Montgomery Fleet Equipment Inventory Analysis Report

1. Introduction

1.1 Project Overview

The objective of this project was to analyze and visualize the fleet equipment inventory for Montgomery County. The dataset provided contained information about various types of fleet equipment used by different departments within the county.

1.2 Dataset Source

The dataset used for this analysis was sourced from Kaggle and is a temporary dataset created for analysis purposes in a similar sector. The dataset includes detailed records of different classes of equipment, their counts, and their distribution across various departments.

2. Data Cleaning and Preparation

2.1 Initial Data Review

The dataset initially contained multiple entries with various attributes. An initial review was conducted to identify any missing values, duplicates, or inconsistent data entries.

2.2 Data Cleaning Steps

- **Handling Missing Values**: Missing values were identified and handled appropriately by either imputing them with mean/median values or removing the incomplete records.
- **Removing Duplicates**: Duplicate entries were identified and removed to ensure the dataset's integrity.
- **Consistency Checks**: Ensured that all data entries followed a consistent format and corrected any discrepancies.

2.3 Prepared Data Table

After cleaning the dataset, a prepared data table was created that included only the necessary columns and rows required for analysis.

3. Data Analysis

3.1 Pivot Table Analysis

Several pivot tables were created to analyze the data from different perspectives:

- **Equipment Count by Class**: Summarized the total count of each equipment class.
- **Equipment Distribution by Department**: Analyzed how different equipment classes were distributed across various departments.

3.2 Key Questions Addressed

- **What is the total count of each equipment class?**
- **Which departments have the highest and lowest number of each equipment class?**
- **What is the overall distribution of fleet equipment across all departments?**

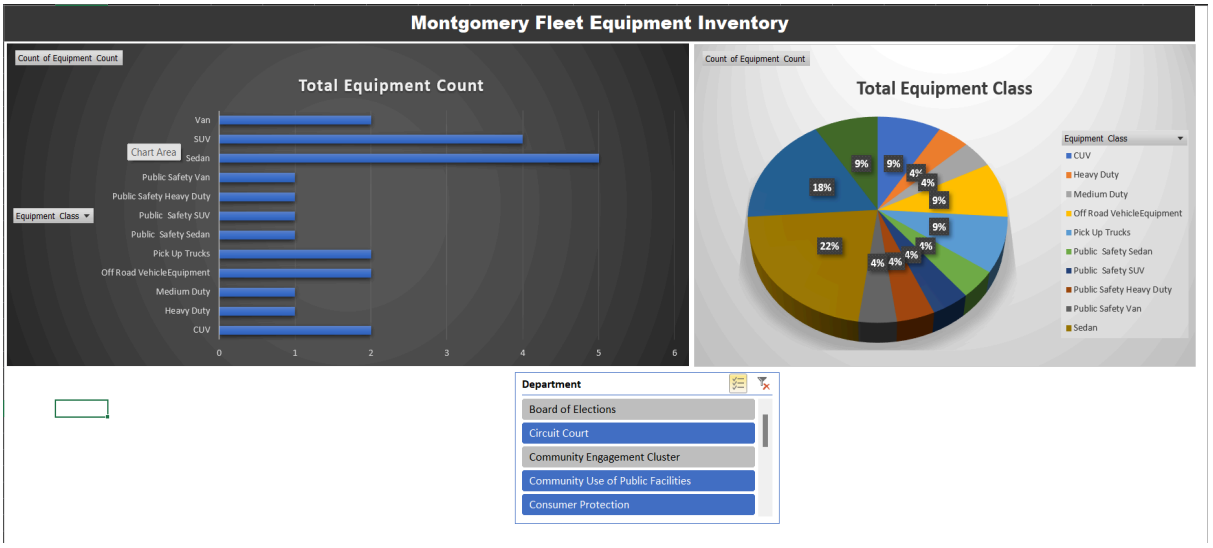
4. Data Visualization

4.1 Visualization Tools in Excel

Excel's built-in charting tools were utilized to create interactive visualizations that provide insights into the fleet equipment inventory. The following types of visualizations were used:

- **Bar Charts**: To display the count of each equipment class.
- **Pie Charts**: To show the distribution of equipment classes as a percentage of the total inventory.
- **Interactive Dashboards**: Combined various visualizations into interactive dashboards for comprehensive analysis.

4.2 Final Dashboards



The final dashboards were designed to be user-friendly and interactive, allowing stakeholders to filter and drill down into specific details. The main components of the dashboard include:

- **Total Equipment Count by Class**: A bar chart showing the count of each equipment class.
- **Total Equipment Class Distribution**: A pie chart representing the percentage distribution of each equipment class.

5. Insights and Recommendations

5.1 Key Insights

- **Dominant Equipment Classes**: Sedans and SUVs are the most prevalent equipment classes in the fleet.
- **Departmental Distribution**: Certain departments, such as Public Safety, have a higher concentration of specific equipment classes.
- **Equipment Utilization**: Insights into how different departments utilize their fleet equipment can help in resource allocation and planning.

5.2 Recommendations

Based on the analysis, the following recommendations can be made:

- **Resource Allocation**: Departments with lower counts of essential equipment should be prioritized for resource allocation.
- **Fleet Optimization**: Regular reviews and optimization of the fleet can ensure efficient utilization and cost savings.
- **Future Data Collection**: Implementing a systematic data collection process can improve the accuracy and reliability of future analyses.

6. Conclusion

The analysis of Montgomery County's fleet equipment inventory has provided valuable insights into the distribution and utilization of various equipment classes. By leveraging Excel's data cleaning, analysis, and visualization tools, we have created an interactive dashboard that enables stakeholders to make informed decisions.

Appendices

A. Data Cleaning Code/Steps

- Detailed steps and code snippets used for data cleaning in Excel.

B. Pivot Table Configurations

- Configurations and screenshots of pivot tables used in the analysis.

C. Visualization Details

- Detailed descriptions and configurations of the charts and dashboards created.

D. Project Documentation

- Additional project documentation, including the original dataset, prepared data table, and final dashboards.