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M|I|C/A

“Better Car” Hypothesis Research

Research Strategy Design Leadership

Introduction

As part of our Master of Professional Studies in User Experience program at the Maryland Institute College of Art (MICA), we were assigned an 8-week “hypothesis-driven” research and design challenge.

First, we were asked to identify a hypothesis and formulate it as a problem statement, which we would validate or invalidate through research with a target audience. Second, we created proto-personas based on our initial assumptions about our audience, which we refined based on our interview findings. Third, we revised our problem statement and personas. Lastly, we developed concepts that reflected the research conducted and addressed our initial hypothesis.

This project was completed in late 2019, prior to the start of the pandemic, and may reflect data and behaviors that are no longer accurate in the post-pandemic context.



Hypothesis

To start, I came up with a number of potential hypothesis statements, ranging from challenges with online dating to our polarized political climate. Being an EV owner, I decided to focus on the roadblocks consumers face when making the switch to electric vehicles.

“Car shoppers would consider switching to an electric vehicle, but are hesitant due to misconceptions about the impact a change would have on their daily driving experience.”

- Individuals don't recognize that EVs represent a paradigm shift and try to apply the practices they've previously established with gas-powered cars to EV's.
- Individuals have not developed their view of EVs through direct exposure to electric vehicles, thus underestimating the maturity of the technology and supporting infrastructure.
- Individuals' political leanings and social bubbles bias their opinions of EVs as a viable purchase in the future.

Proto Personas

My initial starting point for proto-personas was based on conversations I've had with individuals over the years about hybrid, plug-in hybrid, or pure battery electric vehicles that I've owned. This resulted in three personas, which I labeled "the Skeptic," "the Curious," and "the Tree," roughly aligning with a spectrum of openness to EV adoption.

Each proto-persona included a bio, some personal attributes, views specific to EV technology, related views on the EV transition or the environment generally, and an icon to represent them.

Professionally speaking, I prefer archetypes to personas, as I've found that personas often prioritize personality traits over needs and can be susceptible to personal bias on the part of the author when filling in details.

[View My Proto-Personas](#) 



Quote

"You'll never see a return on investment"

Persona Attributes

"The Skeptic"

Age: 47

Occupation: Welder

Politics: Conservative

LET'S MEET CHARLIE

BIO

Charlie is a car guy. He likes his cars fast, his trucks loud, thinks America was built off fossil fuels and doesn't think that's changing any time soon. While he's seen an electric car in person he doesn't think they will become mainstream for most Americans. His 2017 Ford F150 is his prized possession.

VIEWS ON EV TECH

- Heard the production of a battery is less green than burning gas.
- Thinks EV's are more expensive to maintain, especially once batteries fail.
- Believes the energy used to power EV's still comes from fossil fuels.
- Thinks the total cost of ownership is far higher than a similar gas powered vehicle.

RELATED VIEWS

- He doesn't associate burning fossil fuels to climate change.
- Doesn't think EV's could be successful without existing subsidies.
- EV owners get away with not paying the same road tax that others pay when buying gas.
- Resents seeing special parking spaces for charging EV's popping up in his town.

Research Questions

Each interview consisted of three core topic areas, along with an introduction and a wrap-up.

The three topic areas were:

- Introduction/Current Car Situation: Their current vehicle situation, reasons for selecting their vehicle, frequency of driving, general level of driving enjoyment, and their estimation for acquiring their next vehicle.
- Views on Environment: Views on climate change, its impacts over the next decade, individual roles in addressing the issue, priorities relative to other social issues, technologies that can have a positive impact, and the impact on their driving behavior.
- Views on Electric Vehicles: Whether they know an EV driver, whether they have driven in one, their views on the maturity of the technology, the role EVs can play in climate change (both positive and negative), overall practicality for daily use, perceptions of cost, and sources of information that have shaped their opinions.

Research Findings

- Consistent concerns across all subjects included upfront cost, lack of infrastructure, and uncertainty about the source of energy (fossil fuels).
- Subjects become more knowledgeable about car technology and available options when they are in the market for a car, and less so when they are not.
- A universal primary source of information on EVs comes from Facebook and people in their social circles who drive EVs. While other sources are consulted at the time of purchase, this appears to be the only one consistently referenced.
- Several subjects had difficulty distinguishing between pure EVs and hybrids, often treating them as the same. This confusion was particularly evident among those with hybrid experience, who may feel that they are already driving electric vehicles.

Research Findings

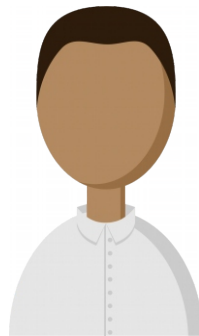
- There was an underlying view that it's not necessarily the buyer's responsibility to purchase an electric or more fuel-efficient vehicle, but rather the industry's responsibility to stop producing cars that aren't fuel-efficient or electric.
- Participants viewed efficiency in the context of the vehicle type; a fuel-efficient dump truck has a different MPG than a fuel-efficient family sedan.
- While there was some perception of EVs as unproven technology, this was not a common sentiment.
- There was a notion that broad adoption of EVs will occur in the used car market, rather than in the new car market.
- Although the importance of climate change varied among subjects, all acknowledged that it is a real problem and potentially one of the top five issues we need to address.

Revised Personas

Based on the conversations I had, I conducted additional desk research on buying habits published between 2017 and 2019, which helped inform two new personas that I would use moving forward. Instead of personas based solely on views of EVs, these were based on people actually in the market: “The Leaser” and “The Buyer.”

Due to the 2019 used EV market being limited to a few models, many of which were EPA “compliance” vehicles, while others, such as those from Tesla, maintained high resale values, I did not create a persona exclusive to the behaviors of a used car buyer.

[View My Revised Personas](#) 



LET’S MEET ADNAN

BIO

Adnan is in the process of completing a three year medical residency. The car he drove through college recently died and he needs a replacement. He’d like to buy new so he knows it will be reliable, but doesn’t have the credit history or income yet to support this. He’d like to find something fuel efficient to help keep his expenses in line.

Quote

“I need to make a quick and wise decision”

Persona Attributes

“The Leaser”

Age: 24

Occupation: Medical Resident

VIEWS ON EV TECH

- Knows a Dr. in his department with an EV who loves it.
- Heard the hospital and his apartment have EV charging stations in their garages.
- Knows there is a government tax incentive, but doesn’t know if it would apply to a lease.
- Concerns long drives to visit his parents for a weekend would be a challenge

RELATED BEHAVIORS

- Has been busy with school, hasn’t investigated car options and doesn’t have a lot of time now to do so.
- Wants something small and practical for today.
- Doesn’t want to be locked into a decision long term for when he is ready to upgrade.
- Cares about the environment, and looks for ways to lower his carbon footprint.

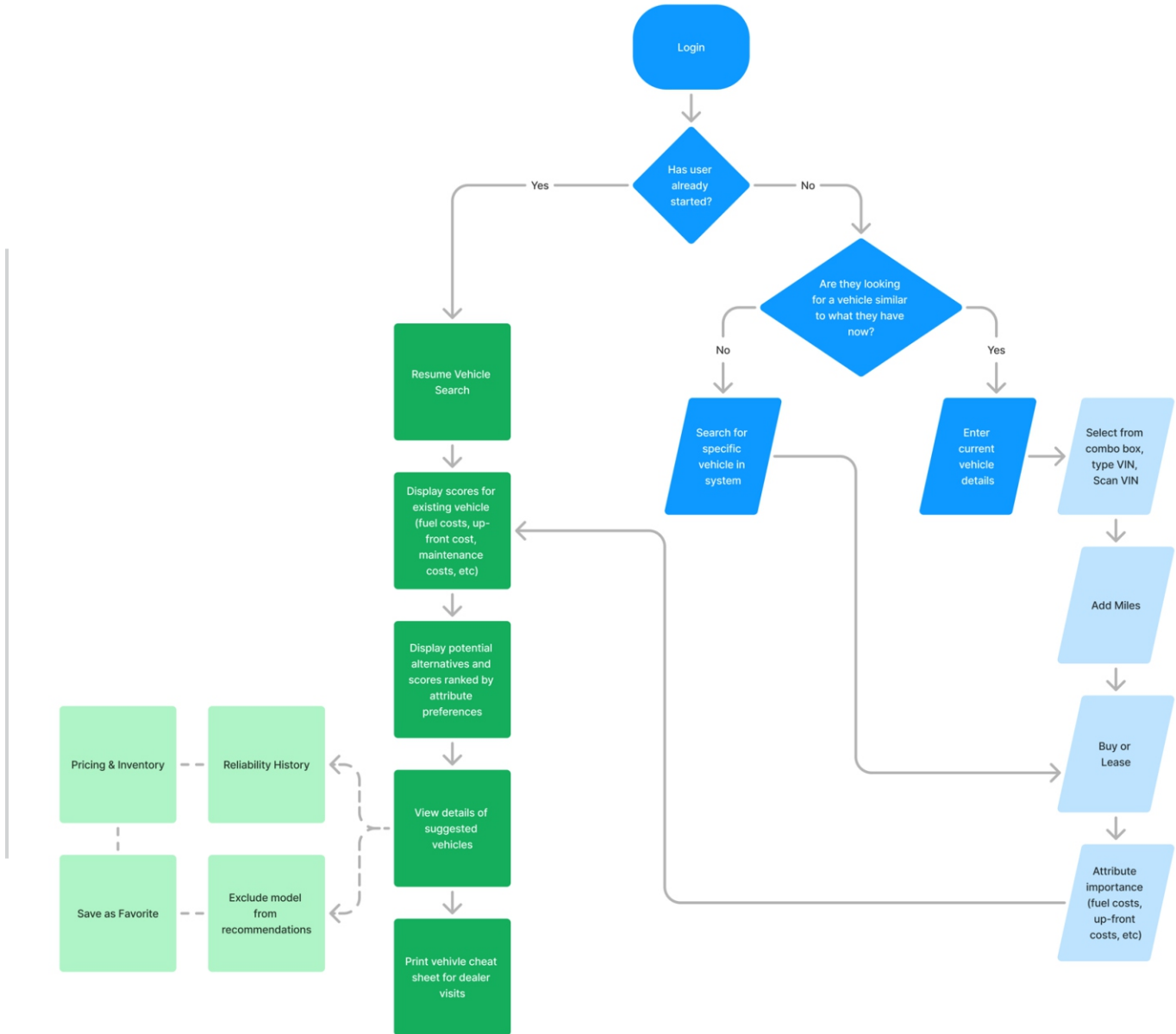
Task Flow

My strategy was to build on two concepts that emerged from my interviews and desk research. The first is that individuals are more receptive to new information about vehicles when they are actively in the market, and the second is that many car buyers tend to “repeat previous decisions” (COX Automotive Car Buying Journey 2018).

Most car sites today, whether on a dealership website or a third-party aggregator, start by having the user select a specific vehicle and then provide a data dump that can be filtered and sorted. This approach requires the viewer to put in extra effort to make any level of comparison across vehicles.

In my revised flow, I aimed to first capture the attributes that matter to the buyer, then start with their current vehicle to show potential alternatives, including electric or more fuel-efficient options, side by side. These alternatives could be direct competitors to their existing vehicle or variants of the same model that they might not have otherwise considered.

Once we captured the buyer's preferences, we could display our recommended vehicles in ranked order based on their stated preferences. This is where we could help educate the buyer and make the case for other options by displaying total cost of ownership factors such as fuel and maintenance costs.

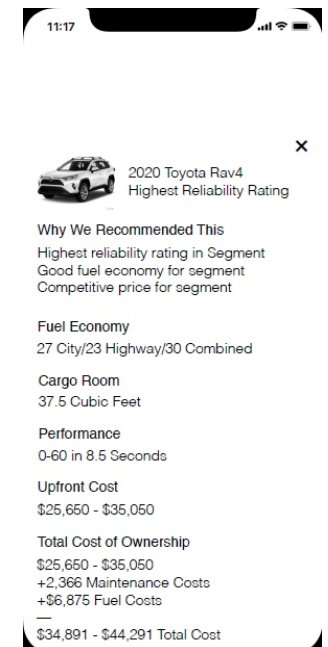
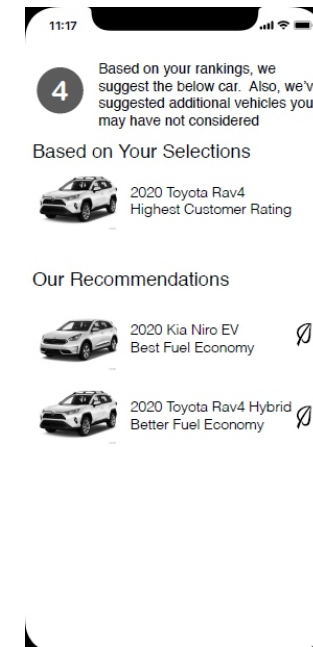
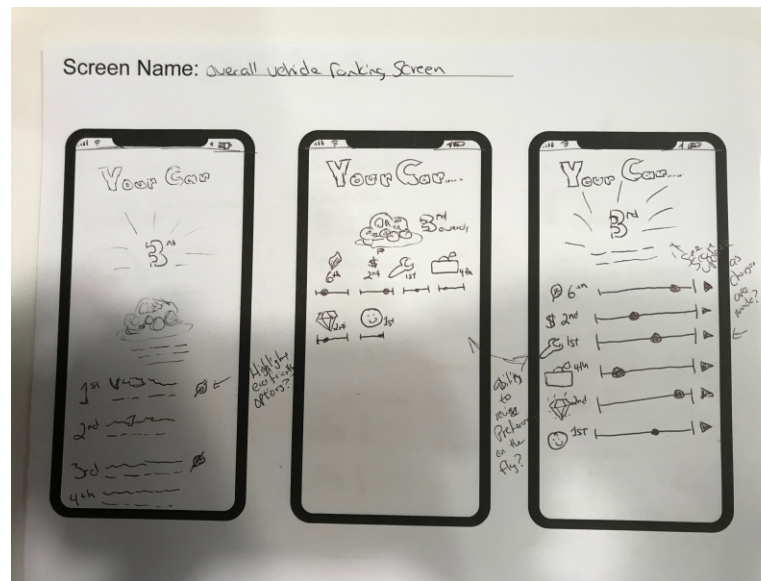


Concepting & Testing

A number of sketches were created for the vehicle results and details screens to explore how to display these new concepts around rank and attributes. From there, wireframes were created in Sketch to work through the end-to-end flow and assemble a click-through prototype for testing.

Testing was conducted with three new participants who were not part of the initial research, all of whom identified as being in the market for a new vehicle within the next 6–9 months.

In testing, most participants moved through the prototype faster than anticipated, indicating a high level of walk-up usability. Areas for improvement included refining the headings used to describe sections of the prototype, finalizing the data displayed for each vehicle, and providing more clarity around why specific vehicles were shown. Additionally, the ability to add multiple vehicles under consideration—not just the vehicle they currently own or are interested in—was identified as a needed feature.



Summary

When I started this project, I was interested in bringing awareness to the benefits of EVs and focused more on perceived personality traits and value systems. As I delved into the research, I began to pivot towards targeting buyer behaviors during the purchasing process as a way to communicate these benefits.

Regarding the designs themselves, I think the model has potential. The current approach of searching for a specific vehicle and then filtering/sorting to find a match works well on a dealer website with a fixed inventory, but it doesn't really help with understanding if there's a better option for me. The burden for that level of research is on the buyer, and unless you're really into cars, I can see why buyers would gravitate towards makes and models they're familiar with.

However, in hindsight, I wish I had more time to think through the concept as presented. In addition to the time constraints of the course and working a full-time job, I was also in the middle of my move to Washington, DC, so I wasn't able to dedicate as much time as I would have liked.

One concept I didn't really get to explore is the idea of a "cheat sheet" that a buyer could take with them to the dealer to assist in discussions. The course also didn't provide time to incorporate our validation feedback into a revised concept and then move to a mockup, but time permitting, I may revisit this work.

[View My Final Presentation](#) 

