

Shuang Liu

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Research Brief: COVID-19 Tracking Mobile Application

Abstract

As the rapid expression of COVID-19 continues, it is essential to educate people with the accurate data and avoid creating unnecessary panic. For this app (name is not decided yet), the user goal is to inform the users with the latest changes of COVID hospitalization. The objective is to provide a most precise number of people who are affected. To keep the data updated, having the number of recoveries is also important.

The current version of the app would organize data in 3 categories: Universities, Cities, and States. Meanwhile, it allows the users to track the number of people with COVID based on his/her location. The system notifies the user if someone (the user of the app as well) is at the same location as him/her. For instance, if there is another user at the same building, street, or classroom, there will be a notification pop up to tell.

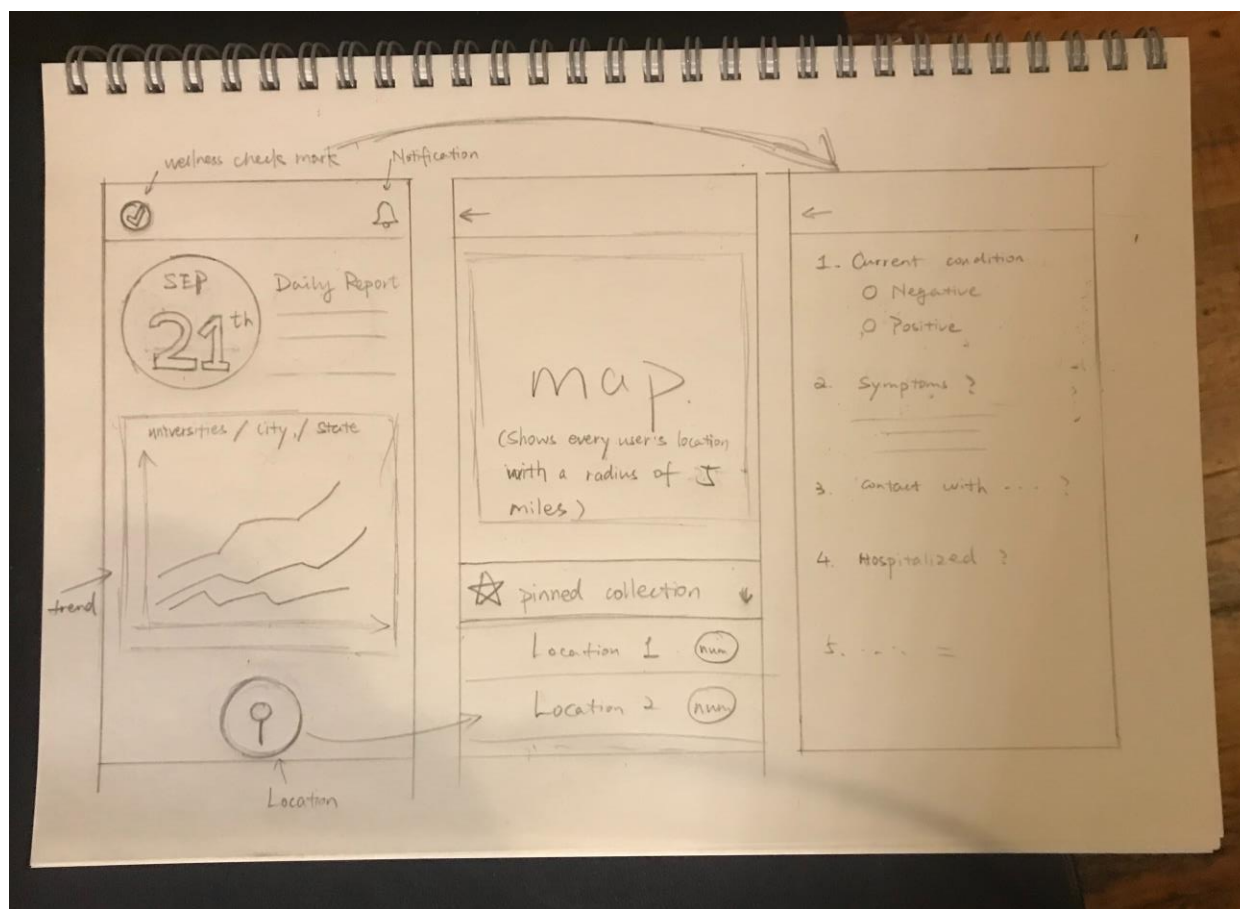
There are 2 types of data that the app would gather. The first type of data comes from hospitals, health care institutions, and universities. It encourages [Departments of Health of all states](#), cities, and universities to provide following data:

- Current hospitalization of COVID-19 patients
- Cumulative hospitalization of COVID-19 patients
- Cumulative recoveries of COVID-19 patients

For instance, Northeastern University has a [Testing Dashboard](#) that tells the numbers of isolations, quarantines, and recoveries. is diagnosed, and hospitalization number. The data updates every 24 hours. If certain data is not collectable, the app would need the support of [CDC](#) and the government of states. The second type of data comes from self-reports of the users. There will be a Daily Wellness Check function embedded in the app, asking the daily condition and health status of the user. Correspondingly, the pin representing each user in the Map page would switch color based on their health status.

Interface, user experience

- **Rough draft: Sep 16-23, 2020**



- **Marvel interface mockup: Sep 23-30, 2020**

- <https://marvelapp.com/prototype/7ch0bgf>
- Home Page:
 - Wellness check mark on the upper left corner of the screen
 - Turn notifications on/off on the upper right corner
 - Shows the date, zip code, daily report of COVID-19, and the data in universities, city, and state
 - Map icon at the bottom of the screen



- Daily Wellness Check
 - Asks the user about their health status
 - After completing the check, the app will tell the users their status of the day, which will affect their pins' color on the map page

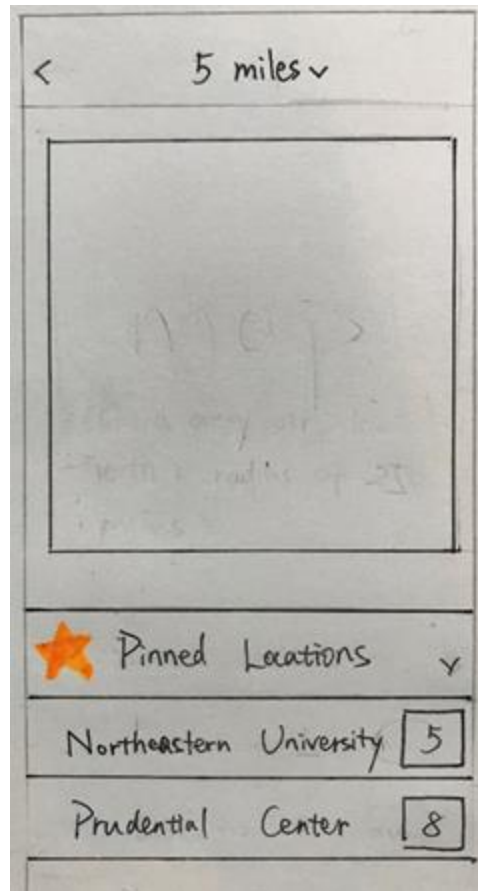
< Wellness Check

1. Current condition :
 - ☐ Negative
 - ☐ Positive
2. Do you have any symptom?
 - ☐ Diarrhea
 - ☐ Fever
 - ☐ Cough
 - ☐ New Loss of smell/taste
 - ☐ Shortness of breath
 - ☐ None
3. Have you contacted with someone who is confirmed as having COVID-19 ?
 - ☐ Yes ☐ No
 - ☐ Not Sure
4. If "Yes", are they currently self-quarantining or hospitalized?
 - ☐ Yes ☐ No

You have completed
Wellness Check !

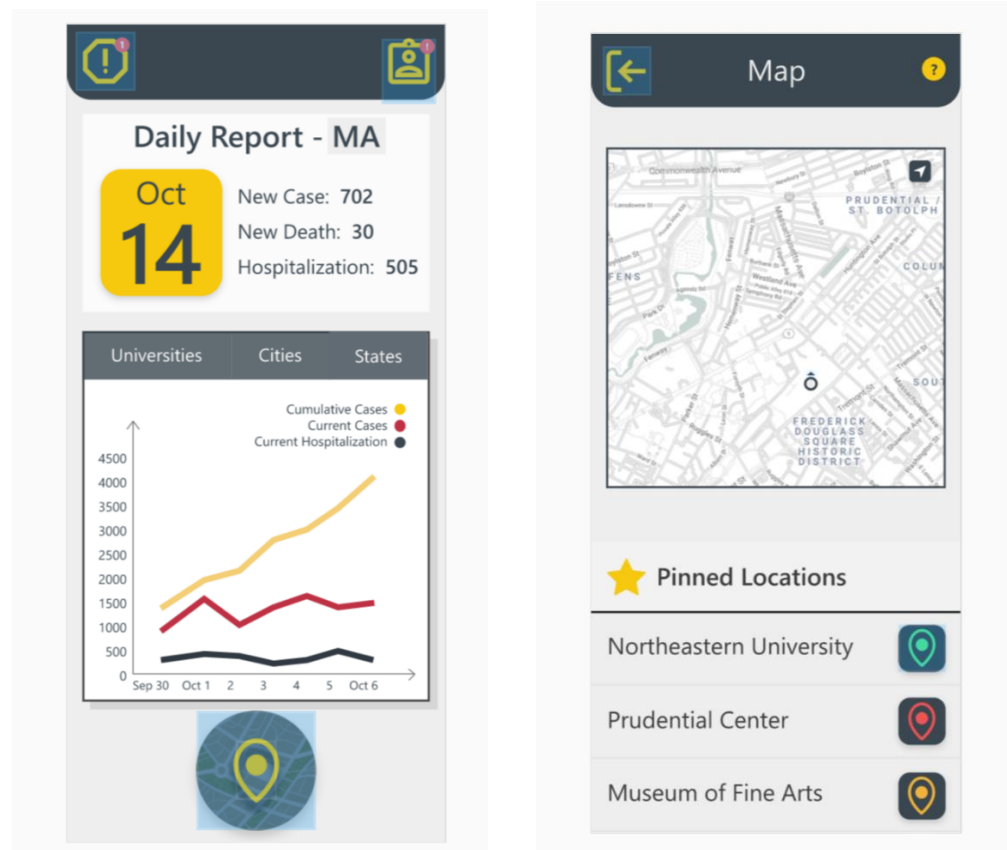
Status :

- Map
 - Shows the location of every user of the app in the radius of 5 miles
 - Each user has a different colored pin which represents the health status
 - Pinning locations to check the number of people that are potential covid carriers (?)

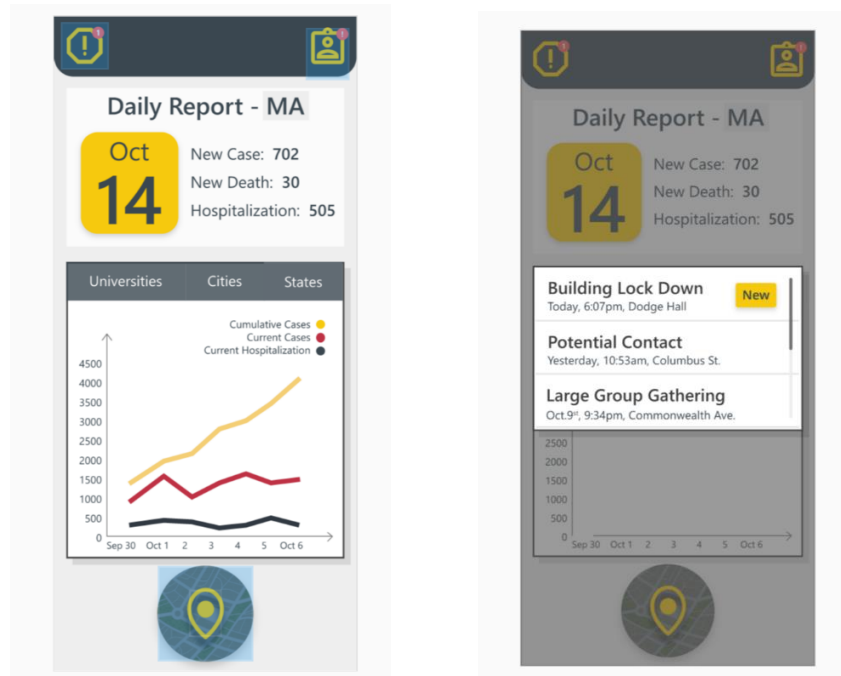


- Adobe Xd interface mockup: Sep 30 - Oct 7, 2020
 - <https://xd.adobe.com/view/c019122b-fa95-44fb-9ec3-e02bdb7d2575-954a/>
- Adobe Xd interface revision: Oct 7-14, 2020
 - Oct 9: <https://xd.adobe.com/view/1fbf52aa-de73-44d6-8b26-513b3f9fed3d-4aec/>
 - Oct 11 after office hour: <https://xd.adobe.com/view/4e782da5-ae50-44fd-93b6-d6e880c98a1d-1b2b/>
- **Adobe Xd interface final:** Oct 14-18, 2020
 - <https://xd.adobe.com/view/c0c84b17-714f-4541-9591-e16562f4f417-959b/>

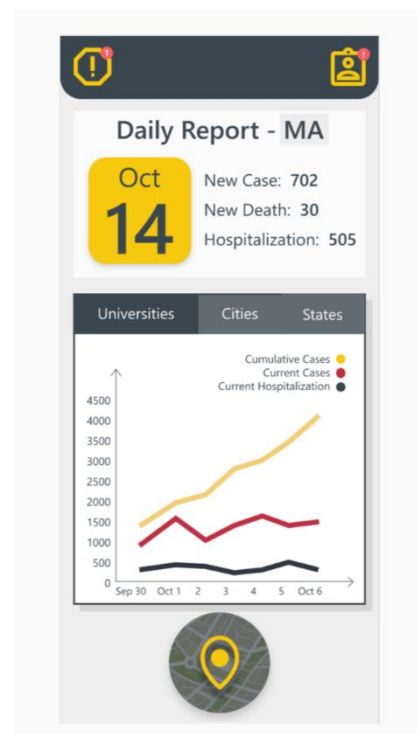
- Discoverability: On the home screen, there are 3 signifiers on the upper left corner, upper right corner, and the bottom. Majority of signifiers are colored in yellow with the same style. Some of them would notify the user if he/she hasn't completed certain tasks or something happens.



- Feedback: After clicking the upper left corner, it shows the latest notification about anything that can cause concern. (e.g. building lock down, large group gathering, etc.) By clicking anywhere of the new screen again will lead the user back to home.



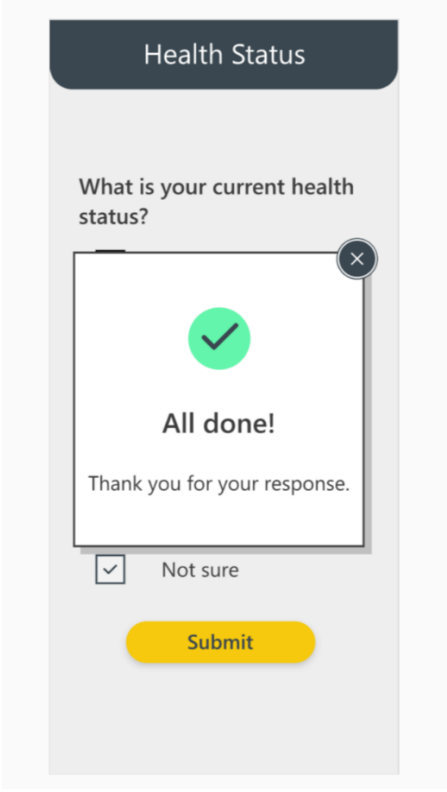
The data chart in the middle of the home screen will be blank when opening the app. After hovering to “universities”, “cities”, or “states”, the button will become darker, and after clicking any of the button, the chart will show the corresponding data.



By clicking the upper right corner, the app brings the user to a daily health status report. The user can check his/her status for the day by checking the box and submit. After submitting the report, a window saying “All Done!” shows and the “X” icon lets the user to go back to the home screen.



The screenshot shows the 'Health Status' screen of an app. The title 'Health Status' is at the top. Below the title, the question 'What is your current health status?' is displayed. There are five radio button options for the user to select: 'Diagnosed negative', 'Diagnosed positive, self-quarantining', 'Diagnosed positive, hospitalized', 'Diagnosed positive, not quarantined yet', and 'Not sure'. At the bottom of the form, there is a yellow 'Submit' button.



The image shows a mobile application interface for a 'Health Status' form. At the top, a dark blue header contains the text 'Health Status'. Below this, the question 'What is your current health status?' is displayed. A white modal box with a green checkmark icon and the text 'All done! Thank you for your response.' is overlaid on the form. Below the modal, there is a checkbox labeled 'Not sure' and a yellow 'Submit' button.

Health Status

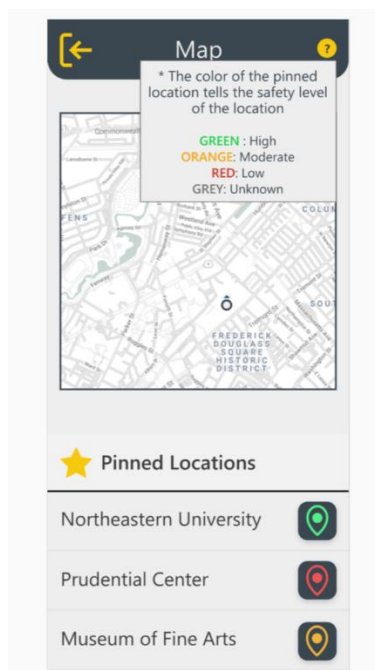
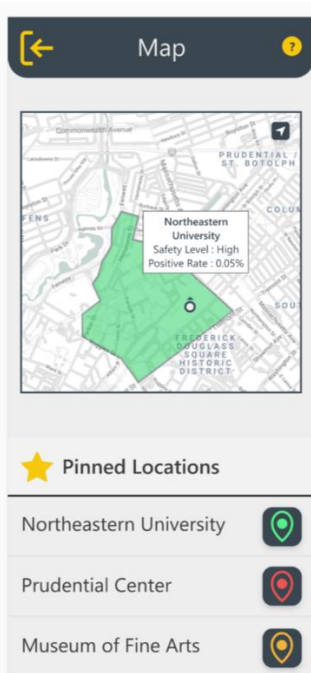
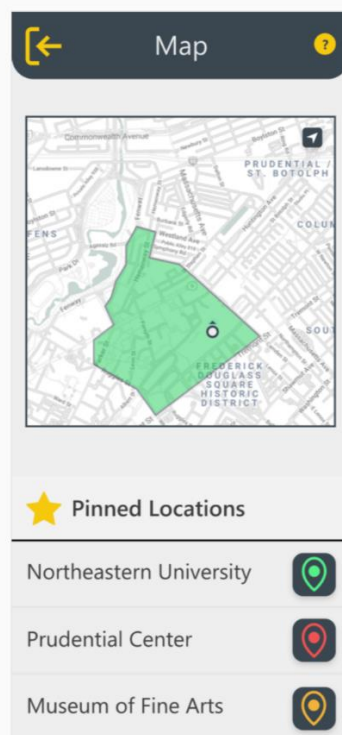
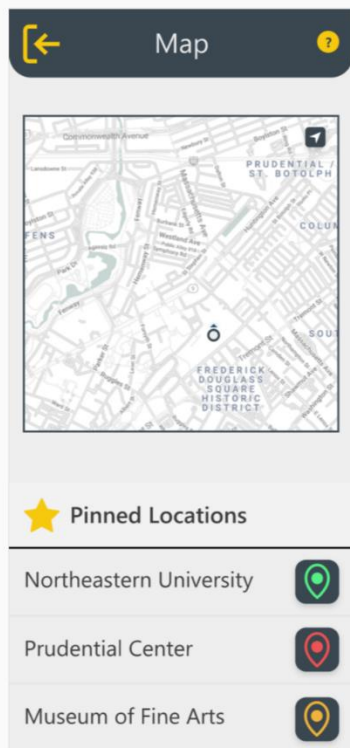
What is your current health status?

All done!
Thank you for your response.

☐ Not sure

Submit

The bottom icon in the home screen takes the user to the map screen. By clicking the pin after every pinned location, it shows the area of the location and the safety level. When the user hovers the mouse to the colored area, a safety report appears with the safety level and the positive rate. The question mark on the upper right corner is a hidden context menu, and it tells which color indicates what safety level the area is. By clicking the signifier on the upper left corner, the user is able to go back to the home screen.



- Conceptual model:

- The goal of this app is to present all of the main affordances in the home screen using signifiers. By adding hover states, some affordances don't require signifiers to activate.
- Affordances
 - The mobile app allows the user to switch among different screens by clicking and hovering on different signifiers.
 - The user is able to check COVID-19 data among universities, cities, and states; get notifications/alerts; reporting their health status; and check safety level of selected locations.
- Signifiers: the app uses icons as signifiers in every screen to identify the affordances.
- Mappings: the app keeps consistency throughout every screen by using grid to keep the same layout. The action bar is on the top, and the main content is in the middle of each screen.
- Constraints: the current stage of the app keeps all the actions simple and basic to avoid unnecessary confusions. Former versions of the app aimed to show users' health statuses in the map which led to confusion in user tests. As a result, the health status report became a data collecting process only, yet it would not connect with the map. The map would show the pinned location's safety level instead.