



**My Neighbor's Kitchen**  
end food waste. locally.

## Final Report

CS 147: Introduction to Human-Computer Interaction Design, Autumn 2016



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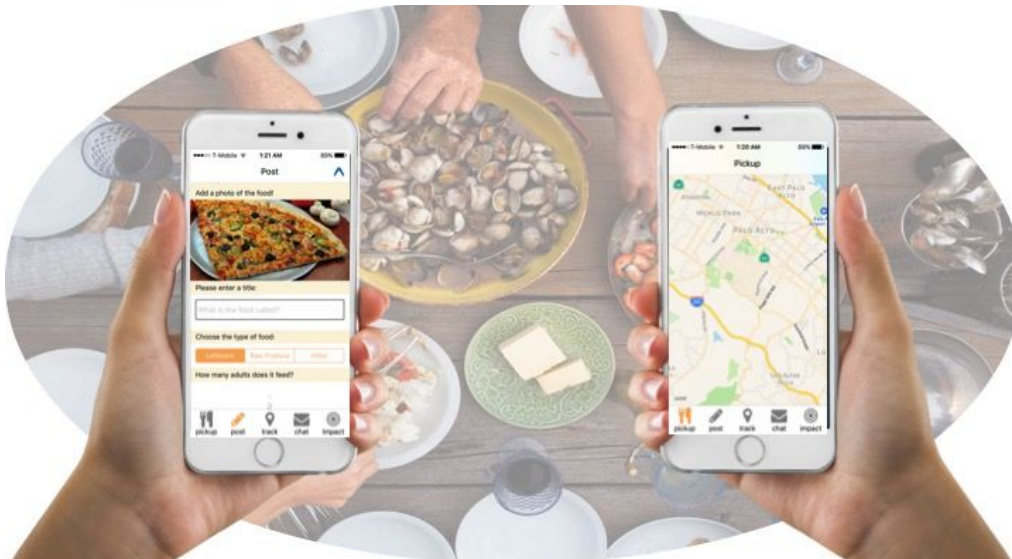


*Devangi Vivrekar*

### Problem → Solution

The average American household throws out 25% of the food it buys. Meanwhile, 1 in 7 Americans are food insecure. Chefs and store owners already have food waste management systems, but what about the average household?

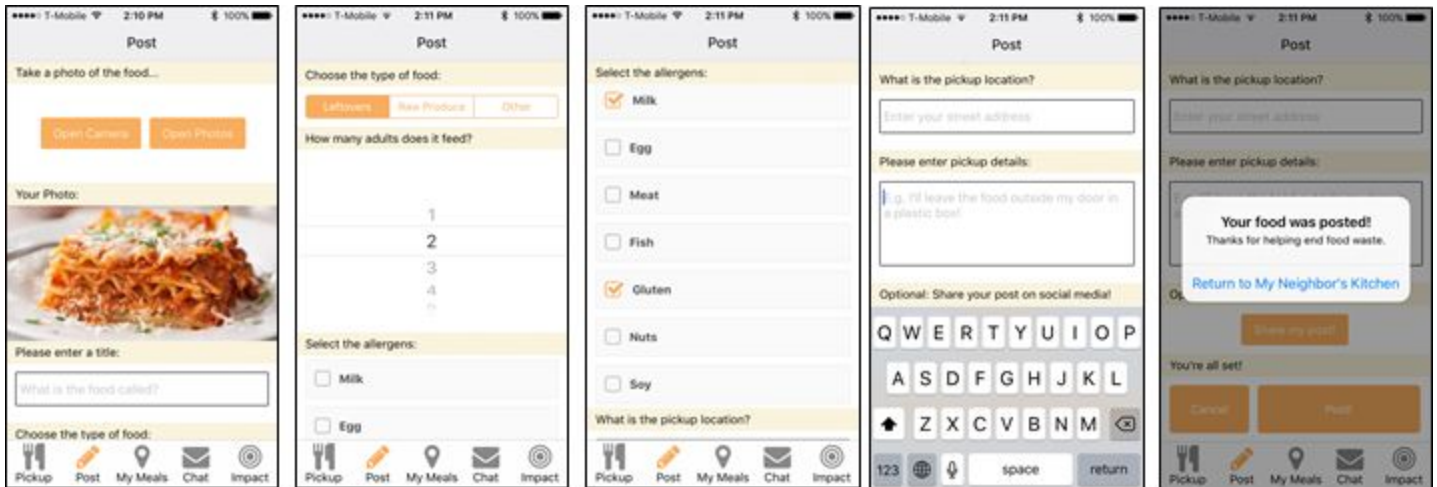
My Neighbor's Kitchen tackles the problem of domestic food waste at the source - the household kitchen. By posting leftovers to the smartphone app, users can make them available for hungry people around them. We equip users to share leftover meals and groceries with their neighbors, browse for and pick up food from around them, and track their impact on the community. With each neighbor doing their part to make sure their excess food goes where it is needed, we dream of ending domestic food waste across America.



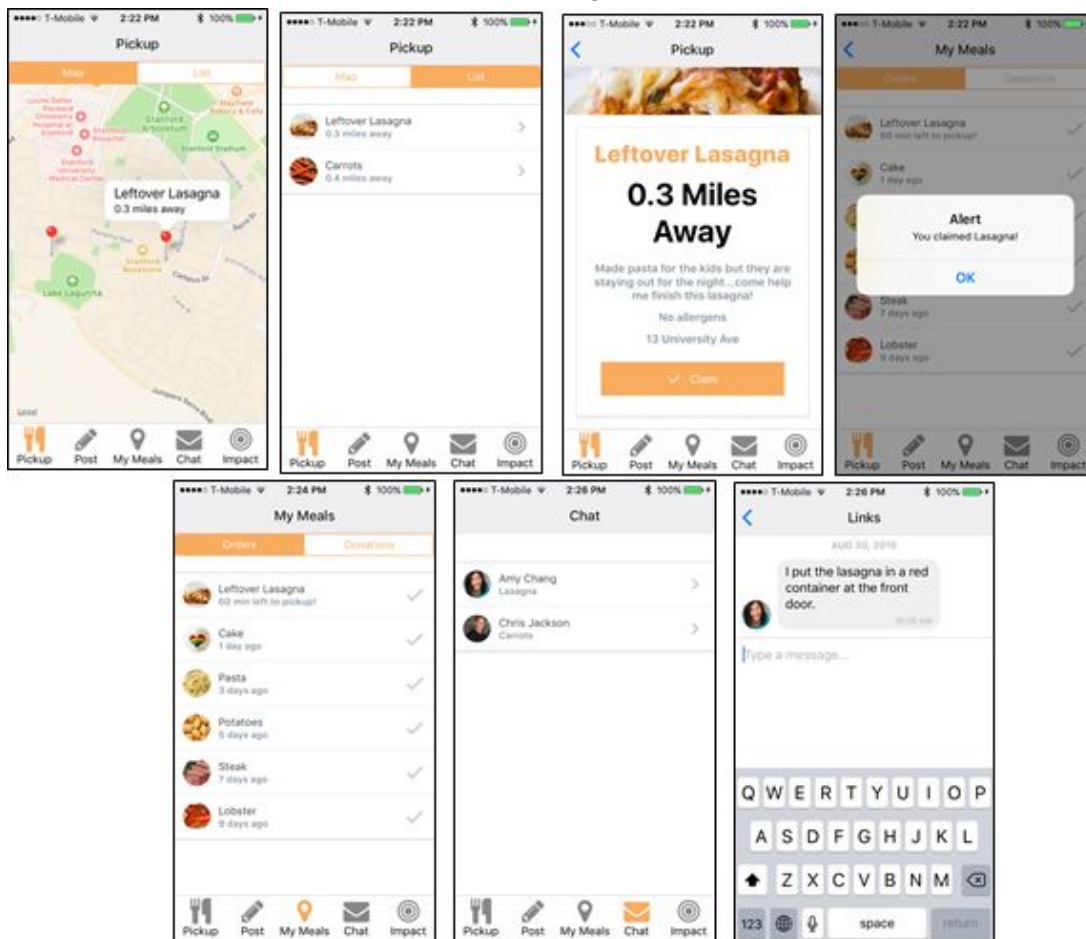
## Tasks and Final Interface Scenarios

Below are our three final tasks with storyboard walkthroughs from the final prototype.

Simple: Post that you have leftover food. We chose this task because it is one of the core purposes that users would want to achieve in the app in order to get rid of leftover food or groceries.

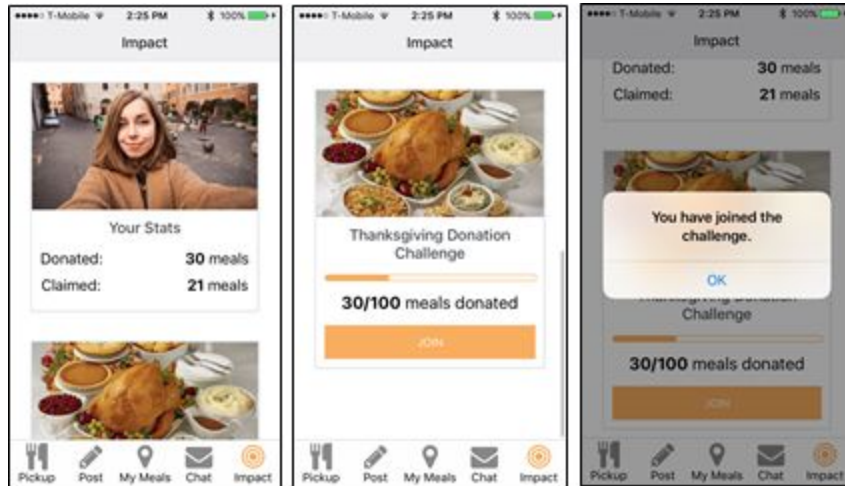


Medium: Find a leftover meal nearby & pick it up. This task captures another core purpose of the users looking for food from their neighbors' kitchen.



Complex: Track your impact on the community and join a food donation challenge. We developed this feature because our needfinding taught us that communities were receptive to food donation based challenges and

friendly competition. Thus we chose this task to help them engage and take ownership of their impact.

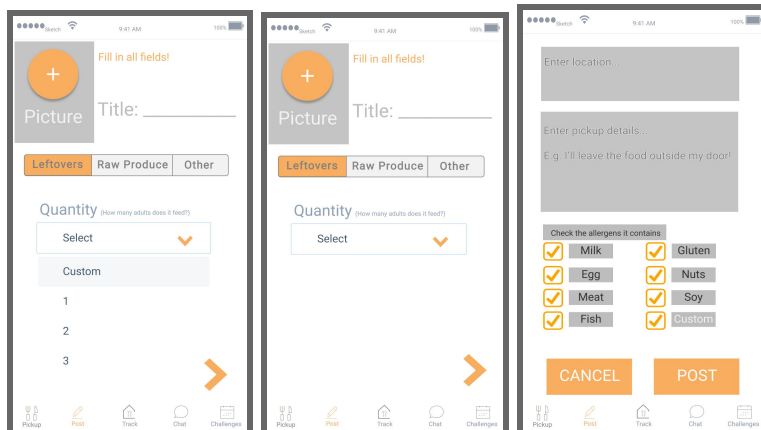
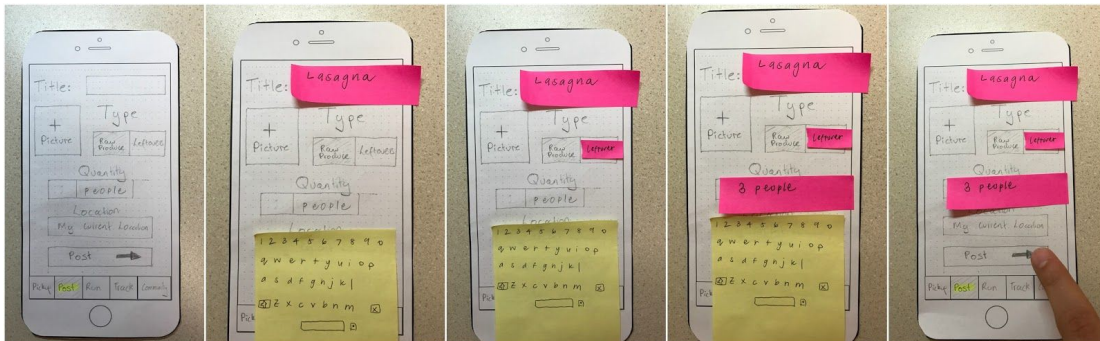


## Design Evolution

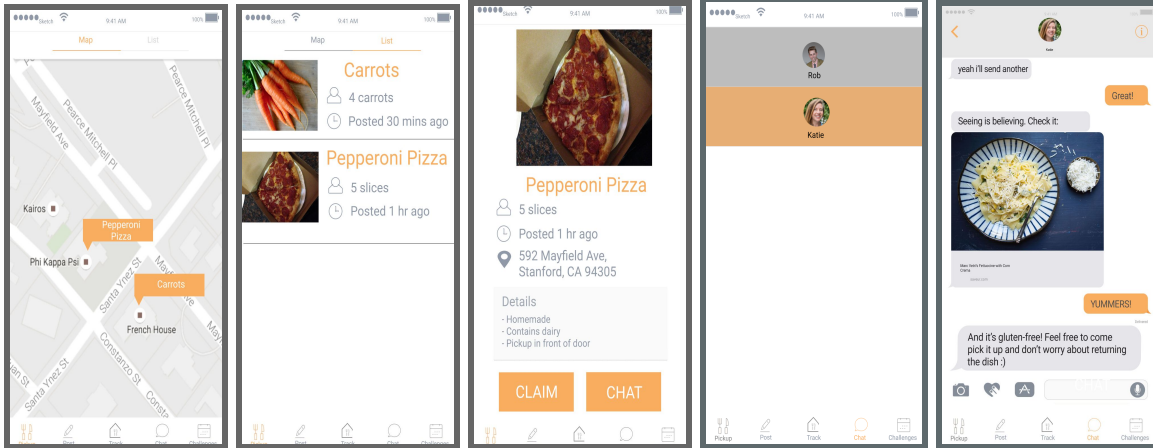
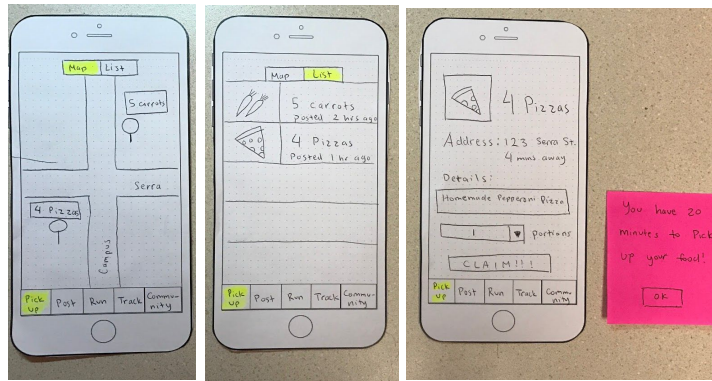
### Low-Fidelity Prototype → Medium-Fidelity Prototype

In this section we illustrate our design changes broken down by task, from our low-fidelity paper prototype to our medium-fidelity prototype created in Figma and Marvel. Between these two stages, we conducted user tests on the paper prototype. We discuss key insights from these user tests following the images.

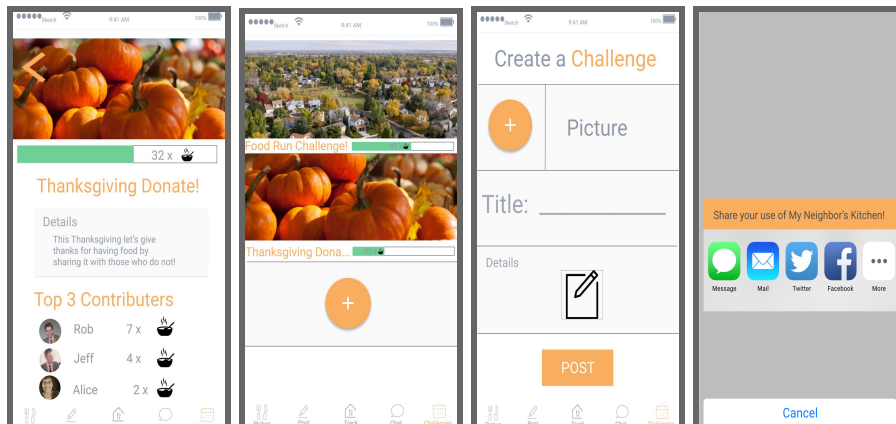
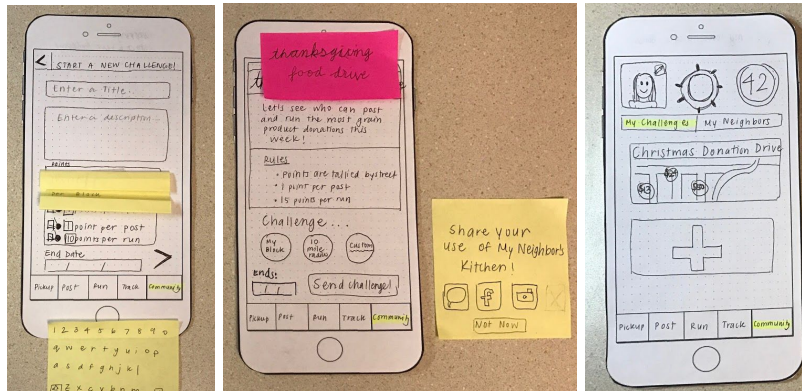
### Task 1: Post Leftover Food



## Task 2: Pickup Food



## Task 3: Community Challenges



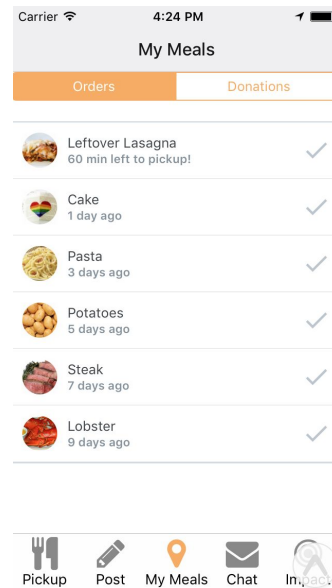
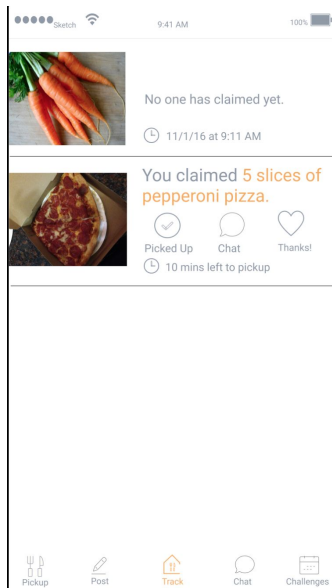
## Discussion of User Tests

To understand how to revise our paper prototype, we conducted user tests with three Stanford Resident Fellows who routinely have leftover food that they share with hungry students in a dorm setting. By observing and discussing their attempts to complete all three tasks, we learned that one of their most pressing concerns was communicating details and coordinating with the person who would be picking up food. This led us to introduce a more detailed “post” interface as well as a “chat” feature for live communication. Their feedback also led us to include allergen information and develop a “track” tab (later changed to “My Meals”) to keep a record of meals claimed. Finally, users expressed confusion about the “community” tab, so we redesigned it to be easier to join a challenge rather than walk through a long form to create one.

## Major Usability Problems Addressed

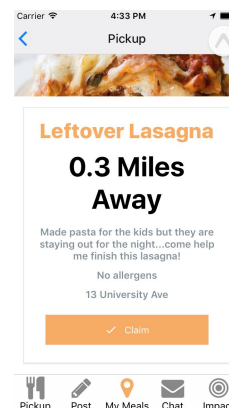
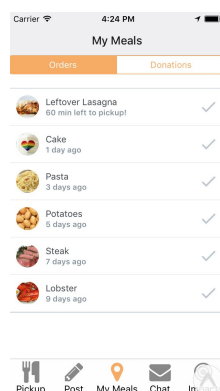
### Main Heuristic Evaluation Problems

- H2-4: Consistency and Standards / Severity: 3
  - **Problem:** The "pickup > list page" and the "track" appear to serve different functions, despite containing mostly redundant information. Suggest removing unclaimed food items from "track" menu, restricting all searching functionality to the pickup menu for clarity.
  - **Response:** We agreed that the 'track' page was a confusing page with far too much information in a single layout. This led to uncertainty over the functionality of the page which is especially confusing for first time users. We decided to re-brand the page as 'My Meals' to enable users to better understand the purpose of the page. We also categorised the meals into 'Orders' and 'Donations' so that specific past meals were more easily found and so that there were fewer meals on any given page cluttering up screen real estate. We also added a header so that users were aware of the difference in page functionality from the 'Pickup' tab, as well as the ability to 'unclaim' items. Finally, we sorted the page by the order/post date of the food, as well as adding how much time was left on an order before it expired and you were no longer permitted to claim it.



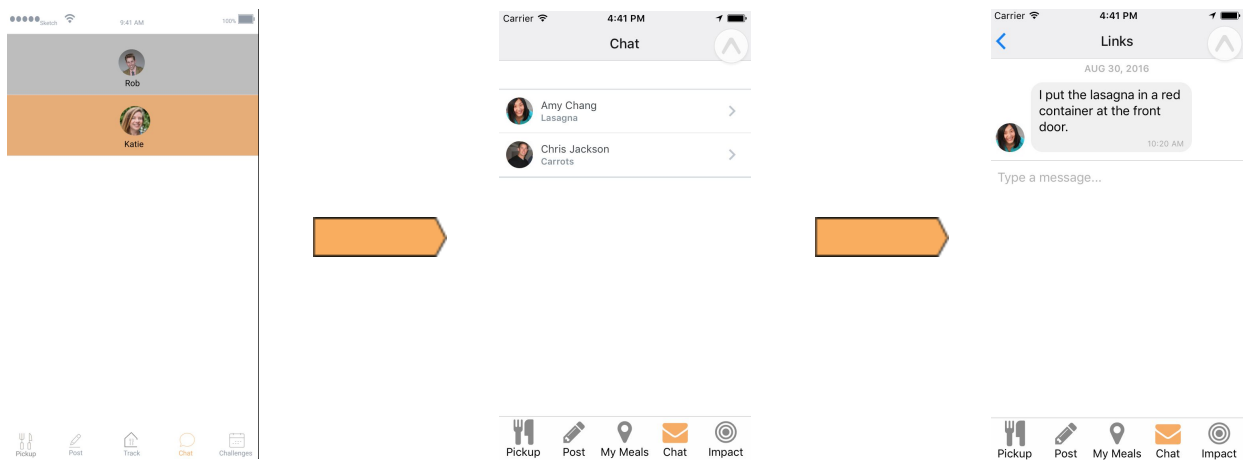
- H2-9: Help Users with Errors / Severity: 4

- **Problem:** After making a post, there is no way for a user to delete or otherwise modify the post. Adding an "edit" or at least a delete button after making a post would allow the user to respond in case of a change in their situation.
- **Response:** We agreed that this was a problem, not only for people who has posted food and needed to edit its details/make it no longer available, but also for claimants of the food who no longer needed the food. This would enable less wasted food as people could enable that food to be claimed by someone else. In the screenshot above you can see that we added a check mark on the right of each item in the orders list view, meaning that this item has been claimed by you. Should you wish to unclaim, all you have to do is click the check mark button. Furthermore, we enabled the editing of posted items by simply clicking on the item in the list view which will take you to the food item profile page where you can make edits to the information. As a result of the hardcoded data used within the application, this was only able to be partially implemented (ie. you can click on a food item to be taken to its profile page but cannot currently edit the information there).



- H2-5 Error Prevention / Severity: 4

- **Problem:** Pressing the chat button when looking at an available food post takes you to the chat screen with a list of people you can chat with, rather than directly starting a chat with the person who made the post. Since information is not given about the poster, the user does not know who to even talk to.
- **Response:** We agreed that the 'Chat' page had several problems, mainly in the fact that we were not doing enough with the amount of space we were given. Previously, we were just displaying the page with a picture of the person and their name. We found that this was confusing to some users who were simply looking to chat with the provider of the food to find out concerns about allergies etc. but were unable to work out which meal corresponded to each person in the chat. Therefore we decided to redesign the page to also include the name of the food item, and have this link to the profile page of the food item. We also made it so that a chat is automatically generated whenever you claim a food item, so that it is very easy for new users to ask questions of the food provider.



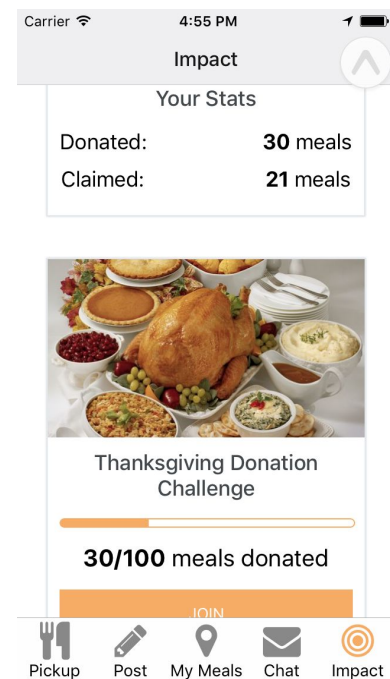
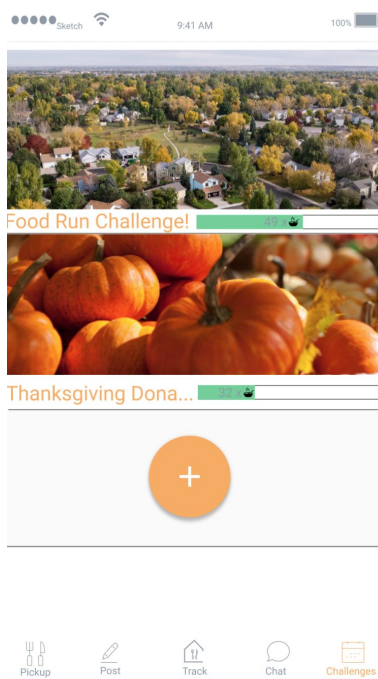
- H2-6 Recognition Rather than Recall / Severity: 3

- **Problem:** On the track page, I believe the carrots post is supposed to be a post made by the user but there is no indication of this, there is only the picture, post time, and text saying that it has not been claimed yet.
- **Response:** As explained above, we categorised the meals into 'Orders' and 'Donations' to make the difference between meals you had claimed and food you had donated.

- H2-1 Visibility of System Status / Severity: 4

- **Problem:** The challenges page is currently lacking an indication of the time (start and end date) for each challenge, which is crucial information. Each challenge should clearly state the start and end date.
- **Response:** We agreed that the 'Challenges' page was one of the most problematic in our application. We repeatedly ran into usability issues with new users who were very confused not

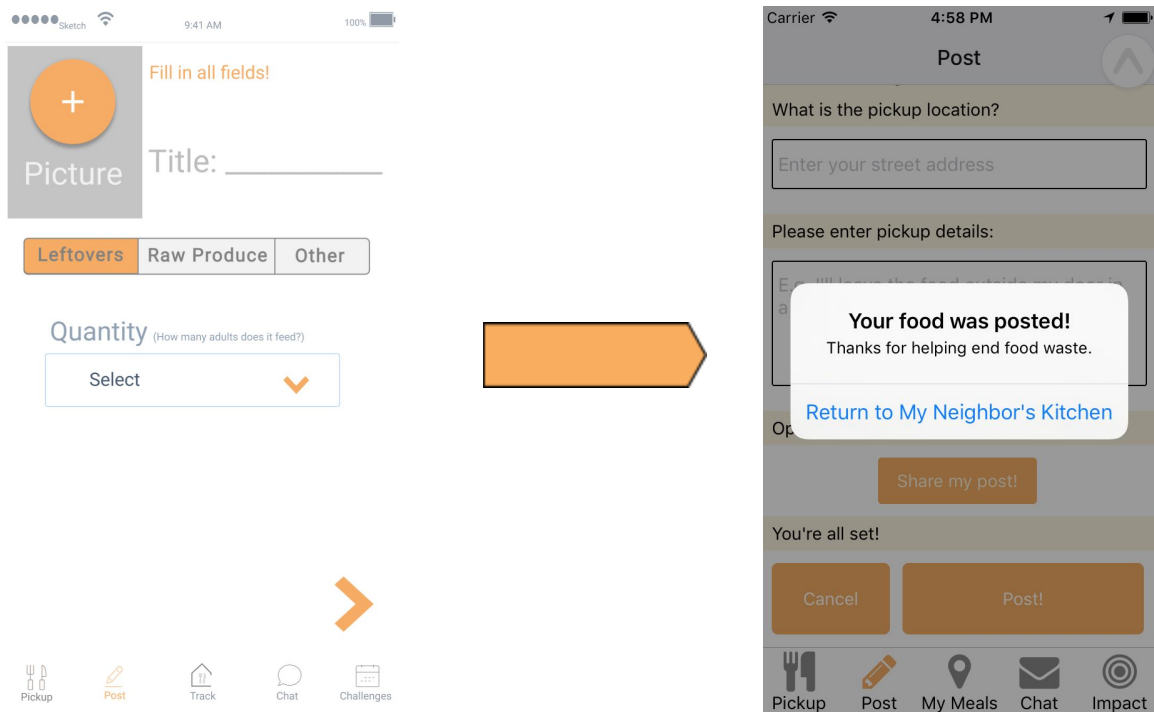
only at a high level by the concept of ‘group challenges’, but were also confused at a practical level of how to join and make a challenge. Therefore we decided to re-brand this page to ‘Impact’, and use it more as an analytics/statistics page of your impact on your local community. This also enabled us to redefine a ‘Challenge’ into a group statistics tracking object, where you could essentially see how many meals were being donated and picked up in your local area. In terms of practical design issues, we changed the display format with the name and progress bar of the events being on separate lines to reduce clutter. We also decided to remove the idea of a dates from the challenges, as it made more sense to always be collecting statistics as opposed to only collecting statistics between certain dates. We also placed a ‘join’ button directly on the event card so that users could join the challenge without having to navigate to a new screen.



- H2-3 User control and freedom / Severity: 4
  - **Problem:** Once a food item is claimed on the Pickup screen, there is no way of un-claiming it. Thus, if the user claims an item and then changes his/her mind, there is no way of indicating that preference change through the app to the food provider and of freeing the item for some other user’s consumption. An un-claim button should be included on the track page.
  - **Response:** As explained in the similar issue above, this problem was solved by putting a checkmark next to each food item in the ‘My Meals’ page, which indicates that this meal has been claimed. Should someone wish to unclaim a meal, all they have to do is click this button to unclaim it, or navigate to the food profile page and unclaim it there.
- H2-1 Visibility of Status / Severity: 3



- **Problem:** After posting a meal, there is no acknowledgement of whether the meal was posted successfully and whether there are any next steps required of the user who posted it. It would also be helpful to be notified once the meal is picked up. Instead, there is a screen inviting the user to share on social media that they use this app, which is somewhat of a nuisance.
- **Response:** We agreed that confirmation was important and that it was unnecessary to show the social media sharing function after every meal post, so we modified the existing confirmation box to tell the user their food had been posted successfully. We also moved the social media sharing function into the body of the Post page so that it could be scrolled past easily if not wanted. Overall we completely changed the layout of the Post page from two separate pages to one scrolling body, as we believed that two screens in the post process was unnecessary and required more button clicks.



## Prototype Implementation

### Tools

We built our hi-fi prototype using React Native and the Exponent development environment. We chose to use React Native because none of our teammates had iOS or Android programming experience so we thought React Native would be the easiest to learn. React Native was easy to use and quick to learn because many of its elements are similar to web programming. Additionally, we found many open-source libraries we could use, such as libraries for buttons, forms, and alerts. As beginners to React Native, we found these extremely helpful in building our app. We did not have any complaints about using React Native and all of us loved developing with it. Exponent was also very simple to use and helpful for our prototype. The only

downside to using Exponent was that there was not much documentation for how to use it. However, we found the office hours to be very helpful and there was a chat feature that we could directly get support from the Exponent team on.

### **Wizard of Oz and Hard-coded Data**

The most significant component of the app that we wizard of oz'd was the backend implementation. We primarily focused on coding the front end of the app. Therefore, even though the forms are fillable, the data from the forms will not be saved anywhere nor show up on our app. Additionally we also did not develop an onboarding system for new users; we assumed the user already had an account. In terms of the hard-coded data, we pre-set data for food available to pick up. We also created fake accounts for neighbors to simulate what it would look like to use the app in a community. Finally, we hard-coded the chat system by pre-entering messages that the neighbors sent the user.

### **Future Improvements**

If we were to work on the app in the future, the first step would definitely be to implement the backend. This would drastically improve functionality and usability. If we developed the backend, we would actually be able to launch the app because most of the front end is already implemented. The next step would be to improve the "My Meals" page in order to allow users to thank neighbors they picked up food from, mainly through reactions to their food. We would also integrate social media networks to allow users to onboard their friends and feel more comfortable posting and picking up food. Finally, we would improve the "Impact" page by allowing users to visualize more of their impact through seeing how much food waste they prevented and other metrics, not just how many meals they donated.

### **Summary**

Overall, as a team, we learned an incredible amount about the end-to-end design process. From brainstorming to needfinding to testing and building out prototypes, every week was a huge learning opportunity on how to refine and iterate on a product. No one on our team came in with design, Sketch/Figma, or mobile development experience. By the end of the class, we all learned these skills because we worked as a team to get the project done. In terms of the project, we are all very proud of our app and believe it could have a real impact. At the poster session, many attendees said "sign me up" or asked if we were going to release the app in the future. We have yet to discuss whether we want to continue working on it in the future, but we believe the biggest challenge would be building an active user base. Ultimately, the most significant takeaways from working on this project were the design skills we learned, the supportive team we assembled, and the technical knowledge we gained.