Project Proposal

# Optimizing Commute Happiness: How Weather, Roads, and Green Cover Shape Smarter Travel Choices

## 1. Project Overview

This project aims to analyze how external environmental factors—such as rainfall, road quality, and green cover—influence people's commuting preferences. It focuses on improving the commuting experience rather than highlighting stress. By using real-time data and analytics, we aim to support happier, healthier, and smarter travel decisions.

## 2. Objectives

* Understand how environmental factors affect transport mode choice (e.g., walk, bike, car, public transport).
* Identify patterns that support smoother, more comfortable commutes.
* Suggest optimal travel modes based on live conditions.
* Promote green and healthy commuting habits by showcasing the positive influence of tree cover and weather balance.

## 3. Scope of the Project

The project focuses on urban and semi-urban commuting. It includes real-time data tracking using Google Sheets & APIs, analysis of different commuting modes and environmental conditions, and visualizations using Excel and BI tools.

## 4. Data Sources & Collection

|  |  |  |
| --- | --- | --- |
| Source | Data Type | Purpose |
| Google Maps API | Distance, duration, mode of transport | Route & commute analysis |
| OpenWeather API | Rainfall, temperature | Weather impact on commute |
| Google Earth Engine | Green cover metrics | Environmental quality |
| User Google Form Input | Daily mode, comfort, satisfaction score | Subjective feedback |
| Traffic Data | Road quality, traffic index | Influence of road condition |

## 5. Tools & Technologies Used

* Data Collection: Google Sheets, Python (APIs)
* Data Storage & Cleaning: Excel, Pandas
* Visualization: Power BI / Tableau
* Automation: Python scripts
* Database (Optional): MySQL

## 6. Methodology

1. Design a structured data schema in Google Sheets.
2. Automate data collection using APIs for weather, maps, and green cover.
3. Collect user input through Google Forms linked to Sheets.
4. Preprocess and clean the data using Python and Excel.
5. Analyze correlation between environmental conditions and transport choices.
6. Visualize results with interactive dashboards.
7. Generate insights and mode recommendations.

## 7. Key Metrics to Track

|  |  |
| --- | --- |
| Metric | Description |
| Commute Comfort Score | User-rated satisfaction for each journey |
| Green Index Score | % tree cover on commute route |
| Weather Effect Rating | Impact of rain/temperature on travel choice |
| Time vs Mode Efficiency | Which mode performs best under different conditions |
| Smart Commute Suggestion | Recommended mode for given conditions |

## 8. Project Timeline

1. Define Project Structure: Set up the data schema, Google Form for user input, and linked Google Sheet for data collection.
2. Integrate Data Sources: Configure and connect APIs for live weather data, Google Maps travel data, and tree/green cover information.
3. Begin Data Collection: Start gathering real-time commute data and user responses; test data flows and ensure accuracy.
4. Data Cleaning & Preparation: Organize and clean the collected data for analysis; remove duplicates, fix missing entries, and standardize formats.
5. Build Dashboards & Visualizations: Develop interactive visuals using Power BI or Tableau to track trends and present insights clearly.
6. Conduct Analysis: Identify key patterns, correlations, and relationships between weather, road conditions, green cover, and transport choices.
7. Compile Insights & Reports: Document findings, generate data-driven recommendations, and prepare final reports and dashboards.
8. Finalize and Share Project: Review all components, upload assets to GitHub, and prepare project files for presentation and submission.

## 9. Expected Outcomes

* A centralized Google Sheet with live commute data.
* A clean dataset suitable for Excel, SQL, and Python analysis.
* A dynamic dashboard displaying real-time commute insights.
* A recommendation system for ideal travel modes under varying conditions.
* A complete GitHub repository with scripts, data, report, and dashboard.
* A case study showcasing how external factors influence commuting happiness.

## 10. Deliverables

|  |  |
| --- | --- |
| Item | Description |
| Dataset | Clean Excel/CSV file with daily commute data |
| Scripts | Python scripts for API integration |
| Google Form | Used for daily user feedback |
| Dashboard | Power BI/Tableau dashboard for analysis |
| Project Report | PDF report with methodology and findings |
| GitHub Repo | All assets stored and documented |