

Ⓟ PARALLEL

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# Project Team

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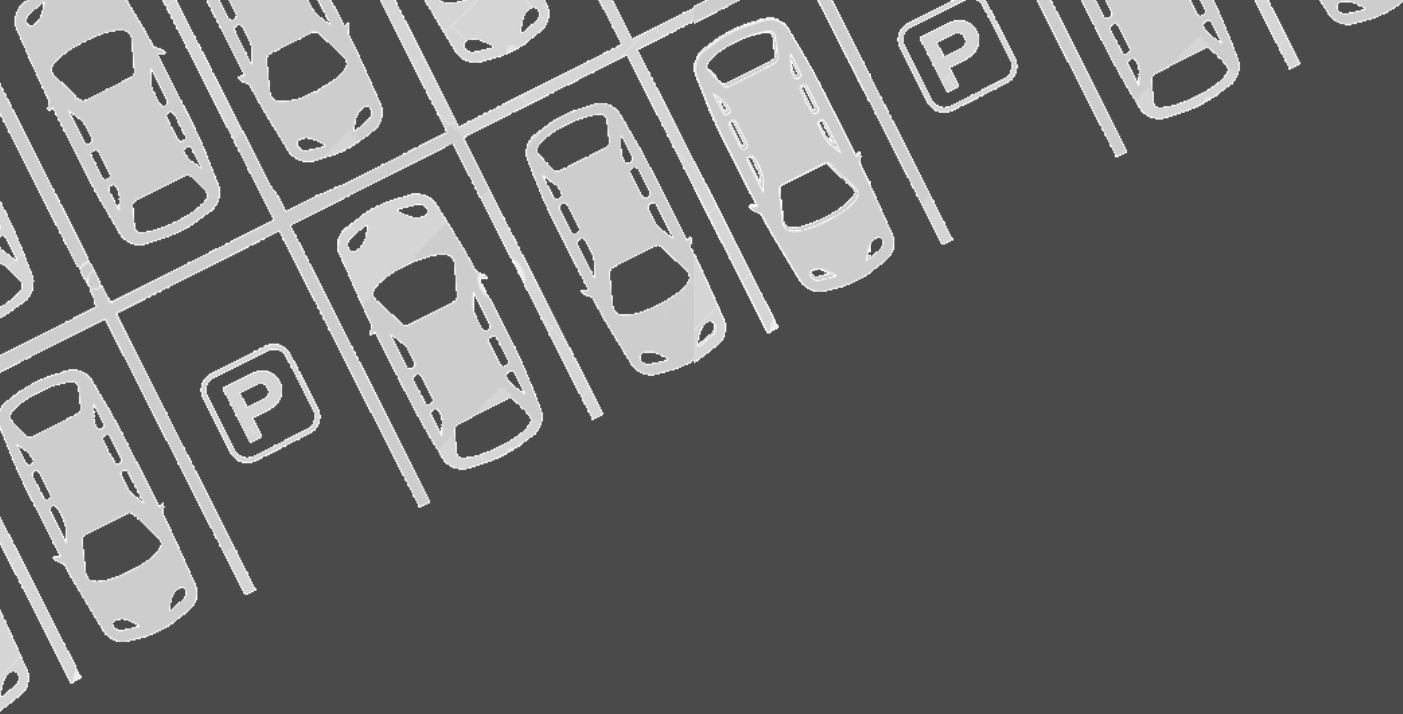
Competitor Research  
Personas

# Introduction

In recent years, there has been an increased awareness of the impact of vehicles on cities and the environment. In response, there was a shift in society's focus from prioritizing individual drivers to prioritizing public transportation systems. With less attention directed its way, the unresolved issue of parking continues to affect those who opt to drive.

Despite the plethora of garages, lots, and curbside spaces located throughout Seattle, parking is problematic simply because of the lack of information being circulated. Motorists do not have access to concise data regarding the specific locations of said parking options, nor do they have the ability to track up-to-date statuses of parking availability. These factors ultimately force the entire parking process to be done on the spot.





# Project Brief

Parking is an everyday occurrence that has a broad range of stakeholders, such as commuters, visitors, merchants, and property owners. Parallel aims to ease the process of finding parking by digitizing and automating the experience. In addition, Parallel strives to achieve these goals:

- Minimize user interaction with the application while driving
- Limit the number of navigation applications needed while driving
- Enable users to customize their parking preferences
- Allow users to make reservations in advance, when applicable
- Display parking spot characteristics, including hours of operation, space availability, price, permit requirements, and time limit, in a concise manner
- Encourage user contribution to data bank

# User Research

Our project team created a 10-question survey that we shared on our social media accounts. In addition, we conducted several personal interviews. Our findings are as follows:

## Survey

Click **here** to be directed to the survey.

- 64% drive, 24% walk
- 76% use Google Maps, 24% do not use any parking applications
- 44% park in parking lots, 40% on the street, 15% in garages
- 49% take 10-15 minutes to find parking
- 60% would pay for parking instead of driving around
- 44% usually park for leisure activities, 22% to go to work, 13% to go eat, 11% to go to class, 9% to go shopping
- 77% have wanted to travel in Seattle but did not want to drive because of parking concerns
- 71% have parked illegally because they could not find parking
- 55% have not received a parking ticket in Seattle

## Interviews

- People do not plan ahead for parking; they only think about it when they reach their destination.
- People value inexpensive parking and proximity to their destination.
- People would like a service that could tell them whether a parking space was available.

# Personas

We created this primary persona, who represents the typical motorist with an inconsistent parking routine, to understand how our potential users operate on a daily basis. By analyzing their routine and personality, we developed solutions that offered them the most benefits.

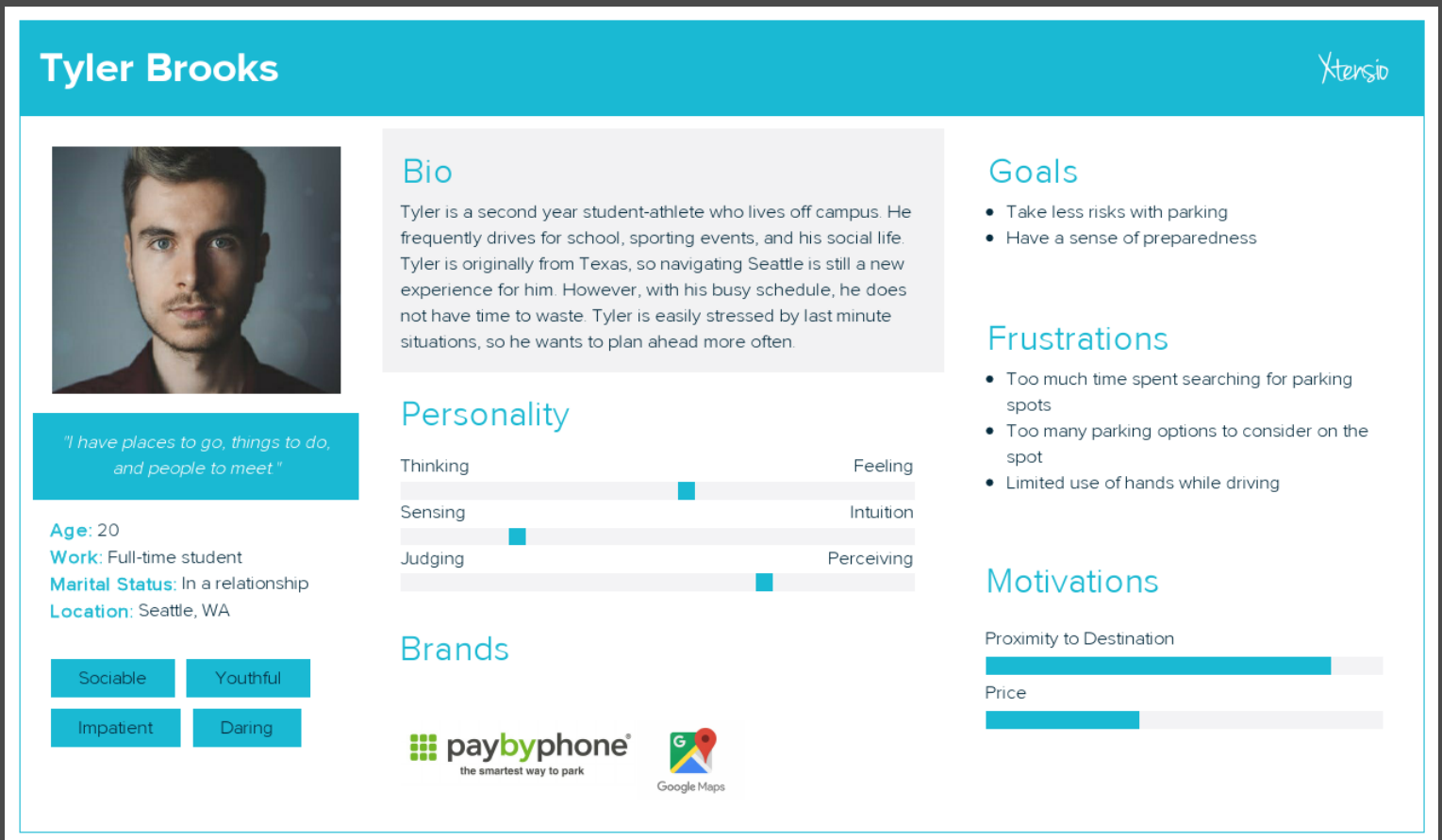


Figure 1. Persona of Tyler Brooks, who symbolizes the typical motorist.

# Personas

We created this secondary persona, who represents the disabled driver with special parking requirements, to empathize with our diverse users. Taking into consideration this underrepresented lifestyle helped us develop solutions based on their unique needs.

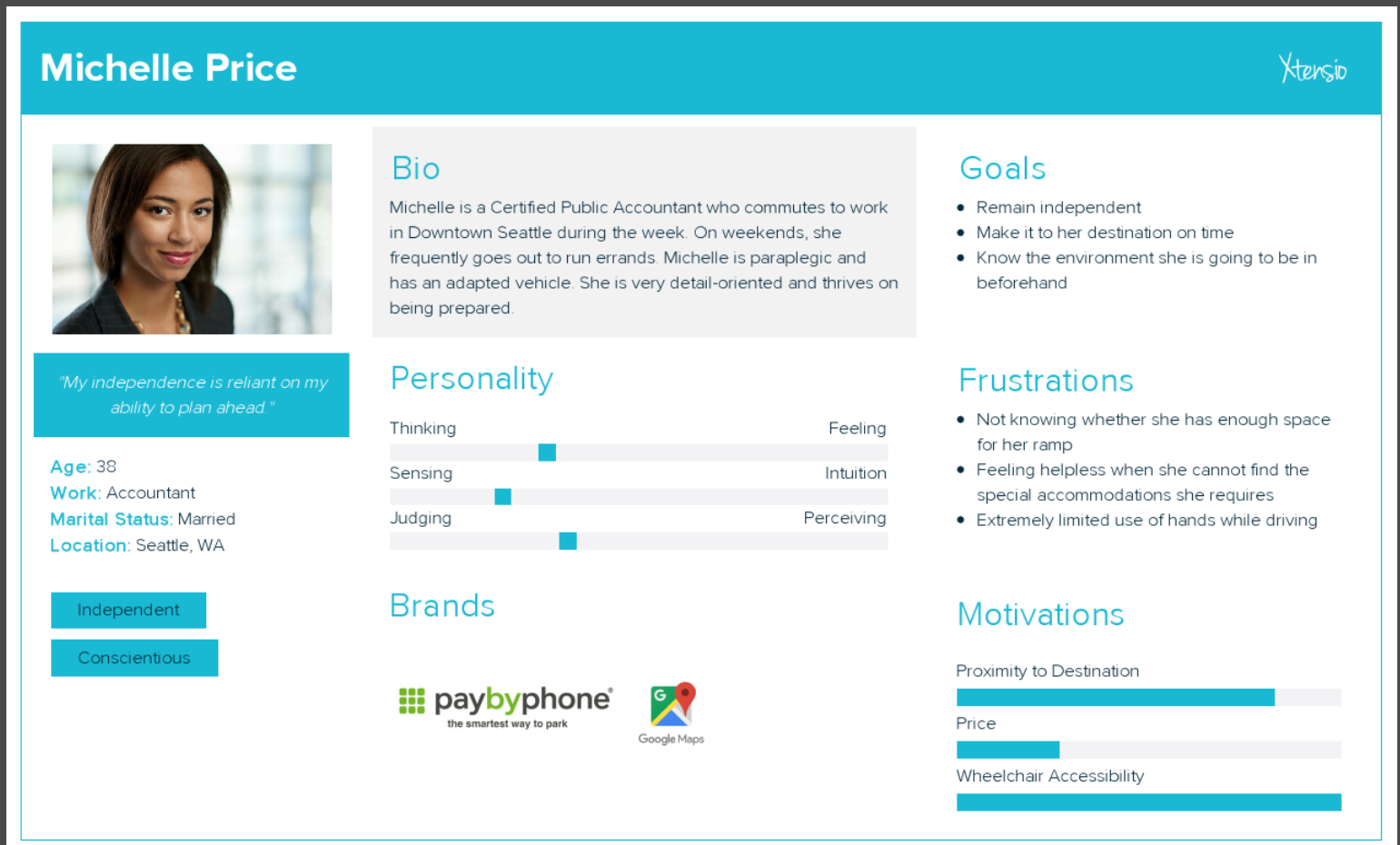


Figure 2. Persona of Michelle Price, who symbolizes the underrepresented motorist.



# Solutions Considered



## Website

Advantages: accessible on all devices, immediate availability encourages initial engagement, very dynamic

Disadvantages: too complex to use while driving



## Application

Advantages: access to features that are native to mobile phones, ability to offer real-time information, ability to enable notifications, supports offline use

Disadvantages: has a smaller display frame, needs to be compatible with multiple operating systems



## Physical Notification System

In the form of a sign displayed outside of parking garages

Advantages: no user interaction needed while driving

Disadvantages: not applicable to all parking options, does not solve secondary issues, difficult to update

# Chosen Approach

We decided to move forward with an application. Despite it being more work to develop, it was ultimately the best platform for Parallel because its association with mobile devices gave us access to supplementary features and made our service readily available to drivers in their vehicles.



# Functions and Features

- Personalized parking profile that includes:
  - Type of parking they desire
    - Street
    - Lot
    - Garage
    - Reserved
  - Distance they are willing to park from their destination
  - Maximum price they are willing to pay for parking
  - Permits they possess
  - Disability of other special needs
  - Which fields they want to see in the results
    - Space availability
    - Hours of operation
    - Price
    - Permit requirements
    - Time limit
- Single-click search activation
- Option to view map results on street-level or satellite display
- Provide directions to parking spot
- Make parking reservations in advance
- Option to link modes of payment
- Option to contribute to crowdsourced data bank

These functions and features will benefit users by supplying them with a plethora of information, which they can filter to better meet their needs. They will also allow the application to be easily navigable while driving, as the brunt of the labor will be done automatically based on the user's predetermined preferences.

# Wireframes

Click [here](#) to be directed to an InVision representation.

Click [here](#) to be directed to a Figma representation.

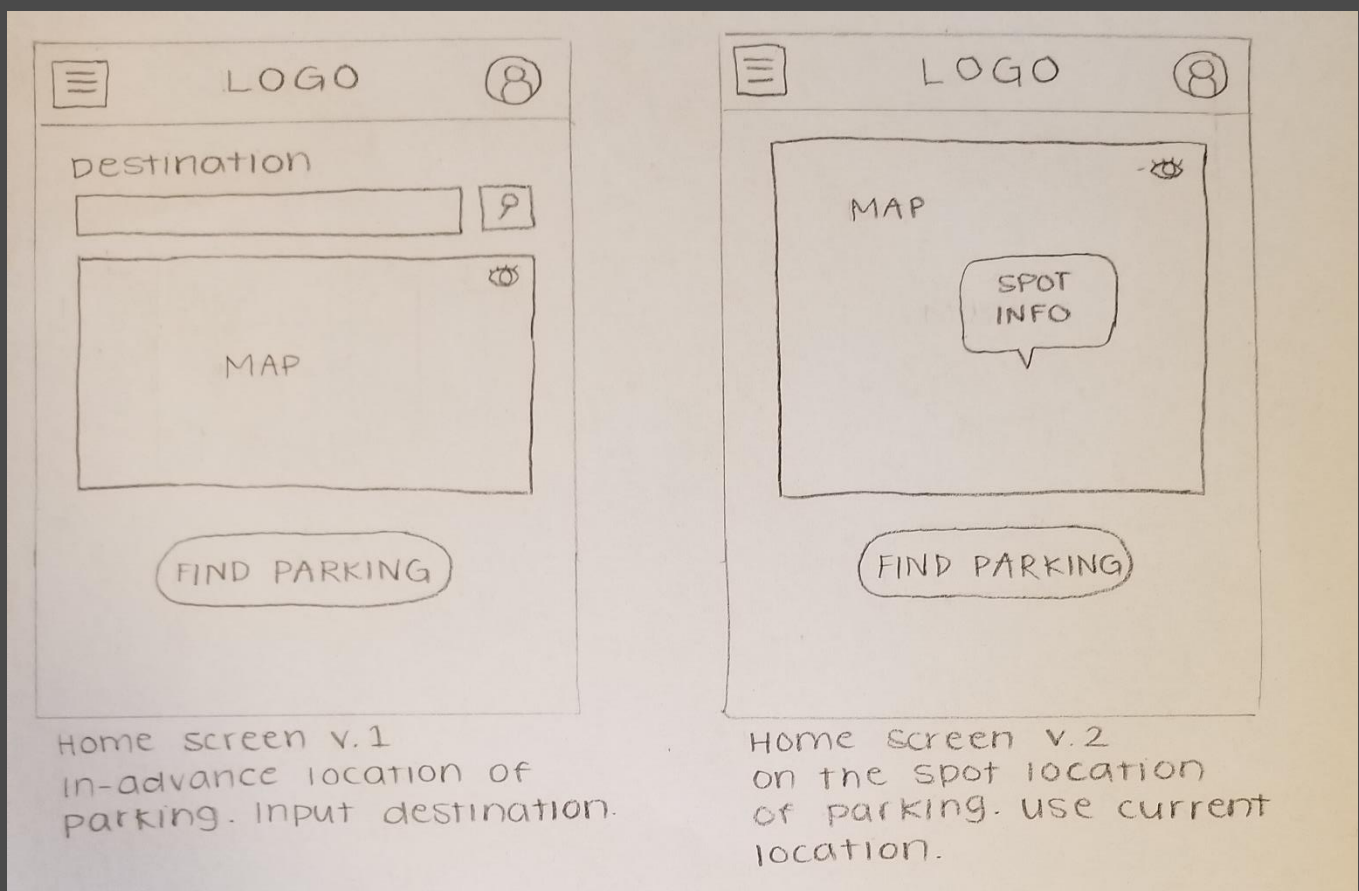


Figure 3. Wireframe sketch of two potential home screens, both of which include the main map and the Find Parking button.

# Wireframes

Click [here](#) to be directed to an InVision representation.

Click [here](#) to be directed to a Figma representation.

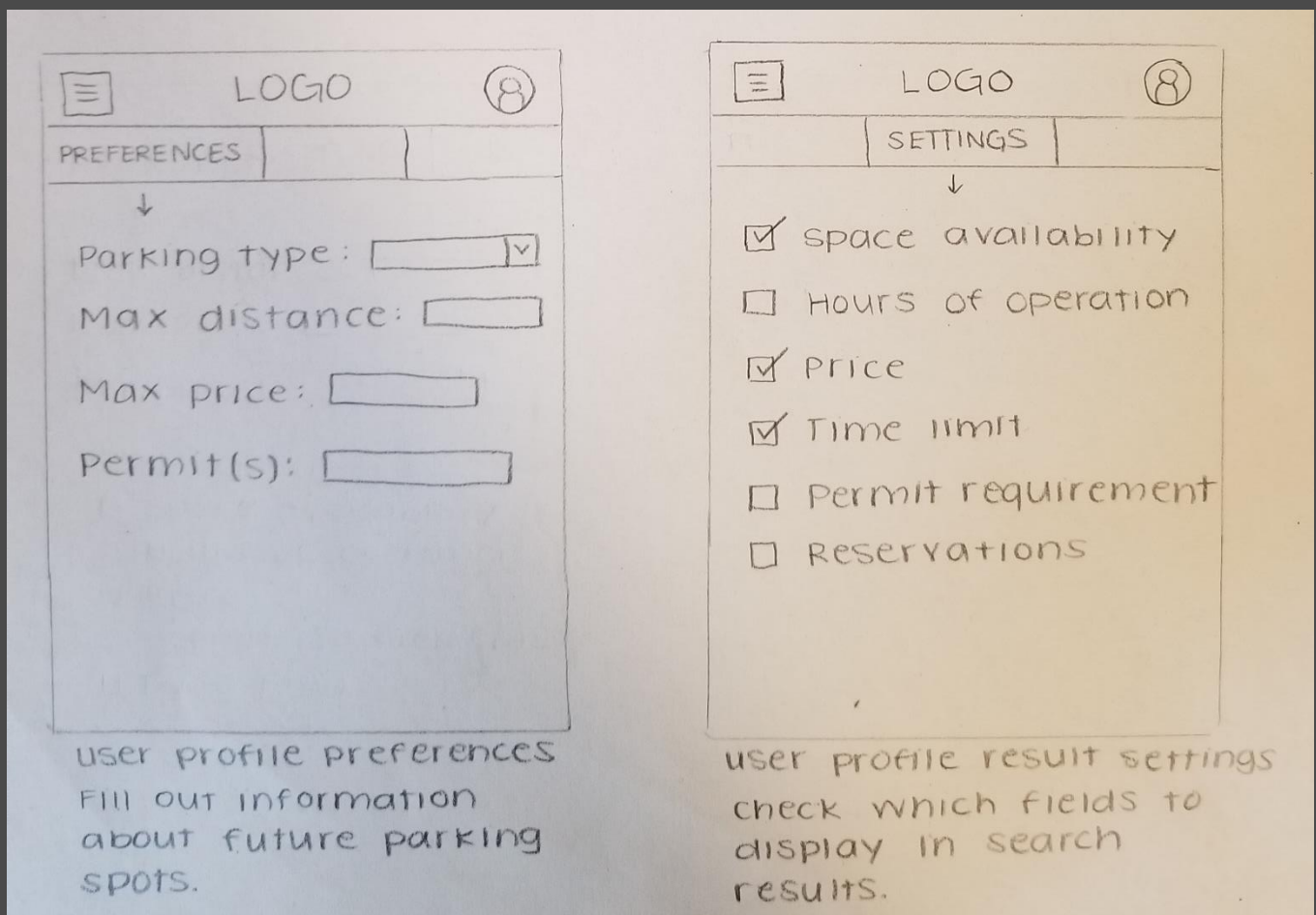


Figure 4. Wireframe sketch of the Preferences and Settings tabs located within the user profile.

# Wireframes

Click [here](#) to be directed to an InVision representation.

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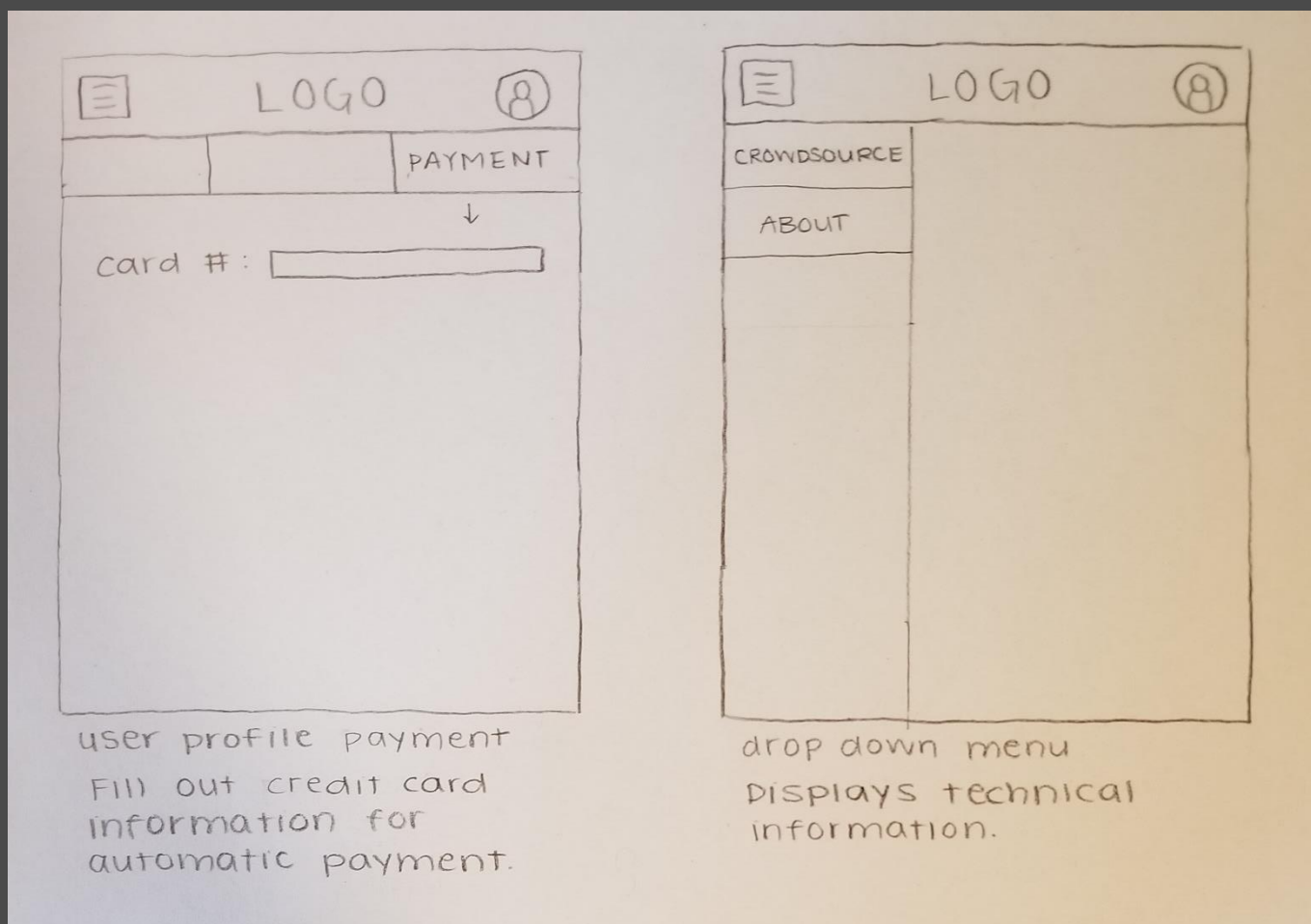


Figure 5. Wireframe sketch of the Payment tab within the user profile (left) and the drop-down menu (right).

# Wireframes Rationale

The home screen was kept simplistic to ensure that the user interacted with the application as little as possible while driving. This increased the safety of using the application while operating a vehicle. Upon running the application, the home screen only featured the map, which pinpointed the user's current location using the GPS feature on their mobile device, and the "Find Parking" button. The results that met the user's criteria and were closest to their destination are displayed on the map to prevent excessive information. Only after deciding on and arriving at a parking spot would the "Confirm Parking" button be enabled. This would proceed to mark the spot as being unavailable in Parallel's system.

The user profile was broken down into three sub-pages for the purpose of organization. The pages are listed in chronological order based on the process of finding parking. First is Preferences, followed by Settings, followed by Payment.

In Preferences, the user can set what type of parking they were interested in, the maximum distance they were willing to park from their destination, and the maximum price they were willing to pay for a spot. They can also note whether they have any permits, such as a residential parking pass or handicap permit. These filters were arranged as such based on the wishes of the people we surveyed and interviewed.

In Settings, the user can select which information fields they want to see for each search result. We included this option because we discovered that some motorists prioritized certain aspects of parking over others.

In Payment, the user can link their credit card to automatically pay for parking and reservations.

# Usage Scenarios

Tyler Brooks was driving to his friend's apartment in Downtown Seattle. Upon his arrival, he realized that the street parking required a resident permit and the public garage was full. Tyler pulled out his phone and opened the Parallel application. He had already filled out his user profile, where he described his ideal parking spot as being within half a mile of his destination and under \$5 with a four-hour time limit and no permit requirements. By simply clicking the "Find Parking" button on the home screen, Parallel was able to find Tyler a parking spot in a lot two blocks away. It provided him with driving directions to ensure he knew where he was going. When he found his spot, the "Confirm Parking" button was enabled below the map. By pressing it, the spot was marked as unavailable in the system to prevent other users from seeing it as a search result.

Nichole Lenton was scheduled for a job interview with a prestigious company. They were located in Redmond, which was an unfamiliar environment for her. Prior to driving over, Nichole installed the Parallel application. She clicked on the user profile button and began filling it out. From the drop-down menu for types of parking, she clicked on garages. In the text field for maximum distance and maximum price, she typed in '0.5' and '10' respectively. She proceeded to the settings page, where she enabled the space availability, hours of operation, and price fields. Then she returned to the home page and searched for the company's name. With her destination saved in the system, Nichole started driving. As she was nearing the area, Parallel offered her the locations of several different parking garages. She selected the location closest to the building, easily parked her car, and was able to arrive on time for her interview.



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