INTRODUCTION TO DATA MANAGEMENT
PROJECT REPORT

(Project Semester January-April 2025)

Electric Vehicle Adoption Analysis

Submitted by

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Programme and Section: B. Tech CSE & K23SG
Course Code: INT217

Under the Guidance of

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CERTIFICATE

This is to certify that Mishrilal Parihar bearing Registration no. 12323641 has completed INT217 project titled, **"Electric Vehicle Adoption Analysis"** under my guidance and supervision. To the best of my knowledge, the present work is the result of his/her original development, effort and study.

Signature and Name of the Supervisor

Designation of the Supervisor

School of …………………………………………
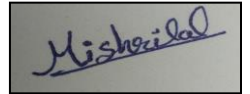
Lovely Professional University

Phagwara, Punjab.

Date:

DECLARATION

I, Mishrilal Parihar, student of B. Tech under CSE/IT Discipline at, Lovely Professional University, Punjab, hereby declare that all the information furnished in this project report is based on my own intensive work and is genuine.

Date: 11-04-2025

Registration No. 12323641

Signature

Name of the student

Mishrilal Parihar

Acknowledgment

I express my sincere thanks and deep gratitude to my mentor **Dr. Karan Bajaj** , for his continuous guidance, valuable support, and encouragement throughout the completion of this project. I am also grateful to Lovely Professional University for providing the platform and resources to explore and enhance my skills in data analysis and visualization.

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1. Introduction

The automobile industry is shifting rapidly towards sustainability with the growing adoption of Electric Vehicles (EVs). This project focuses on analyzing and visualizing electric vehicle registration data from Washington State to understand regional trends, brand popularity, range statistics, and vehicle eligibility for clean fuel programs. A fully interactive dashboard was created using Microsoft Excel, showcasing key metrics and visualizations, making it easy to explore the data and derive insights.

2. Source of Dataset

The dataset used in this project is publicly available and provided by the **Washington State Department of Licensing (DOL)**. It contains information on registered electric vehicles, including details like VIN, Make, Model, City, County, Electric Range, Vehicle Type, CAFV Eligibility, Model Year, etc.

- **Source URL**: https://catalog.data.gov/dataset/electric-vehicle-population-data
- **Format**: Microsoft Excel Worksheet (.xlsx)
- **Size**: ~95,000 rows

3. Dataset Preprocessing

The dataset was cleaned and transformed with the following steps:

- Removed rows with missing/null values in critical columns
- Removed rows where Electric Range was 0
- Extracted Latitude and Longitude (initially for map use)
- Added helper columns like VIN count for grouping
- Converted dataset into Excel Table format for PivotTable support
- Added slicers for filtering by Make, County, Model Year, and Vehicle Type

4. Analysis on Dataset

4.1 General Description

The dashboard displays various aspects of EV adoption including type of vehicles, their distribution across counties, brands, and year-wise trends. It enables users to interact with filters and view the data from different perspectives.

4.2 Specific Requirements

- Identify total EV registrations
- Analyze brand distribution and popularity
- Study electric range statistics
- Show trends by year and region
- Visualize CAFV Eligibility by EV Type

4.3 Analysis Results

- King County has the highest number of EV registrations
- Tesla and Nissan are among the most popular EV brands
- Battery Electric Vehicles (BEVs) make up the majority of registrations
- The average electric range is over 200 miles
- Most vehicles are CAFV eligible with sufficient battery range

4.4 Visualizations

The following 7 charts were used in the dashboard:

1. **EV Count by County** – Bar Chart
2. **EV Count by Make** – Column Chart
3. **EV Type Distribution** – Donut Chart
4. **EV Trend Over Years** – Line Chart
5. **CAFV Eligibility by EV Type** – Stacked Column
6. **Average Range by Make** – Bar Chart
7. **EV Count by City** – Column Chart

And the 4 dynamic filters (slicers):

- Model Year
- County
- Make
- Electric Vehicle Type

Key KPIs included:

- Total Electric Vehicles
- Average Electric Range
- Unique Cities with EVs
- Unique EV Manufacturers

5. Conclusion

This project successfully demonstrates how Microsoft Excel can be used to analyze and visualize a large dataset. Through effective use of PivotTables, slicers, and custom visuals, the dashboard provides clear, actionable insights into EV adoption across Washington State. It highlights the role of clean transportation and the shift toward sustainable mobility.

6. Future Scope

- Implement Power BI or Tableau for advanced interactivity
- Add geospatial maps using Latitude/Longitude
- Integrate real-time datasets for dynamic updates
- Forecast EV growth using time-series models

7. References

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