POSITION STATEMENT

Digital contact tracing and contact tracing apps are currently at the forefront of discussions about digital public health surveillance. An abundance of apps continue to be developed and enter the global market, and many of these apps promise to accurately trace coronavirus infections at scale and contain the ongoing pandemic. However, unlike traditional approaches, digital contact tracing necessitates that a considerable proportion of the general population opt-in – regardless of whether individuals are infected or at high-risk of exposure – to yield true epidemiological utility.[1] Existing apps are not developed with broad interconnectivity in mind, raising a crucial question as to how incompatibility may impact information-sharing, both across platforms and across borders, to accurately trace the spread of the disease.

We propose that a regulatory framework be established that incorporates components that promote epidemiological utility, including (1) reporting by healthcare providers to augment self-reporting; (2) usability across varying operating systems and mobile devices, particularly those that are not smartphones; (3) adoption incentivization; and (4) literacy and disability compatibility requirements. Interface design in particular must account for as many user groups as possible, with special attention to education, age, ability, and socioeconomic factors.[2] Developers involved have thus far failed to incorporate important human factors concepts (e.g., usability, adaptive technology for persons with disabilities, error prevention, interface design for varying levels of literacy, etc.) into their product designs, undermining the potential utility of such apps across disparate populations – especially those that are traditionally underserved.[3]

The design and implementation of digital contact tracing tools should be grounded in the principle of proportionality, establishing data aggregation and use at a scale that is (1) proportional to the severity of the public health crisis, (2) limited to what is minimally necessary for achieving specific public health objectives, and (3) scientifically justified.[4] In terms of security and privacy for

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[1] Alyssa Bilinski, Farzad Mostashari, Joshua A. Salomon, *Modeling Contact Tracing Strategies for COVID-19 in the Context of Relaxed Physical Distancing Measures.,* 3 JAMA NETWORK OPEN e2019217, (2020).; *see also,* Kelly Servick, *COVID-19 Contact Tracing Apps are Coming to a Phone Near You. How Will We Know Whether They Work?*, SCIENCE (May 21, 2020), https://www.sciencemag.org/news/2020/05/countries-around-world-are-rolling-out-contact-tracing-apps-contain-coronavirus-how.

[2] Amalia R. Miller & Catherine E. Tucker, *Can Health Care Information Technology Save Babies?,* 119 J. POLITICAL ECONOMY 289 (2011).; *see also,* Catherine E. Tucker & Shuyi Yu, *Does IT Lead to More Equal Treatment? An Empirical Study of the Effect of Smartphone Use on Customer Complaint Resolution. An Empirical Study of the Effect of Smartphone Use on Customer Complaint Resolution,* SSRN (2017). 10.2139/ssrn.3011633.

[3] *Id.*; *see also,* Nicol Turner Lee & Jordan Roberts, *Managing Health Privacy and Bias in COVID-19 Public Surveillance*, BROOKINGS INSTITUTION (Apr. 21, 2020), https://www.brookings.edu/blog/techtank/2020/04/21/managing-health-privacy-and-bias-in-covid-19-public-surveillance/.; *see also,* What is the Difference Between Accessible, Usable, and Universal Design?, THE DISABILITIES, OPPORTUNITIES, INTERNETWORKING, AND TECHNOLOGY CENTER (Sept. 15, 2017), https://www.washington.edu/doit/what-difference-between-accessible-usable-and-universal-design.

[4] Marcello Ienca & Effy Vayena, *On the Responsible Use of Digital Data to Tackle the COVID-19 Pandemic.*, 26 NATURE MED. 463 (2020).; *see also,* World Health Organization (WHO), *Ethical Considerations to Guide the Use of Digital Proximity Tracking Technologies for COVID-19 Contact Tracing,* (May 28, 2020),

users, contact tracing apps in particular should follow a model of decentralized Bluetooth-based design, realizing though that this technology is still limited by inaccuracies pertaining to the collection of proximity data but preserves user privacy to more acceptable standards than location-based (i.e., GPS) designs.[5] Of additional importance are considerations for requirements related to protected health and medical information and privacy concerns related to other types of biometric data.[6] Furthermore, the United States needs to establish regulatory guidelines for the security and privacy of digital surveillance data, particularly for metadata related to location information that may be abused and/or used for discriminatory or targeting purposes by employers, schools, or the government

A number of members of Congress have proposed legislation to regulate digital surveillance tools, and we urge lawmakers to understand that regulation of public health surveillance technologies needs to balance concerns for epidemiological utility with security and privacy concerns. Over twenty states in the United States are currently considering, designing, or implementing contact tracing apps, but these initiatives continue to lack direction at the federal level. [7] Ultimately, due to international air travel, the United States will need to focus on involvement with global-level contact tracing; however, we stress that there is a dire need for the United States to concentrate on creating a national framework first: one that appropriately governs digital contact tracing – and any future public health surveillance technologies – within the country and between states.

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https://www.who.int/publications/i/item/WHO-2019-nCoV-Ethics_Contact_tracing_apps-2020.1.; *see also, Siracusa Principles on the Limitation and Derogation Provisions in the International Covenant on Civil and Political Rights,* Advocates for Justice and Human Rights, July 1, 1984, https://www.icj.org/siracusa-principles-on-the-limitation-and-derogation-provisions-in-the-international-covenant-on-civil-and-political-rights/.

[5] Patrick Howell O'Neill, Tate Ryan-Mosley, & Bobbie Johnson, *A Flood of Coronavirus Apps are Tracking Us. Now it's Time to Keep Track of Them,* MIT TECH. REV. (May 7, 2020), https://www.technologyreview.com/2020/05/07/1000961/launching-mittr-covid-tracing-tracker/.; *see also,* Apple, Google, *Privacy-Preserving Contact Tracing, (*last accessed Aug. 22, 2020), https://www.apple.com/covid19/contacttracing.; *see also,* Douglas J. Leith & Stephen Farrell, *Coronavirus Contact Tracing: Evaluating the Potential of Using Bluetooth Received Signal Strength for Proximity Detection,* ARXIV (2020). https://arxiv.org/pdf/2006.06822.pdf.; *see also,* Casey Newton, *Why Bluetooth Apps are Bad at Discovering New Cases of COVID-19*, THE VERGE, (Apr. 10, 2020), https://www.theverge.com/interface/2020/4/10/21215267/covid-19-contact-tracing-apps-bluetooth-coronavirus-flaws-public-health.

[6] U.S. Department of Health and Human Services (HHS), *Your Mobile Device and Health Information Privacy and Security*, https://archive.healthit.gov/providers-professionals/your-mobile-device-and-health-information-privacy-and-security.; *see also,* Divya Ramjee & Katelyn Ringrose, *The Challenges of Forensic Genealogy: Electronic Evidence, Dirty Data, and Privacy Concerns,* 98 DENVER U. L. REV. 1 (2021, *forthcoming*).; *see also,* Katelyn Ringrose & Divya Ramjee, *Watch Where You Walk: Law Enforcement Surveillance and Protester Privacy,* 11 CALIF. L. REV. ONLINE 349 (Sept. 2020), http://www.californialawreview.org/law-enforcement-surveillance-protester-privacy.

[7] International Digital Accountability Council (IDAC), *Privacy in the Age of COVID: IDAC Gets Results from COVID-19 Apps Report*, (last accessed Aug. 22, 2020), https://digitalwatchdog.org/privacy-in-the-age-of-covid-idac-gets-results-from-covid-19-apps-report/.; *see also,* Maimuna S. Majumder & Angel N. Desai, *Digital Contact Tracing Tools for COVID-19*, XXXVI, ISSUES IN SCIENCE AND TECHNOLOGY (*forthcoming* Fall 2020*).*