Mobile Device Usage and User Behavior Analysis

# Content and Aim:

The goal of this project is to gain insights into mobile device usage patterns across different user demographics and behavior classes. This analysis will focus on exploring app usage, battery consumption, data usage, and other factors to determine the impact of device model, operating system, and user characteristics on mobile usage behavior. Additionally, it will include creating measures for deeper understanding and a comprehensive dashboard for visual exploration of the data.

# Dataset Description:

This dataset contains detailed information on mobile device usage from 700 users. It includes variables related to the time spent on apps, screen-on time, battery drain, data usage, and the number of apps installed. Users are classified into one of five behavior classes, ranging from light to extreme mobile usage. The demographic information, including age and gender, allows for further segmentation and analysis of user behavior across different groups.

Key Features:

1. Device Model: The model of the user's mobile device (e.g., Google Pixel 5, iPhone 12, etc.).

2. Operating System: The operating system used on the device (e.g., iOS, Android).

3. App Usage Time: The average daily time a user spends on mobile applications (measured in minutes).

4. Screen On Time: The average number of hours the device screen is active each day.

5. Battery Drain: Daily battery consumption measured in milliampere-hours (mAh).

6. Number of Apps Installed: The total number of apps installed on the user's device.

7. Data Usage: The average daily mobile data usage (measured in megabytes).

8. Age: The user's age.

9. Gender: The gender of the user (Male/Female).

10. User Behavior Class: A classification of the user based on their mobile usage behavior (1 = Light, 5 = Extreme).

# Column Creation Questions:

* Create a column for the battery-to-data ratio that shows battery drain per megabyte of data used.
* Create a column to categorize users into age groups (e.g., 18-25, 26-35, 36-45, etc.).
* Create a column that calculates the app usage per installed app.
* Create a column for the screen-on time per app installed on the device.
* Create a column to label users as light or heavy data users based on their data consumption (threshold can be the median data usage).
* Create a column that calculates the battery drain per app installed.
* Create a column to calculate the app usage to screen-on time ratio.
* Create a column that calculates the percentage of daily battery drain used for app usage.

# Measure Creation Questions:

* Calculate the average app usage time per user behavior class.
* Calculate the total battery drain across all users.
* Create a measure for the total app usage time for users above 40 years of age.
* Create a measure for the average data usage per gender.
* Calculate the screen-on time to battery drain ratio for each device model.
* Create a measure for total app usage for Android users versus iOS users.
* Create a measure that sums up data usage for the top 10 heaviest app users.
* Calculate the average number of apps installed by users in the 'extreme' behavior class.
* Create a measure for the median battery drain per user behavior class.
* Create a measure to show the total screen-on time for users under 30.
* Create a column that computes the average number of apps installed per age group.

# Dashboard Design (3 Pages with Minimum 7 Visuals per Page):

## Page 1: Overview of User Behavior and Demographics

* Bar chart showing average app usage by user behavior class.
* Pie chart of device model distribution across users.
* Line chart of battery drain over user age groups.
* Stacked bar chart comparing app usage between Android and iOS users.
* Slicer for filtering data by operating system.
* Table displaying average screen-on time by gender.
* Slicer for filtering by user behavior class.

## Page 2: App Usage and Data Consumption

* Bar chart of total app usage time per age group.
* Heatmap comparing battery drain and data usage across device models.
* Clustered column chart showing data usage by user behavior class.
* Slicer for filtering by data usage levels (e.g., light/heavy).
* Scatter plot of app usage time vs. number of apps installed.
* Line chart showing average data usage over age groups.
* Slicer to filter by gender.

## Page 3: Device Performance and Efficiency

* Column chart of battery-to-data ratio per device model.
* Pie chart of percentage of total battery usage by top 5 app users.
* Line chart comparing screen-on time per device model.
* Slicer for filtering by device model.
* Bar chart showing average number of apps installed per user behavior class.
* Clustered bar chart comparing app usage and battery drain by operating system.
* Slicer for filtering by user age group.