**One-Way ANOVA Examples**

1. **Impact of Advertising Channel on Sales**: A company uses three different advertising channels (TV, social media, and email) to promote a new product. They measure the sales generated from each channel and use one-way ANOVA to determine if there is a significant difference in mean sales among the channels.
2. **Average Waiting Time in Different Hospital Departments**: A hospital administration wants to assess whether the average waiting time for patients differs across four departments (emergency, pediatrics, cardiology, and orthopedics). One-way ANOVA is used to compare mean waiting times among these departments.
3. **Effect of Watering Frequency on Plant Growth**: A gardener tests three different watering frequencies (daily, every other day, and weekly) on plant growth. The height of the plants is measured, and one-way ANOVA is applied to check if there’s a significant difference in average plant height across the watering frequencies.
4. **Student Performance Across Majors**: A university wants to evaluate if students’ average GPA differs by major (e.g., engineering, business, arts, and sciences). They conduct a one-way ANOVA to analyze whether there’s a significant difference in mean GPA across these majors.
5. **Comparing Average Order Value Across Days of the Week**: An e-commerce company wants to determine if the average order value significantly differs across different days of the week. They use one-way ANOVA to compare the average order values from Monday to Sunday to see if any day has significantly higher or lower spending.

**Two-Way ANOVA Examples**

1. **Effect of Age Group and Exercise Program on Fitness Level**: A gym tests the effect of three exercise programs (yoga, HIIT, and strength training) on fitness levels across two age groups (under 40 and over 40). Two-way ANOVA is used to see if there’s a difference in fitness level based on the program, age group, or an interaction between the two.
2. **Employee Productivity by Work Shift and Department**: A company studies employee productivity across three work shifts (morning, afternoon, and night) and two departments (sales and customer service). Two-way ANOVA is applied to check if there are differences in productivity based on work shift, department, or any interaction between these factors.
3. **Impact of Study Technique and Test Type on Student Performance**: A school compares the effectiveness of study techniques (note-taking, flashcards, and group study) on students’ performance in two test types (multiple-choice and essay). Two-way ANOVA is conducted to analyze if there’s a significant effect from the study technique, test type, or their interaction on test scores.
4. **Customer Satisfaction by Service Quality and Time of Visit**: A restaurant chain studies customer satisfaction based on two factors: service quality (excellent, average, poor) and time of visit (morning, afternoon, evening). Two-way ANOVA is used to determine if there’s a significant difference in satisfaction scores based on service quality, time, or an interaction between the two.
5. **Effect of Training Method and Gender on Skill Acquisition**: An organization evaluates the impact of two training methods (hands-on vs. theoretical) on skill acquisition in male and female employees. Two-way ANOVA is used to assess if training method, gender, or their interaction significantly affects skill acquisition outcomes.