



# CampusKey

a COVID app for Fall 2020

**We're developing an app to manage the testing experience for students, faculty, and staff at Massachusetts-area universities.**

## The basics

*Surveillance testing* is the practice of routine testing for all members of a population, regardless of symptoms. Multiple models indicate that surveillance testing is an essential component of a healthy back-to-campus policy ([link](#)). Many Massachusetts colleges are planning to reopen with multiple cohorts of students, faculty, and staff slated for surveillance testing at specified frequencies, many using a common lab (the [Broad Testing Service](#)). For instance, current Tufts plans include a high-frequency cohort at 2x/week and a medium-frequency cohort at 1x/week.

## The app

Tufts has taken the lead to develop a mobile app called **CampusKey** which will serve as a hub for users to interface with the testing regime on campus. The app will organize user **availability** information, interface with a mathematical model assigning load-balanced **scheduling**, provide user access to test **results**, and display a **badge** indicating that the user is in compliance with their assigned testing schedule.

The basic principles of the app are to

- provide a streamlined, unified experience for users;
- set up a generalized solution that will work for multiple universities;
- protect privacy – no sensitive testing information sent to third parties; and
- interface easily with campus planning and logistics.

## How to opt in

There are three ways of participating: as development partners, app adopters, or model users. Potential development partners: please reach out to [contact@megg.org](mailto:contact@megg.org) by July 10, 2020.



# Campus logistics

## Designing your testing cohorts

Most campuses are dividing up their population by their risk of spreading infection; community members living on campus and those with more student-facing responsibilities are in a higher-testing cohort, with those who come to campus less often or in lower-contact roles in a medium-testing cohort. We've made a [calculator tool](#) to help you plan your cohorts.

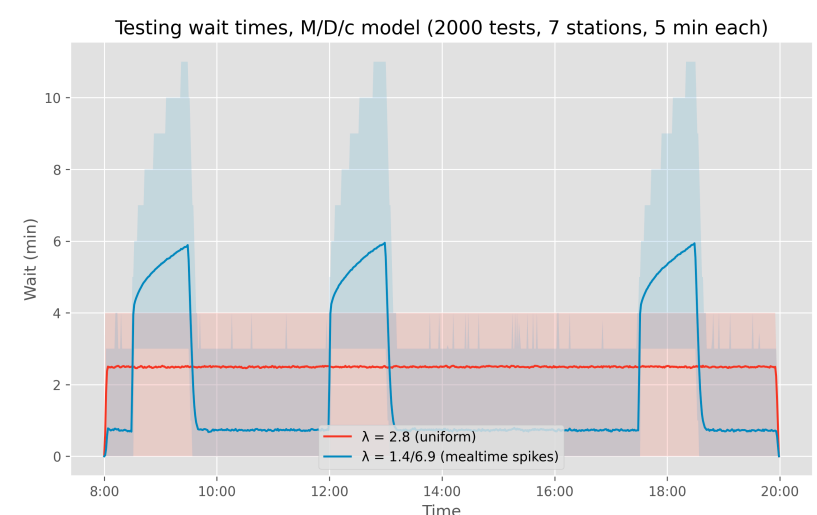
## Onboarding

Tufts will launch the app on August 17. Participants who enter schedule availability by August 21 will receive initial assignments in time for a full scheduled testing week beginning August 24. The standard use case is a phased return to campus in which an initial test is needed to access the dorms.

## Testing and collection stations

Essential: separate doors for entering and exiting.  
Monitor(s) for supervised testing and staffer(s) with table space for test labeling.

Lane configuration should reflect the target throughput and the availability of staff.



If you'd like a good estimate of how many stations will be needed to avoid lines and bottlenecks, our group has carried out simulations to predict wait times and can suggest a minimum number of stations for your campus needs.

## Testing workflow

We are exploring many opportunities for a streamlined workflow. This illustrative pathway will be available to campuses working with the [Broad Testing Service](#) (BTS).

- Participants have an opportunity each week to modify their default availability in the app; they receive a testing schedule once per week. App sends a reminder for each assigned test. Standard use case: each assignment is a time block (e.g., 3-hour window).
- Participants report to the testing facility, scan a QR code with the app, and either test in front of a monitor (recommended for students) or bring a self-administered test to drop off.
- At the collection station, participants present ID. A staffer selects them through the CareEvolve web platform and prints a label that is affixed to the test kit.

We are continuing to work with the Broad to identify further efficiencies (such as pre-labeled test kits). We will help non-BTS campuses adapt this workflow for use with other labs.



# IT details

## Adapting the app for your school

There are several ways the app can be set up to work for your university, whether or not you are using the Broad Testing Service. The scheduling features of the app are available regardless of other choices, but the ability to view results will vary.

- Option 1: You use BTS and your IT staff sets up a server that hosts a copy of the test results. This will involve synchronizing with the CareEvolve database provided by Broad. You configure your database to support API queries by the app. Negative results are accessed by participants within the app.
- Option 2: You use BTS but you do not set up a separate server. The scheduling component of the app resembles Option 1, but results are accessed through the CareEvolve Patient Portal, which is opened in a browser by clicking a button in the app. Participants receive notification that a result has posted, then log in to website to view result.
- Option 3: You use other labs for testing rather than Broad. You host a website for test results and the app directs users to log in to that website to access results, or you work with our team to set it up for API queries.

## Authentication and privacy

The first time a user logs into the app's main scheduling functionality, it will be via a "magic link" (passwordless authentication via email). After this, they can continue to see scheduled tests in the app without an additional login. In order to protect user health information, viewing test results will require the user to log in with credentials to verify their identity, either via SSO to access the school's EMR or through an account set up with CareEvolve to view the Patient Portal. The tokens for this login will be set to expire rapidly, to ensure test results are protected after initial viewing.

Scheduling will be carried out on a Heroku server that we will help your campus set up.

**CampusKey** is built on a commitment to keeping student, staff, and faculty data in trusted hands. Test results will be stored only at the testing lab (e.g., the Broad and its CareEvolve platform) and in your university's EMRs.

## Clickable prototype

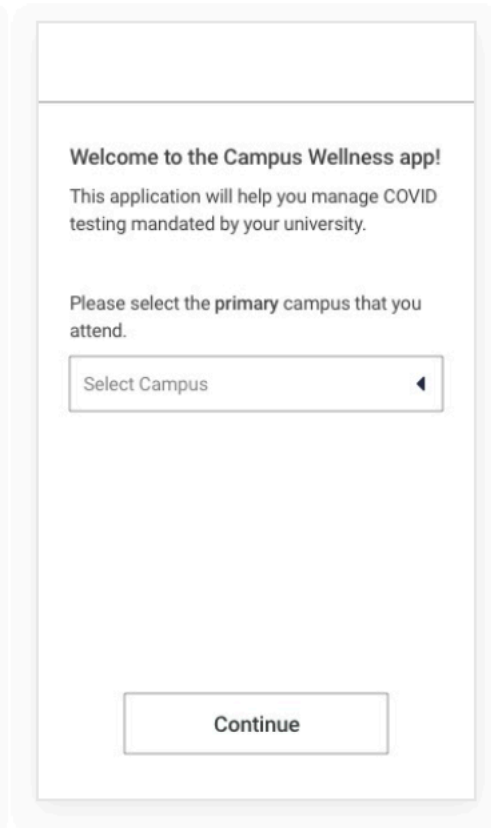
A minimal deployment of the app (Option 2 above) will be submitted to the App Store and Google Play store on July 20th. A clickable prototype will be available at that time.

# Wireframes

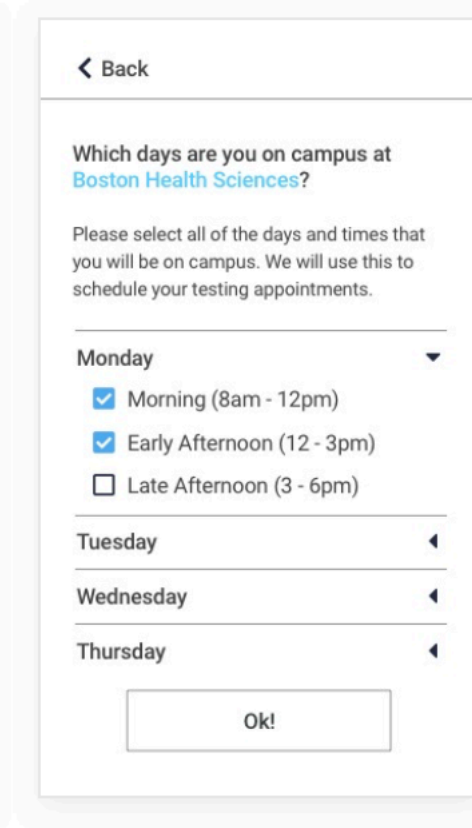
## Onboarding



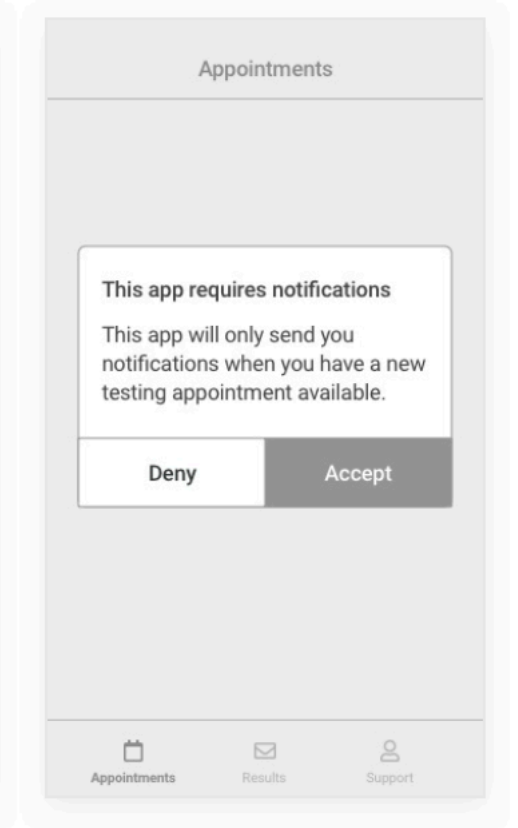
Sign in with "magic link"  
by email



Confirm campus

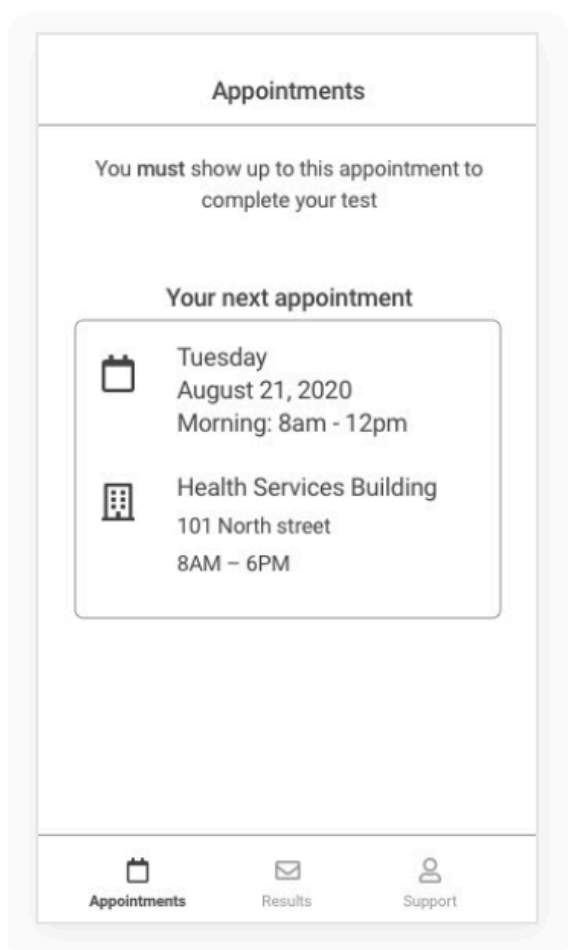


Confirm weekly availability  
(Options can be updated  
mid-semester.)



Enable notifications from  
the app

## Test scheduling



See details about next  
scheduled appointment

You do not have a  
scheduled appointment

Expect an email and phone notification in the  
coming days when we get your appointment  
scheduled.



## Other notes and assumptions

The algorithm and code for scheduling is open-source and publicly available on request. The app is a not-for-profit project but requires significant IT coordination, so funding for the tech support can be arranged on a sliding scale. We hope to support a wide range of colleges in the Massachusetts region.

At the outset—and with updates as needed—each campus should provide **CampusKey** with the following info.

- A CSV file with emails of participating individuals at your school (.edu preferred) and their cohort assignment, as well as desired testing frequencies by cohort.
- The list of testing sites on campus with opening hours and desired testing flexibility.

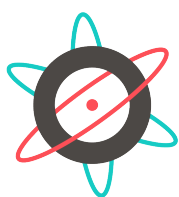
A standing physician order should be on file with the Broad or your other testing lab.

If using BTS, the university should arrange to receive test results from the CareEvolve database in order to deploy their response (isolation, contact tracing, etc). The user receives a notification from the app (with additional text or email notification if desired). Negative results can be accessed by login. Positive results should be communicated to students in person or by phone.

## Who's behind this project?

This is a planning project of the [MGGG Redistricting Lab](#) of Tisch College, Tufts University, in cooperation with Tufts IT. The app development is being undertaken by [Atomic Object](#), a 70-person software design firm based in Ann Arbor, MI, which has ample experience delivering apps that are user-friendly and HIPAA-compliant.

MGGG is providing a suite of models and front-end tools for COVID planning, partially supported by a RAPID grant from the National Science Foundation. Visit our [project page](#) for more information.



**ATOMIC OBJECT**

