

# SOLARA

Duran Karunasena

**EV UI Design System**

Art-419 Fall 2024



# PROJECT BRIEF

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# PROJECT BRIEF

To ensure ease of use and a smooth transition for drivers switching from conventional automobiles to EVs, this project attempts to build an electric vehicle's user interface that is both adaptable and intuitive. In order to maximize ease, the interface will have a widget-based system that lets users customize the dashboard to suit their requirements and tastes. The ordinary driver will find the visual design appealing because it emphasizes a desaturated style with neon blue highlights for a contemporary, tech-savvy feel. The user interface (UI), which emphasizes functionality and simplicity, will provide a user-friendly experience that gives each driver a sense of control and connection: "What matters to you matters to us. Make your car... well, yours!"



# UI DECONSTRUCTIONS

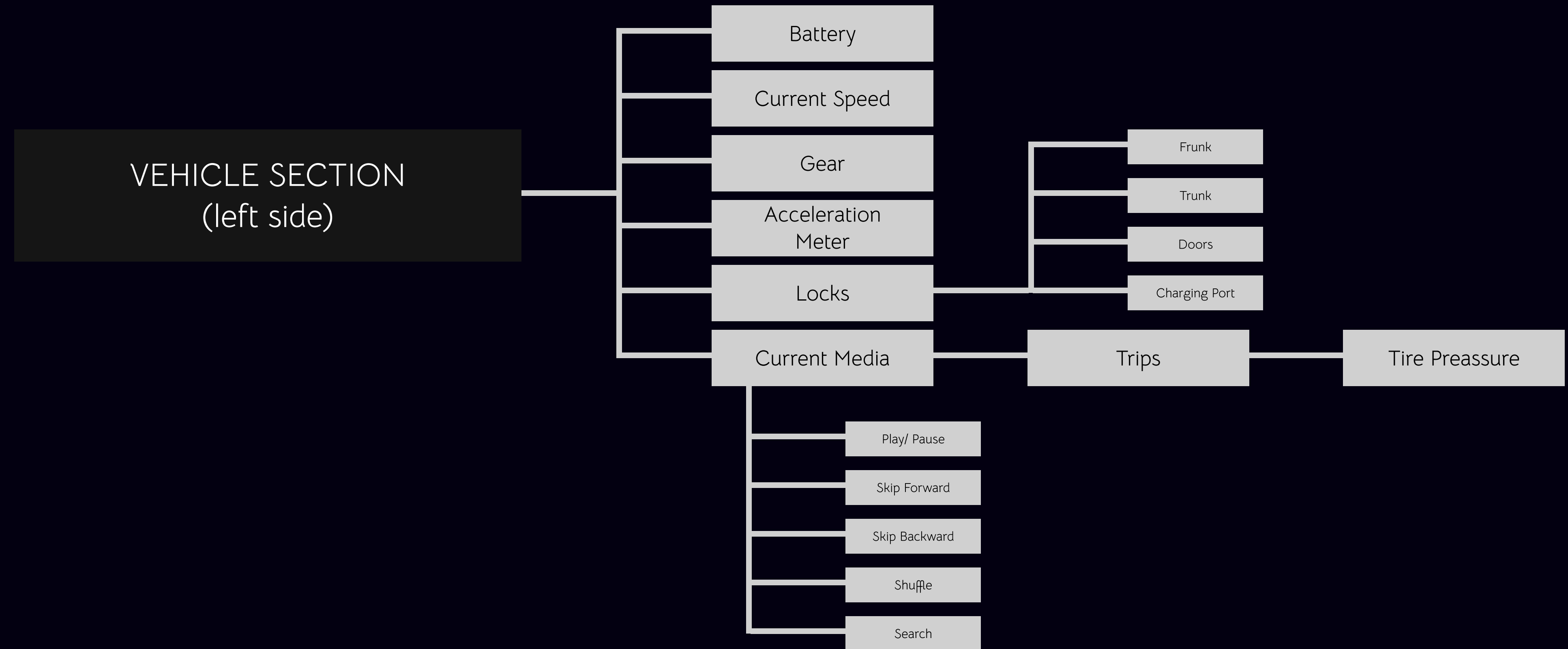
We examined the layouts, features, and user experiences of several car user interfaces. We were able to develop a more user-friendly and adaptable system by using this information to pinpoint our strengths, such as simple navigation, and weaknesses such as intricate menus.





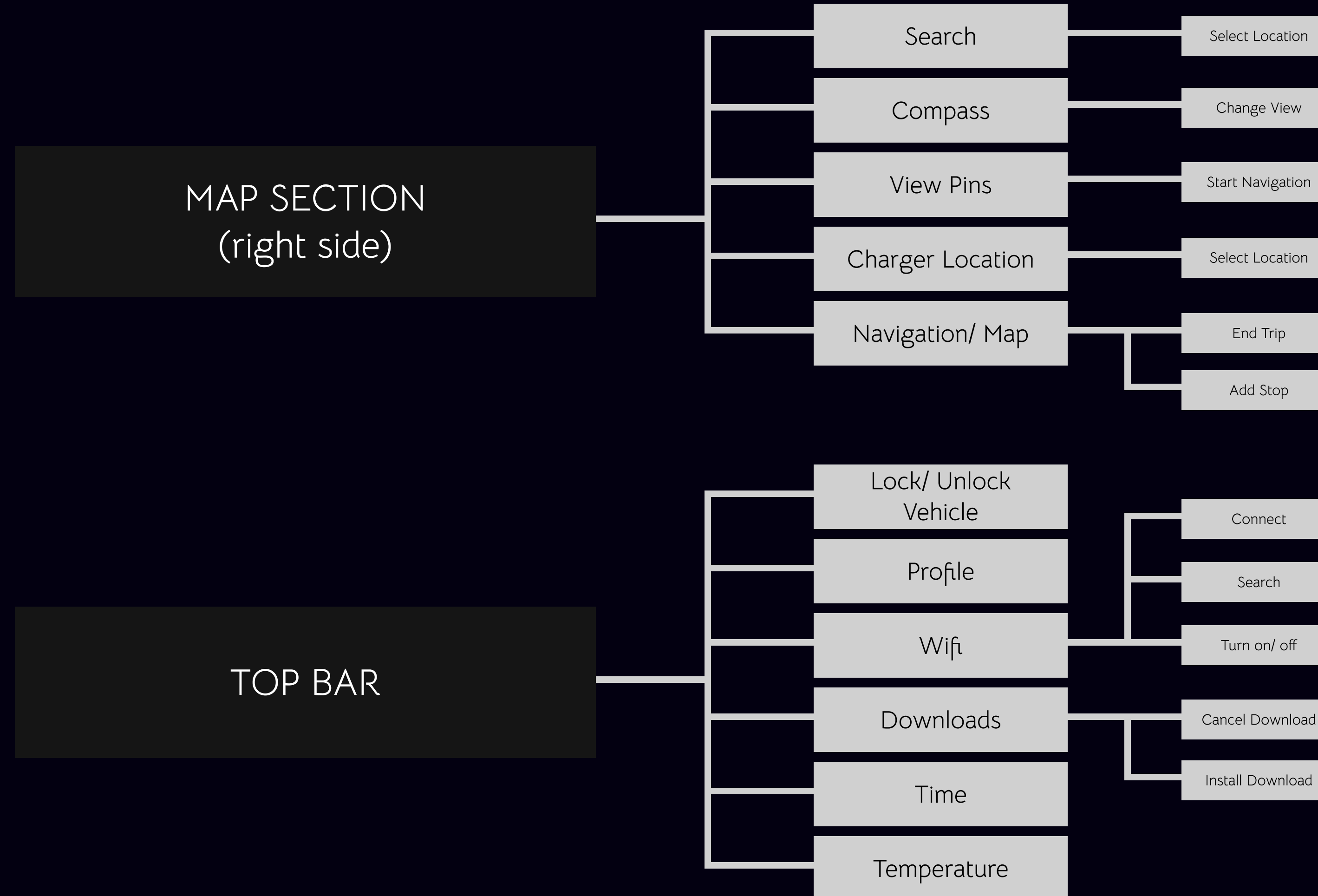
# UI DECONSTRUCTIONS

## TESLA MODEL 3 - UI Basic Deconstruction



# UI DECONSTRUCTIONS

## TESLA MODEL 3 - UI Basic Deconstruction



[illegible]

# UI DECONSTRUCTIONS

## TESLA MODEL 3 - Pros & Cons

### Pros

- Mainly used components are in reach and visible
- Realism of the visuals helps understand the controls better
- Navigation and components of the map are presented in an organized manner
- Applications are customizable/ shortcuts can be dragged to the taskbar
- Settings have a search feature

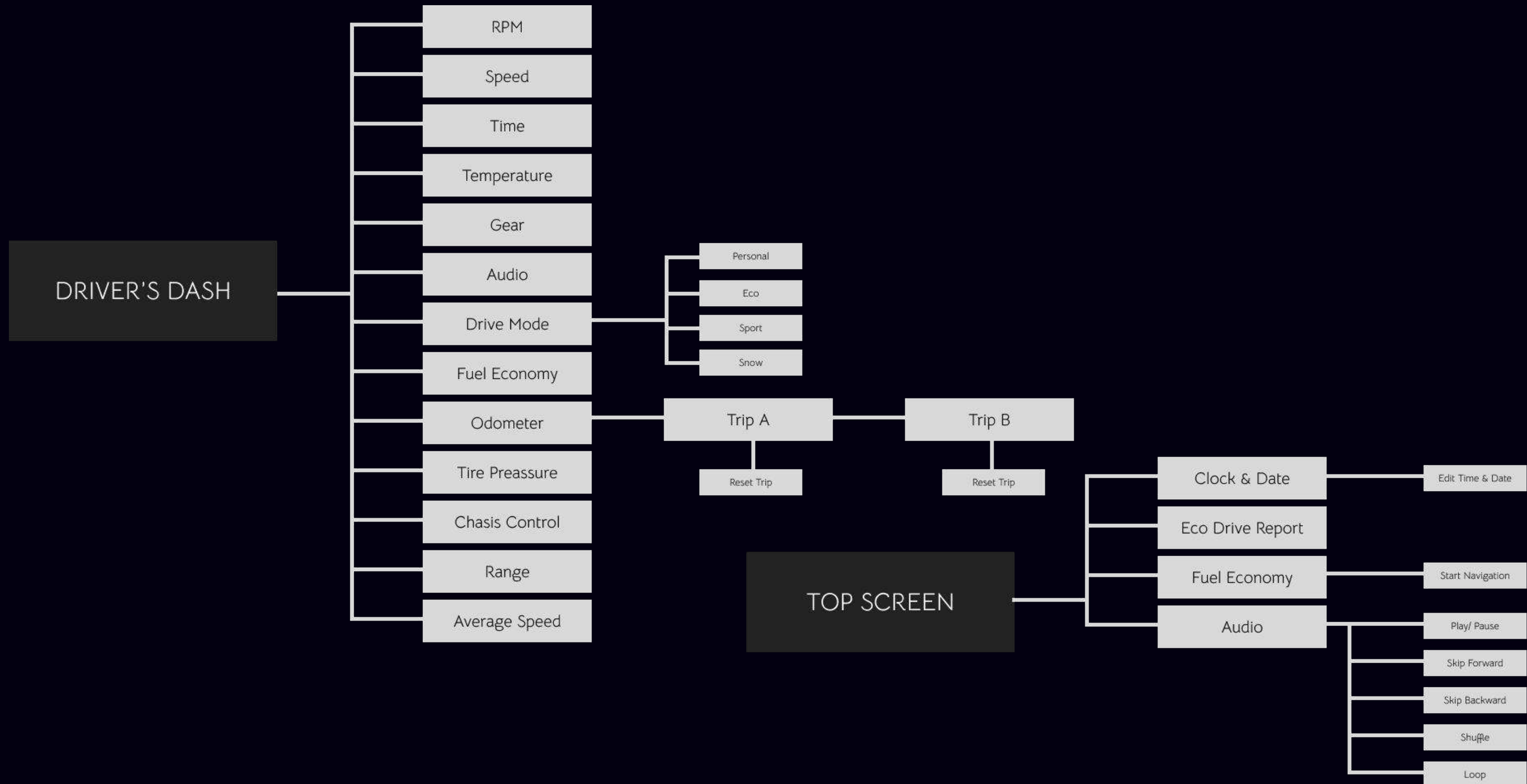
### Cons

- Settings page is cluttered and not organized as well as it could be
- Reachability of important elements take your eyes away from the road
- AC settings are in the applications panel
- Passengers AC cannot be turned off
- Blind spot camera doesn't have its own spot and always covers an important element of the UI



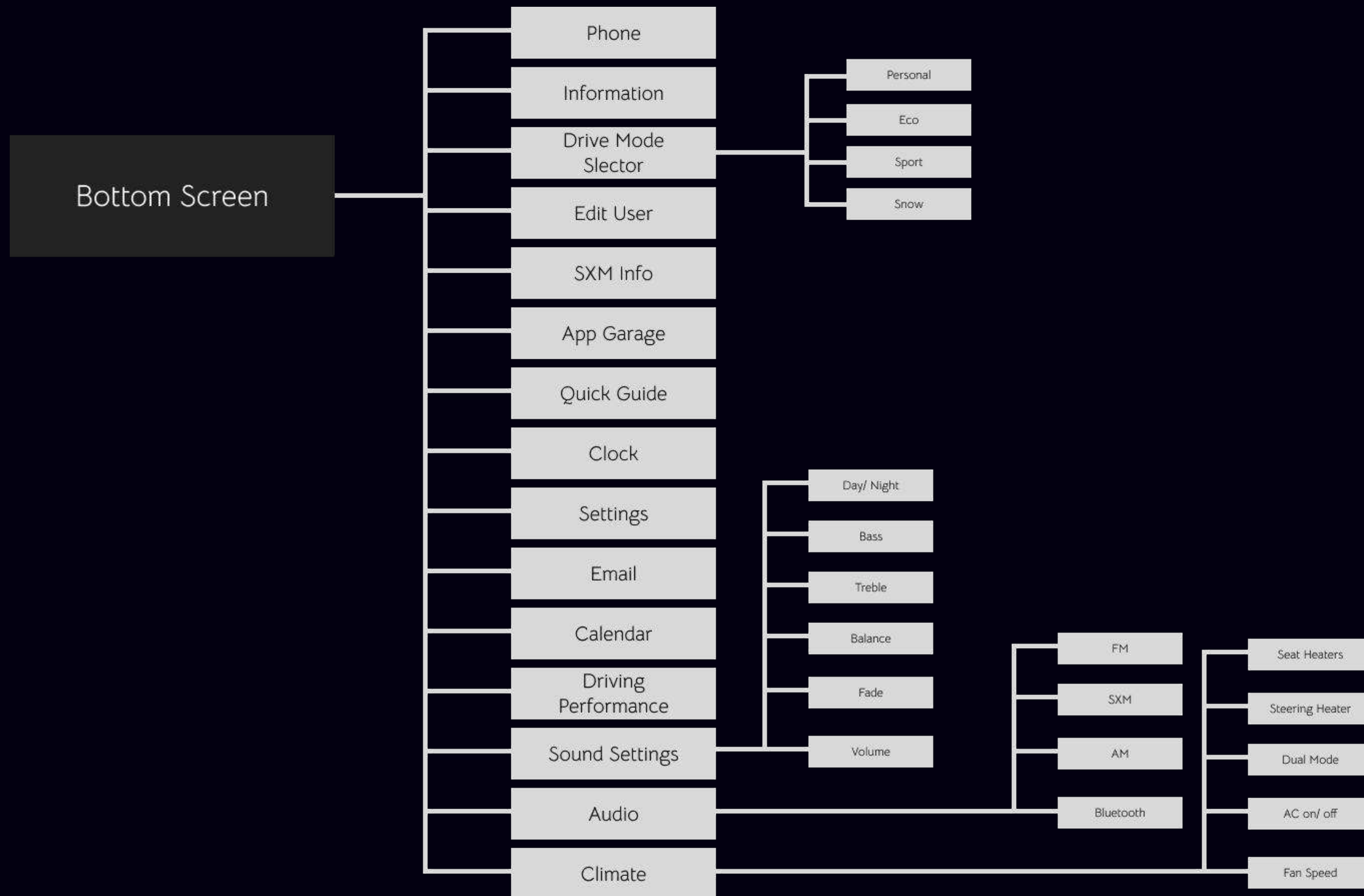
# UI DECONSTRUCTIONS

## INFINITI Q50 - UI Basic Deconstruction



# UI DECONSTRUCTIONS

## INFINITI Q50 - UI Basic Deconstruction





# UI DECONSTRUCTIONS

## INFINITI Q50 – Pros & Cons

### Pros

- More screens to separate UI elements appropriately.
- Standard speed and RPM meters maintained for better understanding.
- Important driving elements left on the drivers dash.
- Buttons available for easy reach and use.
- Touch screen and joystick controls available.

### Cons

- Two main screens are not organized properly.
- Overlapping elements of applications and settings make the UI confusing.
- Icons and colors having too much variety and missing a uniform look.
- Navigation missing Apple/ Android Carplay availability.
- Driver profiles not being able to save preferred settings.

# SURVEYING

## Survey Questions

1. Please state your name, age, vehicle, and number of years of driving experience.  
[Paragraph response]
2. Which aspect of the car's user interface do you find most convenient while driving?
  - Navigation
  - Climate Control
  - Entertainment System
  - Other: \_\_\_\_\_
3. Can you describe a situation where the user interface significantly enhanced or hindered your driving experience?  
[Paragraph response]
4. How do you prioritize the different elements on the car's dashboard? Which features should be more prominent?
  - Speedometer
  - Battery Level
  - Navigation
  - Other: \_\_\_\_\_
5. In what ways do you think the separation of different controls (e.g., climate, navigation, entertainment) impacts your driving experience?
  - It makes it more convenient and efficient
  - It sometimes causes confusion
  - It does not make a difference
  - Other: \_\_\_\_\_
6. Which information do you prioritize most when driving?
  - Speed
  - Battery level or fuel
  - Navigation directions
  - Other: \_\_\_\_\_
7. How would you rate the accessibility of commonly used features in your car's user interface?
  - Very accessible
  - Somewhat accessible
  - Difficult to access
  - Other: \_\_\_\_\_
8. How important is the visual design of the user interface in your satisfaction with the car?
  - Very important
  - Somewhat important
  - Not important
  - Other: \_\_\_\_\_
9. How would you rate the ease of use of your car's interface in your daily driving routine?
  - Very easy to use
  - Somewhat easy to use
  - Complicated
  - Other: \_\_\_\_\_
10. What elements of the user interface do you think are essential and should remain in place? (Check all that apply)
  - Navigation system
  - Climate control
  - Entertainment system
  - Other: \_\_\_\_\_
11. What elements of the user interface do you think could be simplified or removed? (Check all that apply)
  - Navigation system
  - Climate control
  - Entertainment system
  - Other: \_\_\_\_\_
12. Can you describe a time when you found the user interface particularly intuitive or confusing? What changes would have improved that experience?  
[Paragraph response]
13. How do you feel about the integration of your smartphone with the car's interface?
  - Very helpful
  - Somewhat helpful
  - Unnecessary
  - Other: \_\_\_\_\_
14. Do you think the current design of the user interface makes accessing safety features easy?
  - Yes, it is very easy
  - Somewhat, but could be improved
  - No, it is not easy
  - Other: \_\_\_\_\_
15. How do you prefer the controls in the car's interface to be?
  - Mostly manual
  - Mostly touchscreen
  - A balance of both
  - Other: \_\_\_\_\_
16. Which features do you use most frequently while driving? (Check all that apply)
  - Navigation
  - Climate control
  - Entertainment system
  - Other: \_\_\_\_\_

# SURVEYING

## Survey Results

### Surveyor Details - Name, Age, Vehicle, Years of Driving Experience

**Duran Karunasena** - Age: 22, Vehicle: Tesla Model 3, Driving Experience: 4 years

**Tergel** - Age: 22, Vehicle: Tesla, Driving Experience: 7 years

**Andrew** - Age: 21, Vehicle: Rav 4, Driving Experience: 4 years

**Ali** - Age: 23, Vehicle: Rav 4, Driving Experience: 5 years

**Christian** - Age: 24, Vehicle: Toyota Tacoma, Driving Experience: 7-8 years

**Jessie** - N/A

**Tessa** - Age: 22, Vehicle: 2004 Lexus RX, Driving Experience: 5 years

**Shon** - Age: 22, Vehicle: Bicycle, Driving Experience: 6 years

**John** - N/A

**Blake** - Age: 24, Vehicle: Infiniti G35, Driving Experience: 8 years

**Vlad Kondakov** - Age: Not provided, Vehicle: BMW 5-series, Driving Experience: 5 years

**Liza** - Age: 18, Vehicle: Infiniti Q50, Driving Experience: almost 3 years

**Ola Sher** - Age: 42, Vehicle: Buick Enclave, Driving Experience: 18 years

**Harsha Karunasena** - Age: Not provided, Vehicle: Audi Q5, Driving Experience: 30 years

**Savelii Niedoviesov** - Age: 20, Vehicle: Nissan Altima, Driving Experience: Not provided

**Aldi** - Age: 20, Vehicle: Tesla, Driving Experience: 4 years

# SURVEYING

## Survey Results

Which aspect of the car's user interface do you find most convenient while driving?

**Duran Karunasena** - Navigation

**Ca Tergel** - Entertainment System

**Andrew** - Navigation

**Ali** - Climate Control

**Christian** - Entertainment System

**Jessie** - Climate Control

**Tesa** - Climate Control

**Shon** - Entertainment System

**John** - Navigation

**Blake** - Entertainment System

**Vlad Kondakov** - Climate Control

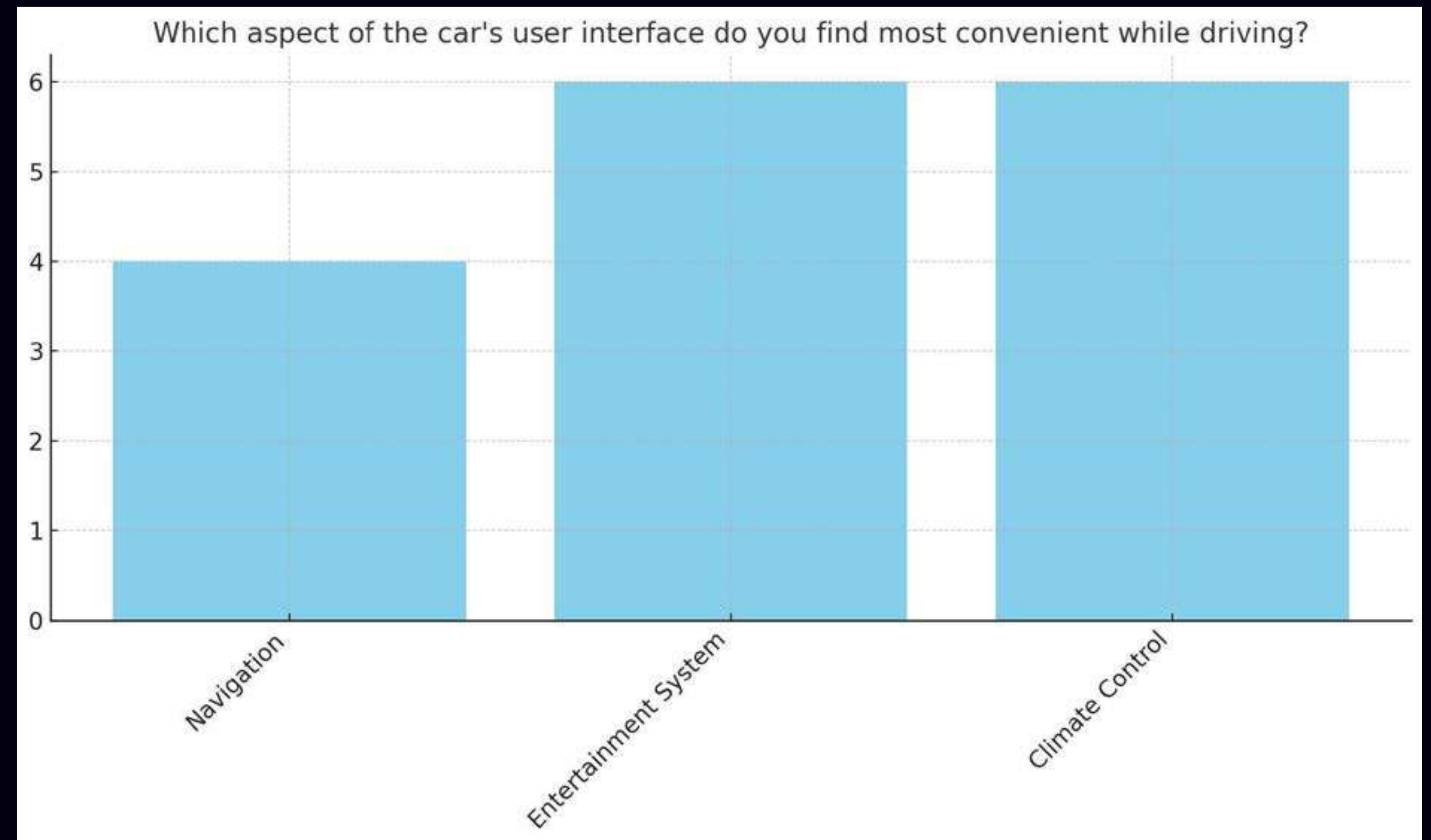
**Liza** - Climate Control

**Ola Sher** - Climate Control

**Harsha Karunasena** - Entertainment System

**Savelii Niedoviesov** - Navigation

**Aldi** - Entertainment System



# SURVEYING

## Survey Results

Can you describe a situation where the user interface significantly enhanced or hindered your driving experience?

**Duran Karunasena** - Having to aim for buttons and look away from the road to use most of the UI causing me to swerve off the road.

**Tergel** - I just love listening to good music while driving.

**Andrew** - N/A

**Ali** - Once, I struggled with a rental car's confusing touch-screen interface, which made simple tasks distracting and stressful. In contrast, my own car's intuitive controls and voice commands make driving much easier and safer.

**Christian** - Don't care for UI. Just need bare minimum.

**Jessie** - It doesn't have a navigation map which causes me to have to use my phone.

**Tessa** - Climate control is used daily to make a comfortable driving experience for both short and long trips, and is helpful in all seasons all year round.

**Shon** - The speedometer and navigation on front windshield glass.

**John** - When you drive and with someone on the phone but want to see a GPS.

**Blake** - No Bluetooth or AC can make long drives a drag.

**Vlad Kondakov** - N/A

**Liza** - Can never find a way to connect my phone fast enough, Bluetooth and connected devices are in two completely different spots.

**Ola Sher** - I do not like climate control in my car, the display at eye level does not show how much I have increased or decreased the temperature and this distracts from driving.

**Harsha Karunasena** - N/A

**Savelii Niedoviesov** - Looking at the map while going to unknown locations is very useful.

**Aldi** - N/A

# SURVEYING

## Survey Results

How do you prioritize the different elements on the car's dashboard? Which features should be more prominent?

**Duran Karunasena** - Navigation directions

**Ca Tergel** - Speed

**Andrew** - Battery level or fuel

**Ali** - Speed

**Christian** - Speed (done on phone for navigation)

**Jessie** - Navigation directions

**Tesa** - Speed

**Shon** - Navigation directions

**John** - Navigation directions

**Blake** - Navigation directions

**Vlad Kondakov** - Speed

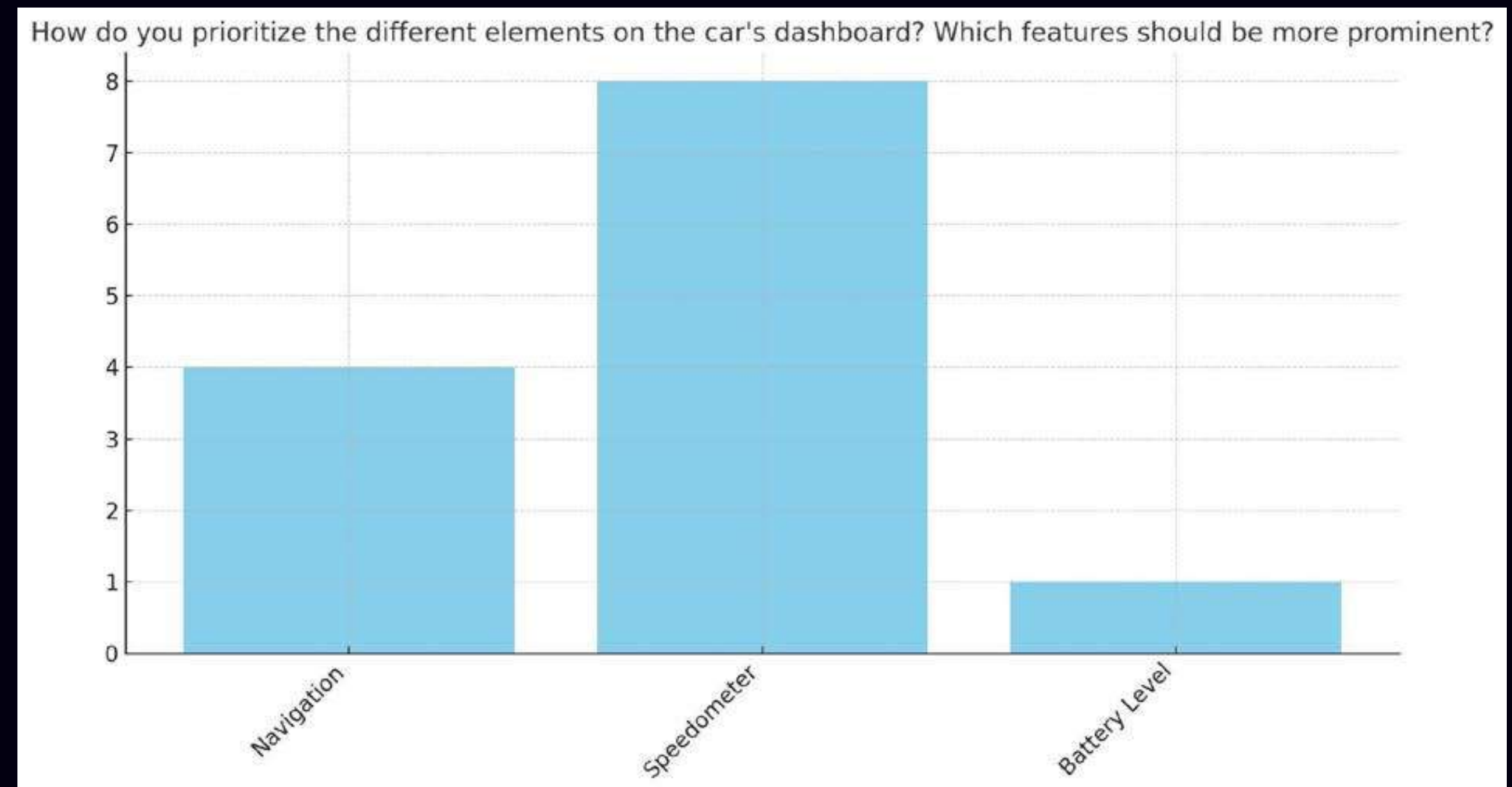
**Liza** - Speed

**Ola Sher** - Navigation directions

**Harsha Karunasena** - Speed

**Savelii Niedoviesov** - Speed

**Aldi** - Navigation directions



# SURVEYING

## Survey Results

In what ways do you think the separation of different controls (e.g., climate, navigation, entertainment) impacts your driving experience?

**Duran Karunasena** - It makes it more convenient and efficient.

**Ca Tergel** - It makes it more convenient and efficient.

**Andrew** - It makes it more convenient and efficient.

**Ali** - It makes it more convenient and efficient.

**Christian** - It sometimes causes confusion.

**Jessie** - It makes it more convenient and efficient.

**Tesa** - It makes it more convenient and efficient.

**Shon** - It makes it more convenient and efficient.

**John** - It makes it more convenient and efficient.

**Blake** - It makes it more convenient and efficient.

**Vlad Kondakov** - It makes it more convenient and efficient.

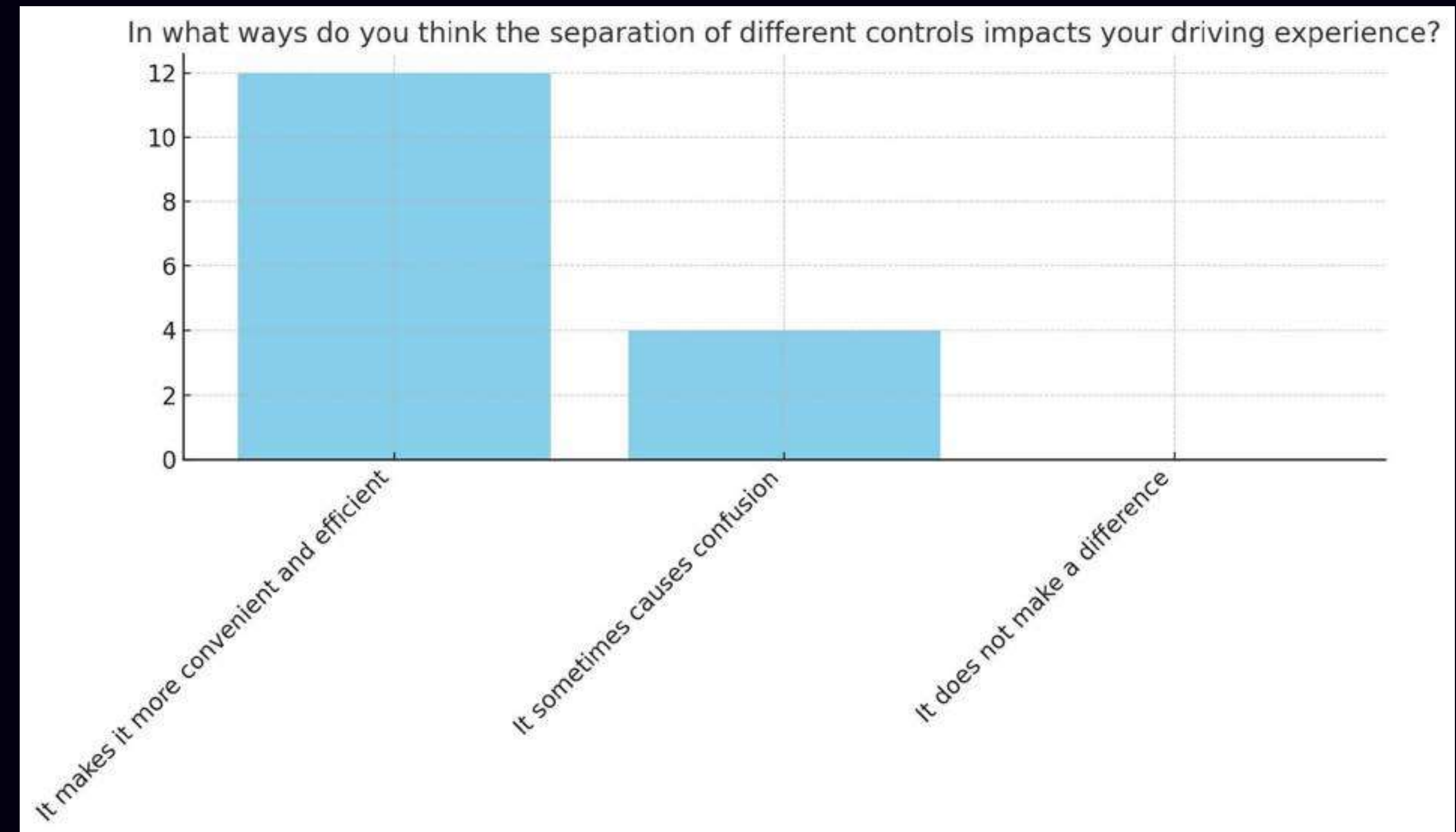
**Liza** - It sometimes causes confusion.

**Ola Sher** - It sometimes causes confusion.

**Harsha Karunasena** - It makes it more convenient and efficient.

**Savelii Niedoviesov** - It makes it more convenient and efficient.

**Aldi** - It sometimes causes confusion.



# SURVEYING

## Survey Results

Which information do you prioritize most when driving?

**Duran Karunasena** - Navigation directions

**Ca Tergel** - Speed

**Andrew** - Battery level or fuel

**Ali** - Speed

**Christian** - Speed (done on phone for navigation)

**Jessie** - Navigation directions

**Tesa** - Speed

**Shon** - Navigation directions

**John** - Navigation directions

**Blake** - Navigation directions

**Vlad Kondakov** - Speed

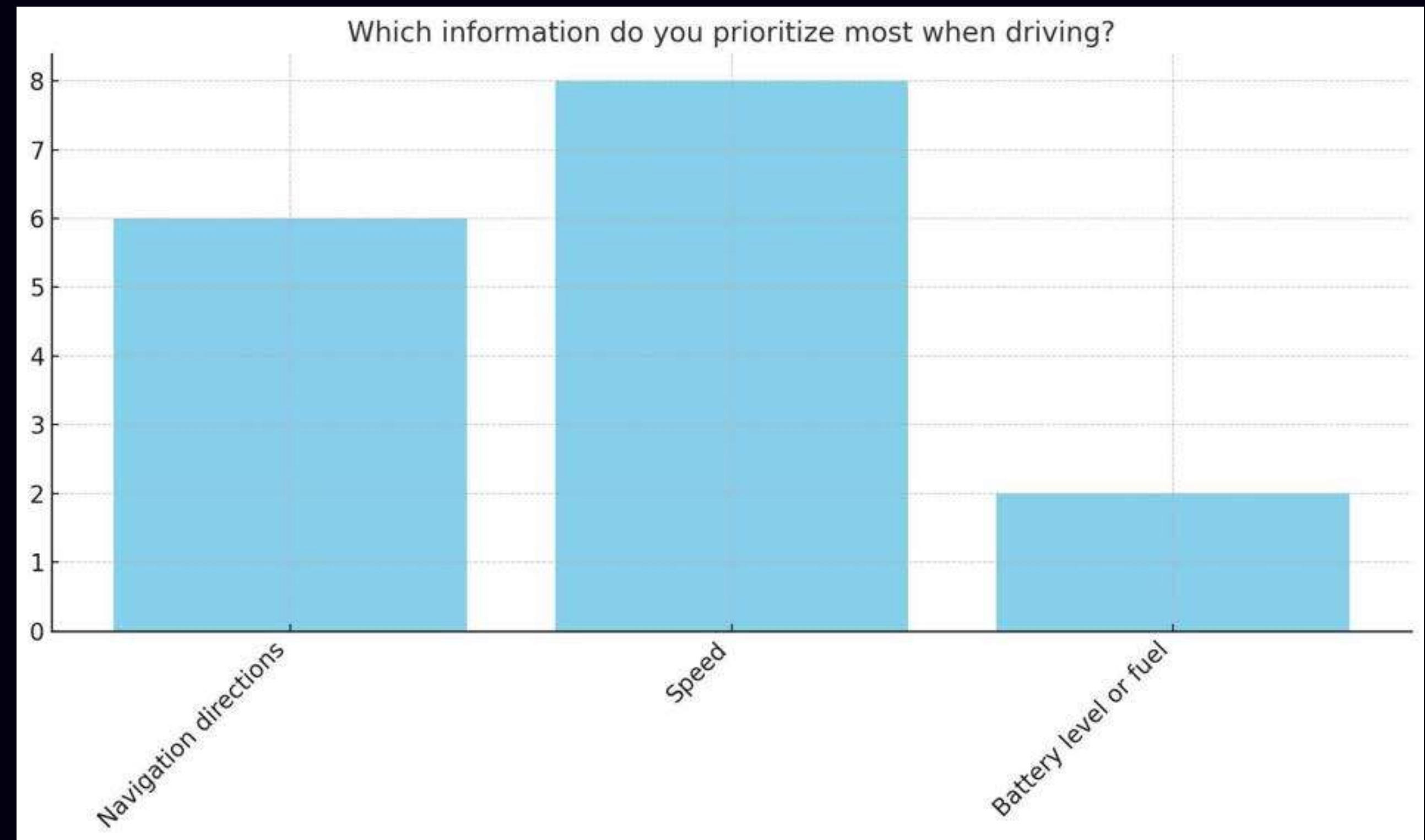
**Liza** - Speed

**Ola Sher** - Navigation directions

**Harsha Karunasena** - Speed

**Savelii Niedoviesov** - Speed

**Aldi** - Navigation directions



# SURVEYING

## Survey Results

How would you rate the accessibility of commonly used features in your car's user interface?

**Duran Karunasena** - Somewhat accessible

**Ca Tergel** - Very accessible

**Andrew** - Very accessible

**Ali** - Somewhat accessible

**Christian** - Very accessible

**Jessie** - Difficult to access

**Tesa** - Somewhat accessible

**Shon** - Very accessible

**John** - Somewhat accessible

**Blake** - Very accessible

**Vlad Kondakov** - Very accessible

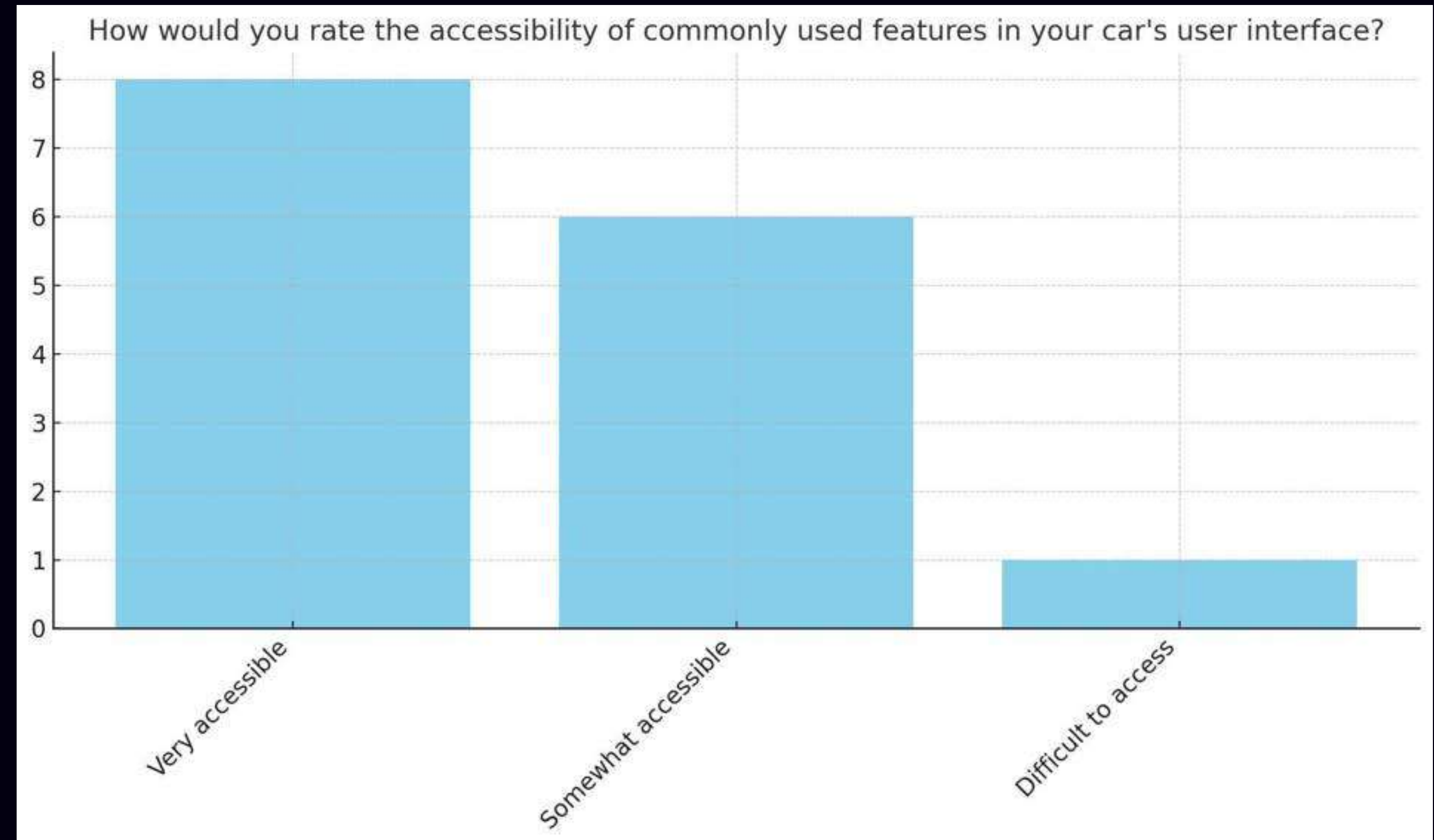
**Liza** - Somewhat accessible

**Ola Sher** - Somewhat accessible

**Harsha Karunasena** - Very accessible

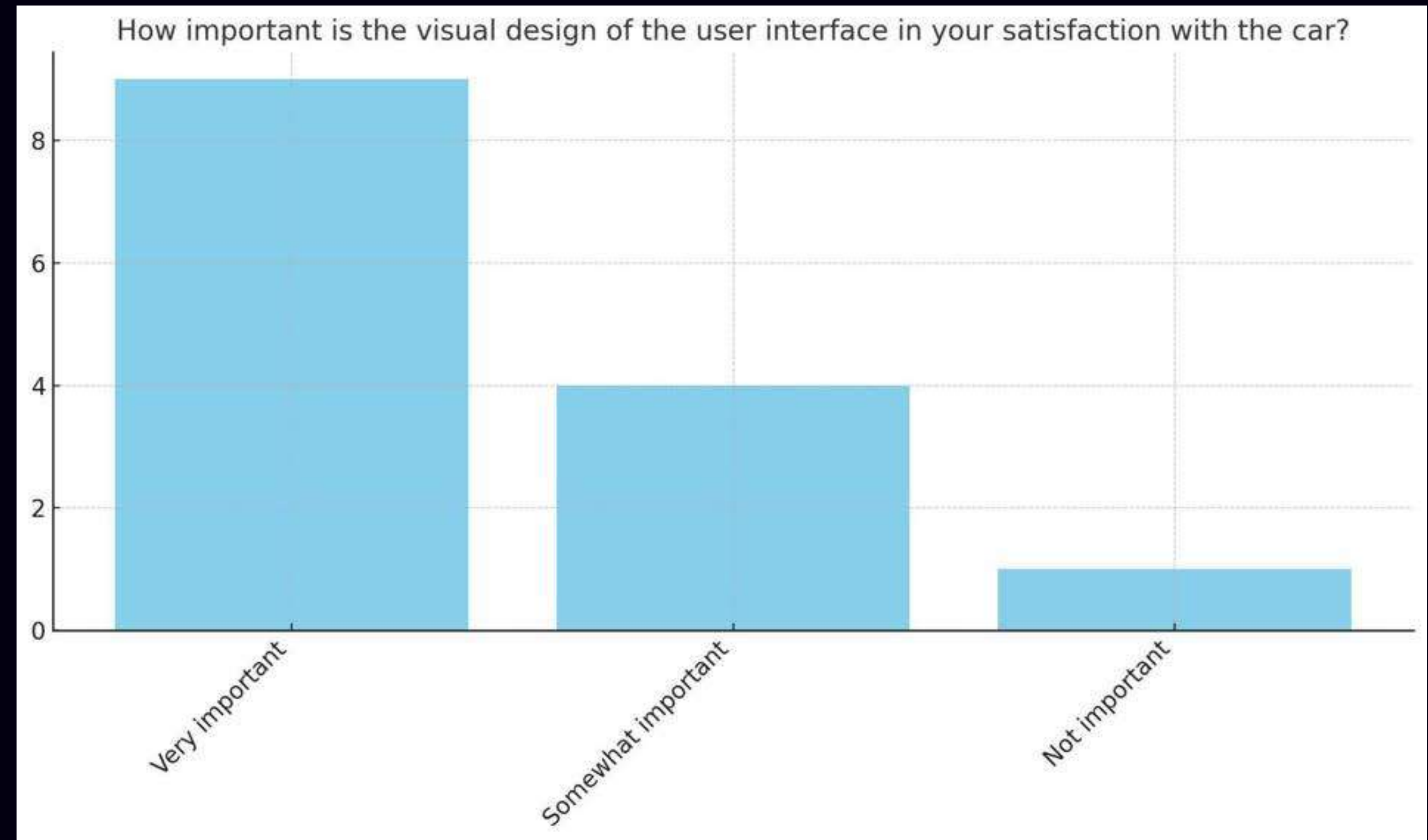
**Savelii Niedoviesov** - Very accessible

**Aldi** - Very accessible



# SURVEYING

## Survey Results



# SURVEYING

## Survey Results

How would you rate the ease of use of your car's interface in your daily driving routine?

**Duran Karunasena** - Somewhat easy to use

**Ca Tergel** - Very easy to use

**Andrew** - Very easy to use

**Ali** - Somewhat easy to use

**Christian** - Very easy to use

**Jessie** - Somewhat easy to use

**Tesa** - Somewhat easy to use

**Shon** - Somewhat easy to use

**John** - Somewhat easy to use

**Blake** - Somewhat easy to use

**Vlad Kondakov** - Very easy to use

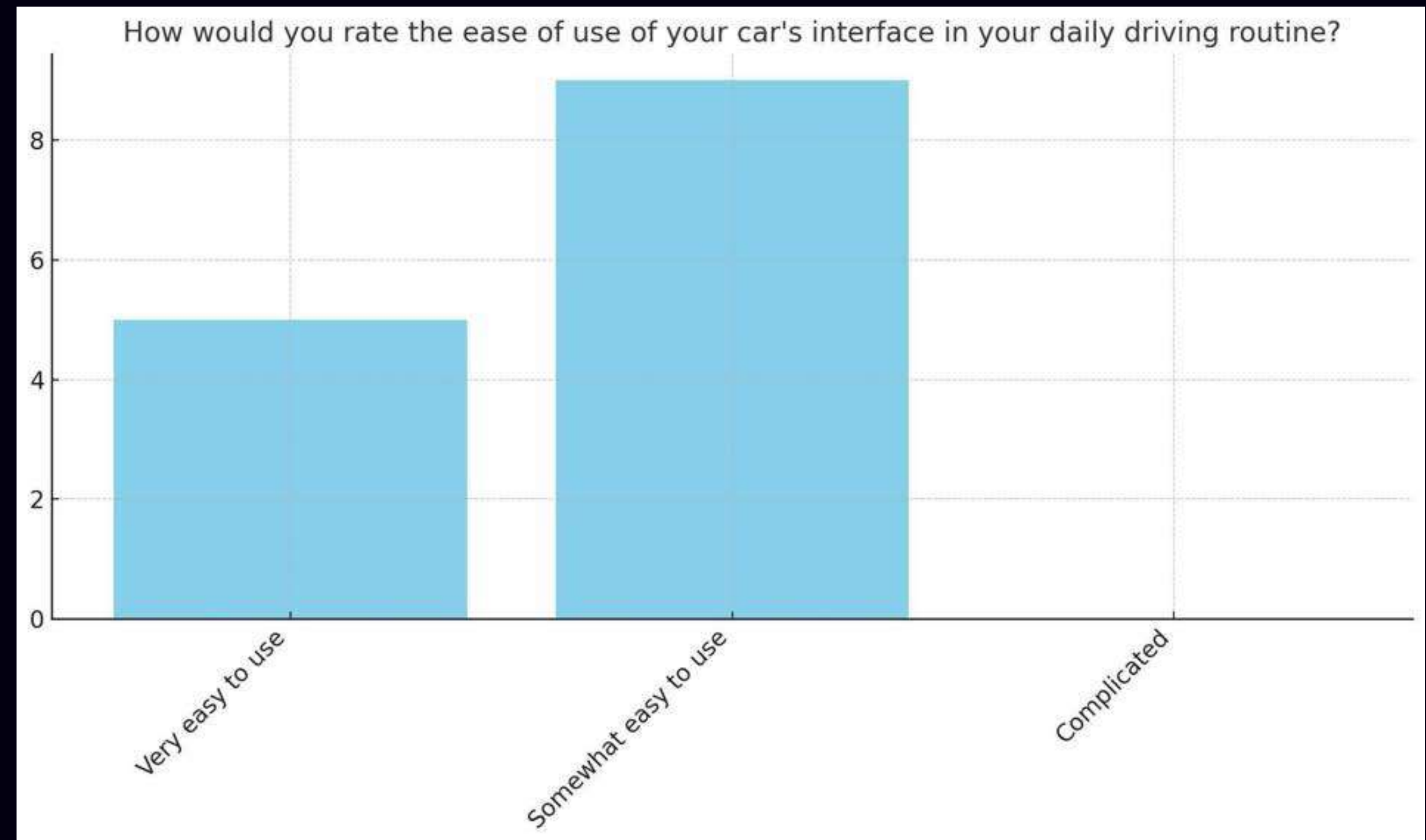
**Liza** - Somewhat easy to use

**Ola Sher** - Somewhat easy to use

**Harsha Karunasena** - Somewhat easy to use

**Savelii Niedoviesov** - Very easy to use

**Aldi** - Very easy to use



# SURVEYING

## Survey Results

What elements of the user interface do you think are essential and should remain in place?

**Duran Karunasena** - Navigation system

**Ca Tergel** - Navigation system

**Andrew** - Navigation system; Climate control

**Ali** - Navigation system; Climate control; Entertainment system

**Christian** - All but navigation (feels it's unnecessary)

**Jessie** - Navigation system; Climate control; Entertainment system

**Tesa** - Climate control; Entertainment system

**Shon** - Navigation system

**John** - Navigation system; Climate control; Entertainment system

**Blake** - Navigation system; Climate control; Entertainment system

**Vlad Kondakov** - Climate control; Entertainment system

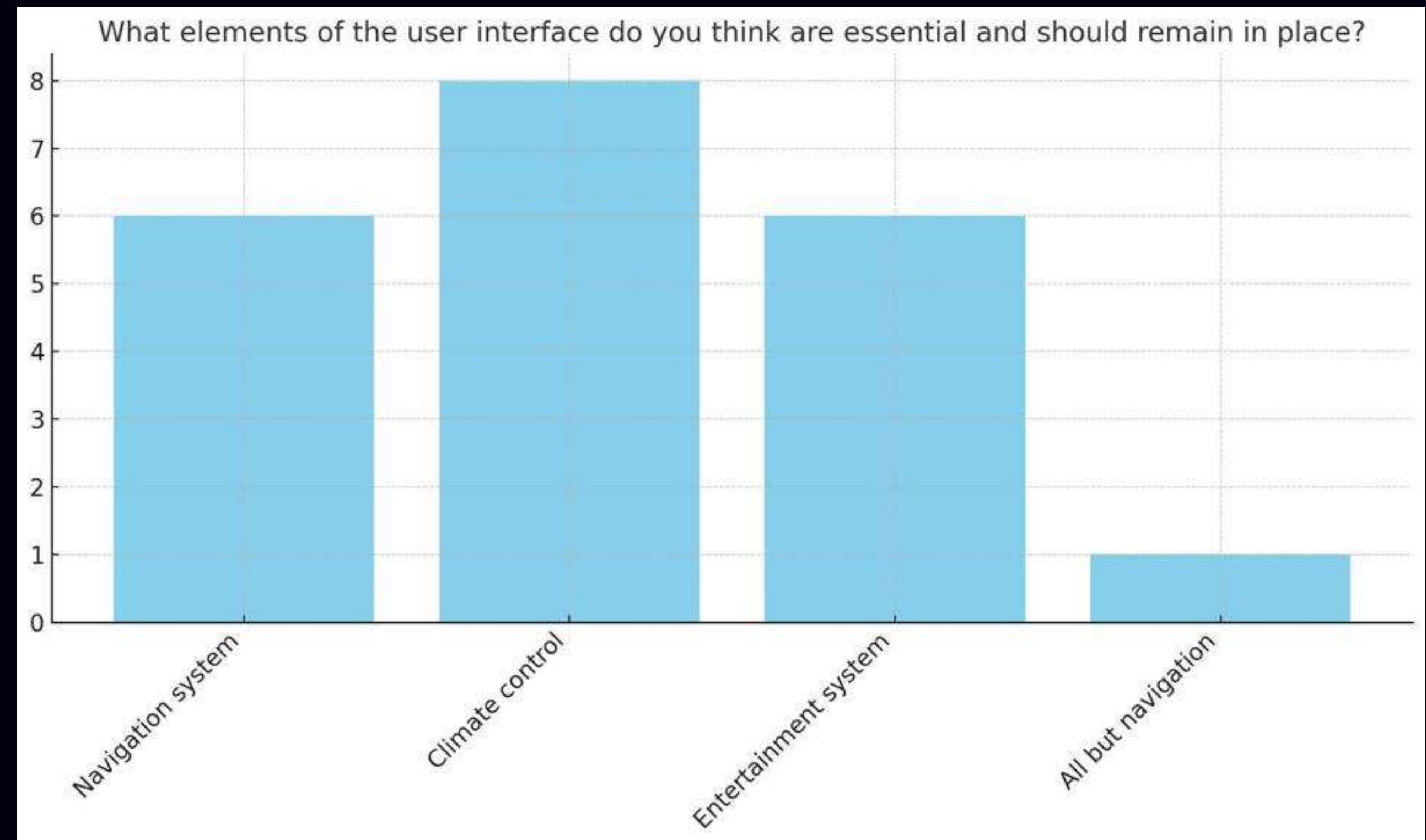
**Liza** - Navigation system; Climate control

**Ola Sher** - Climate control

**Harsha Karunasena** - Climate control

**Savelii Niedoviesov** - Entertainment system

**Aldi** - Navigation system; Climate control; Entertainment system



# SURVEYING

## Survey Results

What elements of the user interface do you think could be simplified or removed?

**Duran Karunasena** - Virtual car animations

**Ca Tergel** - None

**Andrew** - Nothing

**Ali** - None

**Christian** - Navigation system

**Jessie** - None

**Tesa** - Navigation system

**Shon** - Bluetooth connection

**John** - Climate control

**Blake** - Climate control

**Vlad Kondakov** - None

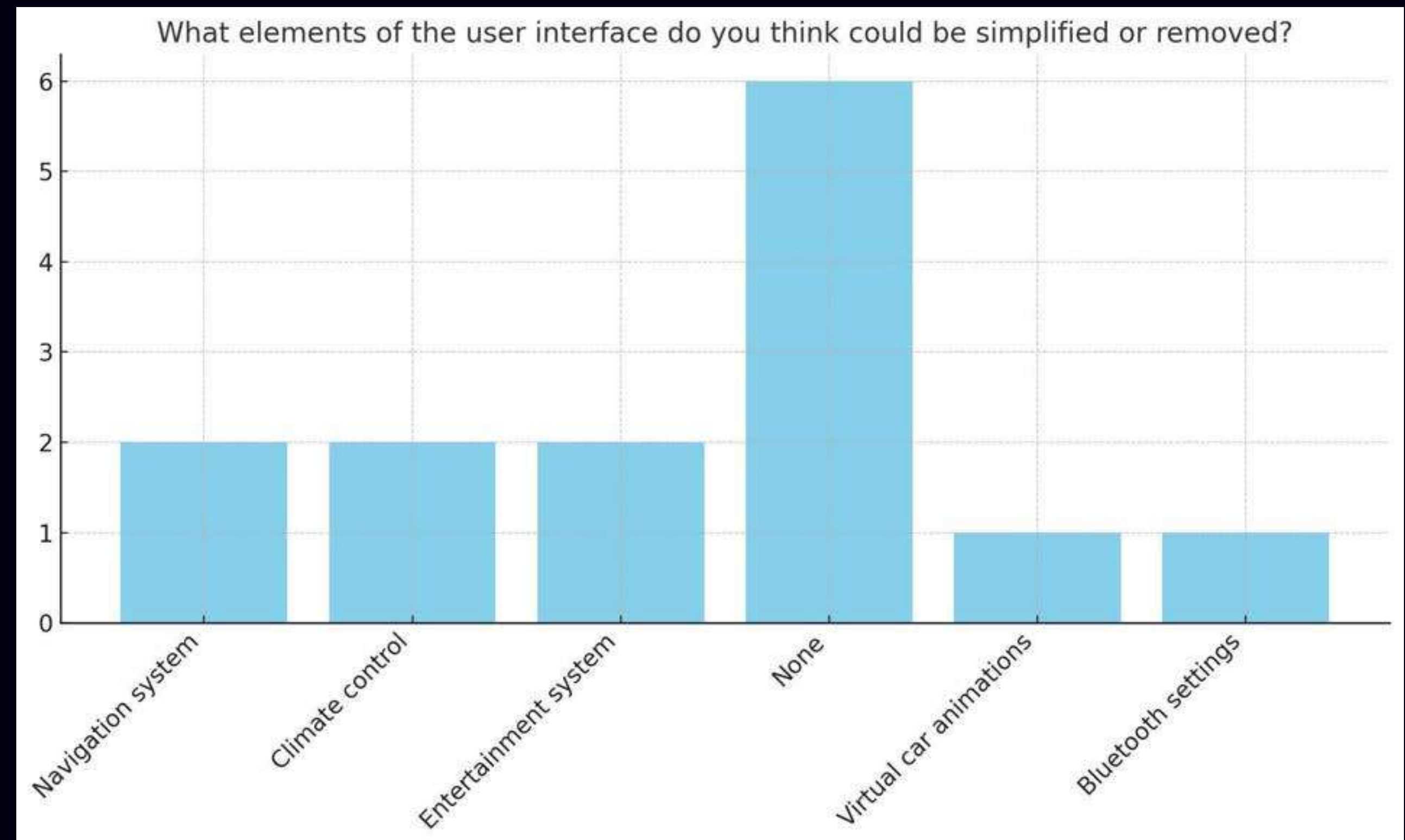
**Liza** - Entertainment system; Bluetooth settings

**Ola Sher** - None

**Harsha Karunasena** - None

**Savelii Niedoviesov** - Climate control

**Aldi** - None



# SURVEYING

## Survey Results

How do you feel about the integration of your smartphone with the car's interface?

**Duran Karunasena** - Very helpful

**Ca Tergel** - Very helpful

**Andrew** - Very helpful

**Ali** - Somewhat helpful

**Christian** - Somewhat helpful

**Jessie** - Very helpful

**Tesa** - Very helpful

**Shon** - Very helpful

**John** - Very helpful

**Blake** - Very helpful

**Vlad Kondakov** - Very helpful

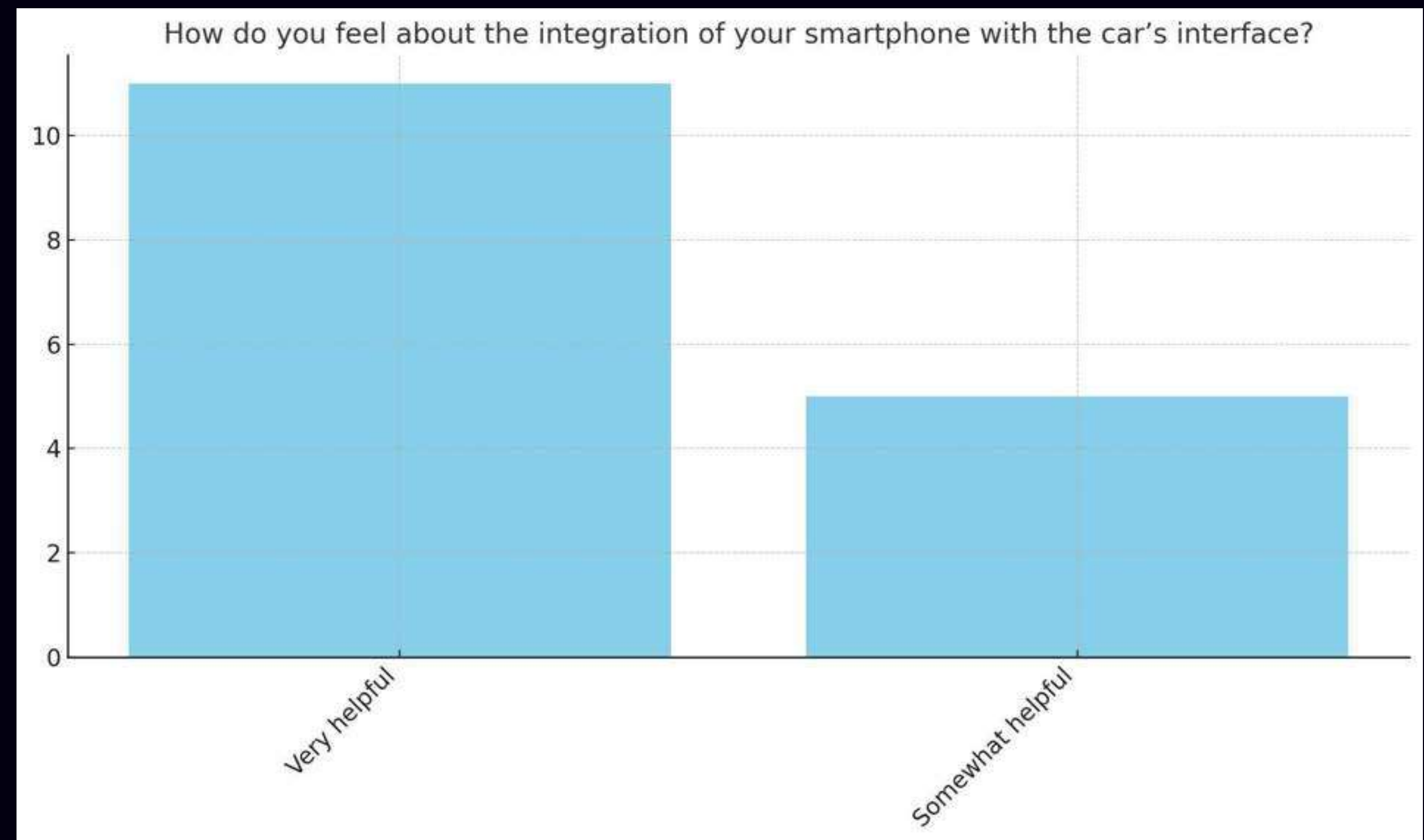
**Liza** - Somewhat helpful

**Ola Sher** - Somewhat helpful

**Harsha Karunasena** - Very helpful

**Savelii Niedoviesov** - Very helpful

**Aldi** - Somewhat helpful



# SURVEYING

## Survey Results

Do you think the current design of the user interface makes accessing safety features easy?

**Duran Karunasena** - Yes, it is very easy

**Ca Tergel** - Yes, it is very easy

**Andrew** - Yes, it is very easy

**Ali** - Somewhat, but could be improved

**Christian** - Yes, it is very easy

**Jessie** - No, it is not easy

**Tesa** - Somewhat, but could be improved

**Shon** - Yes, it is very easy

**John** - Yes, it is very easy

**Blake** - Somewhat, but could be improved

**Vlad Kondakov** - Yes, it is very easy

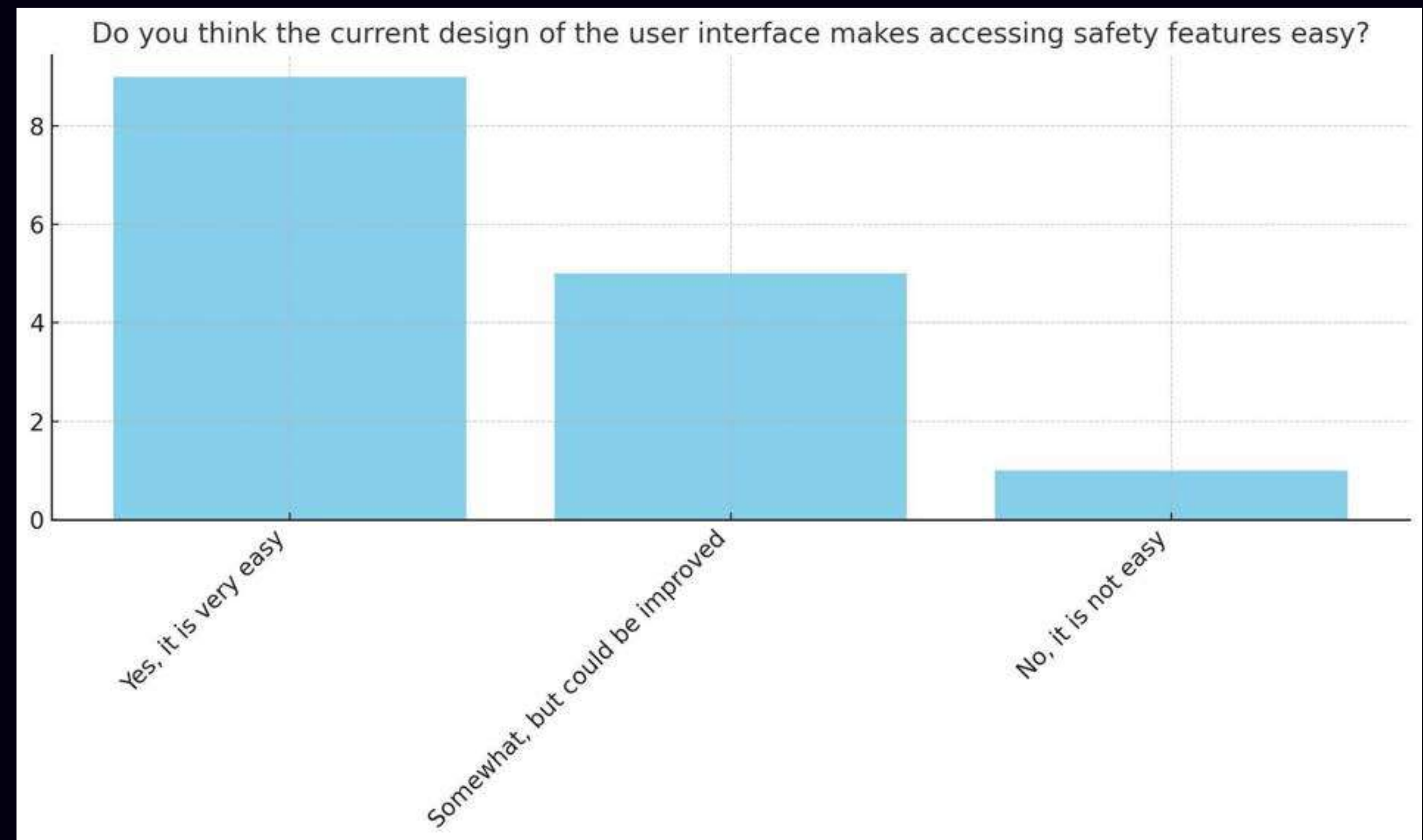
**Liza** - Somewhat, but could be improved

**Ola Sher** - Yes, it is very easy

**Harsha Karunasena** - Somewhat, but could be improved

**Savelii Niedoviesov** - Yes, it is very easy

**Aldi** - Yes, it is very easy



# SURVEYING

## Survey Results

How do you prefer the controls in the car's interface to be?

**Duran Karunasena** - A balance of both

**Ca Tergel** - A balance of both

**Andrew** - A balance of both

**Ali** - Mostly touchscreen

**Christian** - A balance of both

**Jessie** - Mostly touchscreen

**Tesa** - A balance of both

**Shon** - Mostly touchscreen

**John** - Mostly touchscreen

**Blake** - A balance of both

**Vlad Kondakov** - A balance of both

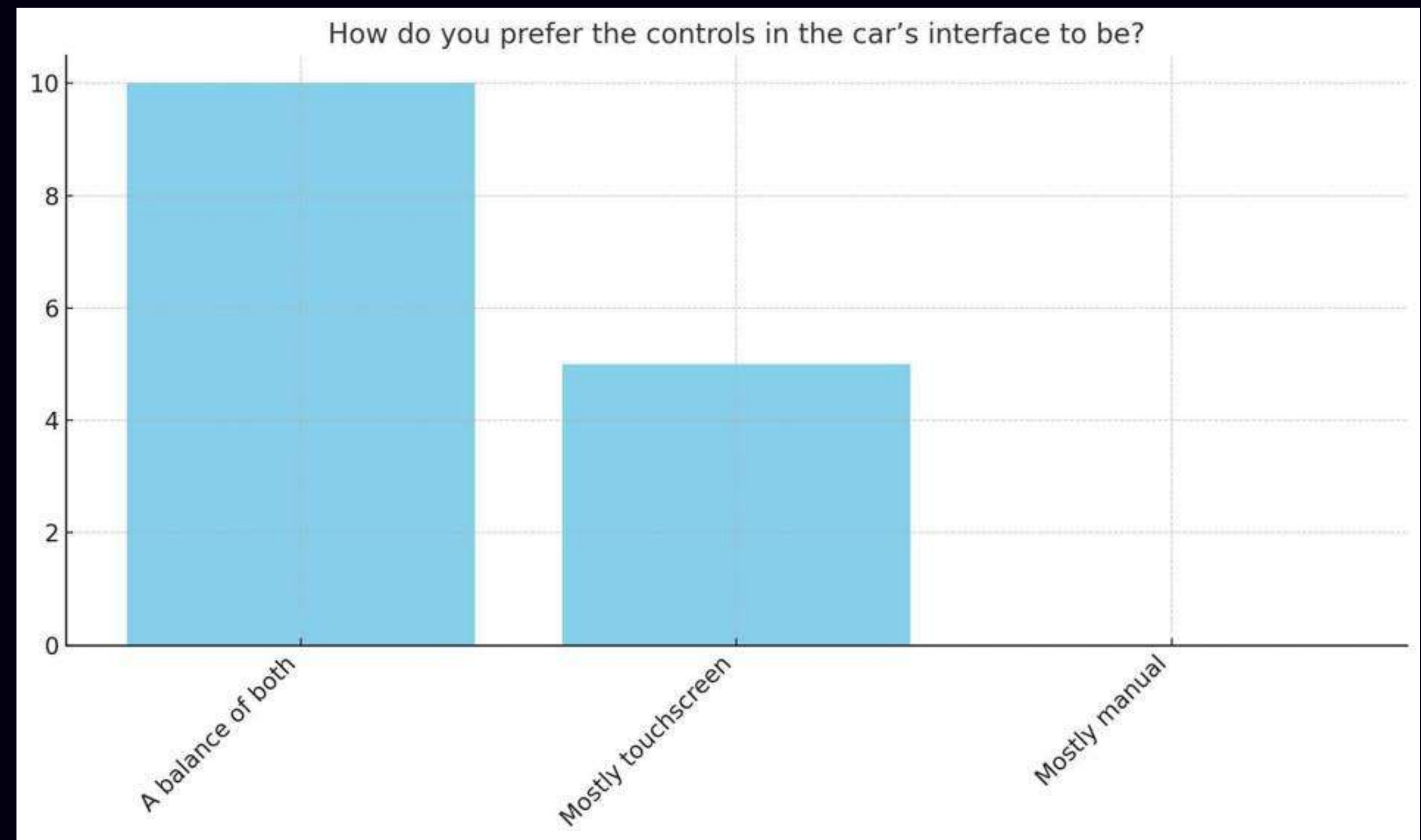
**Liza** - Mostly touchscreen

**Ola Sher** - A balance of both

**Harsha Karunasena** - A balance of both

**Savelii Niedoviesov** - A balance of both

**Aldi** - A balance of both



# SURVEYING

## Survey Results

**Can you describe a time when you found the user interface particularly intuitive or confusing? What changes would have improved that experience?**

**Duran Karunasena** - When trying to find certain things that are, for example, expected to be in “safety,” but they would be in the software section. Better separation of elements and organization could help.

**Ali** - I once drove a car with an intuitive user interface where everything was easily accessible through clear menus and voice controls. It made adjusting settings quick without distraction. On another occasion, a rental car’s interface was overly complex, requiring too many taps to access basic functions. Simplifying the layout and adding shortcut buttons would have greatly improved that experience.

**Christian** - When driving my personal vehicle, which is a 2019 Tacoma, I find the user interface to be quite simple and easy to use as it offers a touchscreen but is stripped down in terms of functions. Everything in the car is quite analog, so the design of the UI matches the experience and makes it a self-explanatory drive. On the other hand, when I have driven some “newer” cars that are more reliant on technology, I have found it more frustrating having to go through a large touchscreen with countless buttons to simply change the A/C temperature. Simplicity would improve these experiences.

**Tesa** - The car’s navigation system is a bit counterintuitive. Possibly because it’s an old car, but it’s hard to set up due to how long it takes to type in directions. A lot more convenient to just use my phone. I would personally remove the car's navigation system altogether.

**Shon** - Bluetooth connection is sometimes confusing.

**John** - Apple CarPlay is very convenient and should be in every car.

**Liza** - Connecting a phone as a Bluetooth device should be easier.

**Savelii Niedoviesov** - Climate controls seem to be very intuitive and self-explanatory. I use them all the time. Red is hot, blue is cold. Fan speed 1 is slow, fan speed 10 is fast.

# SURVEYING

## Survey Results

Which features do you use most frequently while driving?

**Duran Karunasena** - Navigation

**Ca Tergel** - Navigation; Climate control; Entertainment system

**Andrew** - Navigation; Climate control

**Ali** - Climate control; Entertainment system

**Christian** - Entertainment system

**Jessie** - Navigation; Climate control; Entertainment system

**Tesa** - Climate control; Entertainment system

**Shon** - Navigation system

**John** - Navigation; Entertainment system

**Blake** - Navigation; Climate control; Entertainment system

**Vlad Kondakov** - Climate control; Entertainment system

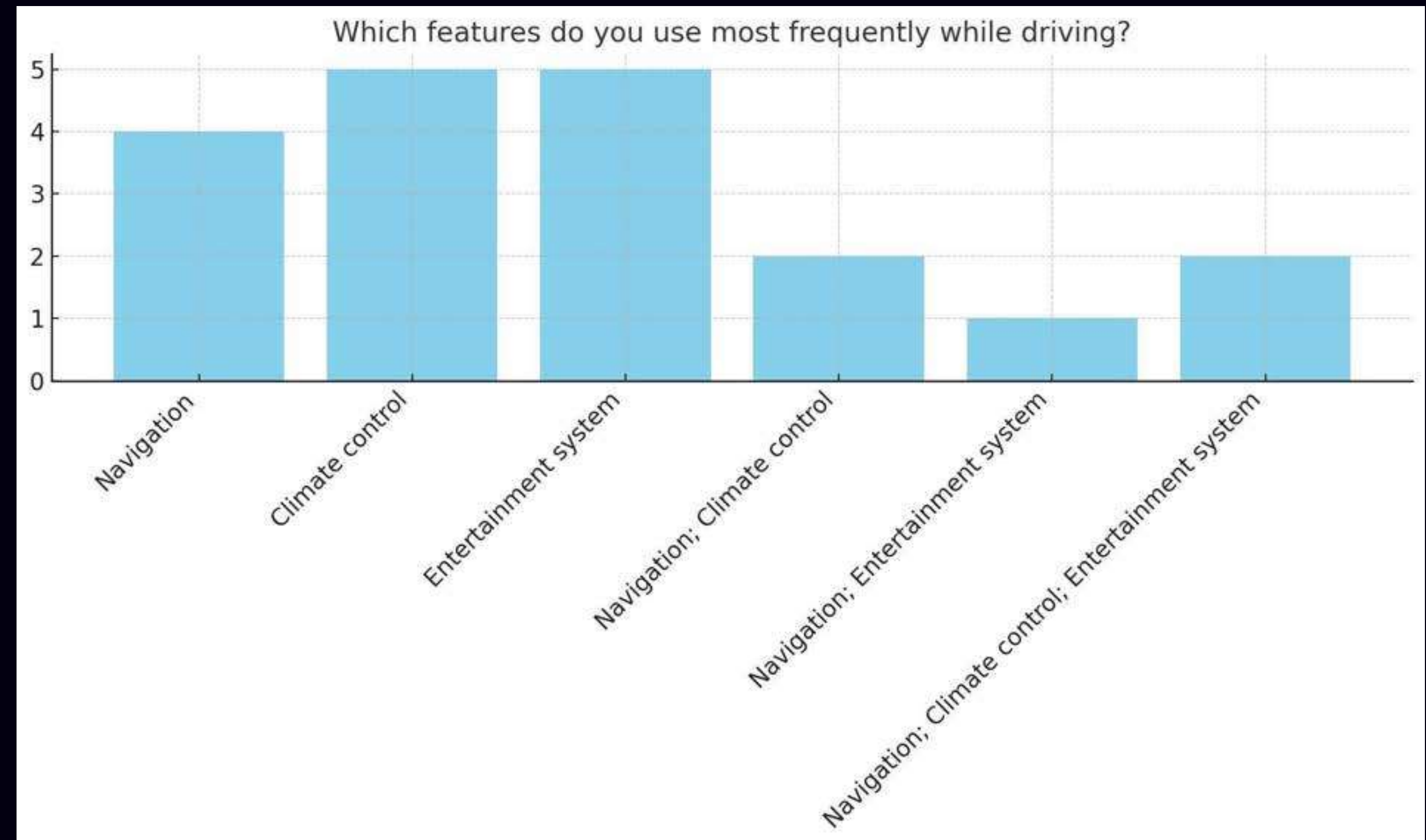
**Liza** - Navigation; Climate control

**Ola Sher** - Navigation; Climate control; Entertainment system

**Harsha Karunasena** - Climate control; Entertainment system

**Savelii Niedoviesov** - Navigation

**Aldi** - Navigation; Climate control; Entertainment system



# SURVEYING

## Survey Results – Key Takeaways

### 1. Most Commonly Used Features:

- Navigation and Climate Control were highlighted as frequently used features by most participants.
- Entertainment Systems were also popular, especially among younger drivers.

### 2. Driving Experience and Interface Interaction:

- Convenience vs. Complexity: Most drivers found the separation of controls (climate, navigation, entertainment) convenient, enhancing their driving experience. However, some reported confusion, especially with newer, more complex systems.
- Age and Driving Experience: Drivers with more years of experience (e.g., Christian, Harsha) preferred simplicity, while newer drivers (e.g., Tergel, Savelii) embraced more advanced features.

### 3. Accessibility and Ease of Use:

- Very Accessible UI: The majority of participants rated their current car interfaces as either "Very Accessible" or "Somewhat Accessible."
- Design Preferences: A visually appealing design is important for most participants. This suggests that the interface for an electric car should balance aesthetics with functionality.

### 4. Touchscreen vs. Physical Controls:

- Preference for Balanced Controls: The majority prefer a balance of both touchscreen and physical controls. This suggests that while digital interfaces are embraced, there should still be some physical buttons for ease of access and reduced distraction.

### 5. Safety Features:

- Access to Safety Features: Most participants (especially those with more driving experience) reported that accessing safety features is generally easy, but some noted room for improvement. A well-organized, intuitive layout is crucial for safety.

### 6. Vehicle and Driving Experience:

- Variety of Vehicles: The survey included drivers of various vehicles, including Tesla, Rav4, Toyota Tacoma, BMW, and Nissan. Each user's experience with the UI can influence preferences for how complex or simple the electric car interface should be.
- Experience Correlation: Those with longer driving experience tend to prefer simpler UIs (e.g., Christian and Harsha).

# SURVEYING

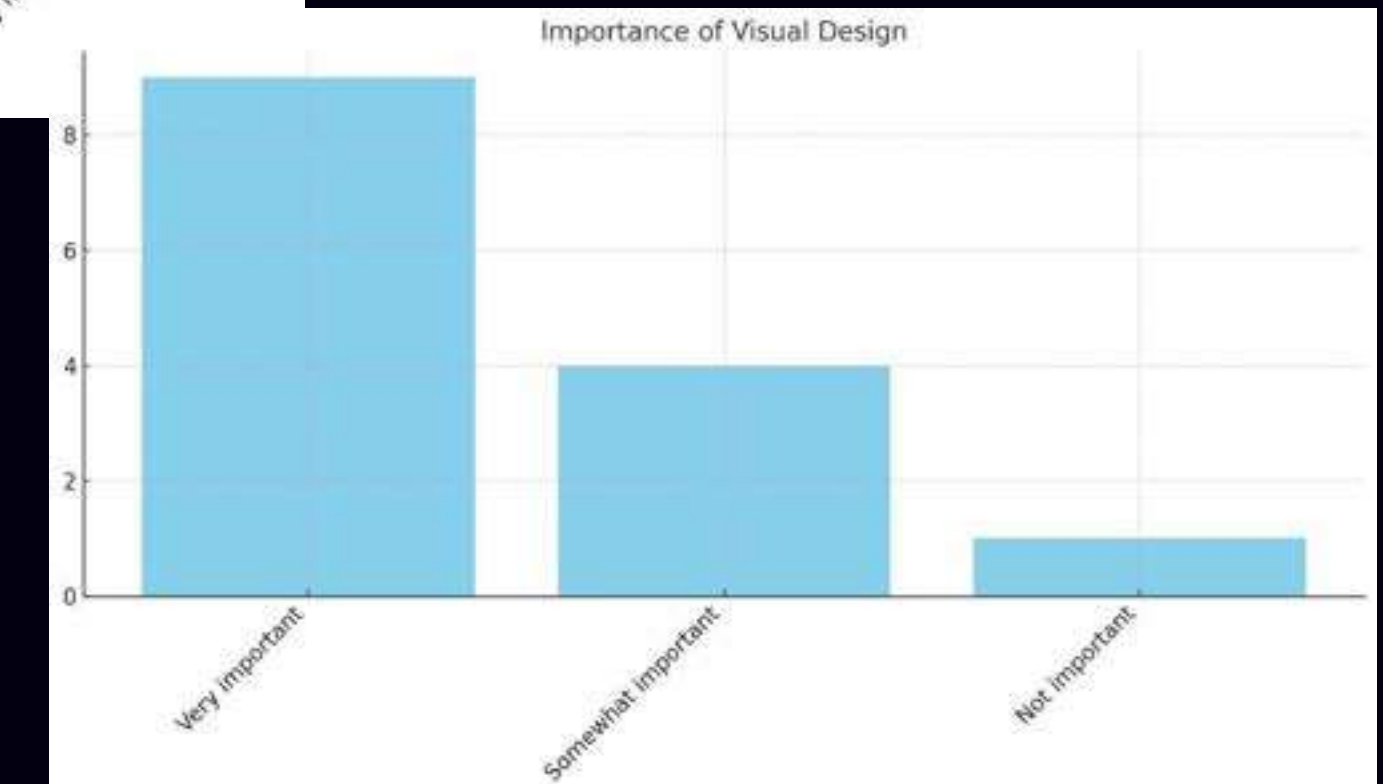
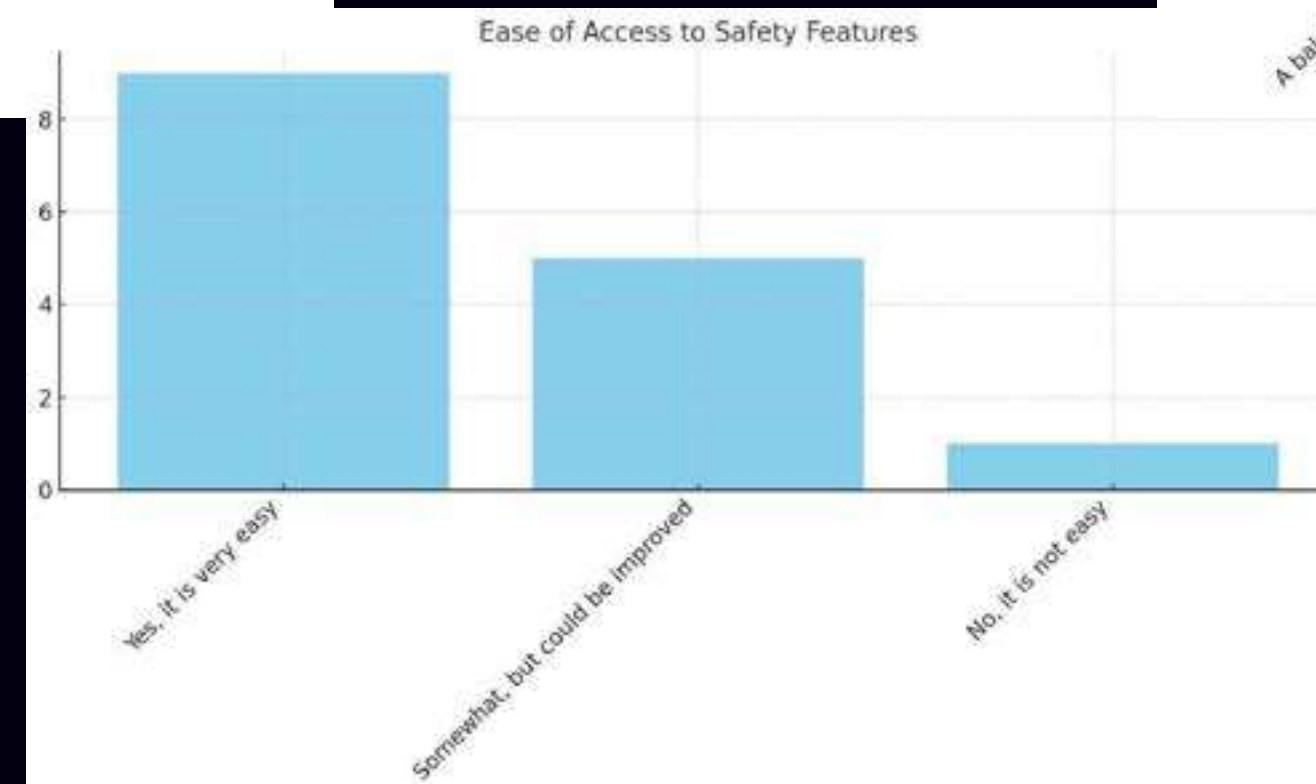
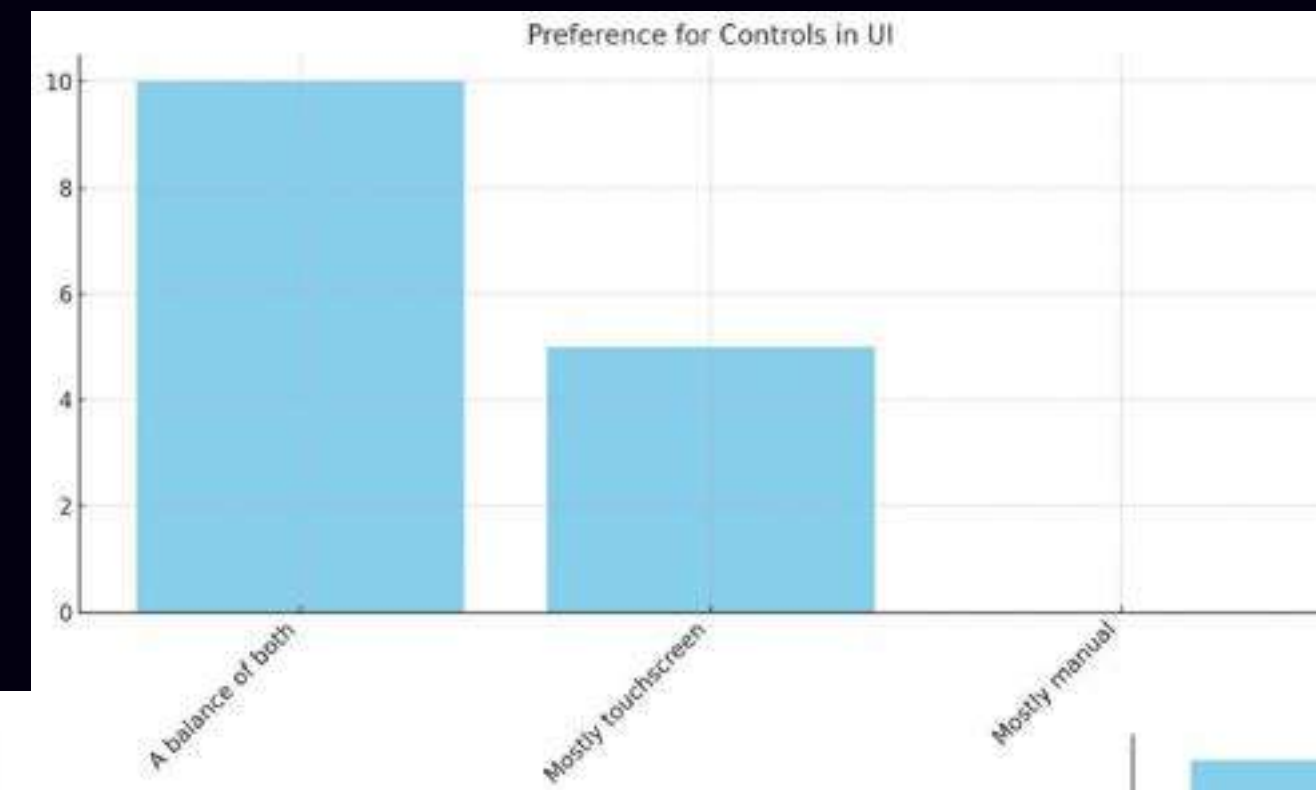
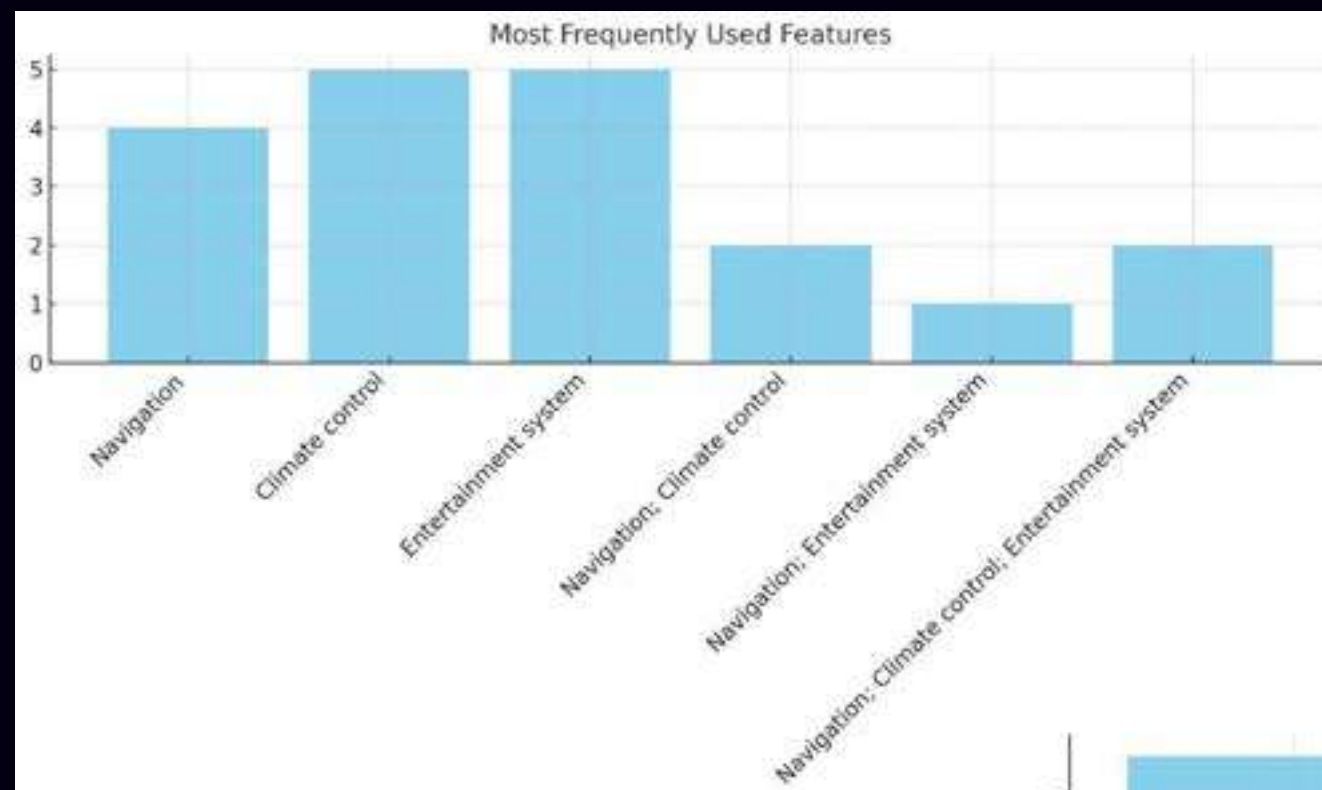
## Survey Results - Key Takeaways

**Most Frequently Used Features:** Navigation, Climate Control, and Entertainment Systems are the most used features, with combinations of these features also being common.

**Preference for Controls:** Most participants prefer a balance of touchscreen and physical controls, with fewer opting solely for touchscreens.

**Importance of Visual Design:** The majority consider visual design to be very important in their satisfaction with the car's interface.

**Ease of Access to Safety Features:** Most participants find accessing safety features easy, though some suggest improvements are needed.



# EMPATHY MAP

## Overall

Easy-to-use controls that lessen distractions and improve driving are appreciated by drivers.	When too complicated touchscreens force drivers to take their eyes from the road, many get upset.	A safer and more pleasurable driving experience is usually linked to simplicity and ease of use.	When shortcuts or voice commands enable rapid modifications, there is satisfaction.	Efficiency is important to certain drivers, who believe that user interfaces should help, not impede, their driving.	For the majority of drivers, having easily readable navigation and climate settings is essential.	Because touchscreens can be distracting, drivers commonly perceive the value in tactile buttons, especially for frequently used features.	While voice command features receive excellent reviews, many are aware that not all user interfaces (UIs) are created in this manner.	The intricacy of smartphone integration and Bluetooth communication is a frequent source of complaints.	Some people emphasize that an orderly arrangement is crucial and credit visual design as being a crucial component in their happiness with the car's interface.
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### Thinking/ Feeling

### Seeing/ Hearing

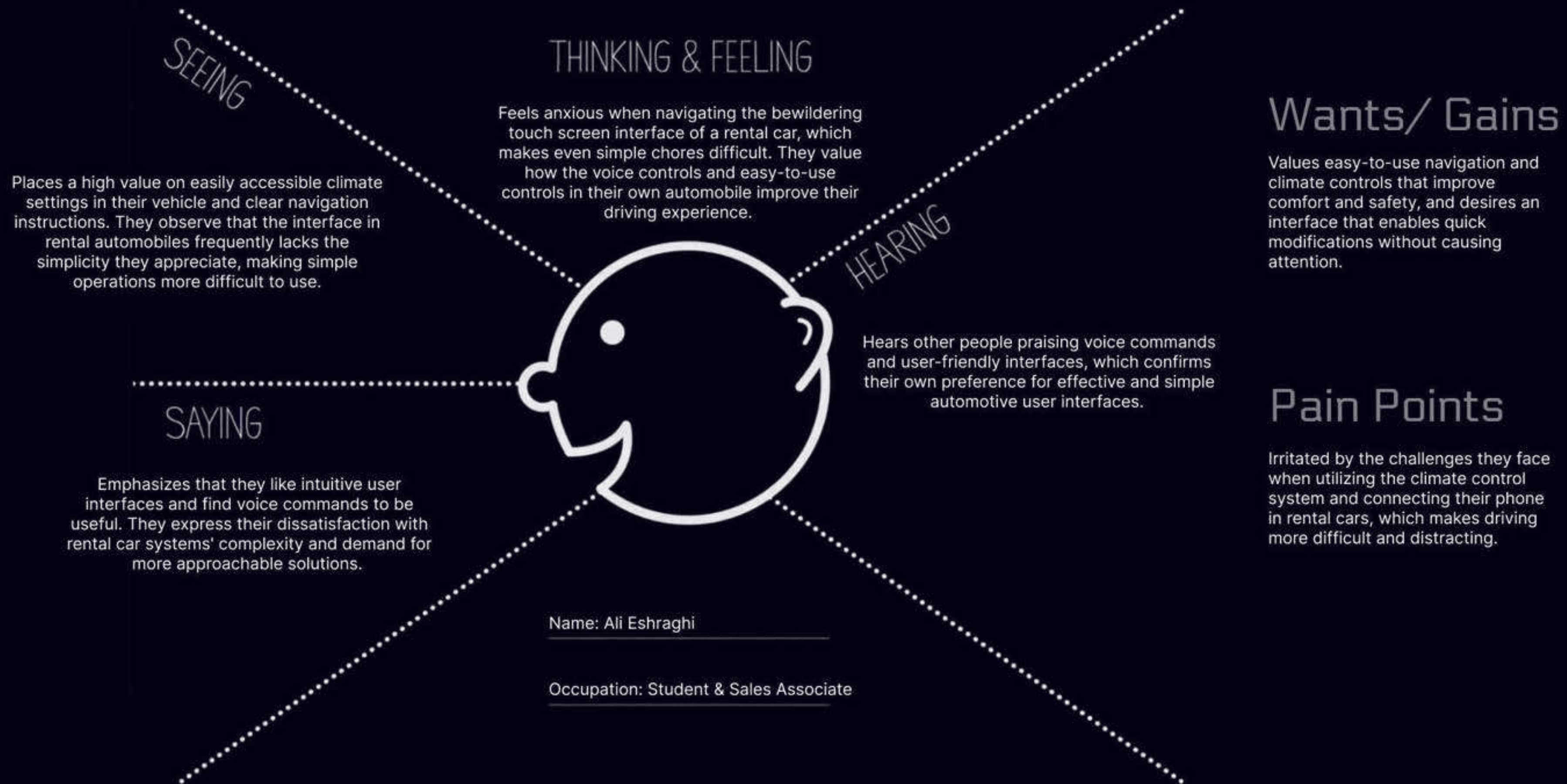
### Pain Points

### Gain/ Wants

Many find it aggravating when complicated touchscreen systems take many touches to accomplish basic tasks.	Climate control and other hard-to-reach settings can contribute to inattentive driving.	Disorienting menu navigation irritates some drivers, particularly when necessary features aren't located where they should be.	Frustration stems from poor smartphone integration, such as sluggish or unclear Bluetooth connections.	Particularly in rental cars or more recent models with an excessive number of digital components, drivers detest interfaces that seem unduly complicated.	The controls should be simple to use and straightforward so that drivers don't have to take their eyes off the road.	Most people prefer a touchscreen and tactile controls in balance since it provides both contemporary convenience and instant access to key functionality.	It would be great to have more direct access and fewer steps in a simplified navigation system.	A lot of people desire faster, more seamless smartphone connectivity, particularly with Bluetooth.	Layouts that emphasize important data, such as climate control, speed, and navigation, without overcrowding the interface are desired.
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# EMPATHY MAP

Ali Eshraghi



# PERSONA CARD

Ali Eshraghi

## PERSONA CARD – Ali Eshraghi



"There's too many steps just to adjust the climate."

### BIO

Ali is an Iranian who likes to play soccer and go to the gym on a regular basis to stay active. He used to work as a DoorDash driver while going to school, which gave him invaluable driving experience. Ali doesn't consider himself an aficionado, although he does like playing video games on his PC and has a passing interest in vehicles.

AGE: 22

OCCUPATION: Student & Sales Associate

STATUS: Single

LOCATION: Costa Mesa, CA

### CASE STUDY

Ali imagined a seamless driving experience, wherein he could operate essential functions such as climate control and navigation with the least amount of interruption thanks to the car's interface. His dream system would include simply navigable menus and voice commands that are simple to use, enabling him to make quick modifications while keeping his eyes on the road. Nonetheless, Ali's encounters with rental automobiles frequently caused him frustration because of their intricate touchscreens that necessitated numerous steps to accomplish basic things, resulting in anxious driving situations. Ali found it challenging to carry out fundamental tasks effectively since there was a blurry line between the controls. Ali's situation emphasizes how crucial it is to design user-friendly automotive interfaces that put an emphasis on simplicity and reduce driving distractions.

### GOALS

- Quickly and without interruption, access key automotive features.
- For a safer, hands-free experience, use voice commands.
- Simplify the control arrangement for better use.
- Adjust basic functions while keeping your attention on the road.

### FRUSTRATIONS

- Touchscreens with too many steps for easy activities.
- Rental car layouts that are confusing and distracting.
- Inability to distinguish clearly between climate and navigation controls.
- UIs that are excessively intricate and demanding.

### NEEDS

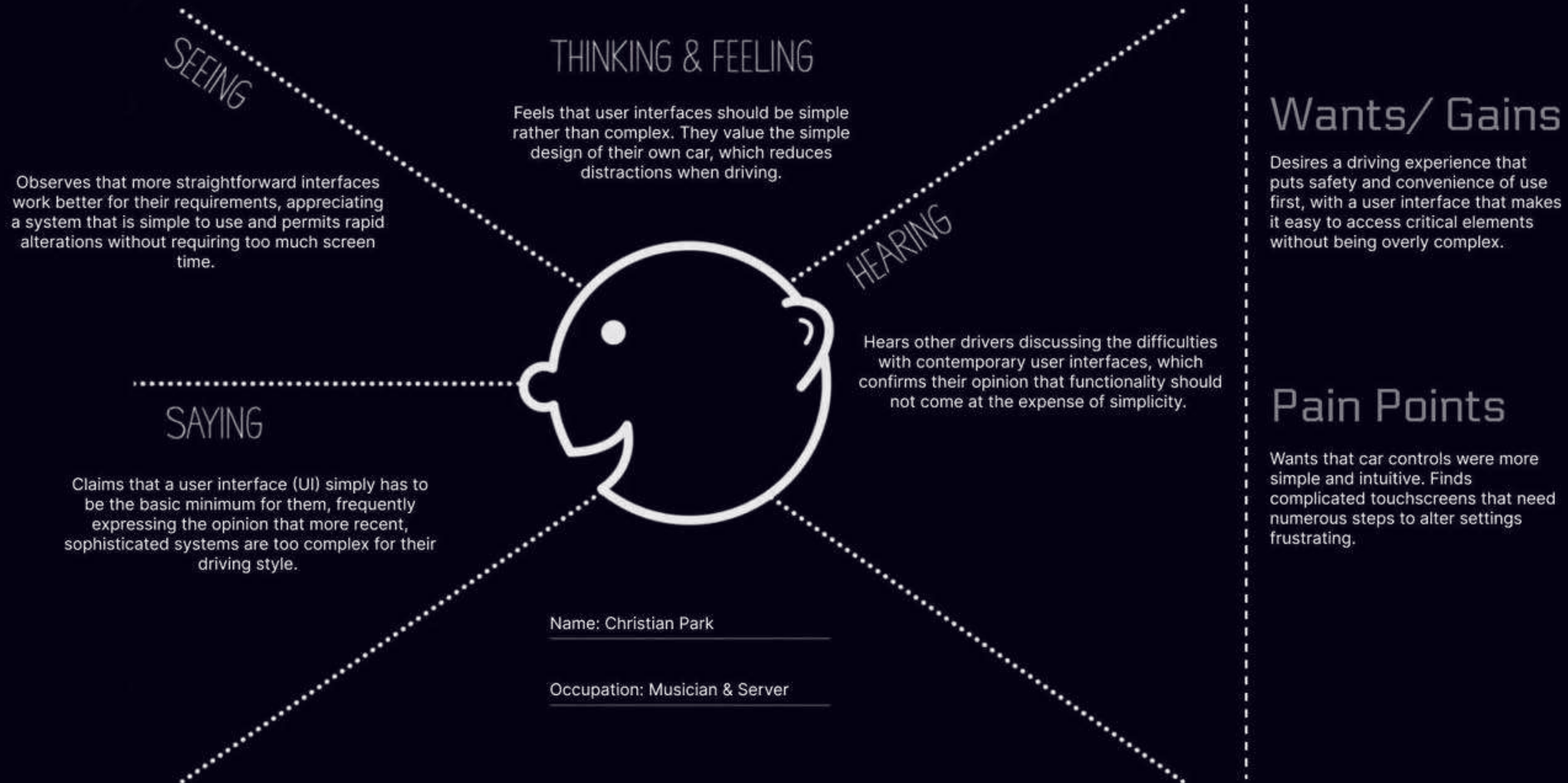
- Voice commands that are intuitive for simple control.
- A basic, neatly arranged user interface for the main functions.
- Easy access to frequently used controls, such as navigation and climate.
- Menus that are simple to use and need few steps to navigate.



# EMPATHY MAP

Christian Park

## Empathy Map - Christian Park



# PERSONA CARD

## Christian Park

### PERSONA CARD – Christian Park



"Too many menus for small adjustments, keep it simple."

#### BIO

Christian is a Korean-American waiter and music enthusiast who works in the restaurant industry. Apart from his musical endeavors, he also likes graphic design and photography. Although he doesn't have much interest in cars, he appreciates a convenient and comfortable trip. Christian hopes to make a name for himself as an artist in the future.

AGE: 24

OCCUPATION: Musician & Server

STATUS: Single

LOCATION: Garden Grove, CA

#### CASE STUDY

Christian sought a simple driving experience, with the car's UI offering simply the necessities for a relaxing trip. He liked things to be basic and minimalistic, with controls that didn't overwhelm him with too many options. But Christian found himself dissatisfied by complicated touchscreens that needed him to go through multiple menus in order to alter simple features like the air conditioning when he drove more recent models with heavily digitalized interfaces. His inclination for the bare minimum was furthered by his own car's considerably more intuitive experience due to its straightforward, analog design. Christian's situation emphasizes the necessity for user interfaces that strike a balance between simplicity and new technology in order to satisfy drivers who prefer intuitive navigation over intricate digital capabilities.

#### GOALS

- Have a basic automobile interface with only the most necessary functionality.
- Get fundamental controls quickly and easily without having to navigate complicated menus.
- Make sure your driving experience is convenient and comfortable.
- Reduce distractions when driving by staying away from sophisticated user interfaces.

#### FRUSTRATIONS

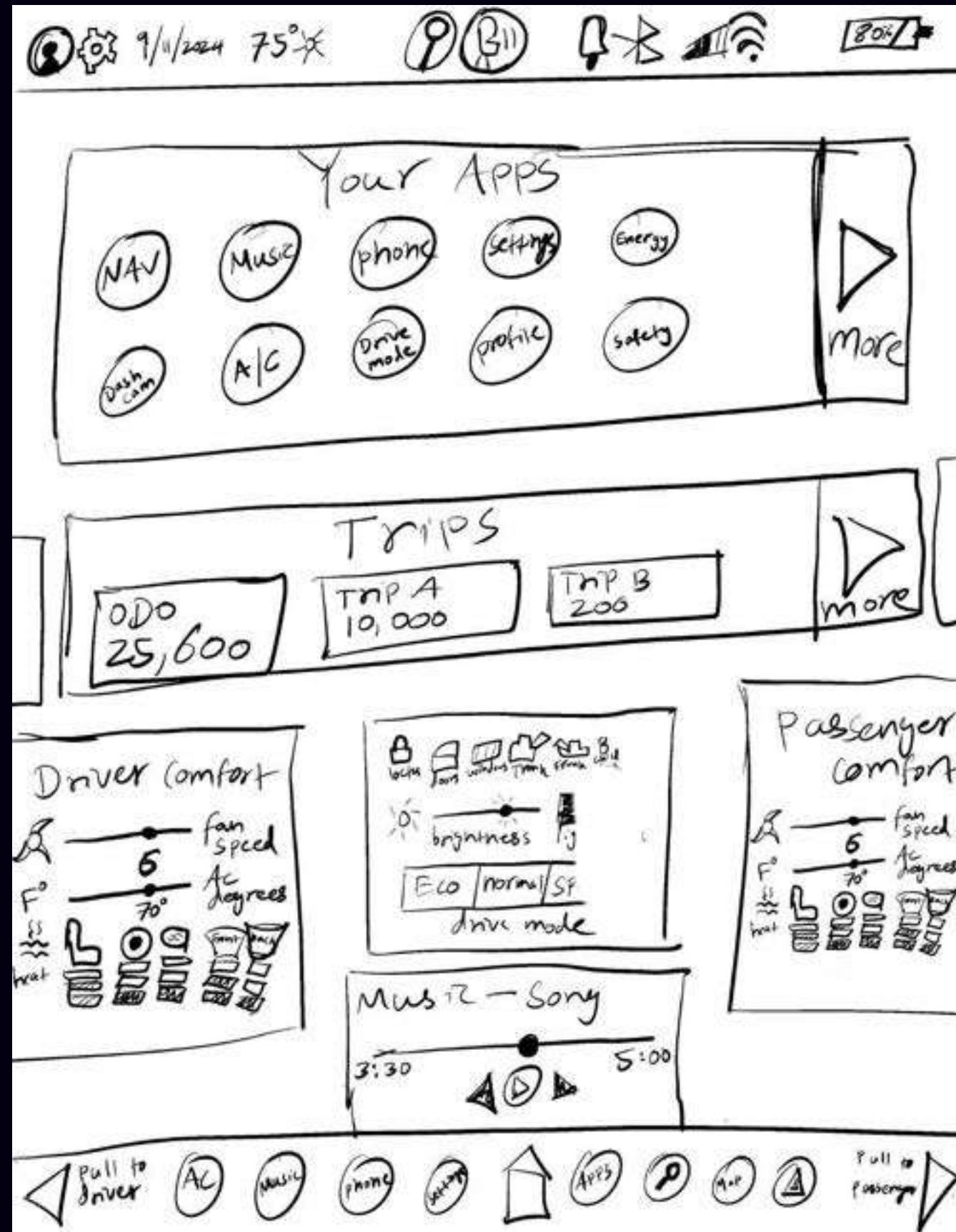
- A/C and other basic features can be adjusted with much too many menus and procedures.
- A frustrating driving experience is caused by excessively complicated touchscreens.
- More recent automobile user interfaces that provide an excessive number of superfluous functionality.
- Finding and utilizing fundamental controls quickly is difficult.

#### NEEDS

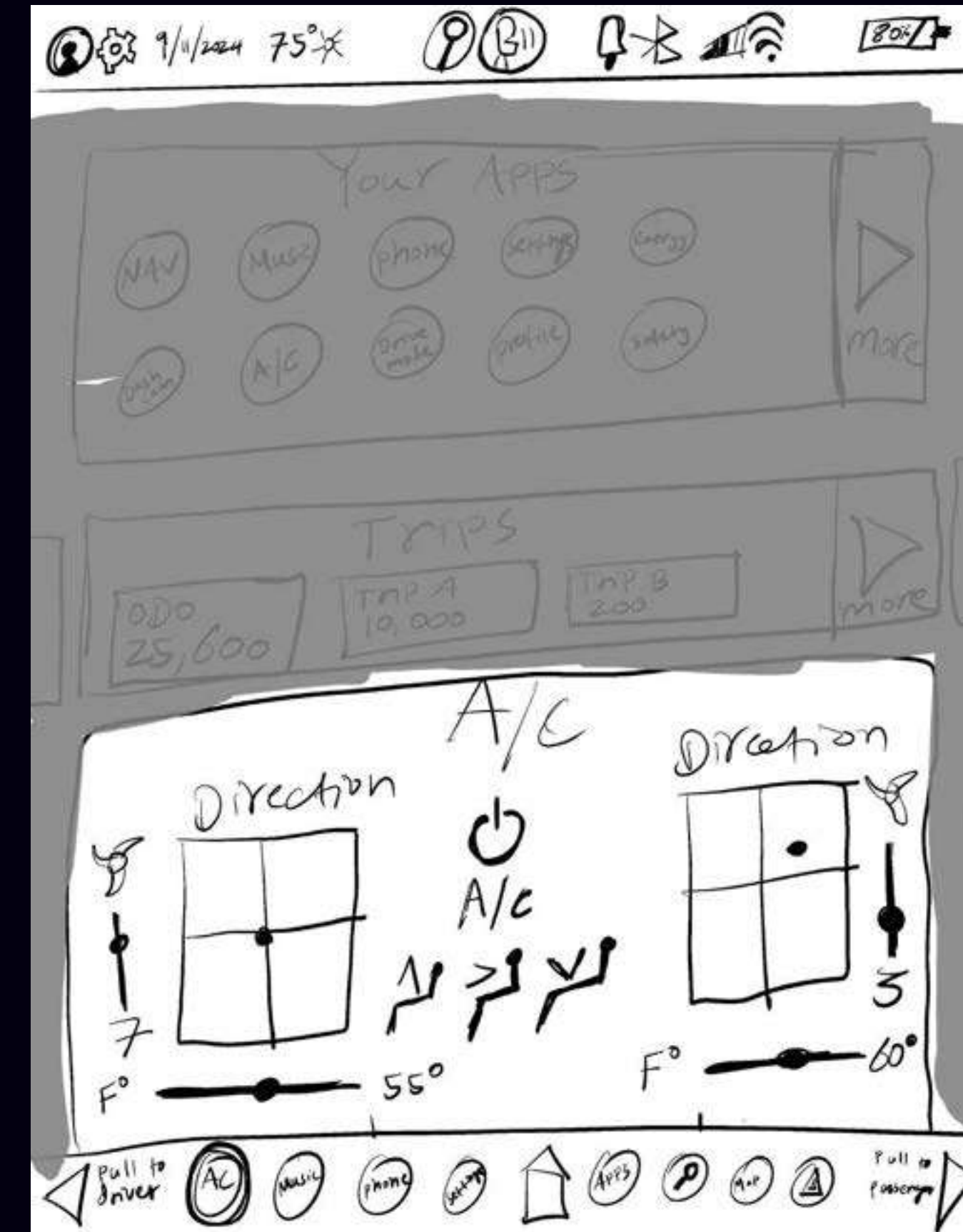
- A simple, uncomplicated interface that emphasizes the most important aspects.
- Simple digital controls or easy-to-use physical controls to make quick adjustments.
- A user interface that puts ease and comfort first.
- A healthy mix of usefulness and simplicity without offering too many choices.



# UI HAND SKETCHES



Homepage



A/C page

# USE CASE SCENARIOS

## Scenario 3

**Using the Navigation System to Travel to The CSULB (California State University - Long Beach) Campus.**

Ali wants to visit the CSULB campus from his home and decides to use his car's navigation system to guide him there. To begin, he taps on the map widget displayed on the car's interface homepage. Once the map opens, he taps on the search bar at the top of the screen to input his destination. Carefully, he types in "C-S-U-L-B" letter by letter, watching as the suggestions populate below. Spotting the correct location at the top of the list, Ali quickly taps on the first search result to select it. With everything set, he confidently taps on "Start Trip" to initiate the navigation and begins his journey to campus.

**Adjusting AC and Seat Heating/ Cooling Controls in the vehicle.**

As the navigation begins, he decides to adjust the car's climate and seat settings. First, he sets the AC on by tapping the AC widget on the interface. To cool the car down, he sets the temperature to 62°F using the directional arrows on the screen. Next, he adjusts the direction of the airflow, ensuring it's directed toward his face for maximum comfort by swiping the airflow animation. Finally, he goes to the seat adjustment page by tapping the seat icon. There, he sets the driver's seat warmer on by tapping "1" for the first level of heat. Finally, he adjusts the backrest to a more comfortable position, ensuring his posture is just right for the drive ahead.



# USE CASE SCENARIOS

## Scenario 2

### **Making and Managing Calls Using the Vehicle's Integrated Phone System.**

Making and Managing Calls Using the Vehicle's Integrated Phone System.

Christian needs to make an important call while on his way to meet a friend. To do so, he goes to the phone feature by selecting it from the left navigation bar on the car's interface. From the keypad, he dials "123 456 7890" and taps on the call button to start the call. Once the conversation is finished, Christian ends the call with a quick tap on the red button. Alternatively, Christian remembers that he can also call a contact directly. He navigates to his contacts from the phone menu and scrolls to find "Dante" in his list. With a tap on Dante's name, Christian initiates the call effortlessly. When the call ends, he taps to end the call and returns to the home screen, ready to continue his day.

### **Using the Vehicle's Entertainment System.**

Christian decides to set the mood for his drive with some music after making his call. From the home page, he clicks on the music widget to expand it, revealing the entertainment options. He then scrolls horizontally through the Albums section but wants a more comprehensive view of his music library. To do this, he clicks on 'Expand Albums' to view all albums in his library. As he scrolls through the list, Christian spots his favorite album by Billie Eilish. Without hesitation, he taps on the play button next to the album, filling the car with the artist's iconic sound. With the perfect playlist set, Christian feels energized and ready for the rest of his journey.



# USE CASE SCENARIOS

## Scenario 3

### Customizing Display Settings for a Personalized Driving Experience.

Christian decides to give his car's interface a fresh new look by customizing the display settings. Starting from the homepage, he clicks on the settings icon to access the customization options. From the settings menu, he taps on 'Display' and is presented with various color themes to choose from. After browsing, Christian selects a new color that feels modern and vibrant. Excited to see the result, he navigates back to the homepage to witness the changes. The updated color scheme brings



# WIREFRAME

## Homescreen

The design of this wireframe prioritized user customization, accessibility, and ease of use. Drivers can engage with necessary controls without removing their hands from their natural resting posture thanks to buttons that are placed on both sides of the interface to provide seamless reachability. Because each card and button in the layout is modular and uses a widget-style system, users can rapidly access navigation or change climate settings, among other customizations, to suit their own tastes.

The most important data is shown in a large, bold font, including gear selection, odometer readings, and battery life. This guarantees that the driver can quickly analyze the information and maintain their attention on the road. The entire design is sleek and contemporary, with a striking style that complements a futuristic, tech-forward appearance while retaining usability for daily usage. An interface that strikes a balance between style and utility is both aesthetically pleasing and easy to use.



# MAIN UI SCREENS

## Homescreen

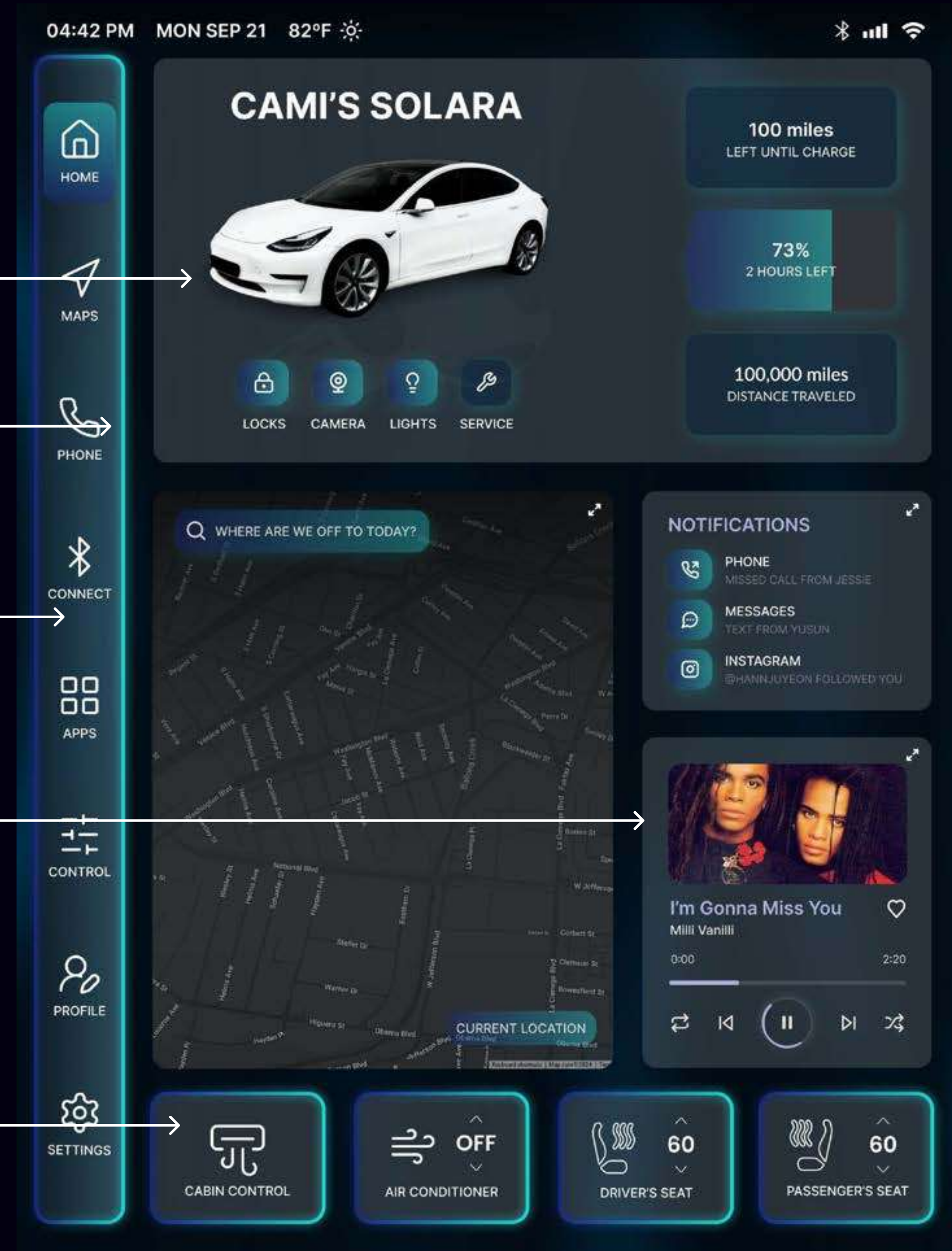
Important vehicle information stated boldly

Neon Blue Branding

Driver-centered tab bar

Customizable widgets/ cards

Desaturated colors to attract the average audience



# MAIN UI SCREENS

## Cluster Panel



# UI DESIGN SHOWCASE



# UI DESIGN SHOWCASE



# UI DESIGN SHOWCASE

