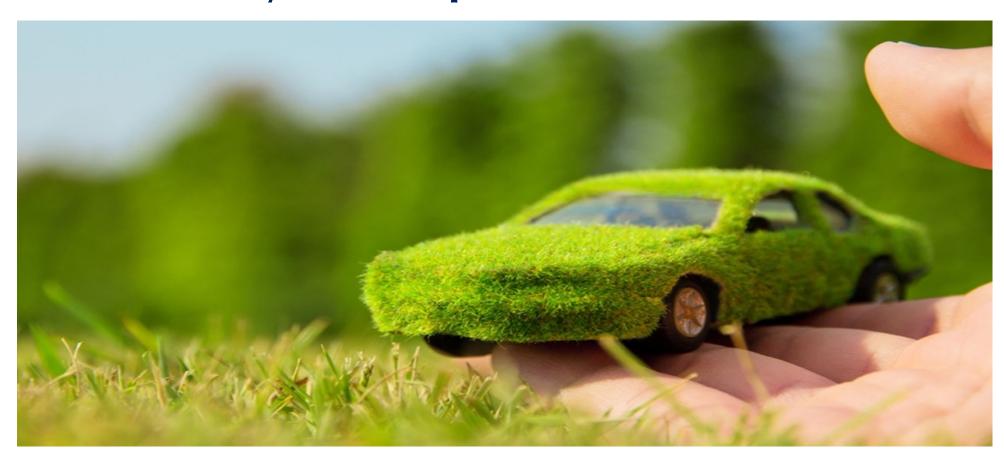# EcoMaxi

Save money and the planet, one ride at a time.

Executive Summary

EcoMaxi helps users calculate the cost of fuel when driving between destinations and provides alternative public transportation options. The app also calculates the total emissions saved by choosing these alternative methods of transportation.

Additionally, EcoMaxi has a feature to compare and show the cheapest option between driving, public transportation and bike or walk. Users can also select a period of time and the app will visually display the total cash and emissions saved over that period, helping users make informed decisions about their transportation choices and ultimately reducing their environmental impact and saving them money. Overall, EcoMaxi promotes sustainable transportation, cost savings and a way to track and monitor the progress for the users.

Concept

- EcoMaxi is an innovative, eco-friendly transportation app that aims to help users make informed decisions about their transportation choices and reduce their environmental impact. The app provides users with the ability to calculate the cost of fuel when driving between destinations and offers alternative options. Additionally, the app compares and shows the cheapest option between driving petrol vehicles, electric vehicles, public transportation, and bike or walk. Ultimately, users will be able to determine their total savings in all areas over a period of one week, one month and one year.

- The motivation behind the development of EcoMaxi is to address the increasing concerns about the impact of transportation on the environment. With more and more people becoming aware of the need to reduce carbon emissions and make sustainable choices, there is a growing demand for tools and resources that can help individuals make more eco-friendly transportation decisions. EcoMaxi is designed to fill this gap by providing users with an easy-to-use, accessible platform that makes it easy to compare the costs, emissions, and other important factors associated with different transportation options.

- A user story for EcoMaxi might be as follows: Peter wants to take a trip from his home to his office which is 25 kms away. He usually drives but he wants to know if there are any other options that are more cost-effective and environmentally friendly. He opens up the EcoMaxi app and enters his starting point and destination. The app shows him the cost of driving petrol vehicles, electric vehicles, taking public transportation, and biking or walking. The app also shows him the total emissions saved and the money saved by choosing the different options. Peter is able to compare and choose the best option for him and make a more informed decision.

Data Techniques

- EcoMaxi uses a combination of data techniques to provide users with the most accurate and up-to-date information possible. The main data sources for the app include:

1. Transportation APIs: (to be added) The app utilizes various transportation APIs to gather real-time information on public transportation options, such as bus and train schedules, routes, and prices. This information is used to provide users with the most current and accurate information on alternative transportation options.

2. Fuel price APIs: (to be added)The app also uses fuel price APIs to gather data on the current cost of fuel in the user's area. This information is used to calculate the cost of driving between destinations and provide users with the most up-to-date information on fuel prices.

3. Emissions data: The app also uses limited emissions data from APIs as well as a current CSV of vehicle makes and models to calculate the total emissions saved by choosing alternative transportation options. This data is used to provide users with a more complete picture of the environmental impact of their transportation choices.

- The reasoning behind data collection is to provide the user with accurate, up-to-date information on transportation options and costs. This allows users to make more informed decisions about their transportation choices and ultimately reduce their environmental impact. The data collection process involves using API calls to gather the relevant data from various sources. Once the data is collected, it goes through a process of exploration and cleaning to ensure that it is accurate, relevant, and ready for use in the app. This process involves removing any duplicate or irrelevant data, filling in missing values, and formatting the data so that it can be easily used in the app.

Data Techniques

```python
    ... score_column:

    # Create a drop-down menu for the year
    year = st.selectbox("Select the year", vehicles_df['year'].unique())
    # Create a drop-down menu for the make
    make = st.selectbox("Select the make", vehicles_df[vehicles_df['year'] == year]['make'].unique())
    # Create a drop-down menu for the model
    model = st.selectbox("Select the model",
                         vehicles_df[(vehicles_df['year'] == year) & (vehicles_df['make'] == make)][
                             'model'].unique())
    # Create a drop-down menu for the transmission
    transmission = st.selectbox("Select the transmission", vehicles_df[
        (vehicles_df['year'] == year) & (vehicles_df['make'] == make) & (vehicles_df['model'] == model)][
        'trany'].unique())
    # Start address
    start_location = st.text_input("Start Location:", "")
    # Destination address
    end_location = st.text_input("End Location:", "")
    # Fuel type = st.text_input("Fuel type:", "")
    fuel_type = st.selectbox("Fuel type", ['petrol', 'diesel'])
```
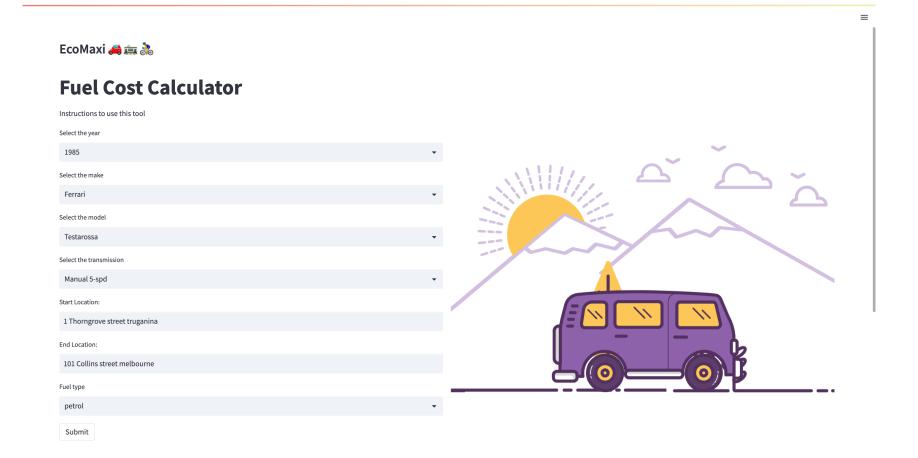
Approach

Our team worked together to conduct research and develop an innovative concept for EcoMaxi. Veronica tackled data cleaning and structural organisation, Peter worked on API integration and application output and Stephen handled the concept development and presentation. We faced some challenges, but our equal team effort led to a successful initial implementation of EcoMaxi. We are proud of the end result, which offers users an cost effective and eco-friendly transportation solution.

Challenges and Successes: Our team faced several challenges during the development process, including difficulties with data cleaning and API integration. However, we were able to overcome these challenges through effective collaboration and problem-solving. Another challenge included obtaining the price of transportation cost which will be included in the API inclusion in the future.

We are proud to present EcoMaxi, an innovative app that addresses the problem of both cost effective and sustainable transportation options. Our equal team effort and dedication has led to a successful product that helps users make more informed decisions about their transportation choices, saving them money and the potential of reducing emissions. We believe EcoMaxi is a valuable tool for anyone looking to make a positive impact on the environment while also saving money.

Demo

EcoMaxi 🚗 🚐 🚵

Fuel Cost Calculator

Instructions to use this tool

Select the year

| 1985 | ▾ |

Select the make

| Ferrari | ▾ |

Select the model

| Testarossa | ▾ |

Select the transmission

| Manual 5-spd | ▾ |

Start Location:

| 1 Thorngrove street truganina |

End Location:

| 101 Collins street melbourne |

Fuel type

| petrol | ▾ |

Submit

Next Steps

- The next steps in the development of EcoMaxi include incorporating real-time fuel prices through the use of APIs. This will ensure that the app always provides users with the most up-to-date information on fuel prices, allowing them to make more informed decisions about their transportation choices.

- Another important feature that we plan to implement is a metric that helps users calculate the calories burned when choosing an eco-friendly option. This will not only help users make budget and environmentally friendly choices, but also healthier choices. By providing information on the physical benefits of eco-friendly transportation options, such as biking or walking, we hope to encourage users to incorporate more physical activity into their daily routine.

- Additionally, we plan to incorporate more data visualization (line charts and heat maps) and tracking features to help users monitor their progress in terms of cost savings and emissions reductions over time. This will provide users with a clear picture of the impact of their transportation choices and encourage them to make more sustainable choices in the future.

- Finally, we also plan to expand our app's coverage to more cities and countries, in order to make it more accessible to a wider range of users. With these new features, EcoMaxi will be an even more comprehensive tool for making eco-friendly transportation choices

Links

- Deployed application.

- GitHub repo.