Pranav R.
UX (User Experience) Capstone

Milestone 6: Final Report

Introduction

Design Problem & Scope:

With universities being closer to reopening and the Covid-19 Pandemic still being a major issue, I thought it would be interesting if I could come up with an interface that addresses social distancing for colleges in the US. This being: How can universities utilize technology to lessen the spread of the Covid-19 virus? Since I myself am a university student, trying to solve this issue would be quite relevant to my own life and to others who are in the same situation as myself: professors, students, faculty & staff, etc. As a result, implementing UX practices while trying to solve this problem would not only get me finding a solution, but also force me to think about the different ways it can be implemented into our own life.

Target Population: University faculty, staff, professors, students, and visitors.
Current/Similar Products: HEALTHLYNKED | Pandemias

What does a successful design look like: An interface that is quick and easy to use. One that allows the user to gather information in just mere seconds and one that allows them to take action based on that information with ease.

Project Brief:

The design that I have in mind is a Map interface. One where the user can see, visually, locations in which many people have gathered in one place (hotspots). Though it may not tell who has the virus directly, enforcing every member of a university to have this app would allow other users to generally see the locations of groups of people and thus, prevent such hotspots. Another feature that should also be incorporated is a GPS feature, in which the user can enter an address and find the most optimal path to a destination while avoiding hotspots, traffic, etc. One final feature that should be incorporated is a COVID-19 zone system. This should work similarly to the hotspot feature, in which one can see which parts of campus are off limits due to COVID-19 being prevalent in said locations, but would require information to be communicated from the university themselves and in a speedy manner.

Work Plan:

With the project now having somewhat of a mold, a work plan is needed to create a structure for me to follow. Initially, I will indulge in a needs finding report: one that addresses basic information such as what a user's needs are, what users are currently doing/practicing without my interface, functional requirements that my interface would need to have as a result of those practices, and finally constraints I may need to keep in mind. It is also important that I get a good idea as to who my competitors are, and this will also be addressed with the needs finding report. Just to be more specific, the information gathered for the Report will come from a survey that I put out to both fellow peers and strangers (using an online tool). After this step is complete, it will be a process of iteration: creating wireframes/prototypes and a microusibility

test plan, indulging on the test with a selected group of individuals/representatives, refining the wireframes after evaluating the post-test results (including a Heuristic Evaluation), and finally repeating the process repeatedly until I end up with a final product. All of this will be included below.

Research & Design Methods

User Research:

To be able to better understand the wants and needs of potential users, I scoped down my demographic and asked a group of individuals a list of questions that might pertain to the development of this interface. The people I asked included both peers (10) and strangers (10: using Survey Monkey), and I made sure that the respondents were related to universities in some way or manner. This meant students, staff, professors, faculty, parents, and even visitors. Additionally, the medium I used for both groups of people was through a survey. All in all, a good amount of information was gathered, and keeping in mind that the interface is supposed to be simplistic, the Needs Finding Report along with the next section summarize this vital information.

Needs Findings Report:

Description of User's Needs:

- Be able to know which parts of Campus COVID-19 have been affected.
- Be able to see which parts of Campus COVID-19 has the highest chance of spreading
- Be able to predict which parts of Campus COVID-19 may affect.

Description of Current User Practices:

- Generally speaking, universities are enforcing a hybrid system of learning that doesn't depend too much on technology when it comes to going outside and to a classroom. Most of the precautions are to wear a mask, make wise decisions, and other practices that are dependent on the behaviors of people. And so, people are planning on/currently practicing these precautions.
- A small number of users utilize third-party apps such as HEALTHLYNKED and Pandemias to gain some general information. However, the fact that they track COVID-19 cases in an inefficient manner and also don't have any information on groups of people, means that people are at a higher risk of catching the disease due to a lack of information (doesn't show hotspots for example).
    - Furthermore, thinking in terms of the app, areas that are affected on campus could be relayed to university personnel and eventually our app much faster, so thus, an improvement to these large scale softwares.

Functional Requirements:

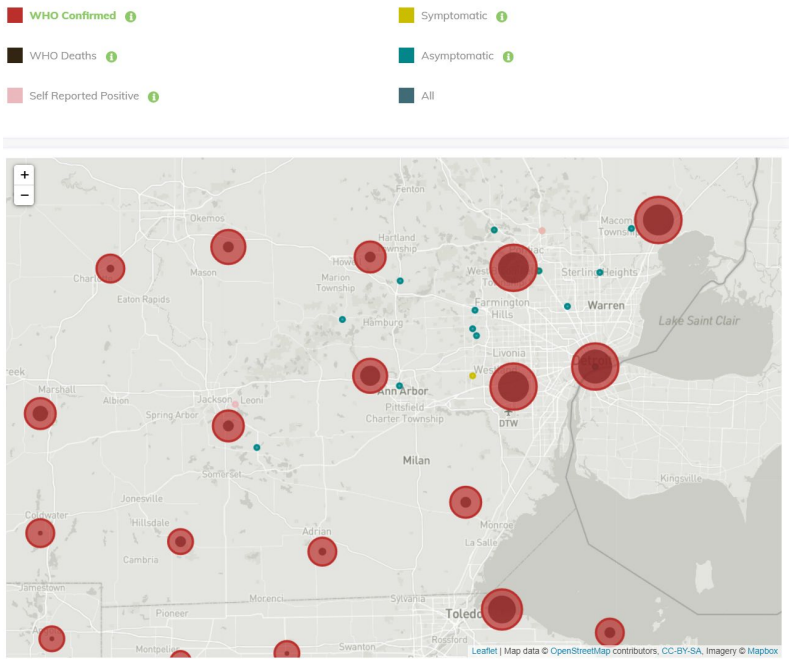
- View where large groups of people are in their general location (campus grounds) in a moment's notice
- View where COVID-19 off-limit zones are (areas which have been previously hit by the virus on campus and are still in the process of being cleansed).
- Perhaps a GPS system that creates directions to a designated location that avoids said "hotspots" and COVID-19 zones.

Constraints

- Will require user to allow location tracking
- If not enforced by university, may not be used by every person on campus.
    - If this is the case, would not report precise findings
- COVID-19 zones would require information from university personnel. Would need to be in contact with them throughout the day.

User Needs Analysis

To further expand on what I've learned about user needs and their current practices for addressing those needs, I will include some additional information that may clear up my intentions for this interface. Firstly and looking deeper into other "apps" or interfaces on the web that display COVID cases on a map layout, there seems to be a general lack of focus or information as the maps are most likely on an international scale. One of the surveyed users said that for HEALTHLYNKED specifically, "the cases that do show up are either self assessed or based solely on data from the World Health Organization and nothing else". This may be quite jarring as there are definitely areas or locations that are being left out and thus, the app can't apply to all its intended users. In other words, it's incomplete due to the immense scale of its intended functionalities and the app itself would have little effect when a user wanted to get a scope for their own environment. As a result, my interface solves this issue by narrowing down the scale of my prospective demographic to college personnel only and making sure that the information for COVID zones is coming from the individuals responsible for each of those respective areas (the Universities themselves). The effect of this is pinpointing more zones and in a faster manner as well.



HEALTHYNKED 8/21/20

Similarly, neither HEALTHYNKED nor Pandemias seem to have a GPS interface that might come in handy. Considering that most of the surveyed college students said they use one during their first few weeks of class anyways, including this feature would definitely reduce their burden of using two apps at once and simultaneously coordinating how one should get about their destination while avoiding COVID zones. Finally, and though it is quite obvious as to why there needs to be COVID zones on the app, I should still explain as to why having a general understanding of where large groups of people are (Hotspots) would make users feel more comfortable going out. A big concern for many students, professors, and parents alike was that they couldn't predict when or where COVID might be spreading and at what time. Though this is generally impossible on a large scale, using one's general location to create these signals on the map would help people avoid crowds. A constraint to this would be users feeling uncomfortable with their location being tracked, but there are definitely ways to go around this: such as inherently disabling location tracking when within a building, specifically showing Hotspots only and not every user's precise location, etc. With all that being said, some scenarios, personas, and even story boards as to how the example user would go about using our interface is included in the appendix.

Competitive Analysis

As mentioned, the main constraints for our competitors is the scale of their product and the limited amount of information their users can gather from their app. Our interface, however, reduces the scope of our intended users and area of focus to create more comprehensive amounts of information for people to get around in their respective college community. Similarly, their product seems to circulate around the Map solely, but our interface is willing to go beyond by including a useful GPS interface that avoids COVID zones and Hotspots. This way, all one needs to do, when stepping out their door, is check their phone for directions instead of constantly having to worry about potential COVID zones/Hotspots in front of them. A valuable feature that both HEALTHLYNKED and Pandemias include though are statistics: people that have died, the number of cases per country, etc. As a result, including a similar feature that is representative of each campus, in some way, shape, or form would bring about a sense of urgency to our users and have them be more understanding of their consequences. Additionally, including tips from the University themselves and/or a couple of messages from important staff would not only enforce the previous idea, but would also have our app stand out as being inclusive of each college's values. By including a GPS system and compared to apps like Google Maps or Waze, we would also need to worry about construction/traffic on the streets and/or blockages within each city. This however, like how we would get info about COVID zones, can come from each University themselves. All in all, if we take the good from our competitors while leaving out the bad/insignificant, our app definitely has potential to be more effective and relevant to our target demographic.

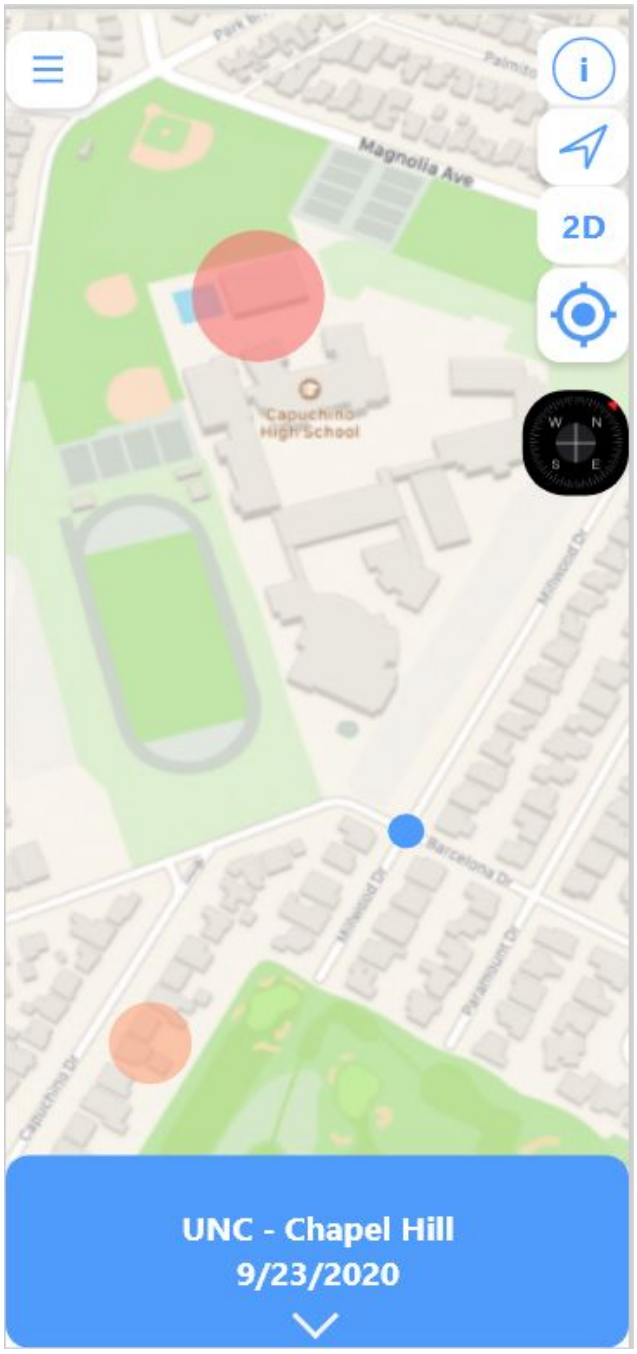
Design Goals

To list the basics, our Interface would need to include a Map layout of each campus and within each map, "zones" that outline areas that have been hit by COVID or have the potential to spread the virus (Hotspots/crowds). Next, there needs to be the GPS feature that in and of itself,

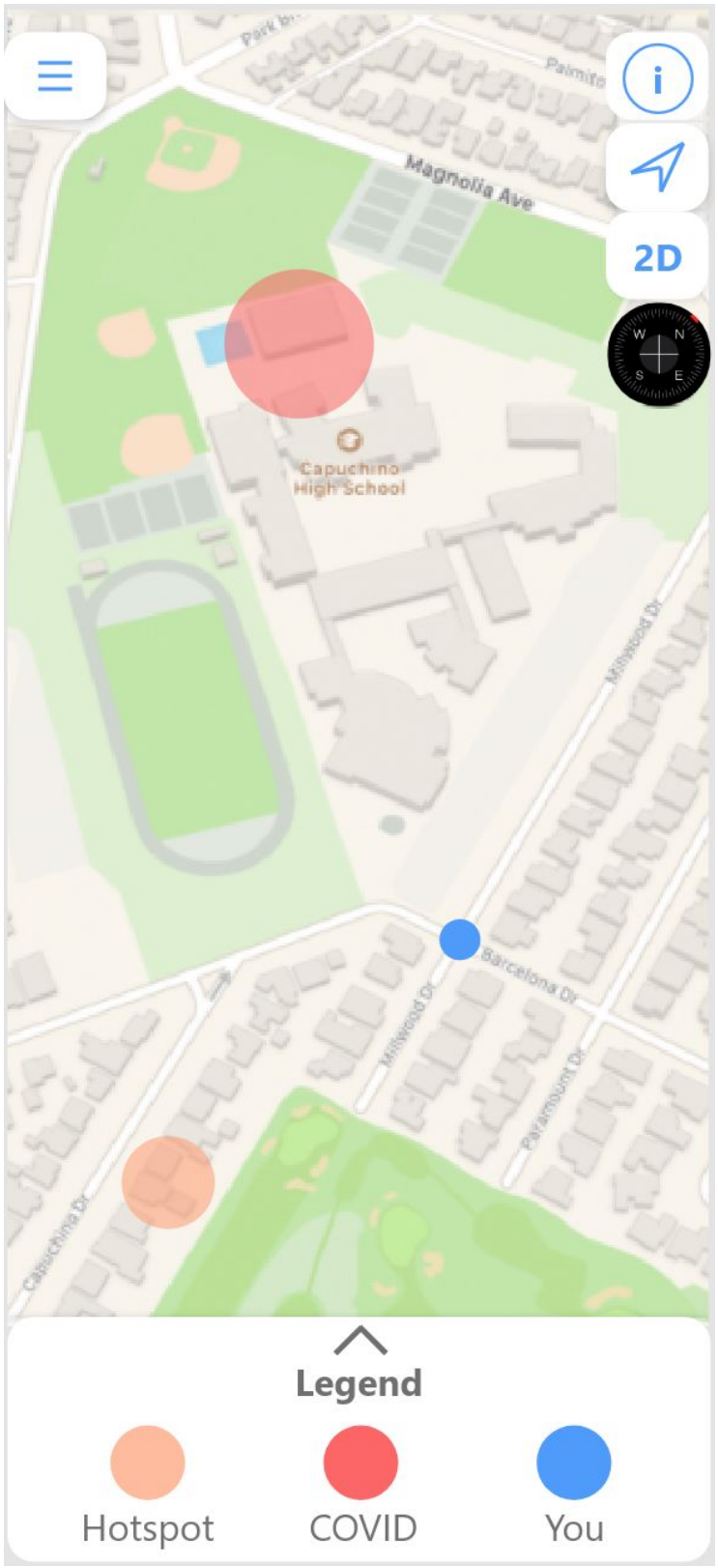
should be easy to use. This means including signals that are common amongst other GPS interfaces, keeping a minimalistic design, and allowing the user to freely edit their options (destinations, route options, etc.). Moving on, there also should be a page that includes basic statistics like the number of COVID zones in an area, the number of cases, buildings on campus that have been shut down, etc. Finally, the last set of pages should include an array of settings and options that can be accessed by users to edit their preferences.

Prototypes

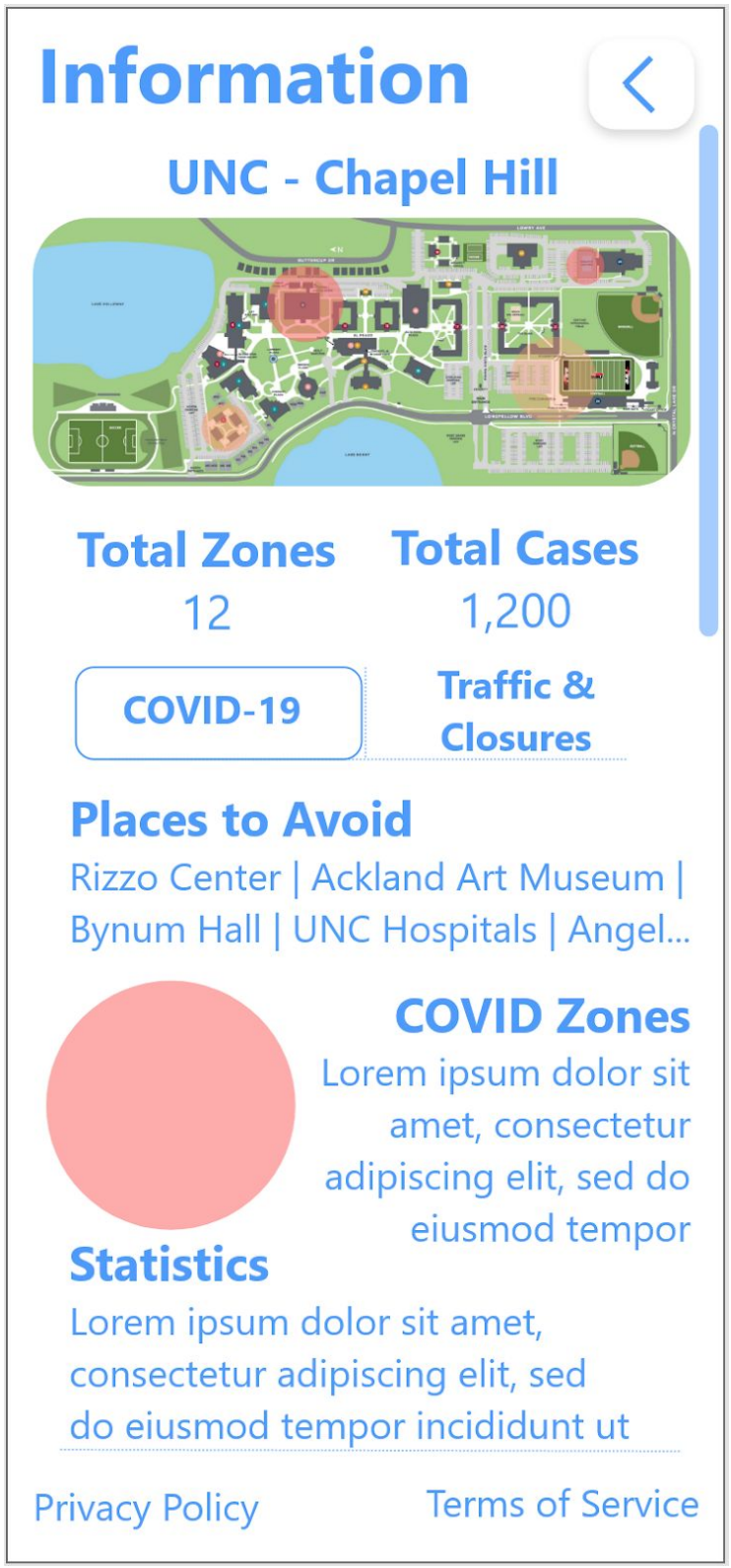
Home



Home (Legend) (Touch Arrow at bottom [below the date])



Information (COVID) (Touch Information Icon) (Ignore Border)



Information (Traffic & Closures) (Touch “Traffic & Closures” Box) (Ignore Border)

Information

UNC - Chapel Hill

Total Zones
12

Total Cases
1,200

COVID-19

Traffic & Closures

Delays *Light traffic*

. Road Closure on Ryan Rd

. 5 min Delay on Raleigh Rd (9 mph)

Construction

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Updates

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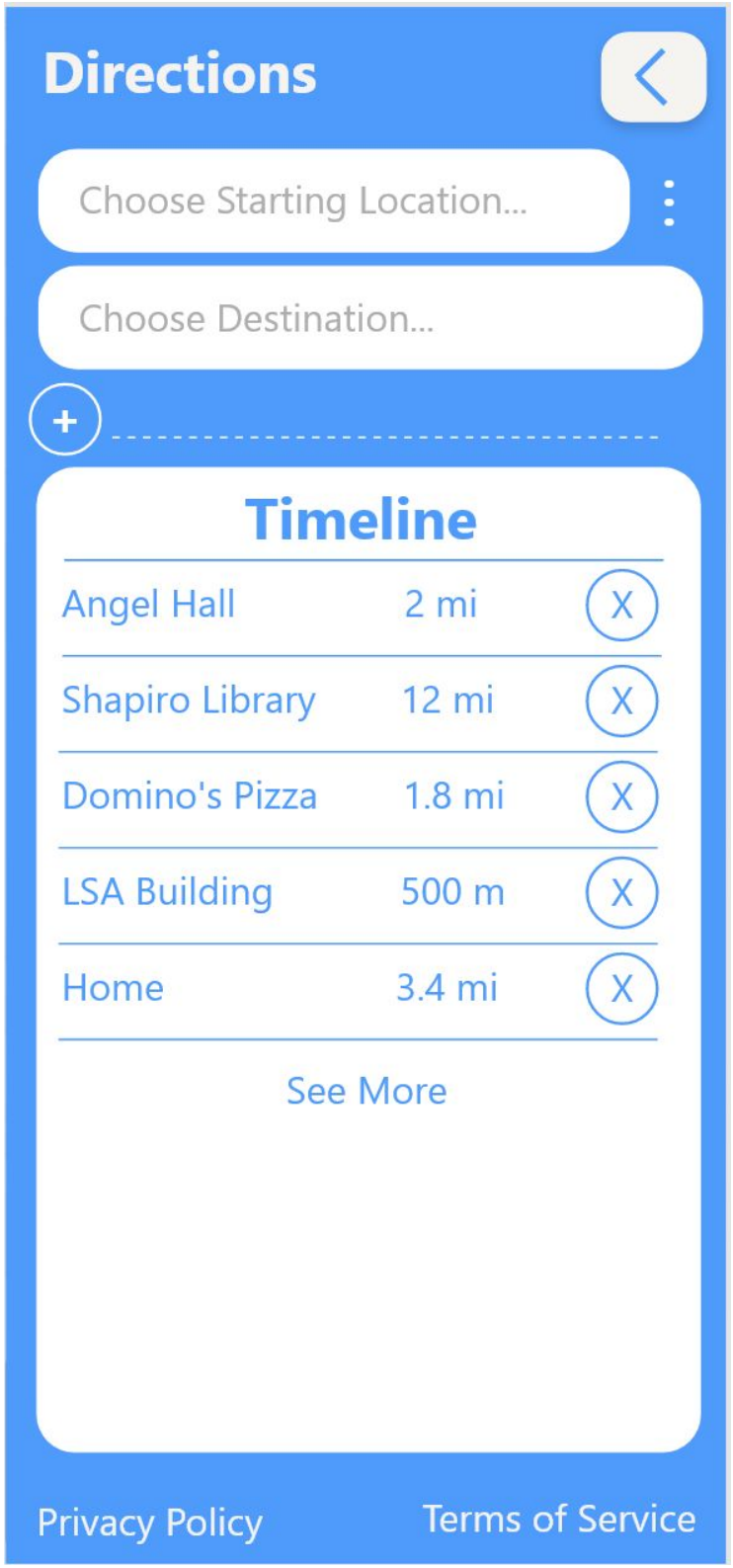
Privacy Policy

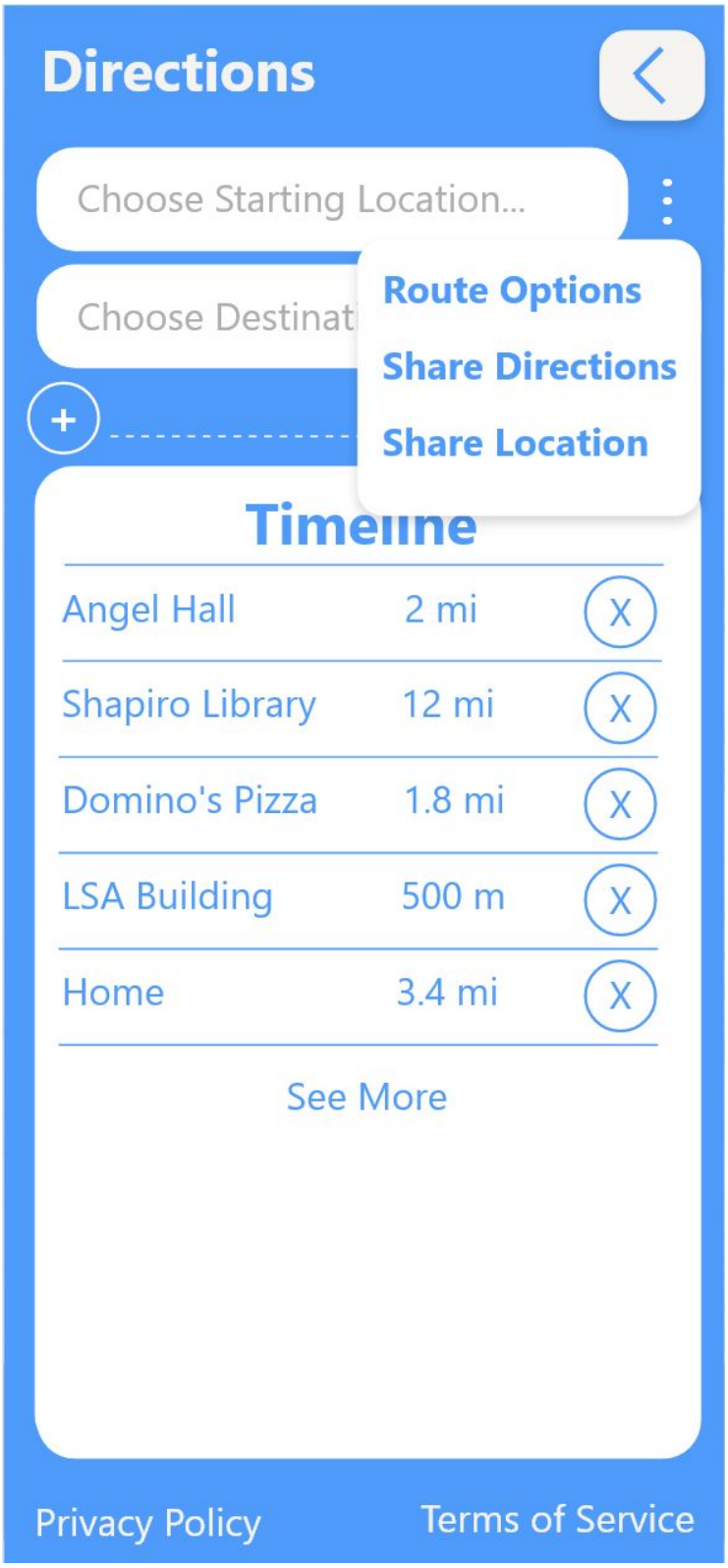
Terms of Service

Directions (Updated) (From Home, Touch Directions Icon)

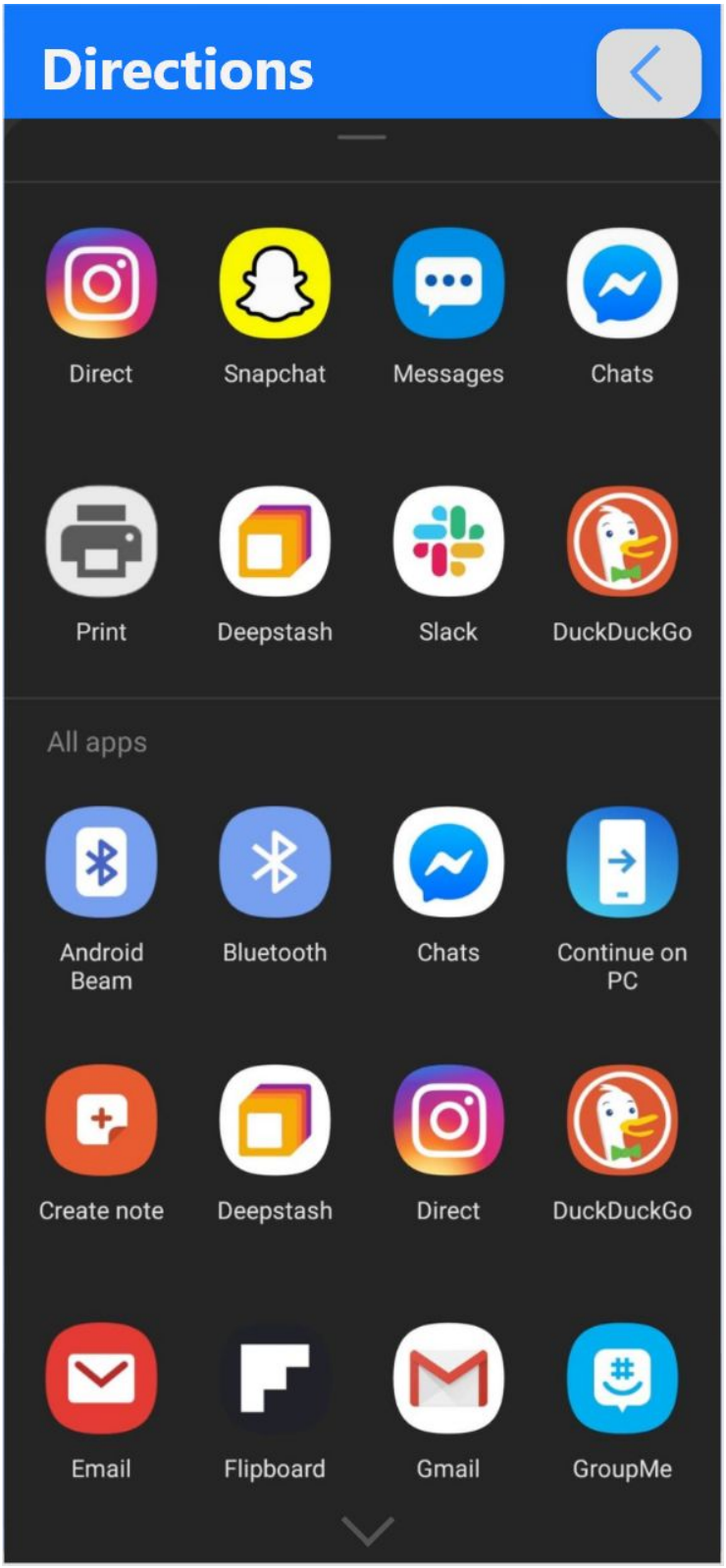


Directions 2 (Updated) (Typed in Destination and User's Current Location)

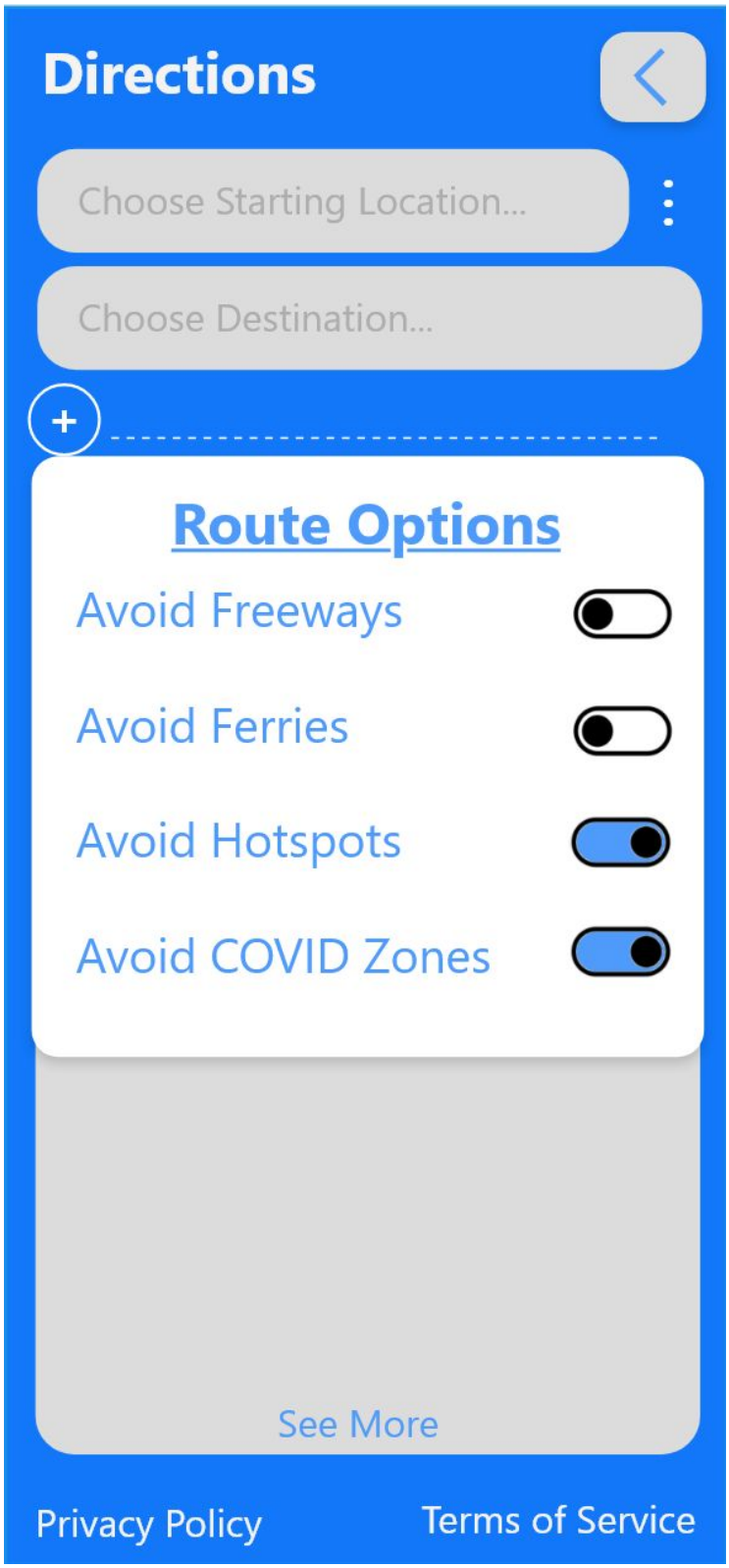
Directions Updated (Options) (Pressed Options icon)



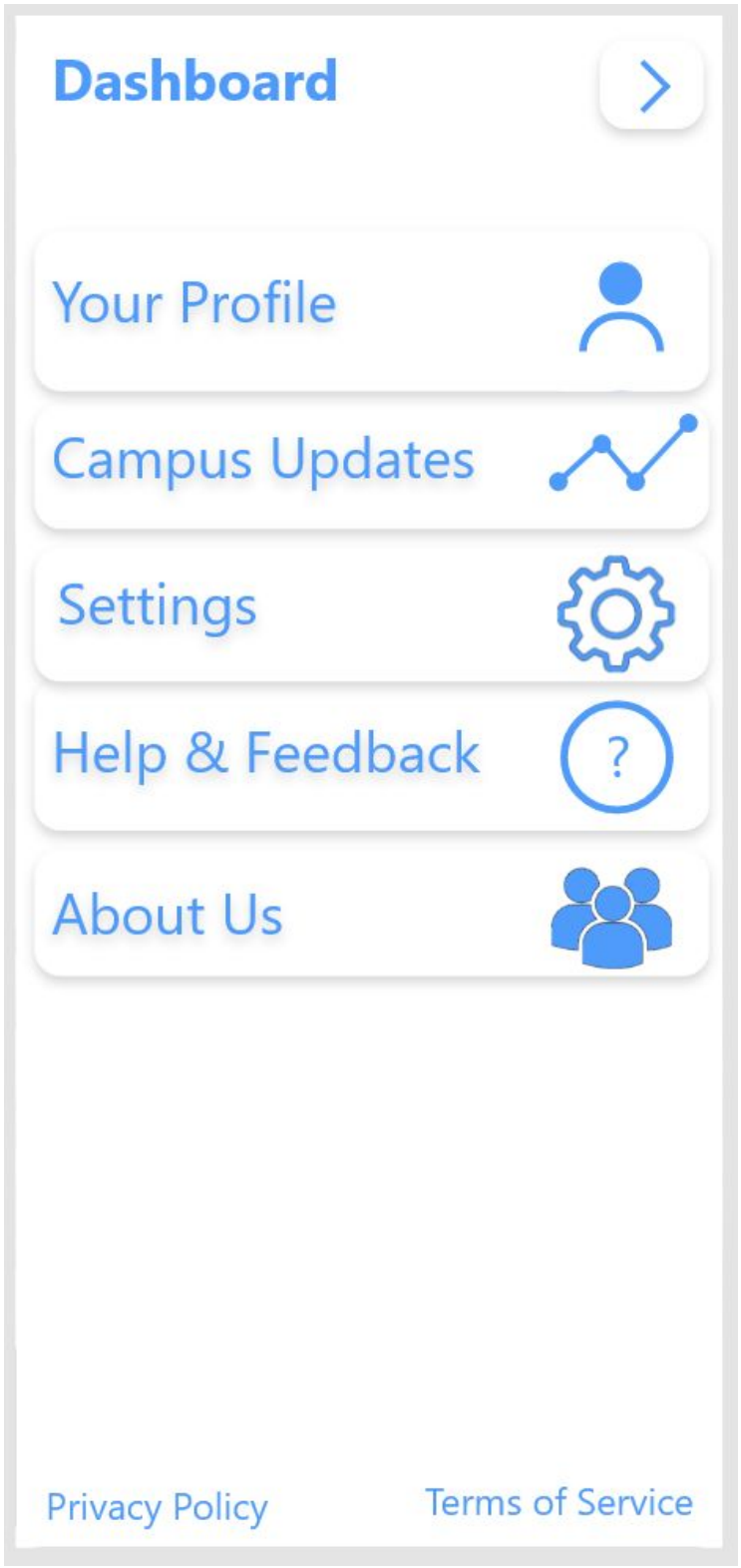
Share Directions/Location (Updated) (Pressed Share Location/Directions under Options Icon)



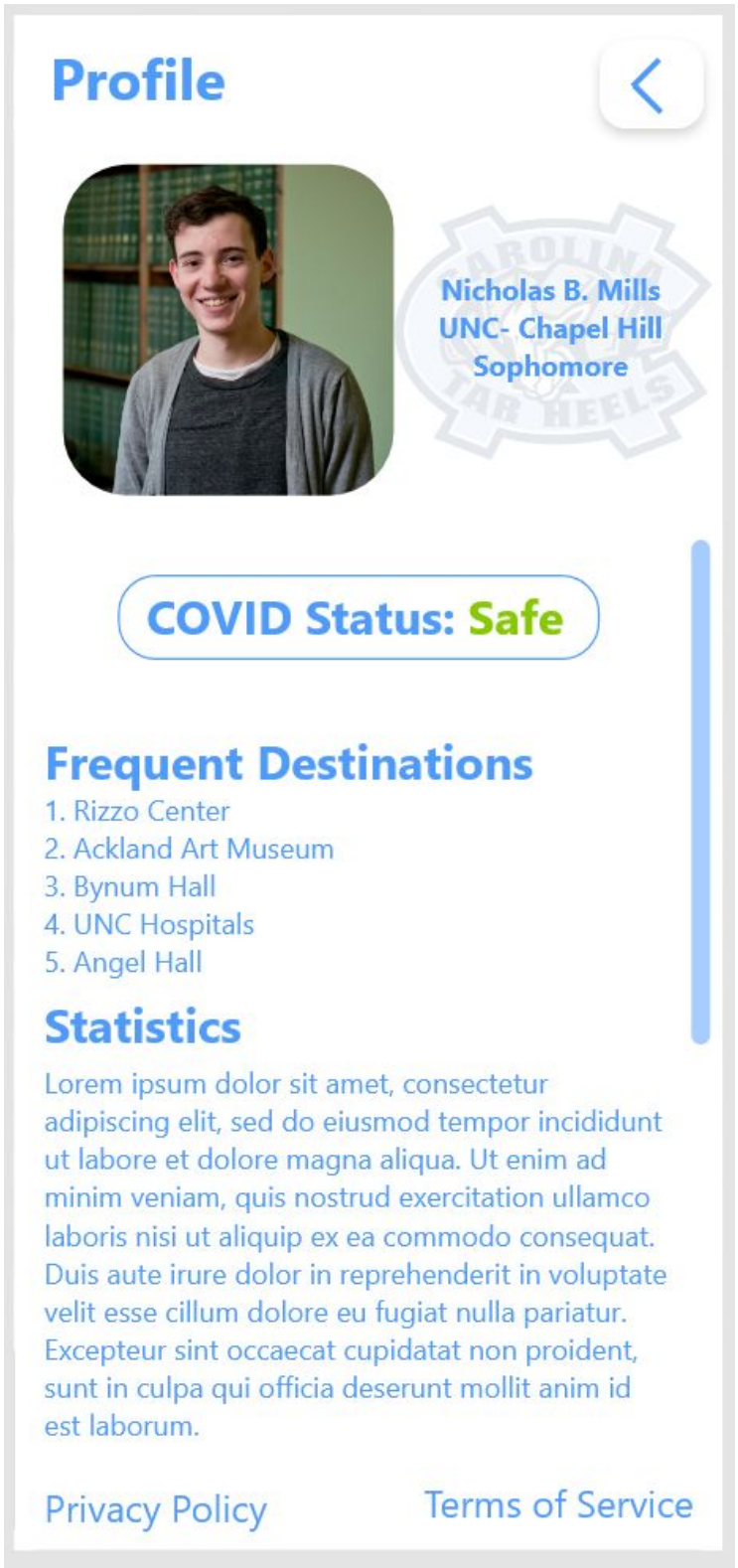
Route Options (Updated) (Pressed Route Options under Options Icon)



Dashboard (Ignore Border) (Updated) (From Home, pressed Dashboard Icon [left])

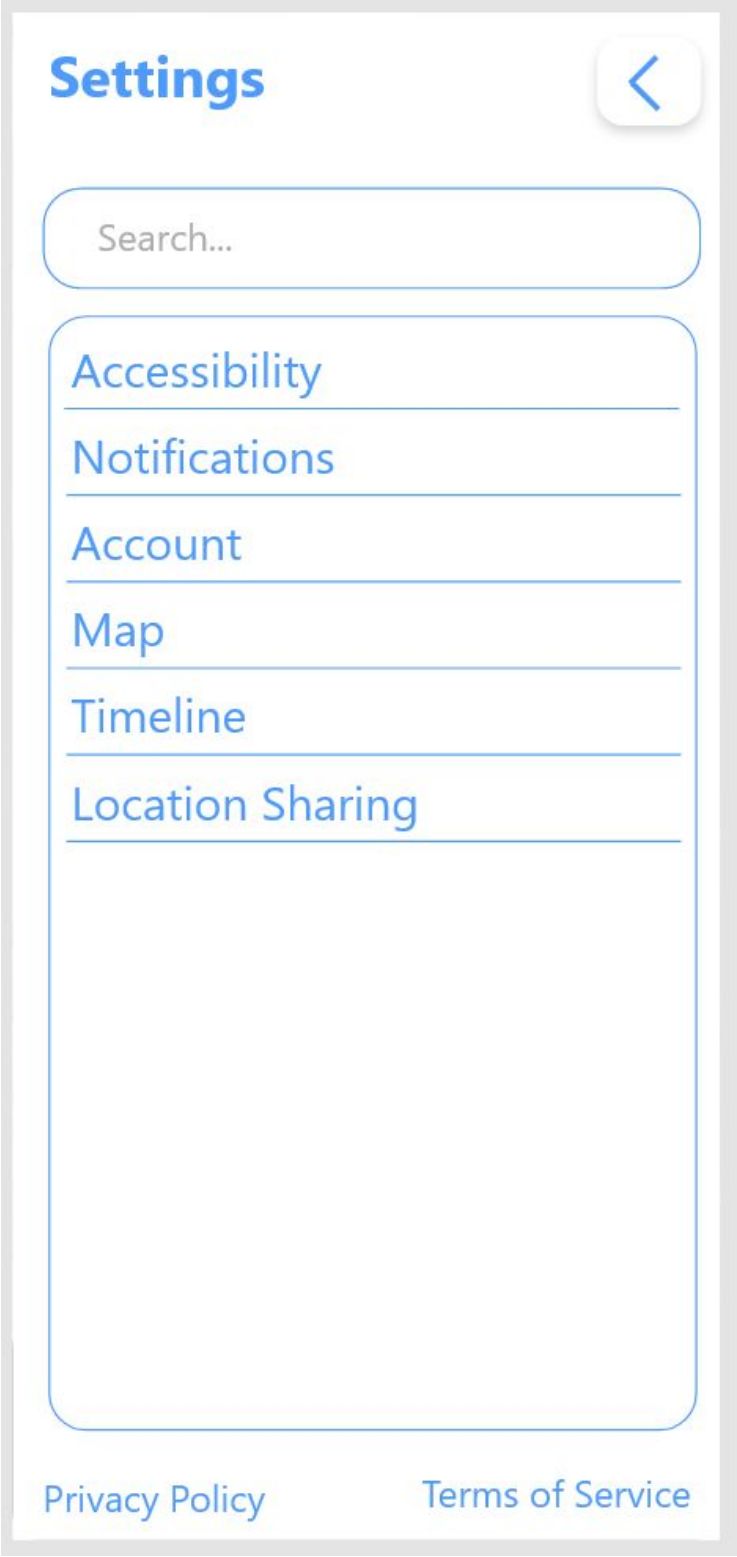


Profile (Ignore Border) (From Dashboard, selected Profile)

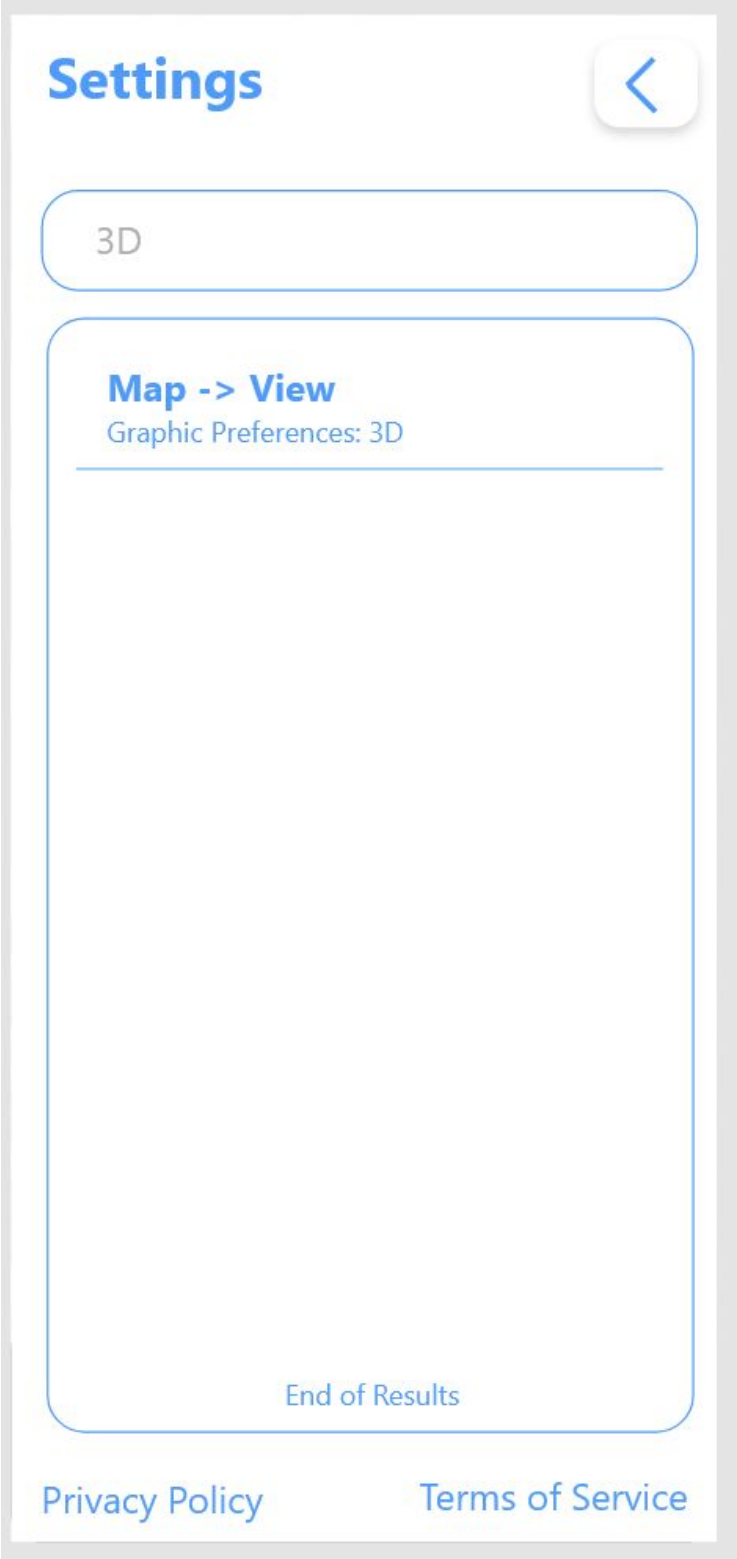


Campus Updates (Ignore Border) (From Dashboard, selected campus updates)

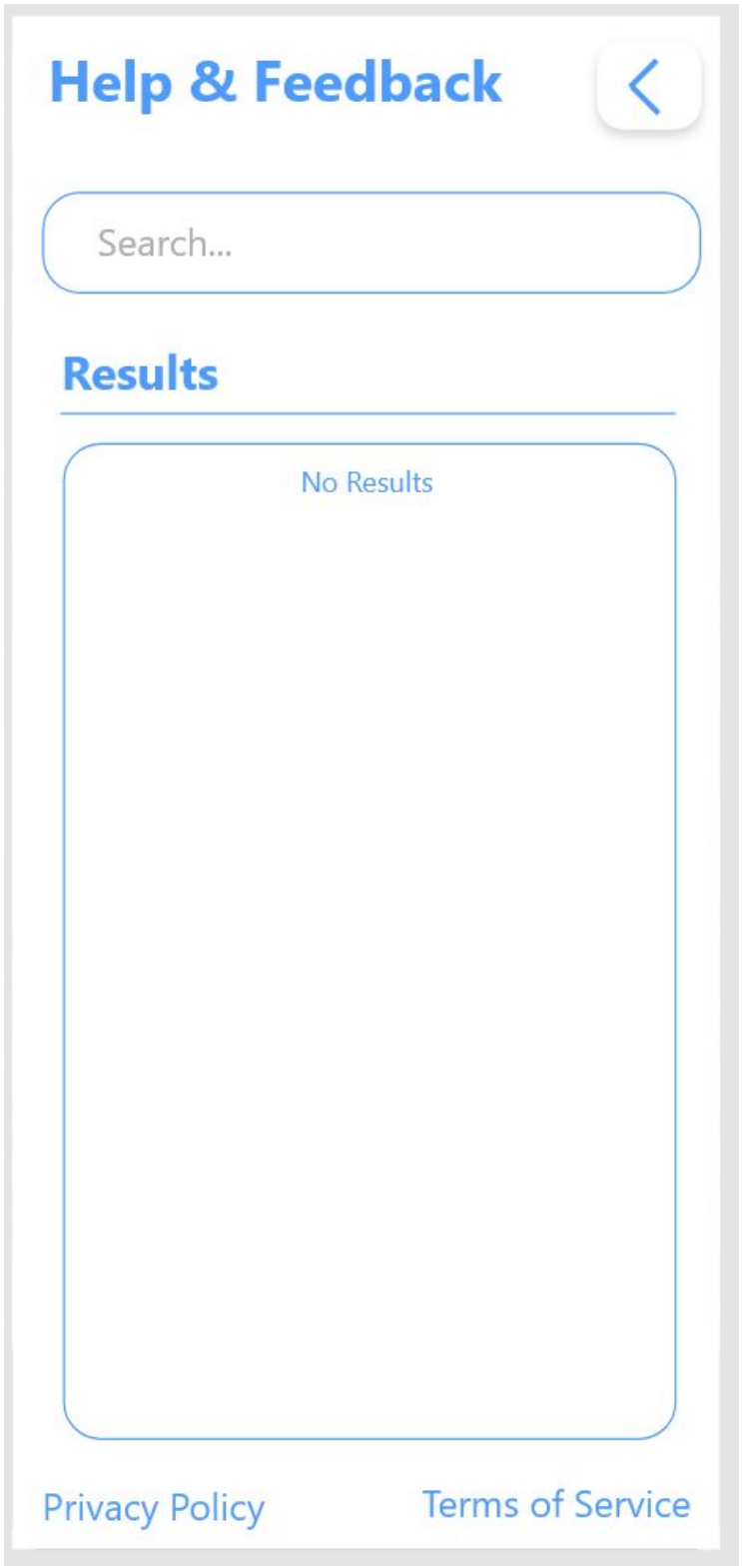
Settings (Ignore Border) (From Dashboard, selected Settings)



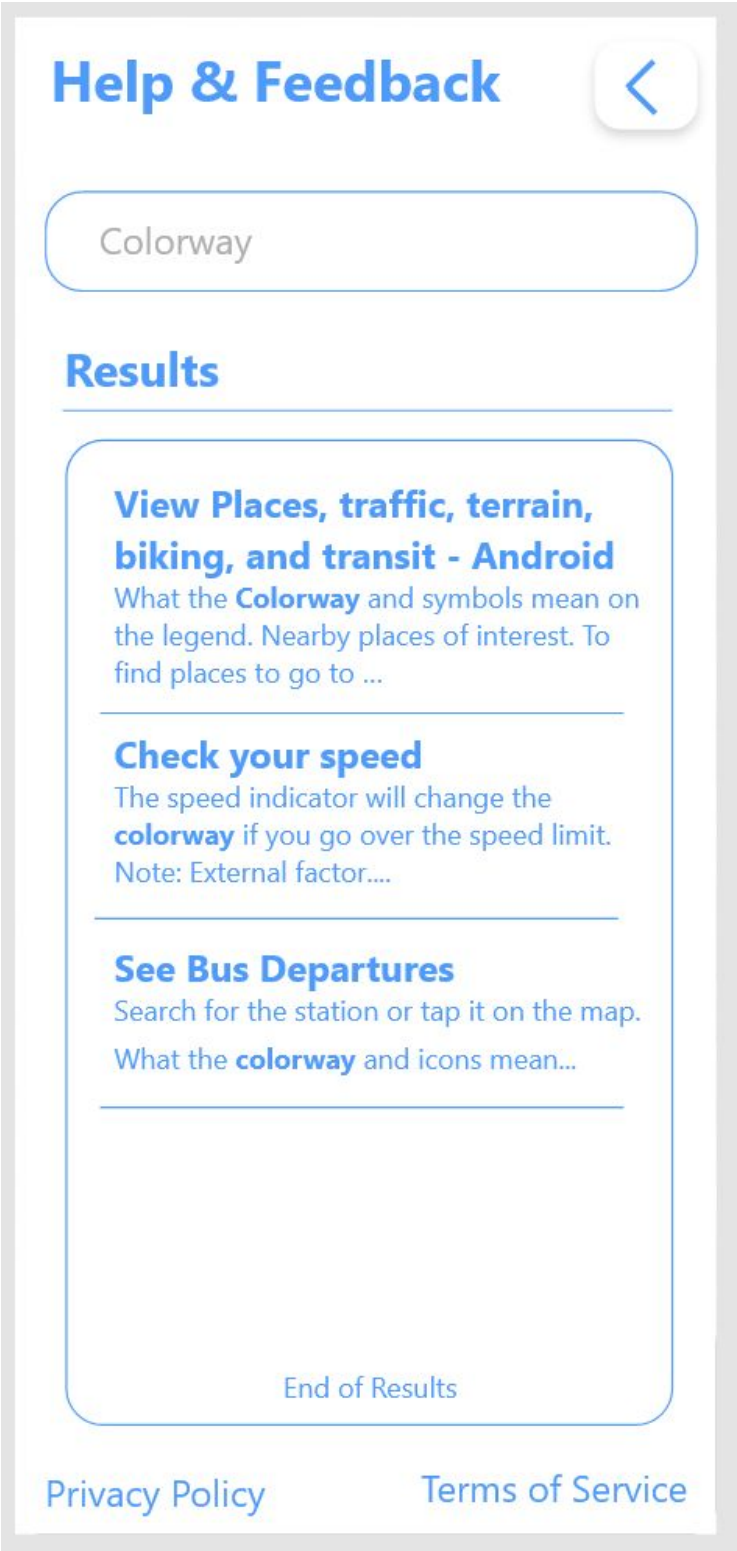
Settings (2) (Ignore Border) (In Settings, searched for keyword “3D”)



Help & Feedback (Ignore Border) (From Dashboard, select Help & Feedback)



Help & Feedback (2) (Ignore Border) (In Help & Feedback, searched “Colorway”)



About Us (Ignore Border) (From Dashboard, select About Us)

All (Adobe XD)


Information
Information
Directions
Dashboard
Your Profile
Campus Updates
Settings
Help & Feedback
About Us
Directions
Directions
Profile
Campus Updates
Settings
Help & Feedback
About Us
Directions
Directions
Settings
Help & Feedback

Final Usability Test

Goals:

With the first few tests, the objective was to determine whether all my pages had the essential features they were meant to have and whether they were organized fairly. Now though, the main goal is to determine whether the functionalities themselves have everything users expect them to have. For example, including the options to add more than one destination in the GPS interface, including different route options, including search features in the Settings and Help/Feedback menus, etc. This time, I will be adding onto that by determining if there are any other things I could add to make the interface feel more professional and for users to feel more comfortable.

- Find areas for improvement in terms of in-built features and if they're missing essential functionalities.
- Figure out whether we need to make the system more fluid and faster to use.
    - If so, where and how?
- Identify common user preferences and determine whether we address them.

Participants:

- Need to be affiliated with a University in any shape, way, or form: Professor, administrator, student, parents, visitor, faculty, staff, etc.

The chosen participants that will indulge in this test phase are two students, two parents (who have college kids and frequently visit campus), and one professor. These people aren't too close for there to be a huge implicit bias of some sort, and they were chosen for that reason. As a result, they are the ones that will go through the prototype and as a result of doing so, I have provided an incentive of rewarding them with $5 through Venmo.

Process

Due to the COVID-19 pandemic, meeting with my test users in person was definitely inadvisable. As a result, all of the testing took place through a Google Meet, where I would share my screen (of Adobe XD) and my users would tell me what they wanted to click and why. Before this though, I made sure to get them situated, have them fill out a Pre-Test Questionnaire, a Consent Form, and other generalities that were essential. All of the specifics are included in the Appendix. Once we started the test, I made sure the user was speaking aloud while describing what decisions they were planning on making and why, and while they were doing this I was logging important actions they took in my log book. Additionally, and just as another form of logging, I asked and made sure to get their approval of setting up an online audio recorder for me to look back on when evaluating my results. One by one, we'd go through the list of tasks I had set up and in the end, I presented the user with a debrief questionnaire along with the SUS (Post-test questionnaire). Again, the specifics can be found in the appendix. After this, we wrapped up the test with final thoughts, and I presented them with their $5 through Venmo.

Results

After going through the final set of tests, most of the users didn't have too much to say in terms of negatives, but there were some suggestions that I took to mind as constructive criticism. The primary takeaways included making the interface feel more anonymous to the user (Profile Info & Location Tracking specifically) and including traffic/construction information in the GPS & Map interface. As a result, I plan on doing just that by perhaps only including a section for frequent destinations under Profile Info if the Timeline feature is on, making it optional to create a profile (could use Guest Profile) in the first place, and finally including icons and images on the Map/GPS interface that directly correlate to different traffic/construction situations. Since this wasn't the first time that I put out a test for this interface, and because the backlash was quite minimal yet constructive, I found it to be a success. Additionally, and the reason I feel this way, was because the Debrief and Post-test questionnaires were fairly positive. In relation to the goals I set forth, it succeeded in that it included all of the features that were essential to making the app unique and its own. However, it still needs improvement in making a more diverse group of users comfortable with using it. For example, reaching people that worry about identity tracking, people that live in densely populated campuses with lots of construction (ex. UCLA, NYU, etc.), and even including more potential features like voice directions, making the app cross platform and accessible by say smart watches, etc. All in all, as a product there is definitely some room for polishing the design and improvement but in terms of essential functionalities, establishing them now was of the utmost importance, and it's getting closer and closer with every test.

Next Steps

As stated in the results section, the next steps would be to fulfill the expectations of the GPS interface and include more options for those that prefer anonymity. Additionally, tuning up the design and getting it over to a dev team would be another process that would be undergone if this was under a professional setting. Finally, working with a broader group of people and having the test be on a phone instead of the moderator doing the clicking may have an internal effect on the user, so including that option after the pandemic settles down is definitely a must during the later rounds of testing.

Conclusion

In conclusion, this experience has been my first real go at UX. I've learned many techniques that are used in the real world and have even applied some of them to this project. In the future, I hope to further expand on this journey by indulging in similar activities with other people so that I can get a more holistic view on how the entire process would go about. In terms of this project though, I feel joy in knowing that I've held my own and gotten through to a certain point of completion. Its taught me a lot about not only things that I've learned on paper, such as how to conduct an interview, but also more applicable things such as pushing me to learn Adobe XD after originally using Figma. Overall, I'd like to thank the team behind the University of Michigan that helped set up this Coursera course, and it was a joy to be part of such a great experience.

Appendix

Personas & Scenarios

Stacy

Demographics

- Age: 20
- Occupation: College Student
- Location: Irvine, CA
- Life Stage: Single

Situational Motivators

- Going to class and being involved on campus
- Participating in extracurricular activities/clubs in-person
- Maintaining strong relationships
- Staying active

Constraints

- Has been hesitant to be involved with campus activities lately due to COVID-19
- Tends to go outside and attend class, but is constantly unsure if she will be at risk of contracting the virus

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Stacy is an overachieving and well-rounded student living in Irvine, CA. She is hopeful to attend all of her classes this upcoming Fall, wants to be involved in extracurricular activities, and generally loves maintaining a strong connection with her new-made friends by spending time with them. That being said, one of her biggest struggles this year has been understanding the COVID-19 virus, and whether or not she'll be safe from her peers. She has been told to handle the situation by wearing a mask, making wise decisions, and staying sanitized as much as possible, but still she is uncertain of the risk due to how prevalent it is. The university she attends, UC Irvine, has recently inherited an app that informs its users of potential "hotspots" and COVID-19 zones. The caveat though, is that it requires its users to allow the tracking of their location. Realizing it's for the best, she adheres to the circumstances and starts using the app. It's now the first week of classes and Stacy is back on campus. She realizes there are a lot of others just like her that are not only using the app, but also wary of each other and social distancing in general. As a result, she is confident in going outside and needs to get to her first class of the day: Calculus 2. She's been to the building before, and knows how to get there, but she decides to check the app for potential COVID-19 cases and finds out the standard route would've taken her right through a "hotspot" where she could've potentially gained the virus! As a result, she enters her destination and the app sets a path that avoids the "hotspot" by a good amount with all the relevant information: bus number, ETA, etc. She adds using the app to her daily routine, and it's saved her a lot of worry when getting to class, but also when attending club meetings, hanging out with friends, etc.

Fernandinho

Demographics

- Age: 51
- Occupation: CEO of Restaurant Chain
- Location: Lansing, MI
- Life Stage: Married

Situational Motivators

- Visiting prospective colleges with his family (for his son who is a junior in HS)
- Learning more about what each university has to offer
- Getting a scope of each campus and the general layout
- Potential spots for business expansion
- Protecting his family from the virus

Constraints

- Though Fernandinho's family follow standard protocols, like wearing a mask and staying sanitized, he's still hesitant about having them out for too long.
- Worries about if certain campuses already a common surge in COVID-19 cases

Fernandinho is a busy man. He's married, has kids, and runs an upcoming restaurant franchise that has been popular in his area. Like everyone else, him and his family have been affected by the COVID-19 virus socially and have been self-isolating since March. Recently though, his son has just finished Junior year in high school and is preparing for college. Fernandinho knows that to choose a university one will attend, getting a first-hand view of the place is essential. He wants the best for his child, and realizes that it's about time to get out of the house. He sets up a few independent campus tours at schools his son is interested in, and receives a confirmation email from each one of them. They all require their visitors to download our app and make guest accounts, which will allow the user to see "hotspots" and areas on campus that are affected by the virus. He does so and before he knows it, it's time to take his family along to their first campus visit. Understanding the tour is independent, Fernandinho found a list of popular attractions and small facts about each place beforehand. Once arriving at school grounds he takes his family to each one while constantly checking the app and using its GPS feature. When on their second to last destination he sees that the building they were supposed to enter is a COVID-19 zone and should be avoided. He explains the cause for not entering inside the building to his family, and they're understanding and greatful. The family finally finish the tour shortly after maneuvering around campus and visiting the final destination. They decide to hit the road after getting some dinner at one of the on-campus restaurants, and use the app to detect "hotspots". After deciding on a fine establishment that is both high rated and has few people, they grab their grub, and are on their way back home.

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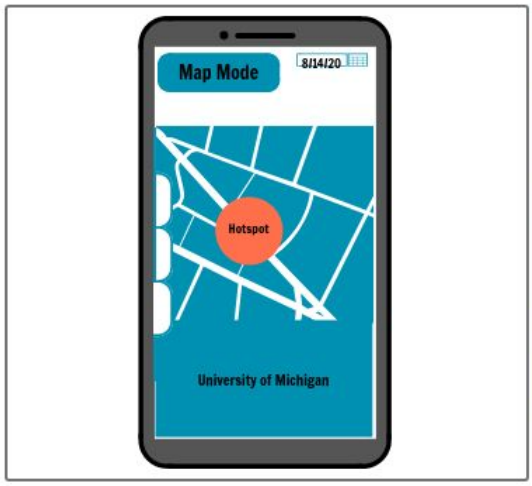
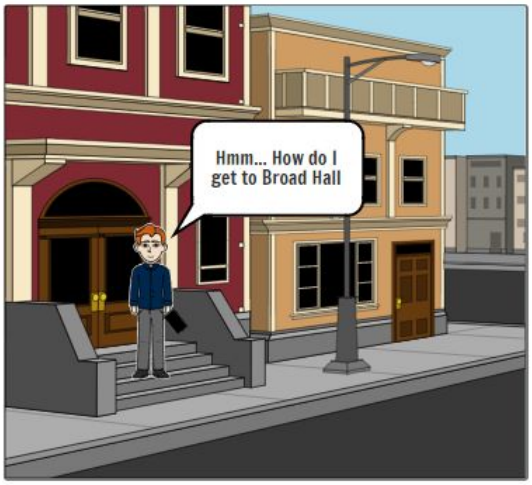
Design Concepts & Storyboards:





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Microusibility Test Plan

Overview:
The test I have prepared to review this interface includes tasks that require the user to access basic information as well as use in-built features. Specifically, I will be timing each user on how long they take to, say, find the number of Hotspots in a particular area or mark the time it takes for them to create the directions to a particular destination (using the GPS feature). Each one of the participants will be picked based on their relative expertise with similar apps and all in all, we will try to make the tests as fair as possible by including a balanced amount of diversity yet keep them relevant to our target demographic. Included below are high level goals, recruiting criteria, components of the test, and sequence of activities for the test sessions.

High Level Goals:

- Find areas for improvement in terms of in-built features and if they're missing essential functionalities.
- Figure out whether we need to make the system more fluid and faster to use.
    - If so, where and how?
- Identify common user preferences and determine whether we address them.

Recruiting Criteria

- Need to be affiliated with a University in any shape, way, or form: Professor, administrator, student, parents, visitor, faculty, staff, etc.

Components of the test

1. You are on the campus of UNC - Chapel Hill and are out in the open. Using the interface, count the number of hotspots between you and Memorial Hall.
2. Now count the number of COVID-19 zones between you and Gerrard Hall.
3. Set a route to Gerrard Hall. Does this take you through any hotspots or COVID zones?
4. Now enter your current location as Ackland Art Museum. Use the timeline feature to reestablish the same route to Gerrard Hall. Would you feel comfortable with this path?
5. Read up on some of the **information** about COVID-19 in your area. What seems to be the total number of cases and zones in your area. What about the places to avoid?

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Consent Form

I agree to participate in the study of a College Map Interface being conducted as part of the Coursera course: UX (User Experience) Capstone.

I consent to the recording of this test. This recording will be used for research and product improvements only.

I understand that participation in this usability study is voluntary and I agree to immediately raise any concerns or areas of discomfort during the session with the study administrator.

Please sign below to indicate that you have read and you understand the information on this form and that any questions you might have about the session have been answered.

Date:_____

Please print your name:

_____

Please sign your name:

_____ Thank you!

We appreciate your participation.

Logging Sheet

User Test Logging Sheet

Test Name: Logger:

Participant ID: Date:

Task Number: Task Success:

Clock Time	Event Code	Notes
	TASK START	Be sure to log start time for syncing later

Pranav R.
UX (User Experience) Capstone

User Test Script:

Pretest Checklist:

- Clear location tracking and set current location to UNC Chapel Hill's Morehead Planetarium.
- Print Task Instructions
- Print Consent Form
- Print Post Test Questionnaire
- Print this Test Script and Consent form
- Start Screen Recording
- Double Check Success Criteria
- Login with Standard Email & Password

Posttest Checklist:

- Stop recording, save audio and video to backup drive
- File consent form
- File logging sheet

I'll start this session by asking some background questions. Then I'll show you some things we're working on, and ask you to do some tasks. As you work on the tasks, please **think aloud.**

This means that you should try to give a running commentary on what you're doing as you work through the tasks. Tell me what you're trying to do and how you think you can do it. If you get confused or don't understand something, please tell me. If you see things you like, tell me that too. I want to emphasize that, **you won't hurt my feelings** by telling me what you think. In fact, frank, candid feedback is the most helpful.

If you do get stuck, **I'm going to try not to answer your questions** or tell you what to do. I'm just trying to see what you would do if you were using it on your own. But don't worry--**I'll help you if you get completely stuck**.

Do you have **any questions** before we begin?

Give Consent Form

Pre-test Questionnaire:

1. Have you used apps/programs like Google Maps and Waze before?
    a. If so, how comfortable are you with them?
2. Tell me about your experience with the COVID-19 pandemic and how it's affected you when going outside. What do you feel emotionally?

3. What information do you feel you'd like to have when stepping outside during this pandemic?
4. How often do you step outside?

Present Task Instructions

Print tasks and present them, one at a time. Read each task aloud and give the printed sheet to the participant.

Debrief:

1. **Review parts of the test where the user struggled:** What difficulties did you have on ____? I noticed you struggled with____, can you tell me what happened? You paused here, tell me more about that.
2. **Preferences:** What did you think of the interface? What did you like/dislike? Which parts of this page are most/least important to you?
3. **Changes:** If you had 3 wishes to make this better for you, what would they be? Why?
4. **Understanding:** How would you describe this to a friend?
5. **Use Cases:** Under what circumstances would you use this? Why?

Conclusion:

This has been incredibly helpful. Today, you mentioned…[Moderator: Try to briefly summarize some key parts of the discussion or issues.] Your input is really valuable for me and the team as we think about the next steps for these ideas. We really appreciate your taking the time to come in, and answering all of my questions. Thanks SO much!

[Moderator: Give participant incentive gift, if appropriate.]

Post-test Questionnaire: SUS

Post-test questionnaire

Answer the following questions based on the scale of 1 -5 where 1 is strongly disagree and 5 is strongly agree

1. I think that I would like to use this system frequently

   1 2 3 4 5

2. I found the system unnecessarily complex

   1 2 3 4 5

3. I thought the system was easy to use

   1 2 3 4 5

4. I think that I would need the support of a technical person to be able to use this system

   1 2 3 4 5

5. I found the various functions in this system were well integrated

   1 2 3 4 5

6. I thought there was too much inconsistency in this system

   1 2 3 4 5

7. I would imagine that most people would learn to use this system very quickly

   1 2 3 4 5

8. I found the system very cumbersome to use

   1 2 3 4 5

9. I felt confident using the system

   1 2 3 4 5

10. I needed to learn a lot of things before I could get going with this system.

    1 2 3 4 5