COMBATING COVID ON CAMPUS

Contact Tracing & Higher Education

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STOP
SURVEILLANCE TECHNOLOGY
OVERSIGHT PROJECT

EXECUTIVE SUMMARY

In March 2020, colleges and universities across the United States ended in-person instruction as the COVID-19 pandemic descended. Millions of American college students scrambled to finish coursework and professors navigated teaching online. The fall poses a new challenge: how to bring students back to campus safely.

As they navigate this new world, universities must guard against the technosolutionism being offered in the form of technology-assisted contact tracing. These apps and wearables – relying on technologies like GPS, Bluetooth, and Wi-Fi location tracking – offer a false sense of security and belie the truth: high-tech contact tracing will fail. More importantly, any form of contact tracing that fails to safeguard users' privacy will be a dangerous distraction from evidence-based models.

Key Topics:
- the privacy and civil rights implications of COVID-19 tracking technologies;
- the equity impact of technology-driven public health responses;
- the best practices for manual, on-campus contact tracing; and
- the financial pressures driving colleges and universities to restart in-person instruction.

Universities have a unique moral and legal duty of care to create a safe educational environment for students and professors. When educational institutions take short-sighted shortcuts in responding to COVID-19, they not only imperil their campus community, they also undermine the very place of higher education in American life. But for students and staff, the harms are far from philosophical. If colleges and universities fail to protect their campuses, the results will be fatal.

INTRODUCTION

This past spring, schools across the country were forced to move instruction online as COVID-19 rapidly spread. This impact hit institutions of higher education particularly hard, affecting more than twenty-five million students at more than four thousand colleges and universities.[1] Students were sent home or told not to return to campus while on spring break, and they were asked to rely on often unreliable internet connections[2] to learn from professors who themselves adapted to new technologies with varying results.[3] Summer break may have offered a brief reprieve to many students and university staff, but the fall semester is swiftly approaching,

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[1] *COVID-19: Higher Education Resource Center*, ENTANGLED SOLUTIONS, https://www.entangled.solutions/coronavirus-he (last visited June 16, 2020).

[2] Nicholas Casey, *College Made Them Feel Equal. The Virus Exposed How Unequal Their Lives Are.*, N.Y. TIMES (Apr. 4, 2020), https://www.nytimes.com/2020/04/04/us/politics/coronavirus-zoom-college-classes.html.

[3] Christopher R. Marsicano, *Embracing Break-and-Bake Cookies*, INSIDE HIGHER ED (Apr. 10, 2020), https://www.insidehighered.com/advice/2020/04/10/professor-inexperienced-zoom-teaching-shares-lessons-learned-his-first-weeks-it.

which raises the question of whether colleges, universities, and boarding schools should reopen their campuses and return to in-person classes.

The virus's still-rising death toll counsels against returning to business as usual, but most universities cannot afford to keep their campuses closed.[4] Christina Paxson, President of Brown University, explained the problem quite simply: "If [students] can't come back to campus, some students may choose—or be forced by circumstances—to forgo starting college or delay completing their degrees. . . . Most colleges and universities are tuition dependent. Remaining closed in the fall means losing as much as half of our revenue."[5] For example, the University of Michigan system expects to lose up to $1 billion,[6] and the former chancellor of the University of Vermont system initially proposed permanently closing three campuses to deal with pre-existing financial issues before walking back the plan and resigning.[7] Market forces have only been compounded by political pressures, as the Trump administration threatens to strip holders of student visas of immigration status if they fail to attend a school offering in-person classes.[8]

Thus, while some schools will hold fall classes remotely,[9] some universities have no choice but to reopen. Indeed, 65% of schools are "planning for [an] in-person" fall semester.[10] But as college administrators struggle to figure out a plan for safely reopening their campuses, technology companies have rushed to fill the gap, offering contact tracing "solutions" like mobile applications, wearables, facial recognition, and temperature checks.

Apps, wearables, or other technology "fixes" for COVID-19 will likely prove to be both a panopticon and panacea. These invasive tools are unproven forms of technosolutionism, buying into the Silicon Valley narrative that institutions should turn to technical fixes instead of

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[4] Christina Maxouris, *Predicted COVID-19 US Death Toll Rises As States Re-Open,* NEWS4JAX (May 11, 2020), https://www.news4jax.com/news/local/2020/05/11/predicted-covid-19-us-death-toll-rising-with-states-reopening/.

[5] Christina Paxson, Opinion, *College Campuses Must Reopen in the Fall. Here's How We Do It.*, N.Y. TIMES (Apr. 26, 2020), https://www.nytimes.com/2020/04/26/opinion/coronavirus-colleges-universities.html; *see also* Michael J. Sorrell, *Colleges Are Deluding Themselves*, ATLANTIC (May 15, 2020), https://www.theatlantic.com/ideas/archive/2020/05/colleges-that-reopen-are-making-a-big-mistake/611485 ("[M]any schools literally cannot afford an online-only existence.").

[6] Frank Witsil, *University of Michigan Makes Cuts, Forecasts Losses of Up to $1 Billion*, DET. FREE PRESS (Apr. 20, 2020, 3:35 PM), https://www.freep.com/story/news/education/2020/04/20/university-michigan-makes-cuts-stem-loss-schlissel/5166574002.

[7] Ethan Bakuli, *Vermont State Colleges Could Close Three Campuses, Lay Off Hundreds*, BURLINGTON FREE PRESS (Apr. 17, 2020, 2:41 PM), https://www.burlingtonfreepress.com/story/news/2020/04/28/vermont-state-college-system-chancellor-jeb-spaulding-resign/3039352001.

[8] BROADCAST MESSAGE: COVID-19 AND FALL 2020, https://www.ice.gov/doclib/sevis/pdf/bcm2007-01.pdf (last visited Jul. 7, 2020); *see* Camilo Montoya-Galvez, *ICE Says Foreign Students Can't Take Online-Only Classes in the Fall,* CBS NEWS (Jul. 6, 2020), https://www.cbsnews.com/news/ice-foreign-students-online-only-classes/.

[9] *Here's a List of Colleges' Plans for Reopening in the Fall*, CHRON. HIGHER EDUC., https://www.chronicle.com/article/Here-s-a-List-of-Colleges-/248626 (last updated June 15, 2020, 4:50 PM).

[10] *Id.*

undertaking systemic reform.[11] This approach not only ignores entrenched inequalities: it amplifies them. For example, tracking systems that require the newest, fastest smartphones will discriminate against lower-income students and staff.[12] Users will struggle with software that fails to support their native language, and those without health insurance may avoid self-reporting symptoms in an effort to avoid paying out-of-pocket for care.[13] Undocumented individuals may fear devices and software that can provide information to police and U.S. Immigration and Customs Information (I.C.E.). And many over-policed and privacy-protective communities will be hesitant about handing over their data to questionable private vendors.[14]

Contact tracing requires public trust and participation. Technologies that scare off students and staff won't just be a costly distraction: they may undermine traditional, evidence-based public health measures. This begs the question: how else can colleges and universities address the current public health crisis?

The only proven approach to tracking and battling the spread of a pandemic is culturally competent contact tracing. This methodology—which has been used to battle everything from HIV/AIDS, to Ebola, to routine food poisoning—relies on manual in-person or phone interviews by specially-trained disease detectives.[15] Once someone is diagnosed, a contact tracer personally works with them to identify and inform people whom they might have infected, helping those affected to create a self-isolation plan.

This paper highlights some of the dangers facing educational institutions as they weigh reopening. It (i) explores the privacy and civil rights implications of COVID-19 tracking technologies, (ii) highlights equity concerns with technology-driven public health models; (iii) recommends best practices for implementing culturally competent contact tracing; and (iv) acknowledges the looming funding crisis for smaller colleges and public universities.

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[11] Petra Molnar, *Borders, Politics, and Pandemics: The Risks of Technosolutionism in the Time of COVID-19*, CTR. FOR STUDY OF GLOBAL HUM. MOVEMENT (May 22, 2020), https://centreghum.com/2020/05/22/borders-politics-and-pandemics-the-risks-of-technosolutionism-in-the-time-of-covid-19.

[12] *See, e.g.*, Craig Timberg et al., *Most Americans Are Not Willing or Able to Use an App Tracking Coronavirus Infections. That's a Problem for Big Tech's Plan to Slow the Pandemic.*, WASH. POST (Apr. 29, 2020 1:03 PM), https://www.washingtonpost.com/technology/2020/04/29/most-americans-are-not-willing-or-able-use-an-app-tracking-coronavirus-infections-thats-problem-big-techs-plan-slow-pandemic.

[13] Jennifer Tolbert, *What Issues Will Uninsured People Face with Testing and Treatment for COVID-19?*, KAISER FAMILY FOUNDATION (Mar. 16, 2020), https://www.kff.org/coronavirus-covid-19/fact-sheet/what-issues-will-uninsured-people-face-with-testing-and-treatment-for-covid-19/.

[14] Timberg et al., *supra* note 12.

[15] *HIV and AIDS Timeline,* CENTER FOR DISEASE CONTROL, https://npin.cdc.gov/pages/hiv-and-aids-timeline (last visited Jun. 23, 2020).

I.   The Problems with Technology-Assisted Contact Tracing

A.   Types of Tracking Technology

High levels of smartphone penetration make mobile device-based COVID-19 tracking applications a popular option for many universities.[16] Smartphone data creates a "fine-grained, continuous collection of people's . . . mobility patterns,"[17] but that picture isn't always as precise as it appears. Relying on end-user devices amplifies racial, gender, and socio-economic disparities in which devices we use.

Smartphone apps will rely on one or more of the following five technologies: Bluetooth proximity detection, GPS, cell tower triangulation, Wi-Fi triangulation, and QR codes. The first four of these track continuously without any user assistance, while QR codes track periodically, demanding users to physically scan a code when requested.

Similarly, there are variances in how each of the continuous tracking technologies work. Bluetooth proximity measures the signal strength of one or more nearby Bluetooth transceivers, extrapolating the device's distance based on the strength of the Bluetooth signal. Typically, mobile devices have a maximum line-of-sight Bluetooth range of 30 to 40 feet, but signal strength can be impacted by everything from the model of phone and battery level to whether there are any objects between the two devices.[18] Various building materials can significantly refract or reflect Bluetooth signals, further degrading reliability.

In contrast, GPS uses a network of geo-stationary satellites to identify the location of a signal phone or device. Since GPS only measures the location of one device, and not the proximity of others, proximity (and the potential for exposure), can only be extrapolated after centrally aggregating numerous devices' GPS data comparing points of potential overlap. This centralized design is used by the remaining forms of continuous tracking. Unfortunately, GPS has an average horizontal position error of 23 to 42 feet, vastly more than the 6-foot range of exposure.[19]

Cell tower tracking closely resembles GPS location tracking. The primary difference is that users' location is identified through the logs of terrestrial cell phone towers. Since phone

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[16] "According to one poll, nearly three-quarters of smart phone users report being within five feet of their phones most of the time, with 12% admitting that they even use their phones in the shower." Riley v. California, 573 U.S. 373, 395 (2014) (citing HARRIS INTERACTIVE, 2013 MOBILE CONSUMER HABITS STUDY (2013)); *see also* Carpenter v. United States, 138 S. Ct. 2206, 2218 (2018).

[17] Gabriella M. Harari et al., *Using Smartphones to Collect Behavioral Data in Psychological Science: Opportunities, Practical Considerations, and Challenges*, 11 PERSP. ON PSYCHOL. SCI. 838, 838 (2016).

[18] Set up and listen to Bluetooth devices on iPhone: Pair a Bluetooth Device, APPLE, https://support.apple.com/guide/iphone/use-other-bluetooth-headphones-iph3c50f191/ios#:~:text=Pair%20a%20Bluetooth%20device&text=iPhone%20must%20be%20within%20about,meters)%20of%20the%20Bluetooth%20device. (last visited Jul. 7 2020); What is the maximum range of a Bluetooth connection?, SAMSUNG, https://www.samsung.com/pk/support/mobile-devices/what-is-the-maximum-range-of-a-bluetooth-connection/ (last visited Jul. 7, 2020).

[19] Krista Merry, Pete Berringer, *Smartphone GPS accuracy in an urban environment*, PLOS ONE (Jul. 18, 2019), https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0219890#sec008.

typically connect to the closest available tower, phone companies are able to approximate users' locations going back years. Since modern smart phones "ping" a cell tower every time a call is made, a text is sent, or a data packet is transmitted, cell phone companies have a near constant map of users' movements. [20] While not always as accurate as GPS, cell phone tower logs can identify users' location within an area ranging from several square miles to a matter of feet.[21]As with GPS tracking, since cell towers only track the location of individual users, and not their proximity to each other, it's only possible to gauge proximity and potential exposure through a centralized analysis over overlapping locations.

Wi-Fi tracking varies from cellphone tower tracking in two minor regards.[22] First, Wi-Fi signals travel a much shorter distance than cellphone signals, making location estimates potentially more precise. Second, since Wi-Fi antennae are operated by a diffuse network of individuals and institutions, any individual Wi-Fi operator can likely provide (at best) a highly incomplete view of an individual's location history. Additionally, Wi-Fi location tracking's accuracy depends significantly on what building materials a Wi-Fi signal needs to traverse.[23]

Lastly, QR codes are a way of embedding information in a machine readable code, so that it can readily be extracted by a smart phone or camera running the appropriate software. Much like the UPC barcode found on most consumer codes, QR codes represent a single, static value. But unlike bar codes, QR codes can contain significantly more data. QR codes can track users location and potential exposure to COVID-19 when individuals user their smartphone's camera to record QR codes corresponding with public locations (such as a classroom), or when they present a QR code on their phone's screen to identify the device and its owner. A minimally invasive example is South Korea's uses of QR codes to allow prospective patients to link medical providers to their answers from online health questionnaires.[24] This reduces the time patients spend on site prior to being seen by a health care provider for potential COVID-19 cases.[25] Highly-invasive examples of QR codes includes China's Alipay, which forces users to display a QR code anytime they enter a store, access transit, or (in some cases) even leave their home.[26]

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[20] Phil Locke, *Cell Tower Triangulation – How it Works*, THE WRONGFUL CONVICTIONS BLOG (Jun. 1, 2012), https://wrongfulconvictionsblog.org/2012/06/01/cell-tower-triangulation-how-it-works/.

[21] *See generally* Minh Tran, Cost Effective Location Detection Techniques Used by the 911 Help SMS App to Overcome Smartphone Flaws and GPS Discrepancies, Federal Communications Commission: Public Safety and Homeland Security Bureau, https://transition.fcc.gov/pshs/911/Apps%20Wrkshp%202015/911_Help_SMS_WhitePaper0515.pdf.

[22] *All Things Considered: How Colleges are Using Tech to Keep Track of Students*, (NPR radio broadcast, Dec. 27, 2019), https://www.npr.org/2019/12/27/791918140/how-colleges-are-using-tech-to-keep-track-of-students.

[23] *Id.*

[24] Richtel, *supra* note 24.

[25] *Id.*

[26] Nicole Jao, David Cohen, and Chris Udemans, *How China is Using QR Code Apps to Contain COVID-19*, TECHNODE (February 25, 2020), https://technode.com/2020/02/25/how-china-is-using-qr-code-apps-to-contain-covid-19/.

Since many Americans lack access to smartphones, some vendors and universities are turning purpose-built wearable tracking devices as an alternatives. These proprietary hardware devices and accompanying software tools rely on the same types of tracking technologies as mobile phone apps. For example: CarePredict PinPoint is a Wi-Fi–based wearable[27] that is marketed to nursing homes, senior living facilities, and other locations with high concentrations of highly vulnerable individuals."[28] Given campuses high population densities, and robust Wi-Fi networks, we expect similar products will be aggressively marketed to universities.[29] Wearables are more commonly marketed to K-12 schools with younger students who lack smartphone access,[30] but they will likely see aggressive marketing towards boarding schools, and some universities have already adopted them.[31] But given that these devices depend on the same technologies as phone-based tracking, the same privacy concerns are implicated.[32]

A second set of alternatives to phone-based tracking comes from an array of biometric tracking tools, including facial recognition and wide-area thermal imaging. Sadly, there is no evidence either technology is effective, and both may be susceptible to bias. Even if thermal imaging is free from the bias that has plagued every other form of biometric surveillance,[33] it still faces a seemingly insurmountable obstacle: many of those with COVID-19 won't have a high enough temperature to trigger the system. Additionally, the human body will fluctuate throughout the day, leading to false positives for those who have engaged in physical activities, and false negatives for those coming in from the cold.

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[27] *Contact Tracing/Exposure Notification Application Survey (Responses)*, TECHCRUNCH, https://docs.google.com/spreadsheets/d/16bS7LFOXc466-PkUTw4cQlMRb9E2L9wqEg58bnLTdKo (last visited June 18, 2020) [hereinafter *TechCrunch Survey Results*]; *Contact Tracing*, CAREPREDICT, https://www.carepredict.com/contact-tracing (last visited June 18, 2020).

[28] *TechCrunch Survey Results*, *supra* note 27.

[29] *See* Edward J. Maloney and Joshua Kim, Opinion, *The Low-Density University*, INSIDE HIGHER ED (April 15, 2020), https://www.insidehighered.com/digital-learning/blogs/learning-innovation/low-density-university.

[30] Will Knight, *Schools Turn to Surveillance Tech to Prevent Covid-19 Spread*, WIRED (June 5, 2020, 7:00 AM), https://www.wired.com/story/schools-surveillance-tech-prevent-covid-19-spread. *But see* Sarah Sole, *New Albany-Plain Local's Sawyers: Article About Tracking Students Was 'Misleading'*, THISWEEK COMMUNITY NEWS (June 9, 2020, 11:23 AM), https://www.thisweeknews.com/news/20200609/new-albany-plain-locals-sawyers-article-about-tracking-students-was-misleading.

[31] *See* Hannah Frishberg, *Univeristy of Missouri Asks Students to Download Location-Tracking App to Curb Truancy*, NEW YORK POST (Jan. 28, 2020; 12:06 PM), https://nypost.com/2020/01/28/university-of-missouri-is-requiring-students-to-download-location-tracking-app-to-curb-truancy/; Salem Isaf, *Campus bluetooth attendance tracking raises debate*, THE DAILY ILLINI (Jan. 30, 2020), https://dailyillini.com/news/2020/01/30/campus-bluetooth-attendance-tracking-raises-debate/; Drew Harwell, *Colleges are turning students' phones into surveillance machines, tracking the locations of hundreds of thousands*, THE WASH. POST (Dec. 24, 2019, 8:00 AM), https://www.washingtonpost.com/technology/2019/12/24/colleges-are-turning-students-phones-into-surveillance-machines-tracking-locations-hundreds-thousands/.

[32] *See* Mark Jones, *Are Wearables the Answer to Contact Tracing App Problems*, TECHWIRE ASIA (June 8, 2020), https://techwireasia.com/2020/06/are-wearables-the-answer-to-contact-tracing-app-problems; discussion *supra* Section I.A.

[33] Shaun Ajay, *Checking Your Temperature: Here's What You Need to Know*, U. UTAH HEALTH (Apr. 27, 2020, 12:00 PM), https://healthcare.utah.edu/healthfeed/postings/2020/04/temperature-screening.php.

Even worse, many facial recognition systems persistently misidentify people of color and female-presenting individuals at higher rates.[34] With some facial recognition systems, Black and Asian individuals are falsely identified nearly 100 times more often than white people.[35] A false identification will not only waste patients and universities time, but will potentially reveal sensitive health data to misidentified students.

B.   Early University Adopters

Some schools have already announced they will deploy mobile applications as part of their reopening strategies. The University of North Florida recently announced it will require daily screening for faculty, staff, students, vendors, and all other campus visitors via a questionnaire-based application,[36] which will then "clear" them to enter campus.[37]

Similarly, the University of Alabama will require all employees and students to self-report data to an online questionnaire. However, the University will "encourage" students and staff to also use a Bluetooth-based smart phone app that tracks highly invasive location and proximity information.[38] An even more invasive example comes from the University of Buffalo's smartphone app, which uses persistent GPS tracking to keep a log of everywhere students and faculty go.[39]

The University of California, Irvine's TrackCOVID app[40] encourages users to scan QR codes at a high traffic location, such as a class or social gathering, to create a temporary log of a user's location history on both the user's device and TrackCOVID's server.[41] While the server-side records are intended to be anonymous, early errors in the project's development would have

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[34] Natasha Singer & Cade Metz, *Many Facial-Recognition Systems Are Biased, Says U.S. Study*, N.Y. TIMES (Dec. 19, 2019), https://www.nytimes.com/2019/12/19/technology/facial-recognition-bias.html.

[35] *Id.*

[36] UNIV. OF N. FLA., DRAFT, BLUEPRINT FOR RETURNING TO CAMPUS, FALL 2020, at 2 (2020), https://www.unf.edu/uploadedFiles/anf/emergency/UNF%20Blueprint%20Returning%20to%20Campus%20for%20Fall%202020_6.8.20.pdf.

[37] *Id.* at 6.

[38] Dennis Pillion, *COVID-Tracking App Could Be Key to University of Alabama Reopening, Including College Football*, AL.COM (May 29, 2020), https://www.al.com/news/2020/06/covid-tracking-app-could-be-key-to-university-of-alabama-reopening-including-college-football.html.

[39] Cory Nealon, *New UB App Could Help with COVID-19 Contact Tracing*, U. BUFF. (Apr. 29, 2020), http://www.buffalo.edu/news/releases/2020/04/037.html; *see also* Matt Richtel, *Contact Tracing with Your Phone: It's Easier but There Are Tradeoffs*, N.Y. TIMES (June 3, 2020), https://www.nytimes.com/2020/06/03/health/coronavirus-contact-tracing-apps.html.

[40] *UCI Team Develops Smartphone Application for Coronavirus Contact Tracing*, UCI NEWS (Apr. 15, 2020), https://news.uci.edu/2020/04/15/uci-team-develops-smartphone-application-for-coronavirus-contact-tracing.

[41] TRACKCOVID, https://trackcovid.net (last visited June 18, 2020); *tyleryasaka/TrackCOVID-Community*, GITHUB, https://github.com/tyleryasaka/TrackCOVID-community (last visited June 18, 2020) (The system facilitates the creation of "checkpoints," for which TrackCOVID generates a QR code that can be printed and displayed for people to scan wherever they have assembled, such as in a public place, at a party, or at a class. The "mark" created by the scan is stored on the phone's local storage, and is automatically deleted after a designated timeframe).

revealed users' IP addresses at the time of check-in, destroying any anonymity.[42] When QR code check-ins are used to track location data, they can raise some of the same concerns as GPS- and Bluetooth-enabled applications. But when QR code checks are added on top of those forms of tracking, the results can be alarmingly invasive. QR codes can become a way to transmit aggregated information, or to enforce users' compliance with requirements to run invasive apps.

Fewer universities have announced that they will rely on biometric tracking, but it remains a potent threat. Molloy College will be deploying kiosks across campus armed with thermal imaging and facial recognition to track potential infections.[43] These kiosks will automatically alert student health services if a student is running a fever so that the student receives immediate medical attention.[44]

C.   Surveillance Apps: Over Promising, Under Delivering

As bad as COVID-19 looks on paper, it may move worse in practice. Take the data privacy protections of leading contract tracing apps. Of fifty contact tracing applications available for Google devices, thirty access call history, text messages, photos, videos, the camera, the microphone, network connectivity settings or other invasive data.[45] Disturbingly, only sixteen of these apps promise to take the minimal step of anonymizing, encrypting, and anonymously aggregating users' data.[46] While these steps are insufficient on their own to protect user privacy, more than two-thirds of reviewed apps fail to make these most basic guarantees.

Compiling the problem is the fact that these apps and devices are being marketed to an American public primed to distrust technology vendors with their health data. An April 2020 *Washington Post* poll found 20% of smart phone users would "definitely not" use Google and Apple's proposed contact tracing solutions; another 30% answered "probably not."[47] And universities – which have long partnered with big tech – fared little better, with 43% saying that they had little or no trust in universities to keep their coronavirus test results anonymous.[48]

College administrators seem to be aware of this distrust. In an interview with *The New York Times*, both Mary Dana Hinton of Hollins College and David Wall Rice of Morehouse

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[42] *tyleryasaka/TrackCOVID/V2 Architecture: More Privacy*, GITHUB, https://github.com/tyleryasaka/TrackCOVID/issues/12 (last visited June 18, 2020).

[43] Catherine Carrera & Joie Tyrrell, *Colleges Prep for Facial Recognition, Temperature Checks in Reopening Plans*, NEWSDAY (May 31, 2020, 4:04 PM), https://www.newsday.com/news/health/coronavirus/colleges-what-s-next-1.45056839.

[44] *Id.*

[45] Tanusree Sharma & Masooda Bashir, *Use of Apps in the COVID-19 Response and the Loss of Privacy Protection*, NATURE MED. (May 26, 2020), https://doi.org/10.1038/s41591-020-0928-y.

[46] Sharma & Bashir, *supra* note 45.

[47] *Washington Post-University of Maryland National Poll, April 21–26, 2020*, WASH. POST, https://context-cdn.washingtonpost.com/notes/prod/default/documents/37ccb851-364b-46bc-84b4-cb0881048b16/note/4e0ffc52-c13f-4e24-b130-df958898f518.#page=1 (last updated May 21, 2020, 11:26 AM).

[48] *Id.*

College said they were against requiring those on campus to use an application.[49] Hinton stated she "wouldn't be comfortable mandating an app like that because of the privacy concerns," but suggested evaluating other screening methods, like self-screening or "like a buddy system," wherein students might screen each other.[50]

Part of the difficulty is that mobile contact tracing apps are built on the legal fiction that those clicking "I Agree" to terms of service are providing meaningful and informed consent, but that is rarely the case. In a recent study of contact tracing app terms of service, some developers admitted that they provided some details on how information would be used, but failed to provide crucial context on the "likely impacts of disclosure and use."[51] This means that even if users were to read the terms of services, which they rarely do, they still wouldn't understand the meaningful impact of their assent.

II.   How do Technology-Driven COVID-19 Solutions Exacerbate Health Inequalities

A. Access to Technology

People who don't have smartphones could easily be missed by contact tracing that is too reliant on smartphones. While most students on campuses are between 18 and 29, a cohort with 96% smartphone utilization, many nontraditional students and graduate students fall out of that age range.[52] Additionally, many of those with smartphones will own devices that are too old, slow, or unreliable to run contract tracing apps, which can put significant strain on a device's processor, storage, and battery life.

Many of the other people on campus (e.g., staff, administration, and faculty) have a higher average age, suggesting even lower adoption rates for contract-tracing-compatible smart phones.[53] Smartphone usage is highly correlated with socioeconomic status, with Americans making more than $75,000 more than a third more likely than those making less than $30,000 per year to own a smartphone.[54] Many students and some staff at these colleges fall into that latter income bracket.[55] This is especially troubling considering that COVID-19 has had a heavier impact on communities with high concentrations of poverty.[56] Thus, the individuals without smartphones are the same people that universities need to be reaching the most. If

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[49] Emily Bazelon, *What Will College Be Like in the Fall?*, N.Y. TIMES. MAG. (June 3, 2020), https://www.nytimes.com/2020/06/03/magazine/covid-college-fall.html.

[50] *Id.*

[51] *TechCrunch Survey Results*, *supra* note 27.

[52] *See* Mobile Fact Sheet, PEW RESEARCH CENTER (Jun. 12, 2019), https://www.pewresearch.org/internet/fact-sheet/mobile/, https://www.bbc.com/news/technology-52415593.

[53] *Id.*

[54] *Id.*

[55] Melinda Hill Sineriz, *What is the average college student's income?*, THE CLASSROOM (Nov. 21, 2018) https://www.theclassroom.com/what-is-the-average-college-students-income-13656104.html.

[56] Andrew Ryan and Kay Lazar, *A new analysis: Coronavirus death rate surged in Massachusetts locations that already faced challenges*, THE BOSTON GLOBE (May 9, 2020), https://www.bostonglobe.com/2020/05/09/nation/disparities-push-coronavirus-death-rates-higher/.

universities deny themselves access to exposed individuals via contact tracing simply because they don't have smartphones, it would be not only exclusionary but bad public health policy. These institutions must include a non-smartphone option in contact tracing plans.

Additionally, while there is little variance in overall smartphone usage by race, it's unclear if there's a meaningful gap in access to the latest-generation smartphones needed to run many contact tracing applications. As with the socioeconomic gap on smartphone adoption, this could compound COVID-19's well-document toll on communities of color.

B. Voluntariness

It's unclear if universities would have the legal authority to exclude individuals who refuse to use invasive tracking technologies, but it is quite clear that such a compulsory system would be ineffective, if not fully counterproductive. A compulsory tracking system deprives universities of the single most important contract tracing resource: trust. No technology will be able to replicate the nuanced, contextual self-reporting possible when students and staff actively engage with contact tracers. Eroding trust can be fatal.[57] This will be especially true on college campuses, where students often engage in illicit or illegal substance abuse, casual sexual encounters, and other activities that they would be reticent to report to campus authorities.

David Wall Rice of Morehouse offered yet another dimension that must be considered: tracking young people of color, particularly young Black men, could pose significant dangers to students. [58] Young Black men are already the victims of a surveillance state that is ostensibly meant to protect us all and is instead weaponized against them.[59] As Data for Black Lives Director of Policy Nicole Triplett wrote in the Boston Globe, "Law enforcement in Minnesota recently claimed to use contact tracing to track protesters during the Minneapolis protests in response to the police killing of George Floyd. Although they've since retracted the comments, the public has limited ways to verify those statements and should not be asked — especially now — to trust police assurances that they are not using contact tracing information to spy on protesters."[60]

Universities have struggled with campus safety and inclusion in normal times, but this moment is far from normal. COVID-19 will exacerbate nearly every facet of campus inequality. Existing fault lines around student autonomy, safety, and inclusion will likely only go. But universities are more than simply large businesses, they are the institutions whose guidance we often look to most in how our broader society should navigate COVID-19. These universities

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[57] *See* Timberg et al., *supra* note 12.

[58] *Id.*

[59] https://www.bostonglobe.com/2020/06/25/opinion/coronavirus-contact-tracing-apps-arent-worth-health-risk-black-latinx-people/, https://thehill.com/opinion/op-ed/264710-racial-surveillance-has-a-long-history

[60] *Id, see also:* Andy Meek, *Minnesota is now using contact tracing to track protestors, as demonstrations escalate*, BGR (May 30, 2020), https://bgr.com/2020/05/30/minnesota-protest-contact-tracing-used-to-track-demonstrators/; Sara Morrison, *Minnesota law enforcement isn't "contact tracing" protesters, despite an official's comment*, Vox (Jun. 1, 2020), https://www.vox.com/recode/2020/6/1/21277393/minnesota-protesters-contact-tracing-covid-19; *see generally* DATA FOR BLACK LIVES, http://d4bl.org (last visited Jul. 7, 2020).

house the academic advising governments on how to implement social distancing, protect workers, and address nearly every aspect of COVID-19. Their choices are far more consequential than other institutions, likely setting a norm for our broader society. When they fail to safeguard against opportunistic technosolutionism, when they fail to protect privacy, they give the greenlight to countless other industries.

This is why privacy and affirmative consent must be central to any COVID-19 response, but students and staff will likely be too wary of high-tech tracking tools for them to be effective. Preliminary polling finding that 48% of Americans would refuse to use tracing apps,[61] with data sharing/storage concerns paramount.[62] But those evaluating contact tracing apps and wearables have found that a majority of the population would have to opt-in for the tools to actually work.[63]

III. Low-Tech Models That do Work

If universities turn their backs on new high-tech offerings for contact tracing, they still can return to one tried-and-true public health response: culturally competent, manual contact tracing. Rather than relying on invasive new apps, this approach relies on human interviewers who can develop trust with those exposed to COVID-19, understanding the full context for their potential points of exposure.

A. Language Access

Contact tracing is only as effective as its ability to harness the trust of those who have been exposed to COVID-19. As an initial matter, this means effective communication with those exposed to COVID-19 in their native language. When programs fail to ensure linguistic capacity, patients will be unable to fully explain their points of exposure, and they will be far less likely to develop the level of trust needed to convey intimate and potentially embarrassing information.

The number of languages needed for each university will vary. For example, New York City's contact tracing corps will speak 40 languages,[64] but one Colorado county's program will only recruit contact tracers speaking English and Spanish.[65] Even with a reduction in

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[61] Susan St. Clair, *Survey: Nearly Half of Americans Refusing or Unlikely to Opt-In to COVID-19 Contact Tracing Apps*, Security Boulevard (May 21, 2020), https://securityboulevard.com/2020/05/survey-nearly-half-of-americans-refusing-or-unlikely-to-opt-in-to-covid-19-contact-tracing-apps/.

[62] *Id.*

[63] Press Release, Oxford Big Data Institute, The UK prepares for national launch of COVID-19 digital contact tracing app with the help of Oxford Scientists (May 26, 2020), https://www.coronavirus-fraser-group.org/for-media; Leo Kellon, *Coronavirus: NHS contact tracing app to target 80% of smartphone users*, BBC (Apr. 16, 2020), https://www.bbc.com/news/technology-52294896.

[64] *NYC Announces Universal COVID Testing; Contact Tracers Reach Out to 600 People*, NBC4 NEW YORK (Jun. 2, 2020), https://www.nbcnewyork.com/news/coronavirus/nyc-announces-universal-covid-testing-contact-tracers-reach-out-to-600-people/2443837/.

[65] Libby Stanford, *Summit County hires 6 contact tracers to combat spread of coronavirus*, SUMMITDAILY (May 28, 2020), https://www.summitdaily.com/news/summit-county-hires-6-contact-tracers-to-combat-spread-of-coronavirus/.

international student enrollment, universities cannot assume that English language interviews will be sufficient to engage with all students and staff.

B. *Cultural Competence*

In addition to being able to communicate effectively with all COVID-19 tracing targets, tracers need to be able to understand the cultural context of those to whom they reach out. Cultural competence means acknowledging that there are more than language barriers to accessing these communities and developing a set of communication skills to close that gap.[66] This emphasis is placed on, ideally, bringing in already-trusted messengers to these communities as contact tracers.[67] Norma Hernandez of the Northeast Georgia Latino Chamber of Commerce put it succinctly: "The government can't just show up and say 'hey, this is what's going on.' Nobody's going to listen. But if the government finds somebody in town and asks to pass the message (along), then that is going to go very far."[68] In Newport, Oregon, contact tracers worked with a pastor who spoke Mam, a Mayan language spoken in Guatemala, to reach workers in a seafood market.[69] Not simply an interpreter, the pastor was called a "bridge" by Oliver Vera of the Oregon Health Authority.[70]

When it's not possible to bring in trusted community messengers, then the next best option is to make sure contact tracers create trust between themselves and community members through skills gained from appropriate training. For example, the CDC's contact tracing training includes training for reaching deaf and hard-of-hearing communities, which includes identifying subcultures and gaps in health literacy as well as creating solutions to tackle those.[71]

C. *"Back-end" Data Collection*

The term "manual contact tracing" can be a bit of a misnomer. Although these systems do rely on direct human conversations for gathering evidence about COVID-19 transmission, they also rely on computer databases to analyze and aggregate that data. Especially at large

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[66] Jonathan Smith, *What is a contact tracer's job and how do they contain the coronavirus?,* MIC (May 8, 2020), https://www.mic.com/p/what-is-a-contact-tracers-job-how-do-they-contain-coronavirus-22884852; *See also Statement of Albert Fox Cahn, Esq., Executive Director, Surveillance Technology Oversight Project ("S.T.O.P.") Before the Committee on Health and Committee on Hospitals, New York City Council For a Hearing Concerning New York City's plan for COVID-19 Tracing and Contact Tracing,* New York City Council (2020), (statement of Albert Fox Cahn, Executive Director, Surveillance Technology Oversight Project).

[67] *Id.*

[68] Tamar Hellerman, *Georgia contact tracers' first obstacle? Gaining Public Trust*, *The Atlanta Journal-Constitution* (May 22, 2020), https://www.ajc.com/news/state--regional-govt--politics/georgia-contact-tracers-first-obstacle-gaining-public-trust/TncLbcPQ32kTBQeIqE1HrI/.

[69] Henry Goldman, Olga Kharif, Christopher Palmeri, *With Immigrants Imperiled, Covid Tracers Confront Language Gap*, BLOOMBERG NEWS (Jun. 25, 2020, 7:00 AM) https://news.bloomberglaw.com/coronavirus/with-immigrants-imperiled-covid-tracers-confront-language-gap.

[70] *Id.*

[71]Identify the Primary Components of a COVID-19 Case Investigation, CENTER FOR DISEASE CONTROL (Jun. 22, 2020), https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/identify-primary-components-of-case-investigation.html#deaf-populations.

universities, it will be impossible to manage an adequate contact tracing program without this type of back-end system.

Back-end systems pose a fundamentally different threat to privacy, civil rights, and health equity when compared to front-end systems, like GPS and Bluetooth-based exposure notification systems. Back-end systems are <u>not</u> collecting data in new and invasive ways but are simply aggregating the data historically collected by contact tracers. Also, since data originates in culturally competent interviews, it's less susceptible to the bias found in many automated tracking systems.

Still, these systems do pose an array of privacy concerns, such as suitable access controls, audits, credentialing, onboarding / offboarding, and other standard cybersecurity practices. Additionally, systems require legal policies that prevent, to the full extent possible, any disclosure or use of the data for any purpose other than combatting COVID-19. In addition to banning commercial sale of the data, universities must commit to fighting any effort from law enforcement or immigration authorities to gain access.

Regrettably, existing health privacy laws generally allow law enforcement and immigration officials to access contact tracing information with a simple subpoena – a much lower standard than is required for a judicial warrant. As a result, educational institutions may be unable to fully protect the data they do retain. Therefore, the most crucial safeguard is data deletion, completely eliminating contact tracing records 14 days after potential exposure or the end of symptoms. By preventing the aggregation of large swaths of location and medical records, universities can make contact tracing data a far less appealing target for law enforcement.

IV.   **Financial Support**

The cost of contact tracing is enormous and poses more of a challenge to some schools than others. The burden of this new bill couldn't have come at a worse time, as plunging enrollment figures cut-off the single biggest source of funding to American colleges and universities: tuition dollars.[72] While a small number of elite institutions boast multi-billion-dollar endowments, they are fare from the norm, Of the 500 schools rated by Moody's, just 40 of them hold two-thirds of the wealth of the whole group.[73] Put another way: 40 schools have double the wealth of the remaining 460.

So, while it seems obvious that the wealthiest schools in America should cover their own contact tracing costs, it does raise the question of what happens to the rest. Lacking the same resources as the top schools, most universities are struggling to survive, and when asked to stand up a contract tracing system, will cut corners if they alone are footing the bill.

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[72] The Condition of Education, NATIONAL CENTER FOR EDUCATIONAL STATISTICS (May 2020), https://nces.ed.gov/programs/coe/indicator_cud.asp.

[73] Kellie Woodhouse, *Widening Wealth Gap*, INSIDE HIGHER ED (May 21, 2015) https://www.insidehighered.com/news/2015/05/21/rich-universities-get-richer-are-poor-students-being-left-behind.

For public universities, state and city funding must be allocated. At a time of shrinking state and local tax rolls, many are cutting funds to public universities, not expanding support. But if state legislatures and municipalities fail to invest in manual contact tracing, many cash-strapped schools will be forced to adopt the quick "tech fix," laying the groundwork for a campus COVID cluster.

But the government obligations don't end there. State and local governments must also work with the majority of private universities to develop suitable funding. Even schools with tens or hundreds of millions of dollars in endowments will see much of that funding restricted to specific programs or services. Even many select colleges will lack the funds to suitably invest in public health protections, especially if plunging enrollment reduces tuition dollars.

However, cities and states are in a financial crisis themselves. Many states are seeing historic declines in tax rolls. And for small rural and suburban communities that host large universities, they simply may lack the tax base to invest in contact tracing on this scale even under normal financial conditions. For many communities, the eventual solution can only be federal funding.

In an op-ed in the *Atlantic*, the president of Paul Quinn College wrote that "if a school's cost-benefit analysis leads to a conclusion that includes the term acceptable number of casualties, it is time for a new model." [74] Universities are on the brink of making just such a choice. Faced with both a decline in tuition dollars and the expense of manual contact tracing, they will be forced to fight COVID-19 on the cheap.

Of course, universities like Harvard, Stanford and Yale will face no such obstacle, eliminating in-person classes or investing in much more effective protections. Absent significant federal, state, and local funding, student fatalities will become just another metric of inequality in American higher education.

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[74] Michael J. Sorrell, *Colleges Are Deluding Themselves*, ATLANTIC (May 15, 2020), https://www.theatlantic.com/ideas/archive/2020/05/colleges-that-reopen-are-making-a-big-mistake/611485.

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