Clean Transportation to Outdoor Activities

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Problem Statement

The goal is to find a more sustainable way for students on UVM campus to access outdoor recreation to decrease the number of personal vehicles brought to campus (*Theme 2: Energy@UVM* 2020). Students can therefore have reliable transportation to outdoor recreation without needing to bring their own cars. We observe that a lot of students bring their cars to campus for transportation to outdoor recreation (*Outdoor Recreation Transportation Survey* 2019), which makes creating easily accessible and clean transportation options to those locations important to reducing UVM's carbon footprint. The challenge brought forward is providing students with transportation to outdoor recreation so they can easily and reliably access outdoor recreation with clean, renewable transportation?

Abstract

The goal of this project was to propose a solution for UVM Students that would provide them with efficient, yet clean transportation to outdoor recreational activities. Currently, a high number of personal vehicles are brought to campus due to a lack of adequate transportation to recreational activities (Theme 2: Energy@UVM 2020). In order to develop a solution, our team, 'Transportation Station' investigated the wants and needs of students who partook in a survey showing the flaws in the current transportation system at UVM. The analysis showed that one of the main reasons students brought cars to campus was to travel to these outdoor destinations, most likely due to the inadequate transportation systems of the city of Burlington and UVM. The numerous amounts of cars brought by the students of UVM not only increases congestion and lessens parking around the UVM campus and the city of Burlington, but it also immensely adds to the carbon footprint that is generated in Burlington by the students of UVM. Therefore, 'Transportation Station' explored ideas including alterations to existing bussing routes, bringing a Zipcar service to campus, and electric scooters being placed around the city for users to ride to destinations. Ultimately, the proposed solution was to develop an app that connects users to easily accessible and efficient bussing as well as carpooling opportunities and car rental services. If implemented, the proposed solution could / will create an efficient transportation system that enables the students of UVM to easily and efficiently reach recreational destinations, inaccessible without a car, thus reducing the number of cars students bring to campus, and ultimately the carbon footprint of UVM.

Background

Most students at UVM lean towards outdoor recreation in many forms. Each day there are always students out biking, hiking, skiing, hammocking, skating, etc. These students all find different ways to access the most preferable areas within Vermont for their activities. As a result of this, many students resort to having on campus cars, and therefore increasing the size of our carbon footprint. In order to achieve a smaller footprint, the solution must provide a way to help a broad range of activities and locations to appeal to all the students and is also efficient enough that the students do not feel the need to resort to personal vehicles.

Data Analysis

- Our team used a map showing different popular locations located nearby campus. Using these locations, we decided extended bus routes could create larger loops that would allow for students to have reliable transportation to their recreational areas, and plenty of space to bring things along inside the bus.
- For the locations that were further away or had no other locations around them, we proposed the idea of implementing rental electric cars through the Zipcar service. This would minimize the need for personal cars, decrease the carbon footprint of combustion vehicles, and appeal to students whose recreational interests require a unique schedule or location.
- Implementing both of these ideas separately would be costly and take a lot of time, so the next step was to integrate both ideas into a single solution that could solve both problems. This led us to developing the plans for an app that would allow students to use their preferences to determine the best mode of transportation for them.

Ideas Explored

- We approached the ideate phase using the "Worst-Possible-Ideas" strategy. This helped us flush out all possible potential solutions and promoted outside of the box thinking.
- Our initial ideate stage yielded about five ideas for transportation solutions; light rail, uber helicopter, adding bus stops to the CATSRide system, renting electric vehicles, and renting busses.
- Ultimately, after taking logistics and finances into consideration, determined an Electronic Vehicle fleet of busses and cars available for reservations and a carpool system facilitated through a mobile app would be the best solution for our campus.

The Team

- Roles:
  - Dytioco: Document Controller
  - King: Technical Lead
  - Nanni: Technical Lead
  - Sakaniwa: Communication Lead

The Gantt Chart on the right demonstrates the step-by-step process in finalizing our proposed solution

Acknowledgements

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Bibliography

- *Outdoor Recreation Transportation Survey*. (2019). https://bb.uvm.edu/bbcswebdav/pid-3526727-dt-content-rid-60143809_1/xid-60143809_1.
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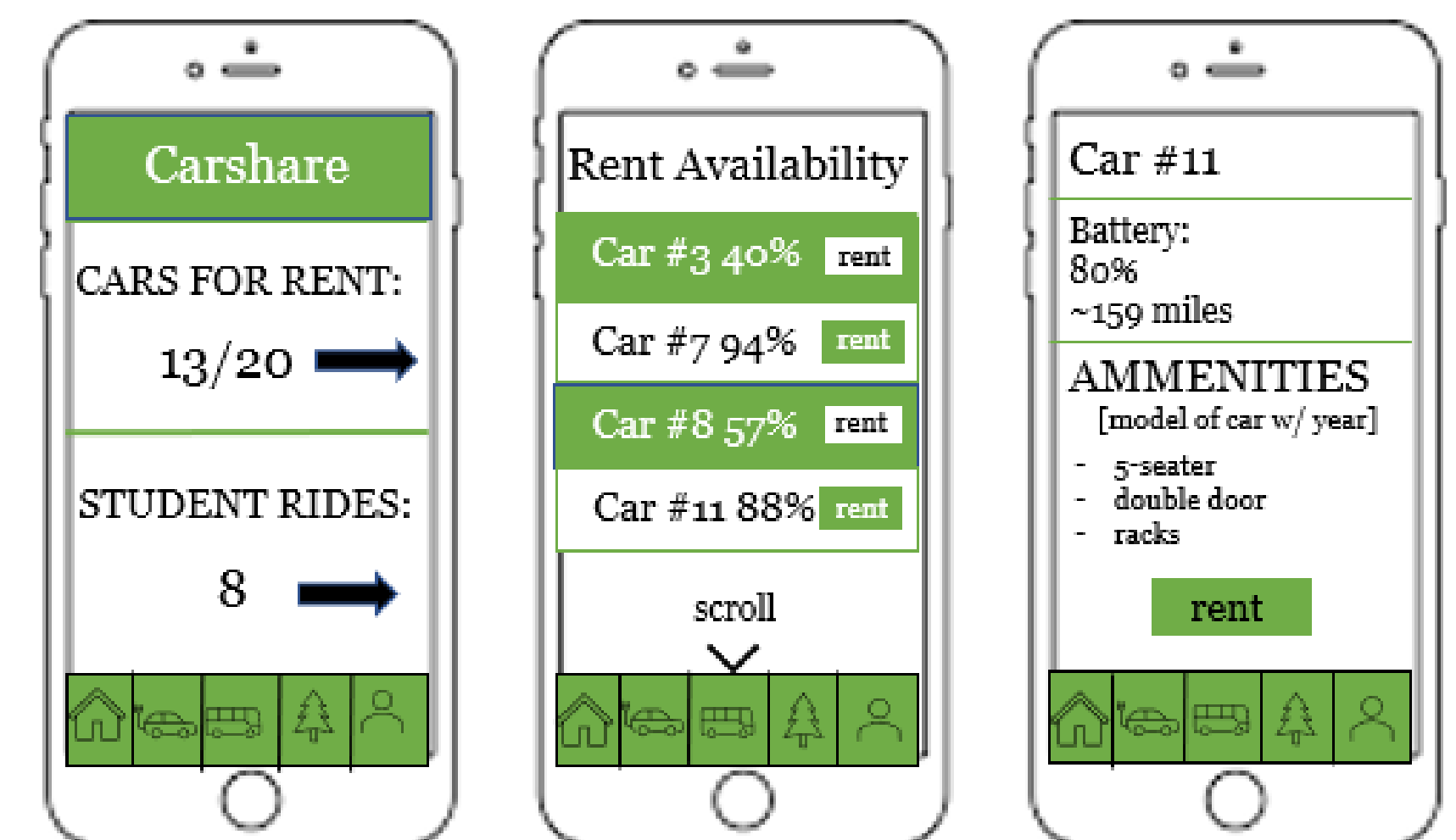
Proposed Solution

Our solution involves the creation of an app where users can easily find and reserve various methods of transportation to travel to their destinations.

Figure 1

Figure 2

- Figure 1 represents how users can sign up for the app and register their information to ensure they can fully engage with the app
- Figure 2 represents a how user can interact with the app to reserve a rental car or partake in a rideshare

Potential Impacts

If the proposed solution were to be implemented at UVM, the school would need to upgrade their energy grid to withstand the charging of an entire EV fleet.

Establishing a carshare, rental service, and a bus line to outdoor recreation sites will reduce the university's net carbon use and encourage community building among students.

Other potential positive impacts of our solution includes freeing up parking around campus and creating efficient transportation outside of the city of Burlington.

A potential negative impact of our solution can be the financial liabilities of having and being able to support a rental car fleet Some other constraints of having a bus line that takes students to outdoor recreational spots would be the limited site options, needing enough student engagement, and limited accessibility for certain sites during winter months.