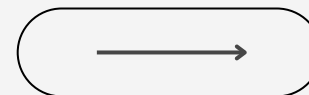# SOLUTION PRESENTATION

TEAM MEMBERS

Miraya Mittal
Niharika Rao
Tomiris Tungat
Julia Loseva

# TEAM



**Miraya Mittal**

Team Lead, Python-
backend developement



**Niharika Rao**

Reasearch, Writing



**Tomiris Tungat**

Html- website
developement



**Julia Loseva**

N/A

# MENTOR
# ILAYDA GOKGOZ

Ms. Ilayda Gokgoz, a STEM, Law, Political Science, Linguistics, and
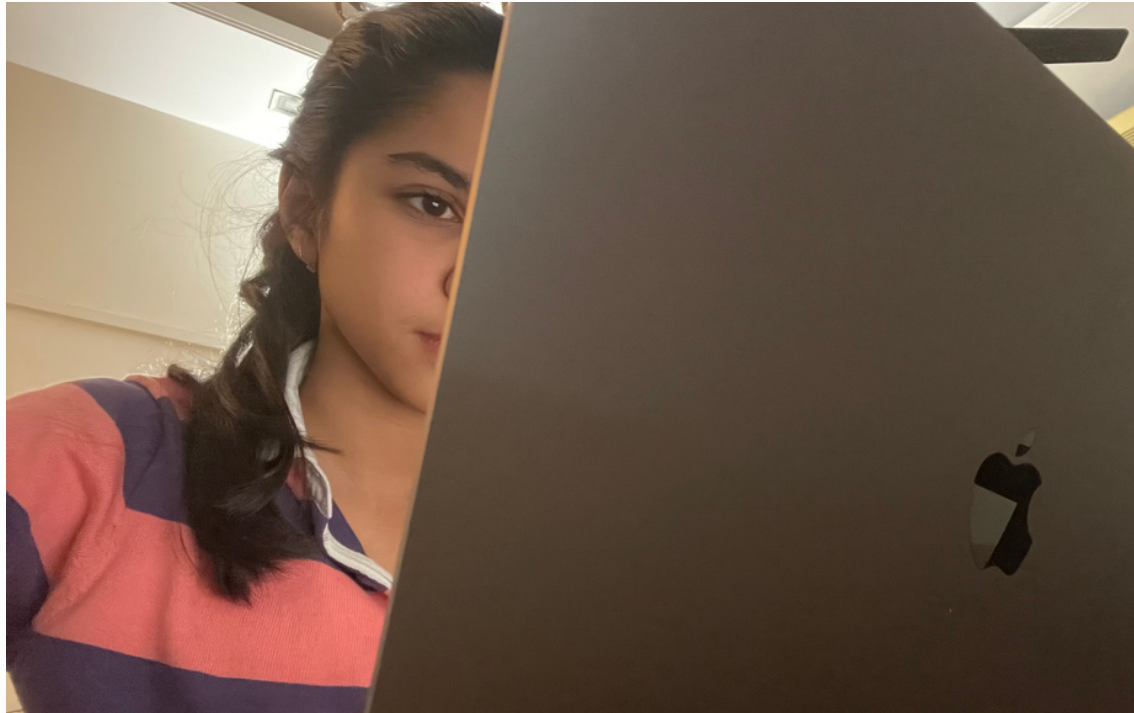Mechanical Engineering enthusiast was our mentor for the project.
Mentor Id: 21122
She assisted us by creating 'process' information documents.
Thanking her for her support and guidance,
Team Pumps to Plugs.

# TEAM MEMBERS' ROLES

### Miraya

Miraya, the team lead, took on the backhand portion of the project, using Python and creating code for the project. She created the excel spreadsheet database for CSV  surveys to gather intel for research purposes.

### Niharika

Niharika took charge of research and writing. She wrote essays to spread awareness about EVs and conducted thorough research to help teammates

### Tomiris

Tomiris was the frontend developer of the project, using her HTML skills to create the website. She designed and coded the website in which the python code and essays were then inputted.

# TABLE OF CONTENTS

Vehicular carbon emissions constitute a significant and concerning aspect of contemporary environmental challenges. As the global reliance on automobiles continues to escalate, the combustion of fossil fuels in internal combustion engines releases substantial amounts of carbon dioxide and other harmful pollutants such as nitrogen oxides and particulate matter, which pose serious health risks to both human populations and ecosystems.

People are now familiar with the concept of electric cars but many are still not fully aware of the benefits of electric cars, such as lower carbon emissions, reduced reliance on fossil fuels, and potential cost savings over time. People are also not aware of the available options and don't know which vehicle is right for them and thus stick to the comfort of the familiar fossil fuel cars.

# THE PROBLEM

# BACKGROUND

Looking for a problem to solve for the project, we decided to solve a small problem since only step by step can the world be helped. Though small, we put in lots of effort to make this the best project we could. We believe that small actions can make big differences. The action has to be from the heart and something one is passionate about. Pumps to Plugs was an amazing experience for all teammates. Looking to combat carbon emissions and the lack of awareness of EVs, it took form and we all worked hard, pooling ideas and opinions to create a successful project.

# HYPOTHESIS

03
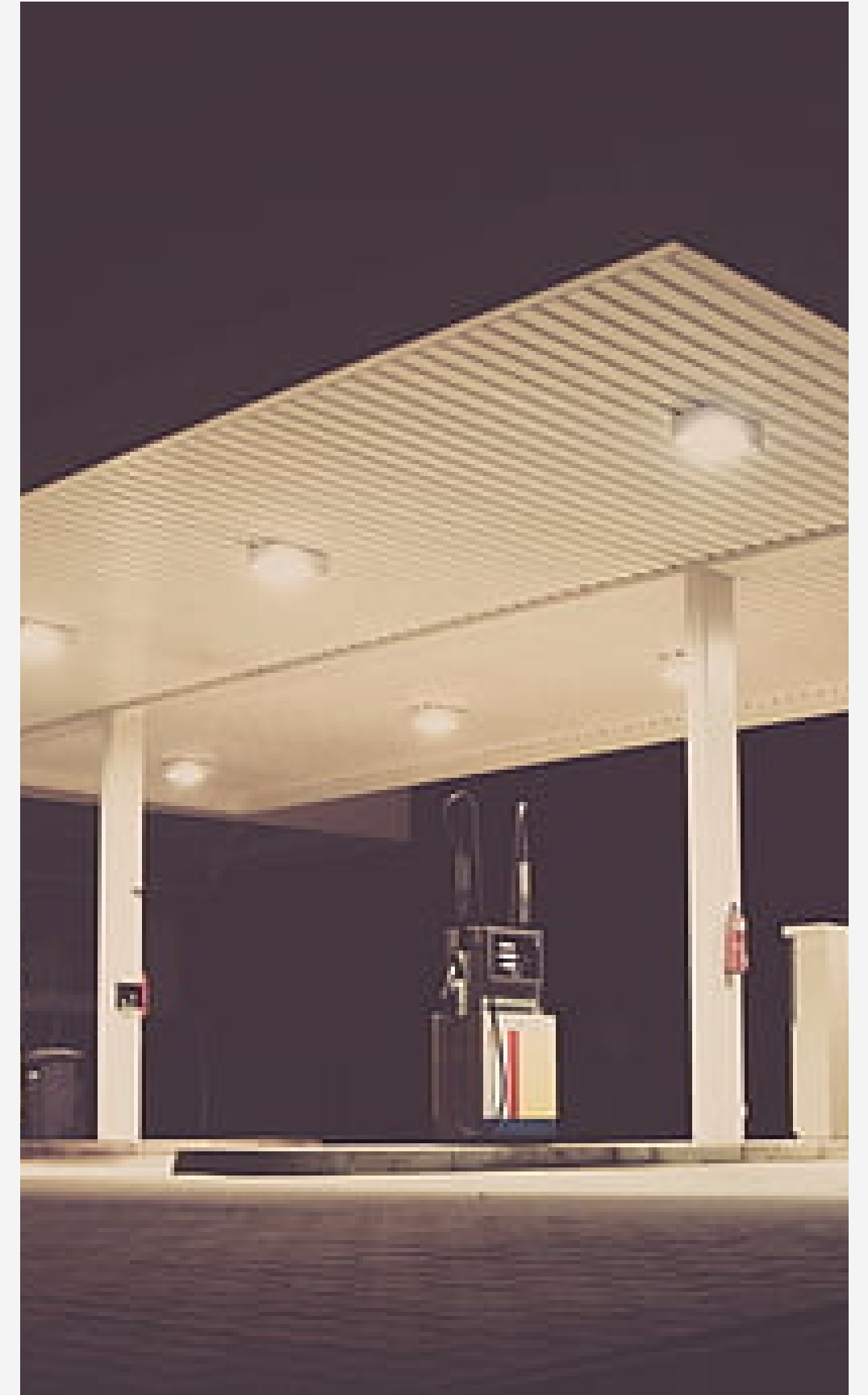


We wished to test the hypothesis that a user-friendly interactive website can help people take the decision of adopting EVs by simplifying their work. The python code will calculate the price (including insurance) of the user's current car model, its carbon emissions and other statistics and then suggest the best available EV for them based on that information. This will help people to take informed decisions which have been simplified for them regarding the purchase of EVs.
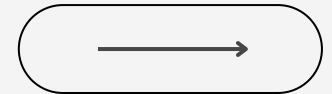
# METHODS

Using the internet, reference books and surveys, we researched cars, the impact of carbon emissions, electric vehicles, people's opinions on the topic, the economics of EVs, their pros and cons and how they can help the environment.

# RESULTS

Through our survey, we found that 70% of people use diesel cars. Moreover, 80% of people use their car for short-distance day-to-day travel which is the ideal use of an electric car. So why don't people adopt EVs? 1. People have gotten accustomed to fuel cars and are comfortable and familiar with them. 2. They are not familiar with the options. 90% of people were interested in using a website which helps them to make the decision to purchase an EV. (https://forms.office.com/r/F1BUyLKBuP)

## 2. Which of these do you currently use?

More Details



| | | |
|---|---|---|
| 🔵 | All-electric vehicle (AEV) | 2 |
| 🟠 | plug-in hybrid electric vehicle (P... | 0 |
| 🟢 | Diesel/petrol powered vehicle | 7 |
| 🔴 | PNG/CNG powered vehicle | 1 |

## 3. What is the model of the car you currently own? (example: Maruti Suzuki Alto)

More Details

**10**
Responses

Latest Responses

*"Toyota Corolla X"*

*"Mercedes Class-C "*

*"Bruv"*

## 4. What is the type of your current car(s)?

| | | |
|---|---|---|
| 🔵 | short distance travel | 6 |
| 🟠 | long distance travel | 4 |



## 7. Is it used:

More Details

| | | |
|---|---|---|
| 🔵 | frequently (day-to-day basis) | 8 |
| 🟠 | rarely | 2 |
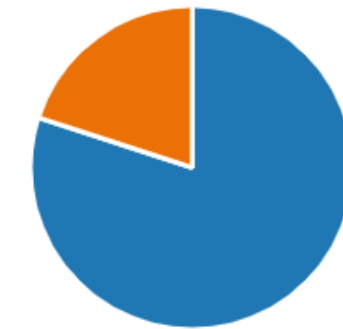


## 8. Which matters to you more:

More Details

| | | |
|---|---|---|
| 🔵 | Running cost | 6 |
| 🟠 | Initial cost | 4 |

## 9. Rank according to importance while purchasing a car

More Details

| | | |
|---|---|---|
| 1 | Safety rating | |
| 2 | Features and creature comforts | |
| 3 | Price of fuel | |
| 4 | Automatic/manual | |
| 5 | Transmission | |
| 6 | EMI/loans availability | |
| 7 | Resale Value | |
| 8 | Taxes | |
| 9 | Second hand purchase availability | |
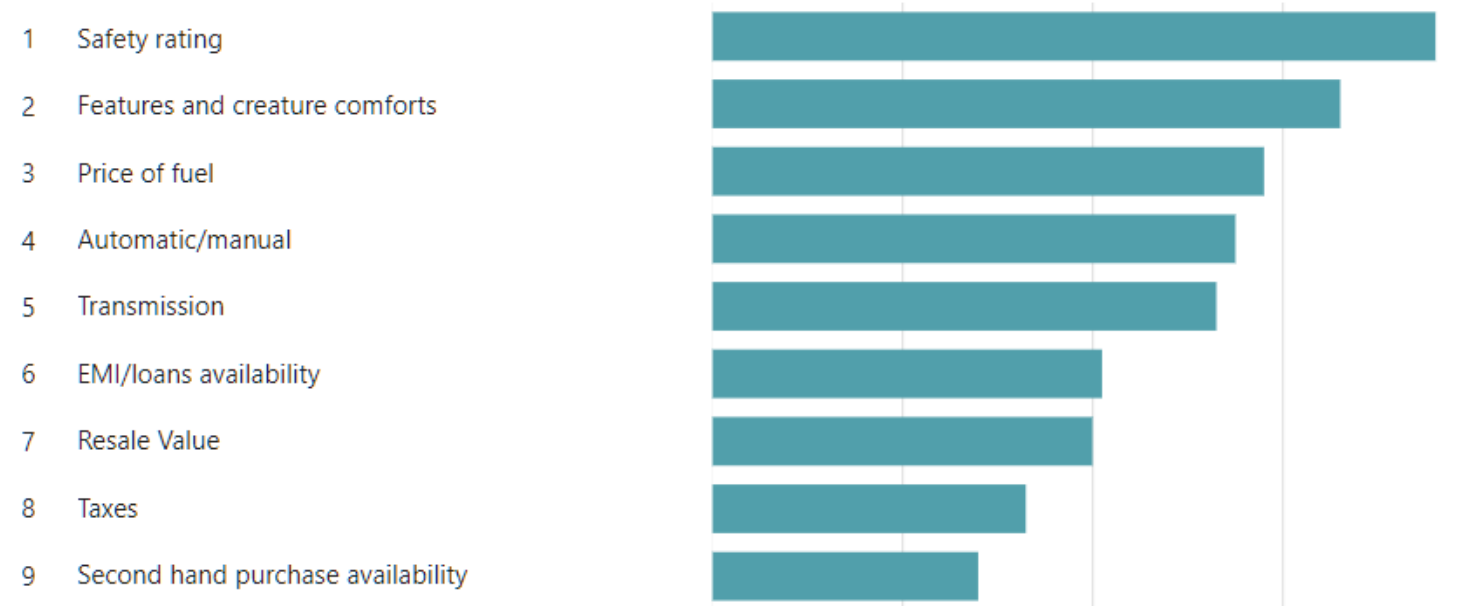


## 10. Are you aware of the available EV options for you?

More Details

- Yes — 7
- No — 3



| | | |
|---|---|---|
| ● Convertible/Cabriolet | 0 | |
| ● MPV | 0 | |
| ● MUV | 1 | |
| ● SUV | 4 | |
| ● Sedan | 1 | |
| ● Hatchback | 2 | |
| ● Crossover/CUV | 0 | |
| ● Station Wagon | 0 | |
| ● Coupe | 0 | |
| ● Minivan | 0 | |
| ● Sports Car/Roadster | 0 | |
| ● Luxury car | 2 | |
| ● Other | 0 | |
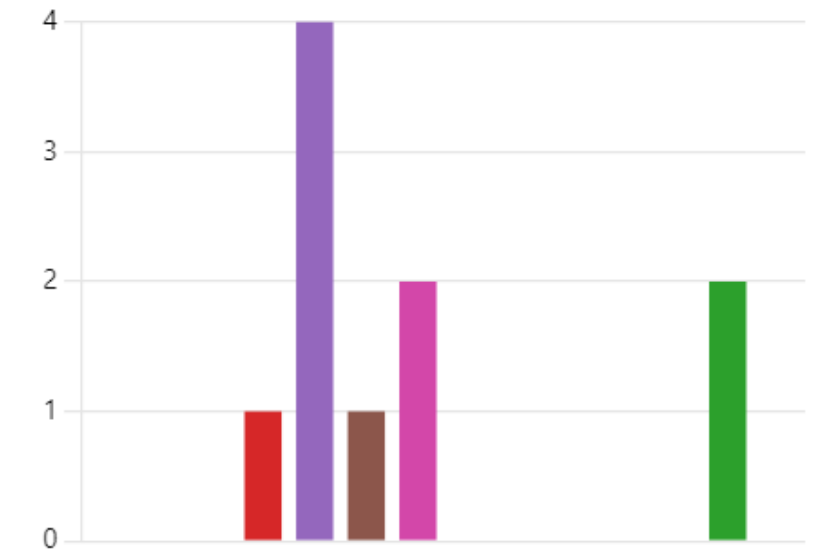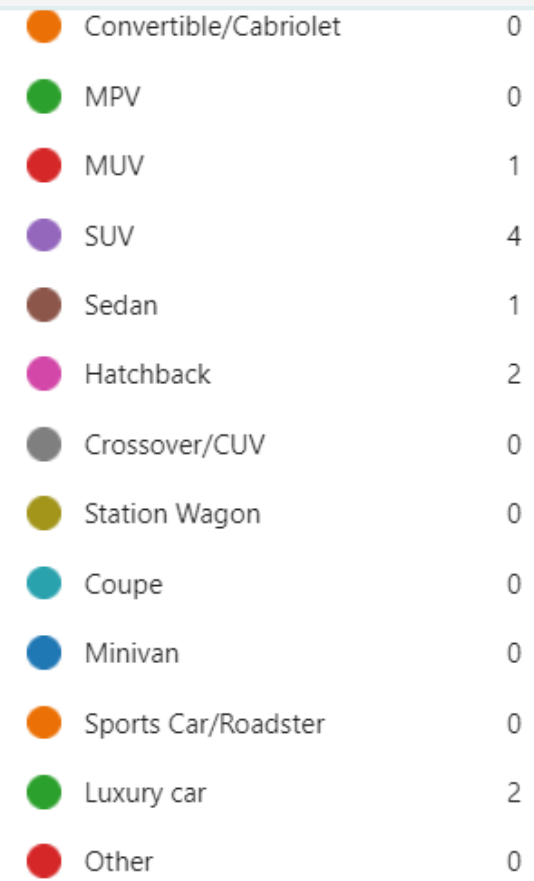


## 5. What is the average distance covered by the car per month? (You may write 'not sure')

More Details

**9**

Responses

Latest Responses

"not sure"

"not sure"

"4000000"

# SOLUTION

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fuel | company | company | car model | | on road p | insurance | mileage | | | |
| 2 | | maruti | | | | | | | | | |
| 3 | petrol | | | Maruti Swift | | | | 21.21 kmpl | | | |
| 4 | | | | LXI | | 5,90,765 | 26,184 | | | | |
| 5 | | | | VXI | | 7,17,670 | 28,819 | | | | |
| 6 | | | | AMT VXI | | 7,70,001 | 30,058 | | | | |
| 7 | | | | ZXI | | 7,83,358 | 30,374 | | | | |
| 8 | | | | AMT ZXI | | 8,35,676 | 31,612 | | | | |
| 9 | | | | ZXI PLUS | | 8,72,423 | 32,482 | | | | |
| 10 | | | | AMT ZXI PLUS | | 9,21,406 | 33,642 | | | | |
| 11 | petrol | | | Maruti baleno | | | | 19.56 kmpl | | | |
| 12 | | | | Sigma | | 6,41,097 | 27,350 | | | | |
| 13 | | | | Delta | | 7,47,998 | 29,340 | | | | |
| 14 | | | | Zeta | | 8,10,871 | 30,720 | | | | |
| 15 | | | | Dualjet Delta | | 8,23,345 | 38,593 | | | | |
| 16 | | | | Alpha | | 8,80,858 | 32,270 | | | | |
| 17 | | | | Delta CVT | | 8,94,720 | 32,580 | | | | |
| 18 | | | | Dualjet Zeta | | 8,85,879 | 40,673 | | | | |
| 19 | | | | Zeta CVT | | 9,57,605 | 33,960 | | | | |
| 20 | | | | Alpha CVT | | ######## | 35,510 | | | | |
| 21 | petrol/cng | | | Maruti wagon R | | | | 20.52 kmpl | | | |
| 22 | | | | R LXI | | 5,06,498 | 19,613 | | | | |
| 23 | | | | R LXI Opt | | 5,14,075 | 19,804 | | | | |
| 24 | | | | R VXI | | 5,55,220 | 20,839 | | | | |
| 25 | | | | R VXI Opt | | 5,62,797 | 21,029 | | | | |
| 26 | | | | R VXI 1.2 | | 5,85,614 | 26,959 | | | | |
| 27 | | | | R VXI Opt 1.2 | | 5,93,208 | 27,155 | | | | |
| 28 | | | | R VXI AMT | | 6,06,110 | 22,117 | | | | |
| 29 | | | | R VXI AMT Opt | | 6,13,686 | 22,307 | | | | |
| 30 | | | | R ZXI 1.2 | | 6,23,009 | 27,931 | | | | |
| 31 | | | | R VXI AMT 1.2 | | 6,36,548 | 28,281 | | | | |
| 32 | | | | R VXI AMT Opt 1.2 | | 6,44,145 | 28,480 | | | | |
| 33 | | | | R ZXI AMT 1.2 | | 6,52,084 | 33,492 | | | | |
| 34 | | | | R CNG LXI | | 5,93,289 | 22,497 | | | | |
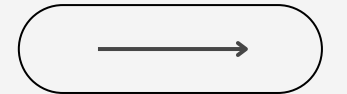
We have created a program to assist in the decision-making of users. Using CSV in Python and HTML, we have created a website that allows users to input their current car's model and the website will suggest the best available EV option for them based on on-road price, insurance and mileage. We have a database of all car brands and their models (fuel-based as well as electric), their on-road prices, insurance and mileage which the code uses to give the results.
This helps people make the decision to switch to EVs.

sources: MyNewCar, Wheels97
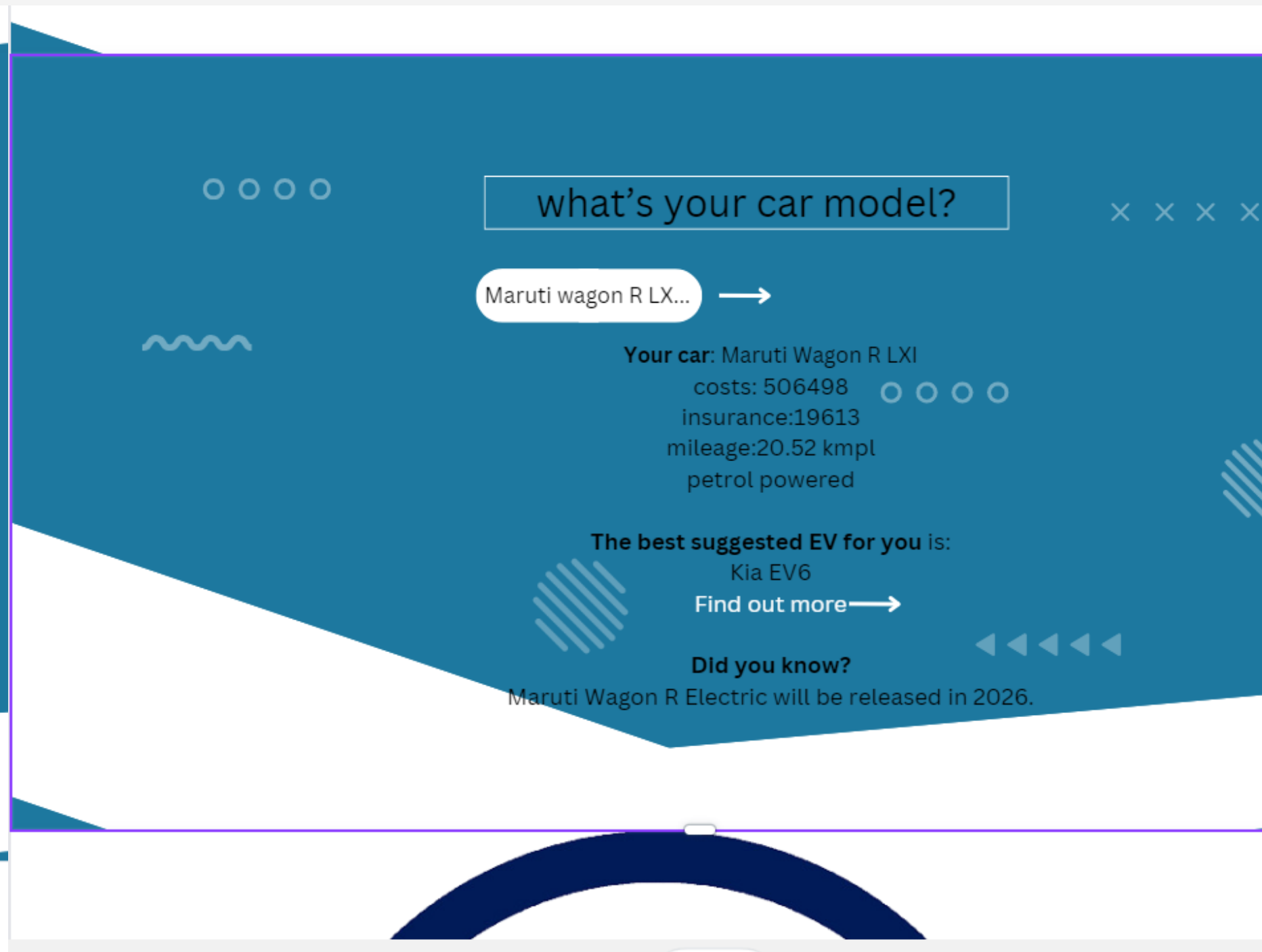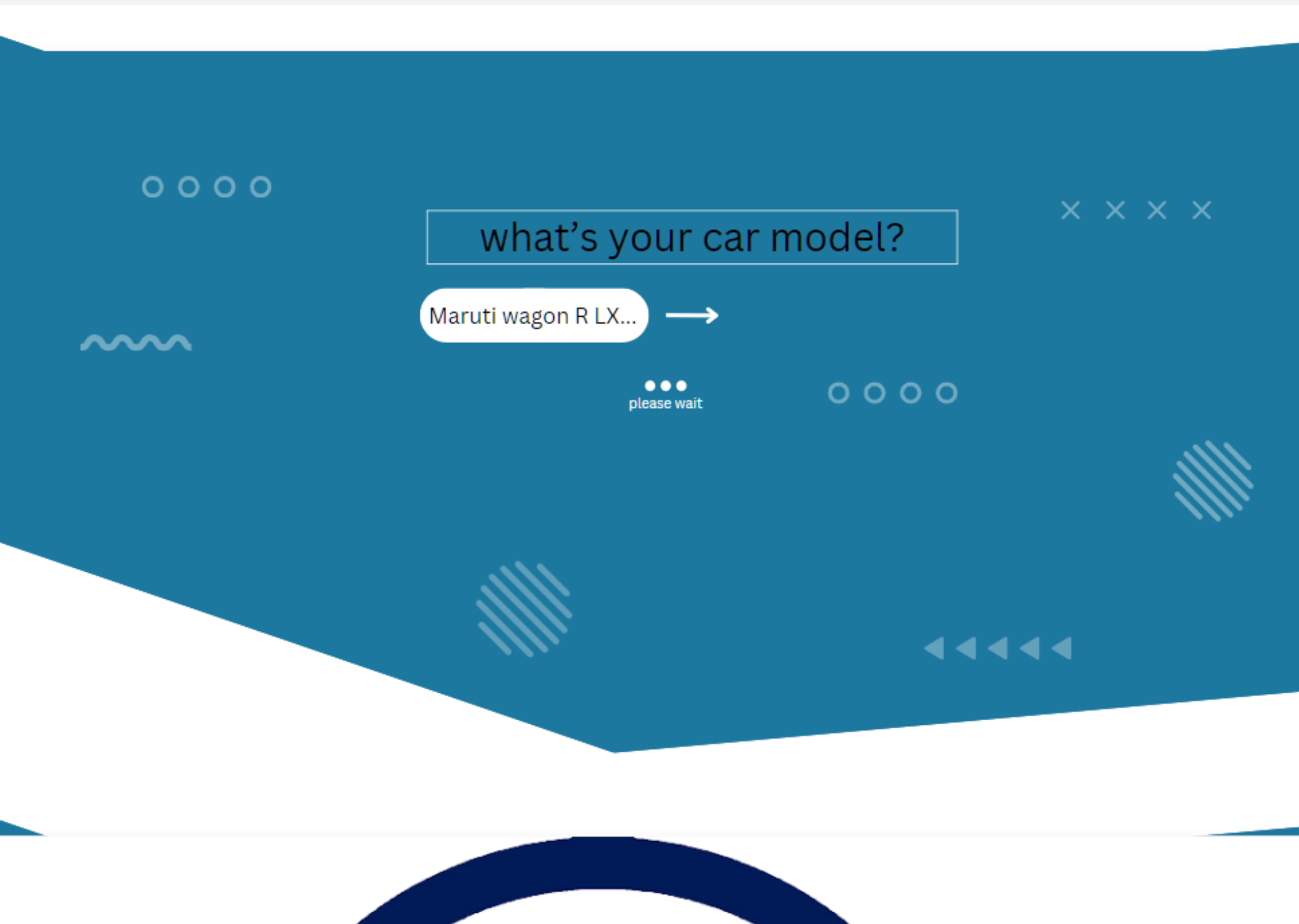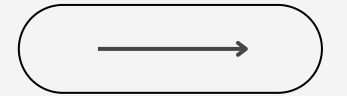
# SOLUTION

# SOLUTION

The program, along with suggesting the best EV option for the user also provides the user with the carbon footprint of their current car (unit: metric tons of CO2e) and compares it with the suggested alternative. Every car has a specific emissions factor and it helps people realise the impact they have on the environment. Raising awareness of people's impact on the environment is a necessary step to slow it.

# EXECUTIVE SUMMARY

To summarise, a website with a calculator code which suggests the best possible EV option for users was created along with a few essays to raise awareness. It also provides the user with the carbon emissions of their current car and how they'll be saving the environment by switching from pumps to plugs. We hope to create an environment where we're no longer dependent on fossil fuels and for our future generations to enjoy a green world.

# PERSONAL REFLECTIONS

### MIRAYA MITTAL

I had an amazing time working with my team and interacting with people from around the globe. The experience of creating something and sharing ideas and knowledge was definitely the best part. I will keep in touch with the team and hope we can collaborate again in the future!

### TOMIRIS TUNGAT

Collaboration became a cornerstone of this experience. Working with a diverse team brought both its rewards and challenges. The exchange of ideas, the clash of perspectives and the collective effort to find solutions enriched the project and taught me the value of open communication, compromise, and the strength that emerges from a unified team working toward a common goal.

### NIHARIKA RAO

This project was not just about delivering results; it was about personal and professional evolution. It illuminated my strengths, highlighted areas for improvement, and provided a platform for honing skills that extend beyond the confines of the project itself. The newfound knowledge and experiences gained during this venture have become invaluable assets that will undoubtedly shape my future endeavors

# THANK YOU

TEAM #4211
PUMPS TO PLUGS