous)
  - Data Simulation: Use different temperature levels to simulate efficiency scores.

## Assignment ANOVA Test (F- Test)

### 16. Education Level and Salary

- Columns: Education\_Level (Categorical: "High School", "Bachelor's", "Master's"), Salary (Continuous)
- Data Simulation: Set salary ranges for each education level.

### 17. Traffic Accidents by Day of the Week

- Columns: Day (Categorical: "Monday", "Tuesday", etc.), Accidents (Continuous)
- Data Simulation: Assign accident frequency values per day with slight variations.

### 18. Time of Day and Productivity

- Columns: Time\_of\_Day (Categorical: "Morning", "Afternoon", "Evening"), Productivity (Continuous)
- Data Simulation: Assign productivity values for each time period.

### 19. Soil Type and Crop Yield

- Columns: Soil\_Type (Categorical: "Sandy", "Clay", "Loam"), Crop\_Yield (Continuous)
- Data Simulation: Use different distributions for each soil type to model yields.

### 20. Coffee Consumption and Work Performance

- Columns: Coffee\_Consumption (Categorical: "None", "Moderate", "High"), Performance (Continuous)
- Data Simulation: Model performance scores with different means for each coffee level.