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## CODED SOCIAL CONTROL: CHINA'S NORMALIZATION OF BIOMETRIC SURVEILLANCE IN THE POST COVID-19 ERA

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CODED SOCIAL CONTROL:  
CHINA'S NORMALIZATION OF BIOMETRIC SURVEILLANCE IN THE POST COVID-19 ERA

*Michelle Miao*<sup>\*</sup>

ABSTRACT

This article investigates the longevity of health QR codes, a digital instrument of pandemic surveillance, in post-COVID China. From 2020 to 2022, China widely used this tri-color tool to combat the COVID-19 pandemic. A commonly held assumption is that health QR codes have become obsolete in post-pandemic China. This study challenges such an assumption. It reveals their persistence and integration - through mobile apps and online platforms - beyond the COVID-19 public health emergency. A prolonged, expanded and normalized use of tools which were originally intended for contact tracing and pandemic surveillance raises critical legal and ethical concerns. Moreover, their functional transformation from epidemiological risk assessment tools to instruments of behavior modification and social governance heralds the emergence of a Data Leviathan. This transformation is underpinned by a duality of underlying political and commercial forces. These include 1) a ***structural enabler***: a powerful alliance between political authorities and tech giants and 2) an ***ideological legitimizer***: a commitment to collective security over individual autonomy. In contrast to the ***rights-centric approach*** embraced by Western democracies to regulate AI-driven biometric surveillance, China adopts a ***state-industry dominance*** model of governance.

***Key words***: health QR codes, biometric data, artificial intelligence, pandemic, governance, China

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## INTRODUCTION

Today, as most societies return to the pre-pandemic order, the tumults engendered by the COVID-19 have faded from the media spotlight. Despite the waning attention, the enduring legacies of the ‘new normal’ of COVID-19 pandemic governance<sup>1</sup> persist to this day, characterized by one distinct feature: the widespread implementation of mass surveillance practices focused on the collection and utilization of personal biometric data.<sup>2</sup> This is especially true in China, the global frontier of digital and biometric surveillance.<sup>3</sup> In July 2023, a partnership between the local legislature and government authorities in Shanghai announced their ambitious plan to “upgrade” Shanghai’s health QR code system, the “Suishen Code,” to the “Citizen Code,” aiming to cement a comprehensive urban service and governance system that encompasses “one code per person, one code per enterprise, and one code per entity.”<sup>4</sup>

Enabled by mobile applications and internet platforms, these surveillance measures have become a prominent aspect of public health management strategies in response to the global pandemic. The pandemic prompted the suspension of normal rules and restriction of civil liberties in favor of pandemic prevention and control. Yet, as we transition into the post-pandemic era, many of the extraordinary measures that were adopted in response to the crisis do not seem to have been fully revoked, especially in countries that resorted to drastic interventions to combat the pandemic threat.<sup>5</sup> Rather, these surveillance technologies seem to have been quietly and subtly incorporated into the broader surveillance regime that emerged before but considerably reinforced during the pandemic. Pandemic surveillance tools are woven into the fabric of post-pandemic social control, and are becoming an integral component of it.

This proliferation of biometric surveillance leads to the normalization of the exception, thereby posing a grave threat to the privacy and dignity of individuals, especially in countries where democratic institutions and legal protections are weak or absent.<sup>6</sup> Biometric surveillance is not a novel phenomenon, nor is the use of internet technology to trace and monitor the populace. However, the COVID-19 pandemic has enabled an unprecedented convergence of authoritarian regimes and mass surveillance systems, powered by artificial intelligence (AI) technologies and fueled by quadrillions of personal biometric data points.<sup>7</sup> China is at the

<sup>1</sup> Kaifeng Yang, *Unprecedented Challenges, Familiar Paradoxes: COVID-19 and Governance in a New Normal State of Risks*, 80 PUB. ADMIN. REV. 657 (2020); Tejaswini Herath & Hemantha S. B. Herath, *Coping with the New Normal Imposed by the COVID-19 Pandemic: Lessons for Technology Management and Governance*, 37 INFO. SYS. MGMT. 277 (2020). Please also note that COVID-19 and COVID are colloquial terms that are used interchangeably throughout this article.

<sup>2</sup> Rama Krishna Reddy Kummitha, *Smart Technologies for Fighting Pandemics: The Techno- and Human-Driven Approaches in Controlling the Virus Transmission*, 37 GOV’T INFO. Q. 101481 (2020).

<sup>3</sup> JOSH CHIN & LIZA LIN, *SURVEILLANCE STATE: INSIDE CHINA’S QUEST TO LAUNCH A NEW ERA OF SOCIAL CONTROL* (2022).

<sup>4</sup> Zuopeng Ma (馬作鵬), *Shanghai: Jiang tuidong “suishenma” diedai shengji wei “chengshima”* (上海：將推動“隨申碼”迭代升級為“城市碼”) [*Shanghai: Promote the Iteration of “Suishen Code” to Upgrade to “City Code”*], RENMINWANG (人民網) [PEOPLE.CN] Jul. 10, 2023, <http://sh.people.com.cn/BIG5/n2/2023/0710/c134768-40487963.html>.

<sup>5</sup> Maya Wang, *China: Fighting COVID-19 With Automated Tyranny*, THE DIPLOMAT (Apr. 1, 2020), <https://thediplomat.com/2020/03/china-fighting-covid-19-with-automated-tyranny/>.

<sup>6</sup> Natalie Ram & David Gray, *Mass Surveillance in the Age of COVID-19*, 7 J. OF L. AND THE BIOSCIENCES Isaa023 (2020).

<sup>7</sup> Alina Polyakova & Chris Meserole, *Exporting Digital Authoritarianism: The Russian and Chinese Models*, BROOKINGS (2019), [https://www.brookings.edu/wp-content/uploads/2019/08/FP\\_20190827\\_digital\\_authoritarianism\\_polyakova\\_meserole.pdf](https://www.brookings.edu/wp-content/uploads/2019/08/FP_20190827_digital_authoritarianism_polyakova_meserole.pdf); Lydia Khalil, *Digital Authoritarianism, China and COVID*, LOWY INST. (Nov. 2020),

forefront of the contentious deployment of the controversial technology of biometric surveillance to fight the pandemic.<sup>8</sup> China also exports its model of surveillance-based pandemic governance abroad to advance its geostrategic interests,<sup>9</sup> potentially shaping a new normative order regarding personal information rights and privacy.<sup>10</sup>

At the heart of China's contentious pandemic surveillance apparatus is a powerful contact tracing tool: health quick response (QR) codes.<sup>11</sup> They are defined by national regulators as "a digital code that algorithmically assesses individuals' COVID-19 risk level by processing real identity and real-time health data from mobile apps and other electronic sources."<sup>12</sup> Governmental authorities relied on this color-coded regime<sup>13</sup> to identify confirmed COVID-19 cases and individuals at high risk of COVID-19 exposure.<sup>14</sup> The ascendancy of individually-targeted, "scientific,"<sup>15</sup> and "optimized"<sup>16</sup> biometric surveillance marks a decisive shift in China's pandemic governance model. Governance has moved away from an *exclusive* reliance on rigid, conventional methods such as community lockdowns and quarantine camps that were used to combat the SARS outbreak two decades ago<sup>17</sup> and also during the recent

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[https://www.lowyinstitute.org/sites/default/files/Khalil%20Digital%20Authoritarianism%20China%20and%20Covid\\_web\\_print\\_021120.pdf](https://www.lowyinstitute.org/sites/default/files/Khalil%20Digital%20Authoritarianism%20China%20and%20Covid_web_print_021120.pdf).

<sup>8</sup> Yanyan Fan, Zhuoxin Wang, Shanshan Deng, Hekai Lv & Fuzhi Wang., *The Function and Quality of Individual Epidemic Prevention and Control Apps During the Covid-19 Pandemic: A Systematic Review of Chinese Apps*, 160 INT'L J. OF MED. INFORMATICS 104694 (2022).

<sup>9</sup> Xiaohui Du (Chinese Ambassador to Zambia), *What Has China Done in Three Years of Fighting against COVID-19?*, EMBASSY OF CHINA IN THE REPUBLIC OF ZAM. (Jan. 9, 2023, 10:01 PM), [http://zm.china-embassy.gov.cn/eng/dshdyjh/202301/t20230109\\_11004689.htm](http://zm.china-embassy.gov.cn/eng/dshdyjh/202301/t20230109_11004689.htm); *China's Fight against COVID-19: Facts and Figures*, MISSION OF CHINA TO THE EUROPEAN UNION (Jan. 1, 2023), [http://eu.china-mission.gov.cn/eng/mh/202301/t20230101\\_10999628.htm](http://eu.china-mission.gov.cn/eng/mh/202301/t20230101_10999628.htm).

<sup>10</sup> Khalil, *supra* note 8.

<sup>11</sup> I use this term in the broad sense to refer to the different variants of QR-code based digital health surveillance schemes that could be loosely called health codes, including but not limited to health codes (健康码), itinerary codes (行程码), venue codes (场所码), enterprise codes (企业码), return-to-work codes (复工码), return-to-school codes (复学码), etc.

<sup>12</sup> Xinguan feiyan yiqing fangkong jiankangma guanli yu fuwu zanxing banfa (新冠肺炎疫情防控健康码管理与服务暂行办法) [Interim Measures for Health QR Code Management and Service of COVID-19 Prevention and Control] (promulgated by the Joint Prevention and Control Mechanism in Response to COVID-19 of the State Council, Jan. 2021, effective Jan. 2021).

<sup>13</sup> Paul Mozur et al., *In Coronavirus Fight, China Gives Citizens a Color Code, With Red Flags*, N.Y. TIMES Mar. 1, 2020, <https://www.nytimes.com/2020/03/01/business/china-coronavirus-surveillance.html>.

<sup>14</sup> April Xiaoyi Xu, *Smartphones Out, Bye COVID-19! — Assessing the Possibility of Exporting China's Global Pandemic-Era QR Codes as Health Certificates*, HARV. J.L. & TECH. (2021), <https://jolt.law.harvard.edu/digest/smartphones-out-bye-covid-19-assessing-the-possibility-of-exporting-chinas-global-pandemic-era-qr-codes-as-health-certificates->; Fan Liang, *COVID-19 and Health Code: How Digital Platforms Tackle the Pandemic in China*, 6 SOCIAL MEDIA + SOCIETY, no. 3, 2020, <https://doi.org/10.1177/2056305120947657>.

<sup>15</sup> Xinhua, *China to Make COVID-19 Response More Scientific, Targeted*, THE STATE COUNCIL OF THE PEOPLE'S REPUBLIC OF CHINA (Mar. 11, 2022), [http://english.www.gov.cn/premier/news/202203/11/content\\_WS622acdc6c6d09c94e48a6715.html](http://english.www.gov.cn/premier/news/202203/11/content_WS622acdc6c6d09c94e48a6715.html).

<sup>16</sup> China Daily, *COVID Strategies Optimized*, THE STATE COUNCIL OF THE PEOPLE'S REPUBLIC OF CHINA (Nov. 30, 2022, 9:07), [http://english.www.gov.cn/statecouncil/ministries/202211/30/content\\_WS6386acbbc6d0a757729e3d57.html](http://english.www.gov.cn/statecouncil/ministries/202211/30/content_WS6386acbbc6d0a757729e3d57.html).

<sup>17</sup> De Foo Chuan et al., *Isolation Facilities for Covid-19: Towards a Person Centred Approach*, 378 BMJ (Jul. 26, 2022), <https://www.bmj.com/content/bmj/378/bmj-2021-069558.full.pdf>; Abba B. Gumel et al., *Modelling Strategies for Controlling SARS Outbreaks*, 271 PROCEEDINGS OF THE ROYAL SOCIETY OF LONDON. SERIES B: BIOLOGICAL SCIENCES 2223 (2004).

COVID-19 crisis<sup>18</sup>.—Rather than overt methods, Chinese authorities have opted for more nuanced<sup>19</sup> yet equally invasive tactics of monitoring and control. These methods revolve around the gathering, examination, and distribution of individual biometric data, which allows them to exert swift, subtle, and discreet control.

In the post-pandemic era, using health QR codes to access public transportation, parks, restaurants, banks, hotels, schools, shopping malls, apartment complexes, and workplaces is no longer a compulsory<sup>20</sup> daily routine.<sup>21</sup> Yet biometric data gathered and shared by officials during the emergency are still in the possession of governmental authorities, without detailed explanations to the general public of their prospective usage.<sup>22</sup> Meanwhile, the nation's epidemic control campaign has fostered the expansion of surveillance technologies utilized only on a limited scale in the pre-pandemic era.<sup>23</sup> For instance, facial recognition technology, an AI tool used for identification, authentication, and personal location tracking, has been widely embedded in health QR code systems. It has progressed from limited pre-pandemic usage in border security and law enforcement to ubiquitous deployment for epidemiological control amid the COVID-19 pandemic.<sup>24</sup> In the post-pandemic era, facial recognition technology continues to be used by governmental authorities and commercial entities to monitor public and private spaces at an unprecedented scale.

This study critically examines the legal and ethical ramifications of China's health QR code regime, which emerged as a biometric surveillance tool during the COVID-19 emergency and persisted as a mechanism of social control in the post-pandemic era. The first section situates the health QR code regime in the broader context of China's biometric surveillance practices and analyzes its evolution from a pandemic response measure to a permanent instrument of social governance. The second section maps out the legal and regulatory frameworks governing the health QR code regime and identifies two sources of tension: the conflict between laws and administrative rules, and the inconsistency between national and

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<sup>18</sup> Zixue Tai et. al., *Locked down through Virtual Disconnect: Navigating Life by Staying on/off the Health QR Code during COVID-19 in China*, 27 THE INTERNATIONAL JOURNAL OF RESEARCH INTO NEW MEDIA TECHNOLOGIES 1648 (2021).

<sup>19</sup> Fan, *supra* note 9.

<sup>20</sup> National regulation specified that health QR code checks were no longer mandatory for access to public places, except for certain specified venues or cross-regional travels. See Guanyu jinyibu youhua luoshi xinguan feiyan yiqing fangkong cuoshi de tongzhi (关于进一步优化落实新冠肺炎疫情防控措施的通知) [Notice on Further Optimizing and Implementing the Prevention and Control Measures of the New Coronary Pneumonia Epidemic] Dec. 7, 2022, <https://nhc.gov.cn/xcs/gzzcwj/202212/8278e7a7aee34e5bb378f0e0fc94e0f0.shtml> (promulgated by Comprehensive Group of the State Council for Joint Prevention and Control Mechanism for the COVID-19 Outbreak, Dec. 7, 2022, effective Dec. 7, 2022), CLI.4.5145060 (Lawinfochina).

<sup>21</sup> Yezi Jin (金叶子), *Jiankangma sannianhou tuichang, zhuanjia jianyi ying xiaohui bufen yinsi shuju* (健康码三年后退场, 专家建议这类隐私数据应销毁或封存) [*The Health Code Will Be Retired After Three Years, and Experts Suggest that Such Private Data Should Be Destroyed or Sealed*], DIYI CAIJING (第一财经) [YICAI], Dec. 10, 2022, <https://www.yicai.com/news/101620327.html>.

<sup>22</sup> Bin Wu (吴斌) et al., *Xingchengka xiaoxian hou, gedi de jiankangma haizai yong ma? Geren xinxi shuju ruhe xiaohui* (行程卡下线后, 各地的健康码还在用吗? 个人信息数据如何销毁) [*After the Itinerary Card Goes Offline, Will the Health Codes in Various Places Still Be Used? How to Destroy Personal Information Data*], NANFANG DUSHIBAO (南方都市报) [S. WKLY.], December 20, 2022.

<sup>23</sup> Khalil, *supra* note 8, at 14.

<sup>24</sup> Wei Ni (倪伟) & (王姝), *Geren xinxi baoguang zengjia, ruhe baohu women de "lian"* (个人信息曝光增加, 如何保护我们的“脸”) [*How to Protect Our "Face" as Personal Information Exposure Increases*], XINJINGBAO (新京报) [Beijing News], May 24, 2020.

local regulations. The third section highlights four ethically challenging aspects of how the health QR code regime has been employed: the absence of free and informed privacy choices, opacity, unfairness, and lack of due process. The article concludes by offering two theoretical viewpoints to explain these tensions and contradictions, echoing the call for an analytical shift in disease surveillance studies to “a broader understanding of surveillance than what is typically given in public health discourse.”<sup>25</sup>

## I. THE RISE AND LONGEVITY OF BIOMETRIC SURVEILLANCE IN CHINA

The field of public health has long been fertile ground for emerging technologies to take root. In recent decades, data mining and artificial intelligence have become deeply entwined with epidemiological control, accelerating in tandem with society’s digital transformation.<sup>26</sup> When the pandemic began, the capabilities honed in this digital hothouse - real-time geolocation tracing, facial recognition, behavioral pattern detection - were mobilized for tracking contagion, identifying cases, and informing public health interventions.<sup>27</sup> Across the globe, algorithmic decision-making has assumed a pivotal role in the monitoring, regulation, and utilization of personal biometric data at an unprecedented scale and speed.<sup>28</sup> These novel capabilities operate alongside conventional disease control measures such as travel restrictions, lockdowns, quarantines, and stay-at-home orders<sup>29</sup>. By amassing and deploying colossal biometric data sets,<sup>30</sup> these epistemological control measures enable a momentous expansion in state power, reshaping relations between governments and citizens in lasting ways.<sup>31</sup>

### A. THE BIRTH & EXPANSION OF A NOVEL TOOL FOR EPIDEMIOLOGICAL SURVEILLANCE

China’s relentless pursuit of a dynamic zero COVID policy gave rise to powerful digital epidemiological initiatives. Examples of these include daily nucleic acid screenings, community and municipality lockdowns, in-public-facility quarantines, compulsory vaccinations, and digital contract tracing. Although many conventional epidemiological measures are effective in controlling personal movements, they lack the flexibility and the

<sup>25</sup> Martin French & Torin Monahan, *Dis-ease Surveillance: How Might Surveillance Studies Address COVID-19?*, 18 SURVEILLANCE & SOCIETY 1, 4 (2020).

<sup>26</sup> Martin French & Gavin Smith, *‘Health’ Surveillance: New Modes of Monitoring Bodies, Populations, And Politics*, 23 CRITICAL PUBLIC HEALTH 383 (2013).

<sup>27</sup> Vinay Chamola et al., *A Comprehensive Review of the COVID-19 Pandemic and the Role of IoT, Drones, AI, Blockchain, and 5G in Managing Its Impact*, 8 IEEE ACCESS 90225 (2020); Raju Vaishya et al., *Artificial Intelligence (AI) Applications for COVID-19 Pandemic*, 14 DIABETES AND METABOLIC SYNDROME CLINICAL RESEARCH AND REVIEWS 337 (2020).

<sup>28</sup> *Global Surveillance for Covid-19 Caused by Human Infection with Covid-19 Virus*, WORLD HEALTH ORGANIZATION (Mar. 20, 2020), <https://apps.who.int/iris/bitstream/handle/10665/331506/WHO-2019-nCoV-SurveillanceGuidance-2020.6-eng.pdf>; Nahla Khamis Ibrahim, *Epidemiologic Surveillance for Controlling Covid-19 Pandemic: Types, Challenges and Implications*, 13 JOURNAL OF INFECTION AND PUBLIC HEALTH 1630 (2020).

<sup>29</sup> MICHEL FOUCAULT, DISCIPLINE AND PUNISH: THE BIRTH OF THE PRISON (Alan Sheridan trans.)(1995); MICHEL FOUCAULT, HISTORY OF MADNESS,(Jean Khalfa ed., Alan Sheridan trans.) (2006).

<sup>30</sup> Calvo, *supra* note 21.

<sup>31</sup> *Id.*; Ram, *supra* note 7.

capacity to precisely and swiftly identify individual risks for exposure and infection.<sup>32</sup> A digital contact tracing scheme of health QR codes, developed in early 2020 at Tencent and Alibaba's labs, was considered the ideal tool to meet this challenge.<sup>33</sup> Although initially intended for the narrowly delimited epidemiological purposes of enabling granular risk assessment to inform health authorities, contact tracers, and community workers,<sup>34</sup> health QR codes quickly proved their utility in mobilizing resources and facilitating public health interventions<sup>35</sup>. Soon governmental bodies, health agencies, and local communities widely adopted them to construct a new pandemic order, amassing over one billion users within a year.<sup>36</sup>

The personal and biometric information - on which big data analytic techniques were applied to compute health QR codes - were gleaned from diverse public and private repositories. Initially, users were required to self-report personal information, biometrics, travel history, medical records, and exposure risks via WeChat and Alipay platforms.<sup>37</sup> Subsequently, government and corporation-controlled metadata - including mobile network traffic data, migration data, and GPS travel history were conscripted.<sup>38</sup> The sources for this data ranged from China's major telecommunication operators to local traffic authorities. In April 2020, a published national technical standard set out a comprehensive taxonomy of personal data collected and fed into the health QR code algorithms. These comprise four primary groups (basic personal information, personal health data, travel history and certified health records) and twenty-five subcategories.<sup>39</sup>

Under the auspices of epidemiological necessity, these disparate streams of personal, locational, and health data were synthesized to infer infection risk levels for individual citizens with unprecedented granularity. The pandemic years witnessed the *spatial* (dissemination across various regions) and *vertical* (expansion through multiple hierarchies of governmental

<sup>32</sup> Xi Yun (云希), Jiankangma de "changzheng" (健康码的“长征”) [The “Long March” of the Health QR Code], *Zhongguo Ribao* (中国日报) [China Daily], (Apr. 3, 2020).

<sup>33</sup> Dawei Xu (胥大伟), Jiankangma: yiqing xiade dashuju shiyan (健康码：疫情下的大数据实验) [Health QR Code: Big Data Experiment under the Epidemic], 15 *ZHONGGUO XINWEN ZHOUKAN* (中国新闻周刊) [China News Weekly] 46 (2020).

<sup>34</sup> Weina Zuo (左玮娜), Jintian ni liangma le ma? (今天你亮码了吗?) [Did You Show Your Health QR Code Today?], *ZHONGHUA RENMIN GONGHEGUO MINZHENGBU* (中国人民共和国民政部) [MINISTRY OF CIVIL AFFAIRS OF THE PEOPLE'S REPUBLIC OF CHINA] May 8, 2020, <https://www.mca.gov.cn/article/xw/mtbd/202005/20200500027330.shtml>; Mengji Chen et al., *Digital Health Interventions for COVID-19 in China: A Retrospective Analysis*, 1 *INTELLIGENT MEDICINE* 29, 33 (2021).

<sup>35</sup> Chen Shi (史晨) et al., Yingji guanli zhong de minjie chuangxin: jiyu jiankangma de anli yanjiu (应急管理中的敏捷创新：基于健康码的案例研究) [Agile Innovation in Emergency Management: Case Study Based On Health Code], 37 *Keji Jinbu Yu Duice* (科技进步与对策) [SCIENCE & TECHNOLOGY PROGRESS AND POLICY] 48 (2020).

<sup>36</sup> Lei Shi et al., Accelerating the Development of Smart City Initiatives amidst the COVID-19 Pandemic: The Case of Health Code in China, 15 *J. OF ASIAN PUB. POL'Y* 266 (2022); Yuan Xi (汐元), Tengxun fangyi jiankangma fabu zhounian baogao (腾讯防疫健康码发布周年报告：累计用户超10亿) [The Annual Report on the Release of Tencent's Health QR Code: More than One Billion Users and 65 Billion Visitors], *IT Zhijia* (IT之家) [IT Home] Feb. 7, 2021, <https://www.ithome.com/0/534/462.htm>.

<sup>37</sup> Gabriel Birgand et al., *Testing Strategies for the Control of COVID-19 in Nursing Homes: Universal or Targeted Screening?*, 82 *JOURNAL OF INFECTION* 159, 168 (2021); Liang, *supra* note 15, at 1.

<sup>38</sup> Shi, *supra* note 37.

<sup>39</sup> Geren jiankang xinxima shuju geshi (个人健康信息码数据格式) [Data Format for Personal Health Information Code] (promulgated by State Administration for Market Regulation and Standardization Administration of China, Apr. 29, 2020, effective Apr. 29, 2020), GB/T 38962-2020.



bureaucracy) proliferation of the health code regime across China. These technological innovations were initially implemented in two of China's most tech-savvy municipalities – Hangzhou and Shenzhen.<sup>40</sup> Within a month, Tencent's system encompassed 300 cities across 20 provinces while Alibaba Cloud supported parallel rollouts across 200 cities nationwide.<sup>41</sup> Despite the rapid cross-regional emulation of digital biometric surveillance regimes, each provincial authority maintained its own coding rules, database resources, regulatory demands and parochial local interests.<sup>42</sup>

At the same time, health codes diffused vertically through multi-tiered governance in bottom-up fashion. Starting with local experiments, health QR codes gradually ascended to national levels.<sup>43</sup> For instance, the local government of the Yuhang District of Hangzhou, the capital city of Zhejiang, was among the pioneers to resort to AI tools for monitoring inbound travelers from Wuhan and coping with overwhelming contact tracing workloads.<sup>44</sup> The experiment commenced with the prototype of the "Yuhang Green Code", which was followed by the Hangzhou municipality government's launch of the "Hangzhou Health Code", the Zhejiang provincial authorities' adoption of the "Zheli Health Code", and the eventual adoption of the "Anti-pandemic Health Information Code" by national authorities.<sup>45</sup>

This interwoven spatial and vertical propagation depended on "unprecedented collaborations" between governmental authorities and powerful digital platforms.<sup>46</sup> The Yuhang District of Hangzhou is home to many technological companies including Alibaba and Shenzhen is the headquarters of Tencent, another one of China's major tech giants. The successful implementation of health QR code systems in these tech hubs relied on strong public-private collaboration for data sharing and analysis.<sup>47</sup> Chinese local governments played a pivotal role as the ultimate decision makers in devising algorithmic rules of risk assessment and as the providers of governmental-controlled big data. As gatekeepers of real name authenticated user and consumer data, tech platforms acted as important intermediaries to help state authorities efficiently allocate resources and gain access to their massive user bases.<sup>48</sup>

In comparison, recent platform regulatory practices in the U.S. provide an interesting parallel to the Chinese government-tech-industry alliance. Much like China, lawmakers and government agencies in the United States have consistently pursued antitrust lawsuits against America's tech giants, challenging their unrestrained power and substantial impact on individual lives and personal data.<sup>49</sup> However, in recent times, legal disputes have emerged in response to accusations that federal agencies, potentially infringing on the First Amendment, collaborated with social media platforms to censor information related to Covid and other politically contentious topics.<sup>50</sup> The logic and mechanisms of such alleged collusion differ

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<sup>40</sup> Calvo, *supra* note 21.

<sup>41</sup> Yun, *supra* note 34; Xu, *supra* note 35.

<sup>42</sup> Xu, *supra* note 35.

<sup>43</sup> Shi, *supra* note 37.

<sup>44</sup> *Id.*

<sup>45</sup> Fangyi jiankang xinxima zonghe fuwu (防疫健康信息码综合服务) [Comprehensive Services for Epidemic Prevention and Health Information Codes], Guojia Zhengwu Fuwu Pingtai (国家政务服务平台) [NATIONAL GOVERNMENT SERVICE PLATFORM], <http://gjzfwf.www.gov.cn/col/col641/index.html>; Shi, *supra* note 37.

<sup>46</sup> Liang, *supra* note 15, at 2.

<sup>47</sup> Yun, *supra* note 34.

<sup>48</sup> Xu, *supra* note 35.

<sup>49</sup> Daisuke Wakabayashi et al., *13 Ways the Government Went After Google, Facebook and Other Tech Giants This Year*, THE NEW YORK TIMES (Dec. 16, 2020), <https://www.nytimes.com/interactive/2020/technology/tech-investigations.html>.

<sup>50</sup> See, e.g., *Changizi v. Dep't of Health & Human Servs.*, 2:22-cv-1776 (S.D. Ohio Oct. 18, 2022) (rejecting the plaintiffs' argument and finding no evidence that the federal actions and statements had caused Twitter to deplatform the plaintiffs, given that Twitter had removed others for disinformation before any of the

significantly from the Chinese context, where, in the absence of a robust civil society, platforms follow directions from governments to act as their powerful instruments. Yet the concern that “Big Government and Big Tech work together to censor speech”<sup>51</sup> highlights the common regulatory challenges that societies encounter as they adjust to an era where the role of digital platforms and algorithms in shaping national and international public discourses and behaviors becomes more pronounced.

## B. NORMALIZATION AND PERPETUATION IN POST-PANDEMIC ERAS

The health code regimes were considered critical to China’s strategic success in combating the pandemic<sup>52</sup> and a litmus test of the regime’s resilience and agility.<sup>53</sup> During pandemic peaks, health QR codes facilitated effective quarantines as well as the mobility of uninfected individuals to travel and “return to work.”<sup>54</sup> In late-pandemic China, as the rituals of routine health QR code scanning fade from the daily lives of most Chinese citizens,<sup>55</sup> the massive biometric surveillance machinery of health QR codes, has, arguably, lost its legitimacy.<sup>56</sup> Yet, there are signs that biometric surveillance regimes have been normalized and sustained beyond their originally intended life cycles.<sup>57</sup> Although delegates repeatedly called for retiring health QR codes and advocated that relevant biometric data be “erased or disposed of” at the National People’s Congress (NPC),<sup>58</sup> Chinese provinces and cities are retaining the

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government actions at issue); see also *Missouri v. Biden*, No. 22-cv-1213 (W.D. La., July 4, 2023) (granting a preliminary injunction against federal agencies and the Biden administration from communicating with social media platforms to request the latter to censor media content, with exceptions for material involving illegal activity); injunction affirmed in part, reversed in part, vacated in part, and modified in part, No. 23-30445 (5th Cir., October 3, 2023); injunction stayed and certiorari granted *sub nom. Murthy v. Missouri*, 601 U.S. \_\_\_\_ (October 20, 2023).

<sup>51</sup> *Despite Court Ruling That White House Colluded with Big Tech to Unconstitutionally Censor Americans, Senate Democrats Again Block Hagerty’s Legislation to Hold Biden Admin Accountable*, SENATOR HAGERTY (Jul. 13, 2023), <https://www.hagerty.senate.gov/press-releases/2023/07/13/despite-court-ruling-that-white-house-colluded-with-big-tech-to-unconstitutionally-censor-americans-senate-democrats-again-block-hagertys-legislation-to-hold-biden-admin-accountable/>.

<sup>52</sup> Yiqing zhong de teshu cuoshi nengfou changtaihua? Zhongguo hangzhou yongjiuxing “jiankangma” jihua zaoyu zhiyi (疫情中的特殊措施能否常态化? 中国杭州永久性“健康码”计划遭遇质疑) [*Can Special Measures during the COVID-19 Be Normalized? China’s Hangzhou Permanent “Health QR Code” Plan Faces Doubts*], BBC (May 26, 2020), <https://www.bbc.com/zhongwen/simp/chinese-news-52805052>.

<sup>53</sup> Shi, *supra* note 37.

<sup>54</sup> Yun, *supra* note 34.

<sup>55</sup> Jin, *supra* note 23.

<sup>56</sup> *Zhongguo xuezhe, jiankangma yiwu hefaxing ying chedi tuichang* (中国学者：健康码已无合法性应彻底退场) [*Chinese Scholars: Health QR Code Is No Longer Legal and Should Be Completely Withdrawn*], LIANHE ZAOBAO (联合早报) [LIANHE ZAOBAO], Jan. 3, 2023.

<sup>57</sup> Gen Chen (陈根), *Jiankangma de xiabanchang, cong yiqing fangkong dao lanyong weiji* (健康码的下半场, 从疫情防控到滥用危机) [*The Second Half of the Health QR Code, from Epidemic Prevention and Control to Abuse Crisis*], XINXIHUA GUANCHAWANG (信息化观察网) [INFOOBS.COM] (Jun. 17, 2022), <https://www.infoobs.com/article/20220617/54248.html>.

<sup>58</sup> *Pandian: 2020 lianghuishang guanyu “geren xinxi baohu” de shengyin* (盘点：2020两会上关于“个人信息保护”的声音) [*Inventory: Voice on “Personal Information Protection” at the 2020 Two Sessions*], ANQUAN NEICAN (安全内参) [SAFETY INTERNAL REFERENCE] (May 28, 2020), <https://www.secrss.com/articles/19864>; Ling Li (李玲) & Lin Jiang (蒋琳), *Zhongyang wangxinban yuan fuzhuren renxianliang: rangdu geren xinxi*

health QR code systems while waiting for national guidelines or have proactively turned such systems to new regimes of governance.<sup>59</sup> In the wake of the retirement of the Communications Itinerary Card app,<sup>60</sup> an official stance on the health code regime and its associated data has been notably absent.<sup>61</sup>

The post-pandemic longevity of health QR codes is on a predictable trajectory. Governmental authorities and technology corporations, entrusted with shaping national technical standards, intended and preplanned their extension into realms like individual healthcare and social welfare, beyond pandemic management, since their inception.<sup>62</sup> Local authorities, on the other hand, motivated by the convenience and effectiveness of this social governance tool, are hesitant to relinquish such data, invoking their prior investment and efforts.<sup>63</sup> Many foresee that health QR codes are “unlikely to be abolished”<sup>64</sup> anytime soon. By the end of 2022, national health authorities jointly issued a “14th Five-Year Plan,” envisioning that by 2025, every Chinese resident will be assigned a “fully functioning

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youshixian yihoujianyi fengcun xiaohui (中央网信办原副主任任贤良：让渡个人信息有时限 疫后建议封存销毁) [*Former Deputy Director of the Central Cyberspace Office, Ren Xianliang: There Should be Time Limits on Transferring Personal Information, and It Should Be Sealed and Destroyed after COVID-19 Ends*], NANFANG DUSHIBAO (南方都市报) [SOUTHERN WEEKLY], May 26, 2020, at GA08.

<sup>59</sup> Hang Wang (汪航), *Yiqing jiben jieshu, “jiankangma” chedi shanchu haishi shengji?* (疫情基本结束, “健康码”彻底删除还是升级?) [*The Epidemic Is Basically Over, Will the “Health QR Code” Be Completely Deleted or Upgraded?*], JIANKANGJIE (健康界) [CN-HEALTHCARE] (Feb. 24, 2023), <https://www.cn-healthcare.com/article/20230224/content-577108.html>.

<sup>60</sup> The “Communication Itinerary Card” (referred to as the Communication Big Data Itinerary Card, the Itinerary Card, or Itinerary Code) analyzes mobile signaling data obtained through the location of the user’s mobile device in relation to base stations. This app was developed in 2020 by the China Academy of Information and Communications Technology in collaboration with China’s three major telecommunication companies: China Telecom, China Mobile, and China Unicom. This Card tracks the past 14-day travel history of holders of mobile devices and therefore was used to monitor confirmed cases. It was suspended in December 2022. See Jing Wei (卫婧), *Gongxinbu “tongxin dashuju xingchengka” fuwu shangxian quanguo yitihua zhengwu fuwupigntai* (工信部“通信大数据行程卡”服务上线全国一体化政务服务平台) [*The “Big Data Travel History Card” Service of the Ministry of Industry and Information Technology Was Launched on the National Integrated Government Service Platform*], XINHUA (新华) [XINHUA] (Apr. 9, 2020), [http://www.xinhuanet.com/politics/2020-04/09/c\\_1125832845.htm](http://www.xinhuanet.com/politics/2020-04/09/c_1125832845.htm); Bo Li (李博) & Xing Gao (高星), *“Tongxin xingchengka” shieryue shisanri qi zhengshi xiaxian* (“通信行程卡”12月13日起正式下线) [*The “Big Data Travel History Card” Will Be Officially Offline from December 13th*], RENMINWANG (人民网) [PEOPLE.CN] (Dec. 12, 2022), <http://bj.people.com.cn/n2/2022/1212/c14540-40227990.html>.

<sup>61</sup> *Zhongguo tingyong xingchengma jiankangma deng gengduo yiqing guankong shouduan mianlin shenshi* (中國停用行程碼 健康碼等更多疫情管控手段面臨審視) [*China Suspended Journey Card Mini Programme, More Epidemic Control Measures such as Health QR Code Face Scrutiny*], BBC (Dec. 14, 2022), <https://www.bbc.com/zhongwen/trad/chinese-news-63967700>.

<sup>62</sup> See *Geren jiankang xinxi shuju geshi* (个人健康信息码数据格式) [*Personal Health Information Code-Data Format*] (promulgated by State Administration for Market Regulation and Standardization Administration of China, Apr. 29, 2020, effective Apr. 29, 2020), GB/T 38962-2020. This national technical standard was drafted by a group of governmental (national and local) authorities as well as leading tech corporations such as BAT (Baidu, Tencent and Alibaba).

<sup>63</sup> Xiaodan Bo (薄晓舟), *Jiankangma hequ hecong* (健康码何去何从?) [*Where Will the Health QR Code Go?*], XINLANG (新浪) [SINA] Feb. 20, 2023, [https://news.sina.com.cn/s/2023-02-20/doc-imyhkezp5272946.shtml#](https://news.sina.com.cn/s/2023-02-20/doc-imyhkezp5272946.shtml#/).

<sup>64</sup> *Id.*

electronic health code.”<sup>65</sup> Beijing, Guizhou, and Hainan are among the many provincial authorities that integrated health QR codes with apps providing services useful beyond COVID-19, including medical services, community services, public transportation, and duty-free shopping services.<sup>66</sup> Health QR code schemes are preserved by local authorities under revamped forms and disguised names.

Concerns about the extension of health QR codes include not only their mere longevity and retention but also their *transformed roles*. Health QR code systems, originally implemented as exceptional measures for epidemiological control and risk management, have expanded their functions outside their intended circumstances of use.<sup>67</sup> They now serve as instruments of social governance, monitoring, regulating, and disciplining individual behaviors in various ways.<sup>68</sup> These processes of transformation, although often discreet and opaque, have sparked controversy. In 2022, various local governments turned individual residents' health codes gray<sup>69</sup> and amber<sup>70</sup> to compel individuals to take nucleic acid tests, and blue<sup>71</sup> to restrict certain individuals from accessing specific establishments, such as supermarkets, beauty salons, internet cafes, and bars. The past year also saw health QR codes being used in tandem with personal credit data to promote regional commercial exchange,<sup>72</sup> to rank and profile

<sup>65</sup> “Shisiwu” quanmin jiankang xinxihua guiha (“十四五” 全民健康信息化规划) [“14th Five-Year Plan” National Health Informatization Plan] (promulgated by the National Health Commission, State Administration of Traditional Chinese Medicine, and the National Bureau of Disease Control and Prevention, Nov. 7, 2022, effective Nov. 7, 2022), CLI.4.5138234.

<sup>66</sup> Wang, *supra* note 58.

<sup>67</sup> Shi, *supra* note 37, at 267.

<sup>68</sup> BBC, *supra* note 51; Mozur, *supra* note 14.

<sup>69</sup> The “gray code” status applies to cross-province travelers without completing the required nucleic acid testing and local residents who haven't tested within specified time periods. Restrictions for grey code individuals include limited access to public places (excluding medical facilities) and a ban on public transport and ride-hailing services. See Lingyan Chen (陈凌燕), *Wuhan shixing jiankangma “huima” guanli xiangguan fuzeren xiangxi jiedu biedanxin! Caihesuanhou banxiaoshi keyi fu “lv”* (武汉试行健康码“灰码”管理 相关负责人详解解读 别担心！采核酸后半小时可以复“绿”) [People in Charge of Wuhan's Pilot Grey Health QR Code Management Interpreted It in Detail. Don't Worry. The Health QR Code Will Turn Green in Half an Hour after the Completion of PCR Test], CHUTIAN DUSHIBAO (楚天都市报) [CHUTIAN METROPOLIS DAILY], (2022).

<sup>70</sup> The orange code status was assigned to all local residents by default and was lifted upon completing the required nucleic acid testing. Residents with orange codes were prohibited from dining out, attending meetings and business events, and entering public spaces. See Bayue ershisiri lingshi qi zhongxin chengqu jiankangma quanbu zhuan “chengma”, *wancheng yici hesuan caiyang hou zidong xiaochuang* (8月24日0时起中心城区市民健康码全部转“橙码”，完成一次核酸采样后自动消窗) [From Tomorrow, All Health QR Codes of Citizens in the Central Urban Area of Chongqing Will Turn “Amber Code”, and the Popup Will Automatically Disappear after the Completion of PCR Test], YANGSHI (央视) [CCTV] Aug. 23, 2022, <https://news.cctv.com/2022/08/23/ARTIbuPVbu0mhBURv2vklCS5220823.shtml> (last visited Oct. 10, 2022).

<sup>71</sup> Cross-province travelers receive blue code need to undergo daily nucleic acid testing and refrain from visiting public places such as restaurants and shopping centers. See Yu Xiang (向宇), *Hunan jiangma “lanma” shangxian jikong zhuanjia quanwei jiedu* (湖南健康码“蓝码”上线 疾控专家权威解读) [The Authoritative Interpretation of the “Blue Code” of Health QR Code in Hunan Province by Disease Control Experts], RENMINWANG (人民网) [PEOPLE.CN] (Nov. 25, 2022), <http://hn.people.com.cn/n2/2022/1125/c336521-40209651.html>.

<sup>72</sup> Lingling Mei (梅玲玲) et al., *Zhejiang geren “xinyongma” zai hangzhou quzhou qidong shidian* (浙江个人“信用码”在杭州衢州启动试点) [Zhejiang Personal “Credit Code” Launched as a Pilot in Quzhou,

individual users based on their activity and biometric data (such as that regarding their sleeping, drinking, and smoking habits),<sup>73</sup> to nudge them towards healthier lifestyles,<sup>74</sup> and to monitor, evaluate, and manage the compliance of non-incarcerated criminals.<sup>75</sup> Despite concerns surrounding privacy and individual autonomy, there are various proposals that envision the transformation of health codes into a regular mechanism for social governance in post-pandemic China.

Recently, Henan provincial government's utilization of health QR codes, particularly in blocking discontented bank depositors from traveling to withdraw their savings<sup>76</sup> and impeding their ability to lodge petitions and protests,<sup>77</sup> has been highly controversial. With amber and red health codes, individuals are not permitted to leave their homes, enter public spaces, or seek medical assistance and legal remedies. In this way, health QR codes act as a form of social nudging, encouraging individuals to obey the authorities and behave as "good" citizens. This approach, while exerting pressures subtler than physical coercion, nudges individuals to adjust their behaviors and decision-making, thereby upholding social stability and promoting effective governance.

By imposing punishment, such as constraints on personal liberty and limitations on access to public amenities, and incentivizing rewards, such as the restoration of personal freedom and privileges, health QR codes effectively regulate and reshape individual behaviors. The post-pandemic integration of health QR codes with various public and private databases significantly amplified the surveillance and risk assessment capabilities wielded by the state-tech conglomerate. Wuhan, where the COVID-19 outbreak first emerged, pioneered this augmented surveillance power by promoting an "urban citizen code", which integrates public administration and crisis management functions.<sup>78</sup> Wuhan's health QR codes are part of a broader scheme of urban management and emergency risk assessment across multiple social sectors.<sup>79</sup> The Anhui Health Code, similarly, integrates applications in multiple social domains with the ambition to create a "coded life" for all.<sup>80</sup>

Systems of digital biometric surveillance oversee distinct segments of the population: pre-pandemic, focusing on criminal suspects and convicts, and during outbreaks, targeting infected individuals and their close contacts. At present, they track and scrutinize individual

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Hangzhou], RENMINWANG (人民网) [PEOPLE.CN] (May 1, 2020),

<http://zj.people.com.cn/n2/2020/0501/c186806-33990406.html>.

<sup>73</sup> BBC, *supra* note 51.

<sup>74</sup> Hangzhoushi weijianwei guixinchu (杭州市卫健委规信处) [Planning, Development and Informatization Department of Hangzhou Municipal Health Authority], *Jizhongli huizhongzhi shiweijianwei quanli shenhua hangzhou jiankangma changtaihua yingyong* (集众力 汇众智 市卫健委全力深化杭州健康码常态化应用) [Gathering All Efforts and All Wisdom, Municipal Health Authority Deepened the Normalized Application of Hangzhou Health QR Code], JIANKANG HANGZHOU (健康杭州) [HEALTH HANGZHOU] (2020), [https://mp.weixin.qq.com/s/pKIM2f\\_FuEakp6LVctoS2g](https://mp.weixin.qq.com/s/pKIM2f_FuEakp6LVctoS2g); BBC, *supra* note 51.

<sup>75</sup> Han, *supra* note 37.

<sup>76</sup> Tessa Wong, *Henan: China Covid App Restricts Residents after Banking Protests*, BBC (June 14, 2022), <https://www.bbc.com/news/world-asia-china-61793149>; Yin Cao, *Culprits Punished in Henan Health Code Scandal*, CHINA DAILY, June 23, 2022.

<sup>77</sup> Joy Dong, *A Chinese City May Have Used a Covid App to Block Protesters, Drawing an Outcry*, N.Y. TIMES, June 16, 2022.

<sup>78</sup> Wuhan shiminma bianma yu yingyong guifan (武汉市民码编码与应用规范) [Coding and Application Specifications of Wuhan Citizen Code] DB 4201/T 655—2022 (2022) (China).

<sup>79</sup> *Id.*

<sup>80</sup> Jiankangma ronghe yingyong guifan (健康码融合应用规范) [Health Code Fusion Application Specification] (promulgated by Anhui Provincial Market Supervision Administration, Nov. 30, 2022), DB 34/T XXXXX—XXXX.

users, transcending their monitoring capabilities beyond the confines of specific domains of criminal justice and public health to encompass banal daily life activities such as finance and banking, medical services, public transportation, urban management, education, access to justice, employment, and social credit rating. Their functions have also transitioned from containing the bodies of the guilty and tracking pathogens to behavioral modification and control.

The pandemic normalized and entrenched uses of sensitive biometric data, leading to the emergence of a society governed by digital codes. Although these digital biometric systems are no longer explicitly referred to as “health QR codes” and are no longer restricted to pandemic prevention objectives, the use of health QR codes is here to stay. Ultimately, the convergence of risk assessment and scoring mechanisms encompassing health, social credit, education, public administration, travel, employment, and law enforcement will culminate in a form of societal categorization and ranking, reminiscent of the concept depicted in the thought-provoking episode “Nosedive” from *Black Mirror*<sup>81</sup>.

## II. LEGAL & ETHICAL FRAMEWORKS: RISKS, RIGHTS AND RESPONSES

The sociotechnical transformations of China’s health QR code regimes over the pandemic have been critically mediated by the legal and regulatory context within which they operate.<sup>82</sup> China’s authoritarian governance model diverges from Western liberal democracies not only in its technological arsenals to combat the COVID-19 crisis, but also in its legal-regulatory approaches that authorize and shape these technological policies and practices.<sup>83</sup> However, it would be an overstatement to attribute the unchecked deployment of biometric surveillance through health QR codes to the *complete* absence of privacy and personal data protection laws.

Although there is no specific national law that directly governs the health QR codes, China has established a patchwork of administrative regulations and local rules that enable the implementation of health QR codes without stringent oversight or judicial review. These *ad hoc* guidelines and directives, issued by the executive branch, confer discretion and authority to the government and tech platforms, creating legal dissonance with extant statutes on personal data and public health governance. In other words, rather than a total absence of law, the inner *tension* within the legal-regulatory framework and the *unenforceability* of right-protective provisions underpins the ascendance of the data leviathan of biometric surveillance.

Indeed, deficient legal and regulatory oversight that would limit unconstrained surveillance measures in Western liberal democracies is not the main *cause* for China’s expansion of surveillance power. China’s embrace of intrusive biometric surveillance results not from a monolithic, well-orchestrated “Big Brother” state machinery but a tangled web of competing governance demands, where national aspirations collide with provincial pragmatism and new laws run up against entrenched apparatuses. Rather than determined by one single voice, the expansion of the health code regime is the *outcome* of the complex interplay between China’s conflicting policy priorities: 1) the tension between national and local governance preferences and 2) the contradiction between legislative and executive forces. Rather than reducing analysis to a binary of no regulation versus full rights protection, evaluating health

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<sup>81</sup> Joe Wright, *Nosedive, Episode 1, Season 3, Black Mirror*, NETFLIX (Oct. 21, 2016), <https://www.netflix.com/tw/title/70264888>.

<sup>82</sup> Xu, *supra* note 14; Xiaohan Zhang, *Decoding China’s COVID-19 Health Code Apps*, NATIONAL LIBRARY OF MEDICINE 1479 (2022), <https://pubmed.ncbi.nlm.nih.gov/36011136/>

<sup>83</sup> Kummitha, *supra* note 2.

codes regulations demands a nuanced examination that appreciates their novelty as sociotechnical systems and their societal context which anchor these design and implementation.

## A. CONFLICTS WITHIN THE LEGAL-REGULATORY FRAMEWORK

No comprehensive national statutes, basic or ordinary,<sup>84</sup> were specifically devoted to regulating the use of health QR codes in China. Despite their considerable curtailment of the liberty, rights, and privacy of Chinese citizens, China's health QR codes operated in a legal vacuum in the pandemic years. This said, it is also pertinent to observe that the broader legal subfield of biometric data collection, sharing, and analysis in China is regulated by two sources of law: 1) existing general laws that encompass personal information and 2) public health crisis management laws. The former set of legal provisions affords some degree of protection for biometric data along with other types of personal data to ensure that they are processed lawfully and with respect to individual rights. The legal foundation provided by the latter allows for divergence from the former during times of pandemic emergency and for the protection of other compelling public interests.

### *1. Allowing Derogation to Principles: Creating a Legal Safe Haven for Data Processors*

China's legal system pertaining to the protection of biometric data is primarily centralized, with most relevant laws concentrated at the national level. While there are no specific statutes exclusively dedicated to guide the use of health QR codes, various laws and regulations contain relevant provisions pertaining to the protection of biometric and other sensitive personal data. For instance, the Civil Code<sup>85</sup>, the Personal Information Protection Law<sup>86</sup>, and the Cybersecurity Law<sup>87</sup> all contain general provisions to ensure the lawful and responsible use of biometric and personal data. Alternatively, the criminal law prohibits the unauthorized acquisition, sale, and sharing of personal information.<sup>88</sup> Since biometric information is encompassed by the general concept of personal information as well as the notion of sensitive personal information, its violation entails criminal liability. Similarly, Consumer Rights Protection Law imposes obligations on businesses to safeguard consumer

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<sup>84</sup> Chinese national legislature makes two forms of laws: basic laws and ordinary laws. See *Zhonghua renmin gongheguo lifafa* (中华人民共和国立法法) [Legislation Law of the People's Republic of China] (promulgated by the National People's Congress, Mar. 15, 2000, effective Jul. 1, 2000, most recently amended Mar. 13, 2023), arts. 10-11, CLI.1.5159701(EN) (Lawinfochina).

<sup>85</sup> *Zhonghua renmin gongheguo minfadian* (中华人民共和国民法典) [Civil Code of the People's Republic of China] (promulgated by the National People's Congress, May 28, 2020, effective Jan. 1, 2021), art. 1034, CLI.1.342411(EN) (Lawinfochina).

<sup>86</sup> *Zhonghua renmin gongheguo geren xinxi baohufa* (中华人民共和国个人信息保护法) [Personal Information Protection Law of the People's Republic of China] (promulgated by the Standing Committee of the National People's Congress, Aug. 20, 2021, effective Nov. 1, 2021), art. 28, CLI.1.5055321(EN) (Lawinfochina).

<sup>87</sup> *Zhonghua renmin gongheguo wangluo anquanfa* (中华人民共和国网络安全法) [Cybersecurity Law of the People's Republic of China] (promulgated by the Standing Committee of the National People's Congress, Nov. 7, 2016, effective Jun. 1, 2017), art. 76, CLI.1.283838(EN) (Lawinfochina).

<sup>88</sup> *Zhonghua renmin gongheguo xingfa* (中华人民共和国刑法) [Criminal Law of the People's Republic of China] (promulgated by the National People's Congress, Mar. 14, 1997, most recently amended Dec. 12, 2020), art. 253, CLI.1.349391(EN) (Lawinfochina).

data, which includes biometric data as well.<sup>89</sup> A comprehensive interpretation of the constitutional provisions concerning the safeguard of human rights<sup>90</sup>, liberty<sup>91</sup>, the confidentiality of correspondence<sup>92</sup>, and human dignity<sup>93</sup> - either separately or collectively - could be construed as laying the foundation for biometric data protection in China.

Notwithstanding these recent legislative endeavors to institute a solid legal foundation for personal data protection, many of these provisions are afflicted by being vague and universal in nature, thus deficient in concrete enforceability. Does the COVID-19 pandemic entirely absolve public and private data processors of their responsibility to guarantee individuals can exercise informed consent over their sensitive personal data, or does it only alleviate some of the obligations and permit concessions in practice? When should we ascertain the cessation of “public health emergencies” and who possesses the authority to make such determinations?

The formula adopted by legislators often consists of a combination of abstract requirements for rights protection, along with extensive deviations from the norm. For instance, China’s Personal Information Protection Law (PIPL) imposes general duties on data processors to inform data subjects of the “purposes, methods, [and] types of personal information processed,”<sup>94</sup> “the necessity of processing sensitive personal information and the impact on their rights and interests,”<sup>95</sup> and “rules of personal information processing.”<sup>96</sup> However, broad exception clauses shield data controllers and processors from liability in the event of “public health emergencies.”<sup>97</sup> For instance, Article 13 of PIPL stipulates that the exigencies of public health crises or the imperatives of safeguarding human life, health, or property from imminent threats obviate the need for obtaining individual consent for data processing.<sup>98</sup> Such legislative equivocation and ambiguities cast doubt on the pragmatic efficacy and robust enforcement of biometric protection law.

Another salient example is the statutory provisions regarding user consent. Major statutes in the sphere of personal data protection in China mandate informed consent as a necessary condition for the lawful processing of personal data, conferring individuals sovereignty over their information.<sup>99</sup> In particular, the processing of sensitive personal information necessitates the separate and written consent of the data subjects.<sup>100</sup> However, such protections are easily circumvented by broad exceptions. The Civil Code authorizes the processing of a natural person’s personal information without their consent when it is “mandated by laws or administrative regulations.”<sup>101</sup> All individuals must accept “investigations, examinations, sample collection, quarantine treatment, and other preventive

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<sup>89</sup> Zhonghua renmin gongheguo xiaofeizhe quanyi baohufa (中华人民共和国消费者权益保护法) [Law of the People's Republic of China on the Protection of Consumer Rights and Interests] (promulgated by the Standing Committee of the National People's Congress, Oct. 31, 1993, effective Jan. 1, 1994, most recently amended Oct. 25, 2013), art. 29, CLI.1.211792(EN) (Lawinfochina).

<sup>90</sup> Zhonghua renmin gongheguo xianfa (中华人民共和国宪法) Dec. 4, 1982, effective Dec. 4, 1982, most recently amended Mar. 11, 2018), art. 33, CLI.1.311950(EN) (Lawinfochina).

<sup>91</sup> *Id.* art. 37.

<sup>92</sup> *Id.* art. 38.

<sup>93</sup> *Id.* art. 40.

<sup>94</sup> Personal Information Protection Law, *supra* note 84, art. 17.

<sup>95</sup> *Id.* art. 30.

<sup>96</sup> *Id.* art. 48.

<sup>97</sup> *Id.* art. 13.

<sup>98</sup> *Id.*

<sup>99</sup> *Id.*; Civil Code, *supra* note 83, art. 1035; Cybersecurity Law, *supra* note 85, art. 41.

<sup>100</sup> Personal Information Protection Law, *supra* note 84, art. 29.

<sup>101</sup> Civil Code, *supra* note 83, art. 1035(1).



and control measures related to infectious diseases control” and “are obligated to truthfully inform.”<sup>102</sup>

The post-pandemic normalization of the health QR code regime directly contradicts the fundamental principles of personal data processing enshrined in the PIPL: necessity<sup>103</sup> and minimal impact.<sup>104</sup> Also, Article 47 of the PIPL places a proactive obligation upon personal information processors to remove personal data when “the purpose of data processing has been fulfilled, becomes unattainable, or is no longer essential for its intended objective”; or “where the personal information processor ceases to provide products or services, or when the designated data retention period has elapsed.”<sup>105</sup> Indeed, the unrestrained proliferation and metamorphosis of health QR codes into social management tools is the best proof that the intended function of data protection legislation has been undermined by the state’s surveillance and control agenda. The nascent PIPL was proved ineffective in restraining health QR codes’ mandatory data processing power and their encroachment of individual autonomy. Contrary to the legislative intentions, this data protection legislation has become a convenient pretext for legitimizing the collection, processing, and sharing of personal information without proper oversight or accountability.

In parallel to general data protection statutes, China has enacted sector-specific legislation authorizing biometric collection and processing for compelling public interests within specialized domains. The Counter-Terrorism Law<sup>106</sup> enables such practices for law enforcement objectives, while the Exit and Entry Administration Law<sup>107</sup> empowers immigration authorities for surveillance purposes. The legislative regime governing biometric and personal data flows during public health crises encompasses both statutory provisions and administrative regulations. These include the Law on Prevention and Treatment of Infectious Diseases<sup>108</sup>, the Emergency Response Law<sup>109</sup>, the Regulation on Responses to Public Health Emergencies<sup>110</sup>, and the Measures for the Implementation of the Law on the Prevention and Treatment of Infectious Diseases<sup>111</sup>. This patchwork of domain-specific laws and regulations

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<sup>102</sup> Zhonghua renmin gongheguo chuanranbing fangzhifa (中华人民共和国传染病防治法) [Law of the People's Republic of China on Prevention and Treatment of Infectious Diseases] (promulgated by the Standing Committee of the National People's Congress, Feb. 21, 1989, effective Sep. 1, 1989, most recently amended Jun. 29, 2013), art. 12, CLI.1.206064(EN) (Lawinfochina).

<sup>103</sup> Personal Information Protection Law, *supra* note 84, at art. 5.

<sup>104</sup> *Id.* art. 6.

<sup>105</sup> *Id.* art. 47.

<sup>106</sup> Zhonghua renmin gongheguo fankongbuzhuyifa (中华人民共和国反恐怖主义法) [Counter-Terrorism Law of the People's Republic of China] (promulgated by the Standing Committee of the National People's Congress, Dec. 27, 2015, effective Jan. 1, 2016, amended Apr. 27, 2018), art. 60, CLI.1.313974(EN) (Lawinfochina).

<sup>107</sup> Zhonghua renmin gongheguo churujing guanlifa (中华人民共和国出境入境管理法) [Exit-Entry Administration Law of the People's Republic of China] (promulgated by the Standing Committee of the National People's Congress, Jun. 30, 2012, effective Jul. 1, 2013), art. 30, CLI.1.178090(EN) (Lawinfochina).

<sup>108</sup> Law on Prevention and Treatment of Infectious Diseases, *supra* note 99.

<sup>109</sup> Zhonghua renmin gongheguo tufa shijian yingduifa (中华人民共和国突发事件应对法) [Emergency Response Law of the People's Republic of China] (promulgated by the Standing Committee of the National People's Congress, Aug. 30, 2007, effective Nov. 1, 2007), arts. 11, 38, 41 & 50, CLI.1.96791(EN) (Lawinfochina).

<sup>110</sup> Zhonghua renmin gongheguo tufa shijian yingji tiaoli (中华人民共和国突发公共卫生事件应急条例) [Regulation on Responses to Public Health Emergencies] (promulgated by the State Council, May 9, 2003, effective May 9, 2003, amended Jan. 8, 2011), arts. 6, 11, 15 & 44, CLI.2.174915(EN) (Lawinfochina).

<sup>111</sup> Zhonghua renmin gongheguo chuanranbing fangzhifa shishi banfa (中华人民共和国传染病防治法实施办法) [Measures for the Implementation of the Law of the People's Republic of China on the Prevention and

supplements baseline rights frameworks with discretionary powers during extraordinary epidemics. These makeshift legal responses reveal the contextual contingency in balancing civil liberties protections with asserted state prerogatives to leverage data for public welfare aims under exigent circumstances. Notably, the Criminal Law might conceivably be construed as providing implicit support for health QR code frameworks through the imposition of sanctions for the failure to adhere to legally prescribed responsibilities of individual citizens in the context of pandemic prevention and control.<sup>112</sup>

## 2. *The Triumph of Admin Rules over Laws*

On the specific issue of health QR codes, a salient regulatory feature is the primacy of administrative agency directives over legislative statutes. Specifically, a mere duo of Department Rules<sup>113</sup> promulgated by task forces under the aegis of the State Council sanction adoption of health codes for dual purposes - appraising individual contagion risk<sup>114</sup> are effectuating broader social governance aims.<sup>115</sup> The legal basis for these two Department Rules remains questionable. While China's Legislation Law allows the NPC to delegate its lawmaking power to the State Council, there is an important exception: legal matters involving coercive measures that impinge on personal freedoms are excluded from such delegation and can only be enacted by the NPC and its Standing Committee in the forms of basic or ordinary laws (rather than admin regulations or department rules).<sup>116</sup> Health QR codes restrict personal freedom in extensive ways, despite the seemingly "objective" and neutral processes in reaching such automated decisions.

In this context, the legislative authority to the State Council and its affiliated working groups does not extend to enact regulations authorizing the use of health QR codes. The absence of formal legislative authority raises salient inquiries regarding the legitimacy and constitutionality<sup>117</sup> of health QR codes. It is noteworthy that neither of the aforementioned Rules solely concentrate on the matter of health QR codes. Moreover, China's only set of drafted rules that was purported to exclusively address health code governance has not reached public visibility until this day, only privately circulated among select experts and scholars.<sup>118</sup> The opacity around specialized regulations matches the technology's own lack of transparency. This disjunction between the ubiquitous presence of health codes in daily life and the conspicuous absence of their codified legal foundations spotlights rule of law's limitations in

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Treatment of Infectious Diseases] (promulgated by the Ministry of Health, Dec. 6, 1991, effective Dec. 6, 1991), arts. 4, 13, 37 & 41, CLI.2.5495 (Lawinfochina).

<sup>112</sup> Criminal Law, *supra* note 85, at art. 330 (5).

<sup>113</sup> Department rules are lower in hierarchy than Constitution, laws (ordinary and general), and admin regulations. *See* Legislation Law, *supra* note 81, at arts. 91 & 99.

<sup>114</sup> Guanyu yifa kexue jingzhun zuohao xinguan feiyan yiqing fangkong gongzuo de tongzhi (关于依法科学精准做好新冠肺炎疫情防控工作的通知) [Notice on Scientific and Accurate Prevention and Control of COVID-19 in accordance with the Law] (promulgated by the Joint Prevention and Control Mechanism in Response to COVID-19 of the State Council, Feb. 24, 2020, effective Feb. 24, 2020), art. 2 (1) (iii), CLI.4.339762 (Lawinfochina).

<sup>115</sup> Guanyu shenru tuijin "hulianwang + yiliao jiankang" "wugeyi" fuwu Xingdong de tongzhi (关于深入推进"互联网+医疗健康" "五个一" 服务行动的通知) [Notice on Deepening the "Five Ones" Service Action of "Internet plus Medical Health"] (promulgated by the National Health Commission et al., Dec. 4, 2020, effective Dec. 4, 2020), CLI.4.348741 (Lawinfochina).

<sup>116</sup> Legislation Law, *supra* note 81, at art. 12.

<sup>117</sup> Constitution, *supra* note 87, at art. 37.

<sup>118</sup> Interim Measures for Health QR Code Management and Service of COVID-19 Prevention and Control, *supra* note 12.

China. The state's capacity to normalize technologies of control through extra-legal bureaucratic dictate, bypassing procedural due process and instruments of accountability, signifies a privileging of untrammelled executive power over both representative deliberation and individual rights.

In summary, the legal and regulatory frameworks at the national level concerning health QR codes are characterized by inconsistencies and tensions. The absence of dedicated national legislation regulating health codes and the reliance on administrative rulemaking to normalize health codes reflect the prevalence of technocratic discretion over representative deliberation in China's centralized governance system. Tensions arise between legislatures and administrative departments, as well as within legislative and executive authorities, regarding the scope, implementation, and oversight of health QR codes. These tensions reflect broader debates and conflicts over competing policy goals, as well as uncertainty about the appropriate role of executive authorities and their regulatory powers in governing public health emergencies.

### 3. *Disconnect between National Laws and Local Rules: A Dual Taxonomy*

A salient regulatory disjuncture exists between China's national biometric data governance frameworks and local implementation. While national policies articulate baseline protections, provincial and municipal authorities exhibit little legislative appetite to operationalize these principles locally. Regulations and rules enforcing biometric information protection are rare or non-existent at lower levels (province, municipality, and county governments). This legislative disconnect between national and local levels breeds inconsistencies and allows local authorities to self-legislate and self-regulate the use, extension, and normalization of health QR codes. In a vast and diverse country like China, at local levels, legislatures and government authorities promulgated their own regulations and guidelines for specific sectors or regions, leading to a fragmented legal and regulatory landscape. The enforcement and interpretation of these laws vary considerably due to regional differences, local practices, and individual administrative discretion.

A comprehensive review in July 2023 found that among China's thirty-two provincial-level administrative regions, all but one (Guangdong) have retained their health QR code schemes by either merging them with other social administration schemes or by extending their use to broader social spheres. Only three out of these thirty-one regions have resorted to formal local governmental rules<sup>119</sup> enacted by provincial governments to legitimize their practices.

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<sup>119</sup> *Erling'er'er nian shanghaishi quanmian shenhua "yiwang tongban" gaige gongzuo yaodian* (2022年上海市全面深化“一网通办”改革工作要点) [*Key Points for Shanghai to Comprehensively Deepen the Reform of "One Network Connection" in 2022*], SHANGHAISHI RENMIN ZHENGFU (上海市人民政府) [PEOPLE'S GOVERNMENT OF SHANGHAI CITY] (Jan. 14, 2022), <https://www.shanghai.gov.cn/nw12344/20220114/9ac0208eb4024b61a20307c94831be40.html>; Guanyu yinfalingerling nian shuzi fujian gongzuo yaodian de tongzhi (关于印发2020年数字福建工作要点的通知) [Notice on Issuing the Key Points of Digital Fujian Work in 2020] (promulgated by the General Office the People's Government of Fujian Province, May 29, 2020, effective May 29, 2020).

The remaining twenty-eight provinces (87.5%) implemented the health QR codes based on *ad hoc* directives<sup>120</sup> and standards<sup>121</sup> or without a solid local regulatory basis.

As such, there are two ways in which Chinese provincial regions are categorized, as delineated in Table One. Under the first typology, predicated upon how health QR codes are actually used today, the thirty-two provinces are classified as follows: “*Abolitionists*,” emblematic of regions that have chosen to discontinue the utilization of health QR codes; “*Active Practitioners*,” signifying those regions that not only retained codes post-crisis but expanded their application to non-epidemiological functions through integration with other public and private systems; and “*Mere Retentionists*,” encompassing regions that have opted for the retention of the regime and associated data solely for the objective of pandemic prevention, neither amplifying use cases nor accelerating abolition. For a national map of the regional patterns, see *Figures Two and Three*.

The second approach to categorization divides the thirty-one regions which keep health QR codes in operation into four groups: “*Formal Rule Followers*” include regions where the use of health QR codes is governed by formal rules enacted by local governments; the cohort of “*Self-Regulators*” comprises regions where local public health entities and *ad hoc* committees validate their respective health QR code regimes through self-imposed regulatory mandates. The third category, designated as “*Ruleless Enforcers*,” pertains to regions that have adopted, expanded, and normalized health QR codes while disregarding the imperative of a legal underpinning.

This dual taxonomy furnishes a nuanced examination of diverse regional responses, casting light upon the intricate interplay between government authority, technology, and legal initiatives across varied geographic contexts. The *first* typology reveals the degree to which local administrative entities strategically incorporate emergency technological tools within broader agendas of societal control. The *second* taxonomy provides granular insight into the

<sup>120</sup> See, e.g., Henansheng jiaotong yunshuting gunayu jiaqiang shiming gongjiaoka yu jiankangma xinxi zhenghe de tongzhi (河南省交通运输厅关于加强实名公交卡与健康码信息整合的通知) [Notice of Henan Provincial Department of Transportation on Strengthening the Integration of Real Name Bus Card and Health QR Code Information] (promulgated by Henan Provincial Department of Transportation, Apr. 13, 2022, effective Apr. 13, 2022), CLI.14.5456494 (Lawinfochina); Neimenggu zizhiqu xinxing guanzhuang bingdu ganran feiyan fangkong gongzuo zhihui bu yiliao fangkongzuo guanyu jinyibu zuohao yiqing fangkong jiankangma yima tongxing gongzuo de tongzhi (内蒙古自治区新型冠状病毒感染肺炎防控工作指挥部医疗防控组关于进一步做好疫情防控健康码一码通行工作的通知) [Notice of the COVID-19 Prevention and Control Work Headquarters of the Inner Mongolia on Further Improving the Work of Health QR Code Access for COVID-19 Prevention and Control] (promulgated by the COVID-19 Prevention and Control Work Headquarters of the Inner Mongolia, Feb. 1, 2021, effective Feb. 1, 2021), CLI.14.1703952 (Lawinfochina); Guanyu jinyibu zuohao laingma heyi gongzuo de tongzhi (关于进一步做好两码合一工作的通知) [Notice on Further Improving the Integration of Two Codes] (promulgated by Yunnan COVID-19 Prevention and Control Work Leading Group Office, Jul. 16, 2020, effective Jul. 16, 2020); Guanyu jinyibu youhua dangqian yiqing fangkong gongzuo de yijian (关于进一步优化当前疫情防控工作的意见) [Opinions on Further Optimizing the Current COVID-19 Prevention and Control Work] (promulgated by Xinjiang Uyghur Autonomous Region COVID-19 Prevention and Control Work Leading Group Office, Jan. 2022, effective Jan. 2022); Guanyu jinyibu cujin fugong fuchan puji “xinyong jiankangma” yingyong de tongzhi (关于进一步促进复工复产普及“信用健康码”应用的通知) [Notice on Further Promoting the Resumption of Work and Production and Popularizing the Application of “Credit Health Code”] (promulgated by Qinghai Provincial Public Credit Information Center, Mar. 20, 2020, effective Mar. 20, 2020).

<sup>121</sup> Health Code Fusion Application Specification, *supra* note 78; Sichuan tianfu jiankangtong disanfang yingyong jieru guifan (四川天府健康通第三方应用接入规范) [Sichuan Personal Health Code Third Party Applications Access Standard] (promulgated by Sichuan Provincial Market Supervision Administration, Dec. 7, 2022), DB /TXXXX—XXXX.

attitudes exhibited by regional authorities towards the role of formal rules as legitimizing instruments for surveillance mechanisms. To illustrate, each of the three provinces classified as "formal rule followers" – namely, Shanghai, Henan, and Guizhou – have extended the ambit of health QR code deployment into broader domains of societal governance. The allure of procedural propriety and accountability, furnished by formal rulemaking processes, confer legitimacy upon health QR code regimes, thereby fostering adherence among the citizenry. Notably, while a majority of the remaining twenty-nine provinces did not adhere to formal legislative procedures, they nevertheless resorted to diverse ad hoc mechanisms, characterized by self-engineered regulations, standards, and notifications, to justify the use of extensive extralegal surveillance architectural power.

In sum, the *national-local* conflict and *legislative-executive* tension within the legal and regulatory frameworks on health code systems explain the legal system's failure to effectively counterbalance the growing power asymmetry between individual data subjects and data controllers/processors. Contradictions between laws and regulations at the national level and the patchwork of local rulemaking at local levels proved insufficient to address the unique challenges posed by health QR codes and offer individuals effective protections. The discord between legislative and executive branches at the national levels, similarly, hampers the establishment of robust legal safeguards and accountability. The concerns of the legislature regarding personal information rights and privacy were relegated to a secondary position as the executive branch prioritized the swift implementation of stringent measures for disease prevention and control. In the post-pandemic era, similar legal deficiency provides a fertile ground for expedient measures enacted during exigencies to morph into enduring techno-authoritarian status quos.

## B. ETHICAL DEFICITS OF HEALTH QR CODES: A CRITICAL ANALYSIS

Under the regime of health QR codes, AI algorithms compute a risk score based on three vectors - temporal, spatial and interpersonal<sup>122</sup> - for each individual user and assigned them a colored (red, green, or amber) code accordingly.<sup>123</sup> Access to public facilities, entry into public venues and permits to travel are only authorized upon the presentation of a green code; amber and red codes lead to quarantines and various travel .<sup>124</sup> Under the regimes of health QR codes, pioneering municipalities of big data analytics, such as Shenzhen, Shanghai, and Hangzhou, integrated pandemic management datasets with population databases, enterprise databases, digital license databases, digital ID databases, social credit databases, geolocation databases to facilitate the sharing of personal data between public entities and private corporations.<sup>125</sup>

For nearly three years, China's Health QR code regime, monitored the minutiae of everyday activities of Chinese citizens, controls their freedom of movement and regulates their access to public resources.<sup>126</sup> Never before has humanity's vast digital footprint - from biometric scans to social threads, purchasing records to travel trails - been so interwoven across

<sup>122</sup> Xu, *supra* note 35.

<sup>123</sup> Mozur, *supra* note 14.

<sup>124</sup> *Id.*

<sup>125</sup> Xu, *supra* note 35.

<sup>126</sup> Qian Han (韩谦), *Jiangukangma de yiqian tian* (健康码的1000天) [1000 Days of the Health QR Code], NANFANG ZHOUMU (南方周末) [S. WKLY.], Nov. 12, 2022; Suwen Yuan (苑苏文), *Zhongguo fangyi shenqi "jianshangma" shi zenme yunzhuan de?* (中国防疫神器“健康码”是怎么运转的?) [How Does the "Health Code", An Artifact of China's Epidemic Prevention, Work?], Xinlang (新浪) [Sina] (Jan. 25, 2022), <https://finance.sina.com.cn/tech/2022-01-25/doc-ikyakumy2415816.shtml>; Jin, *supra* note 23.

regions into a comprehensive web of personal information. During the pandemic years, this rising data reservoir has been fed by national and local governments, state-owned enterprises, private corporates, tech-platforms and governmental-backed residential committees. This merging of public and private efforts magnifies and enables new scale and depth of surveillance. Where personal biometrics were once private information, they now interweave with behavioral and movement breadcrumbs for the tracking, analyzing and sorting of individuals. This bold social experiment using health QR codes has led some to imagine a future where the entire society is ruled by “one single code”: hospital visits, driver's license checks, attending schools, business and banking, will all be assessed and verified based on “seamlessly integrated and interconnected data.”<sup>127</sup>

China's health QR code system raises profound ethical concerns warranting further discourse and analysis. This system engenders multiple ethical dilemmas, such as those pertaining to autonomy, privacy, transparency, due process, discrimination, and social exclusion. Consider, for instance, the issue of autonomy over sensitive personal information, which is increasingly salient in the contemporary world. The coercive acquisition of personal data without transparency or informed consent infringes upon foundational ethical tenets of and self-governance and autonomy. Moreover, the system may also create or exacerbate social exclusion, which is the marginalization or denial of access to resources and opportunities for certain groups or individuals. For example, senior citizens and migrant workers may be unable to obtain a green health code due to technological illiteracy, lack of internet access, financial hardship or frequent relocation. This may prevent them from entering public places, traveling freely, or receiving essential public services. How does China's health QR code system align with such ethical norms?

### 1. “Choices” Without Consent: Neither Informed Nor Free

China's health code governance represents a polycentric amalgam of public rulemaking and private contractual arrangements. As described in the previous section, legislators and governments guide the implementation of health QR codes with published law and regulations. Meanwhile, corporations use terms of service and privacy policies - which are also legal instruments to shape the rights and obligations of the parties involved in the system and to secure user consent. This duality of public authorities and private forces institutionalizes the surveillance structure underpinning the operation of the health QR codes. China's leading tech platforms are the main private rule makers in this area.

China's implementation of health QR codes rely on two top tech giants: Ant Financials' Alipay and Tencent Holdings' WeChat. They, together and individually, exert a substantial presence in China's digital ecosystem.<sup>128</sup> Tencent's WeChat, with over 1.3 billion monthly active users,<sup>129</sup> offers a wide range of services including social networking. Alipay commands

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<sup>127</sup> Xu, *supra* note 35.

<sup>128</sup> Erlingerer niandu zhongguo APP yuehuo paihangbang chulu, qiansanming jihu nan handing? (2022年度中国APP月活排行榜出炉, 前三名几乎难撼动?) [The 2022 China APP Monthly Activity Ranking Has Been Released, and the Top Three Are Almost Hard to Shake], ZHONGGUOWANG (中国网) [CHINA.COM.CN] (Feb. 10, 2023), [http://science.china.com.cn/2023-02/10/content\\_42254847.html](http://science.china.com.cn/2023-02/10/content_42254847.html).

<sup>129</sup> Zhongguancun Zaixian (中关村在线) [ZOL.com.cn], Weixin yuehuo 13 yi wenzuo “diyi guomin APP” baozuo (微信月活13亿 稳坐“第一国民APP”宝座) [WeChat Monthly Lives 1.3 Billion and Securely Positions as the “First National APP”], TENGXUN (腾讯) [TENCENT] (Mar. 26, 2023), <https://new.qq.com/rain/a/20230326A028AX00>.

a significant user base of over 900 million monthly active users,<sup>130</sup> widely recognized for its dominance in the mobile payment and e-commerce sectors.

### a. Bypassing User Consent with Mobile Mini Programs

Access to health QR codes within the Alipay and WeChat platforms is characterized by a seamless and instantaneous process, wherein existing users can effortlessly acquire these codes with a single click, obviating the need for supplementary app installations. This technical concept of "mini apps within an app" diverges from the decentralized and voluntary contact tracing applications in the United States and other jurisdictions.<sup>131</sup> These mobile app-based mini programs, by and large, offer users a cohesive experiential interface. The fusion of health QR codes mini programs with the host platforms effectively streamlines real-time authentication and precludes the necessity of re-submitting personal data, previously entrusted to Alipay and WeChat. However, this synergy of convenience and privacy engenders a discernible trade-off. Notably, the embedded nature of privacy permissions within mini programs, contingent upon host app authorization, engenders a parasitic relationship that bypasses independent user privacy permissions, thereby subjecting user data to potential vulnerabilities.<sup>132</sup>

The technical peculiarity of Alipay and WeChat in China, coupled with the global online ecology of meaningless "consent" online, enabling access absent deliberative consent. The latter is a ubiquitous phenomenon transcending China. Nowadays, user consent to online privacy policies has widely been reduced to hollow ritual.<sup>133</sup> Fine print has become such a cliché as an individual users' acknowledgement and approval of such terms and conditions are probably 'the biggest lie on the internet'<sup>134</sup> even after legislative efforts such as GDPR<sup>135</sup>. The prevalent "notice and choice" model, ostensibly designed to empower users with informed and autonomous decisions, reveals inherent shortcomings.<sup>136</sup> On the one hand, users see long, legalistic and vague notice documents as nuisance and casually ignore them while pursuing convenience and digital access.<sup>137</sup> On the other hand, the "take it or leave it"<sup>138</sup> regime casts

<sup>130</sup> Lujia Shangye Pinglun (陆玖商业评论) [Lujia Commercial Review], *Zhifubao, haisuan guomin APP ma?*

(支付宝, 还算国民级APP吗?) [Alipay, Is It Still a National APP?], TENGXUN (腾讯) [TENCENT] (Mar. 20, 2023), <https://new.qq.com/rain/a/20230320A014Z300>.

<sup>131</sup> Nadeem Ahmed et al., *A Survey of COVID-19 Contact Tracing Apps*, 8 IEEE ACCESS 134577 (2020); Robert A. Kleinman & Colin Merkel, *Digital Contact Tracing for COVID-19*, 192 CAN. MEDICAL ASSOCIATION JOURNAL E653 (2020).

<sup>132</sup> Jianyi Zhang et al., *A Small Leak Will Sink Many Ships: Vulnerabilities Related to Mini Programs Permissions*, ARXIV, <https://arxiv.org/pdf/2205.15202.pdf>.

<sup>133</sup> Aaron Smith, *Half of Online Americans Don't Know What a Privacy Policy Is*, POLICY COMMONS (2014), <https://policycommons.net/artifacts/619431/half-of-online-americans-dont-know-what-a-privacy-policy-is/1600556/>; Ari Ezra Waldman, *Privacy, Notice, and Design*, 21 STAN. TECH. L. REV. 74 (2018); Jonathan A. Obar & Anne Oeldorf-Hirsch, *The Biggest Lie on the Internet: Ignoring the Privacy Policies and Terms of Service Policies of Social Networking Services*, 23 INFORMATION, COMMUNICATION & SOCIETY 128 (2020).

<sup>134</sup> Obar, *supra* note 131.

<sup>135</sup> Thomas Linden et al., *The Privacy Policy Landscape After the GDPR*, ARXIV, <https://arxiv.org/abs/1809.08396>.

<sup>136</sup> Helen Nissenbaum, *A Contextual Approach to Privacy Online*, 140 DAEDALUS 32 (2011).

<sup>137</sup> Alessandro Acquisti & Jens Grossklags, *Privacy and Rationality in Individual Decision Making*, 3 IEEE SECURITY & PRIVACY 26 (2005); David B. Meinert et al., *Privacy Policy Statements and Consumer Willingness to Provide Personal Information*, 4 J. OF ELEC. COM. IN ORGS. (2006); Janice Y. Tsai et al., *The Effect of Online Privacy Information on Purchasing Behavior: An Experimental Study*, 22 INFO. SYS. RSCH. 213 (2010); Nili Steinfeld, *"I Agree to the Terms and Conditions": (How) Do Users Read Privacy Policies Online? An Eye-Tracking Experiment*, 55 COMPUTERS IN HUMAN BEHAVIOR 992 (2016).

<sup>138</sup> Nissenbaum, *supra* note 134.

doubt on whether individuals' decisions are genuinely informed, rational, and free as they have few alternatives.

### **b. A Case Study of the Privacy Terms of Health QR Codes on Digital Platforms**

In this present case study of the privacy terms offered by health QR code mini programs on WeChat and Alipay in China, it appears that users' decision to submit their personal biometric data via health QR codes may neither be deliberate nor truly free. Accessing health QR code mini-programs is easy, but ensuring privacy protections for users poses a significant challenge. As of July 2023, over six months after China's proclaimed end of using health QR codes in public places, health QR code regimes are still in operation on the two major digital platforms (see Table Two). These include Yuekang Code used in Guangdong, the sole Chinese province<sup>139</sup> promised to "completely delete and destroy" all health QR code related data in early 2023.<sup>140</sup> This also includes Yuekang Code, a health QR code system implemented in Guangdong, the only Chinese province that pledged to "completely delete and erase" all data related to this system in early 2023.

Of the twenty-nine provinces whose health QR codes mini programs are hosted by Alipay, only five (17%) include privacy policies for users to review and consent to before they run these mini programs on their mobile phones.<sup>141</sup> The overwhelming majority (twenty-four provinces) offer no privacy policies to users, thereby depriving them of the necessary information to render informed and autonomous decisions on profound impact on their biometric rights and privacy. In these provinces, the only applicable document is a standardized user authorization agreement, dated April 2022, comprising a brief introduction and five paragraphs on a single page (991 words in total). Users are assumed to accept the agreement if the user clicks on the website or "in any other ways."<sup>142</sup> The five paragraphs, in order, 1) request users to give a permanent, broad authorization to share user data to cooperative third parties, 2) relieve Alipay from any dispute arising between the user and the said third party, 3) remind users of possible future changes of these terms, 4) explain that Alipay Service Agreement generally applies and 5) provide the governing law and jurisdiction.<sup>143</sup> The terms are meant to shield the platform from liability with overbroad authorizations and liability waivers, rather than empower users to make free and informed decisions.

But even for the five provinces that provide their residents with privacy terms on Alipay, these terms are identical with privacy terms on WeChat-housed mini programs. In other words, their users, after reading and evaluating the terms, if they decide not to proceed with submitting their personal biometric data via Alipay or WeChat, they do not have any realistic alternatives. In some provinces such as Henan and Yunnan, their mini programs reside on only

<sup>139</sup> Health QR codes have also been phased out in two Chinese municipalities, Wuxi and Nantong, albeit without extending to other areas within Jiangsu province.

<sup>140</sup> Yuekangma duoxiang fuwu jiangyu eryue shiliuri shiyishiqi tingzhi (粤康码多项服务将于2月16日11时起停止) [Multiple Services of Guangdong Health QR Code Will Be Discontinued from 11:00 am on February 16th], GUANGDONGSHENG RENMIN ZHENGFU (广东省人民政府) [PEOPLE'S GOVERNMENT OF GUANGDONG PROVINCE] (Feb. 14, 2023), [https://www.gd.gov.cn/zfwf/bmts/content/post\\_4094443.html](https://www.gd.gov.cn/zfwf/bmts/content/post_4094443.html).

<sup>141</sup> These five provinces are Shanghai, Hunan, Zhejiang, Gansu, and Liaoning. Although Guangdong claimed that it has destroyed all data, its provincial health QR code data-collection system is still accessible through Alipay.

<sup>142</sup> Zhifubao (支付宝) [Alipay], Yonghu shouquan xieyi (用户授权协议) [User Authorization Agreement], Version 20220422, Released Apr. 22, 2022.

<sup>143</sup> *Id.*



one of the platforms. This leaves users with one and only “option” to decide freely to agree on the privacy policies of that health QR code mini program. The only alternative is not to obtain a health QR code at all. All these privacy practices create a “leave it or take it” situation as sharing their personal biometrics via health QR codes is a necessary condition of enjoying personal freedom and gaining access to public spaces, resources, and transportation. Chinese users, therefore, do not have the real opportunity to freely choose to control their privacy as the price of being quarantined at home permanently and being excluded from public and social life is such a high price that few can afford to pay.

Compared to Alipay, fewer than half of the mini programs on WeChat offer their users privacy policies for them to read. Out of the 29 provincial and municipality health QR code mini programs nested on WeChat, three contain no privacy documents, 12 (40%) include standalone privacy policies associated with health QR codes mini programs, and 14 (47%) integrate such health QR code mini programs into their other social governance services, such as community health care, education and examinations, vehicle licensing management, social order maintenance, employment, welfare and housing, overseas traveling, and so on.<sup>144</sup>

### c. Ethical Obligations and Power Imbalance

The conspicuous absence of informed and voluntary consent in the processing of personal biometric data within China's health QR code mini programs is deeply disturbing. This concern is accentuated by the continuation of this deficiency into the post-pandemic era, where the exigencies of the pandemic can no longer be evoked as justification for deviations from legal norms. As described earlier, China's legislative framework pertaining to personal information protection embodies the principle of user consent as a prerequisite for data processing but leaves ample leeway for derogation. China's Personal Information Protection Law (PIPL), promulgated after the birth of the health QR codes, took no interest in incorporating a sunset clause to forestall the persistence of pandemic-driven surveillance.<sup>145</sup> Given the relatively malleable and toothless nature of statutory protections within this sphere, it is unsurprising that government bodies and tech powers see such statutory provisions as facilitators rather than major impediments to rationalize the expansion of biometric surveillance into the post-pandemic period.

But these deficits in law are no excuse for decreasing the ethical responsibilities of data processors. Users' consent to privacy policies on the collection and sharing of biometric data should be distinct from their permission for collection, for instance, financial and payment data (in the case of Alipay) and social media contacts and posts (for WeChat). As biometric data is highly sensitive and breaches of the privacy and security of such data will have significant repercussions for data subjects, they should be afforded ample chances to read, assess, deliberate, approve, or reject such privacy policies. Governmental entities and technological

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<sup>144</sup> Tianjinshi dashuju guanli zhongxin (天津市大数据管理中心) [Tianjin Big data Management Center],

“Jinxinban” xiaochengxu yonghu yinsi zhengce (“津心办”小程序用户隐私政策) [Privacy Policy for Users of the “Jinxinban” WeChat Mini Program].

<sup>145</sup> A common justification for the retention of the health QR codes is that they hold vaccination information which could serve as a reference for physicians during the diagnosis and treatment of severely ill patients. In addition, local governments expressed a desire to retain the health code, suggesting that it could be reactivated for efficient containment and control in the event of another pandemic outbreak. These practical concerns may underpin the longevity of health QR codes until the present day. See Hong Zhao (赵宏), *Xujing yichang de jiankangma “fuhuo”, weihe rengxu huyu chedi xiaxian* (虚惊一场的健康码“复活”，为何仍需呼吁彻底下线?) [Why Do We Still Need to Call for a Complete Shutdown Despite the False Alarm of the Health Code's "Resurrection"?], ZHONGGUO SHUZI SHIDAI (中国数字时代) [CHINA DIGITAL TIMES] (Dec. 6, 2023), <https://chinadigitaltimes.net/chinese/702959.html>.

enterprises bear an ethical debt to the vast populace subjected to digital surveillance within health QR code frameworks, who are entitled to an elevated level of safeguarding, rather than a diminished one.

While notice and choice rituals provide largely rhetorical protection, their very availability signifies nominal acknowledgment of user rights and power. By denying even hollow consent procedures, Alipay and WeChat abandon the pretense that user privacy and rights should be given serious consideration before users are required to authorize the use and share of their sensitive data. This lays bare the imbalance of power and priorities between individual users and governments and tech corporations.

Power imbalance can also help explain why users do not take such privacy terms seriously even if they are presented with them. Users' willingness to read (or otherwise gain knowledge of) terms and conditions should increase if there were any real chance that reading would actually make a difference in steering users toward or away from consenting. If users can genuinely influence the trade-offs being made in the privacy terms they are being presented with, this would render reading more meaningful. Giving users more genuine choices than "take-it-or-leave-it" could encourage user-centered decision-making and informed engagement. If users do not possess such power, then, understandably, few will have strong motivation to even become informed. The health QR code regime, mediated through digital giants in China, reduced individuals to the role of passive data subjects, engendering a feeling of digital alienation.

## 2. Multiple Shades of Opacity

A major criticism of health QR codes is the lack of transparency.<sup>146</sup> A landmark case demonstrating the expansion of health QR codes beyond the original intended purpose of epidemiological control is the assignment of red codes to Henan Rural Bank depositors. Recently, the Henan provincial government used health QR codes to prevent dissatisfied bank depositors from undertaking journeys to access their funds and initiate petitions and protests.<sup>147</sup> Following a bank run, thousands of depositors traveled to Zhengzhou, the provincial capital, to demand their money back and protest against the banks and the authorities. However, many of them found that their health QR codes abruptly turned red when they arrived in Zhengzhou, subjecting them to various travel ban measures, such as mandatory quarantines.<sup>148</sup> Considered high-risk individuals in a public health emergency and prevented from accessing public transportation, hotels, and banks, many were detained by the police and told to leave the city. Red codes were arbitrarily assigned to a total of 1,317 aggrieved depositors.<sup>149</sup>

The Henan authorities' use of health codes for socio-political control beyond the intended pandemic containment functions: to restrict individual mobility and stifle civil dissent. This weaponization of a purportedly apolitical, public health surveillance infrastructure exposes its susceptibility to misuse and abuse by unchecked authorities. Crucially, this case exemplifies the manner in which opacity can serve as a mechanism for authorities to circumvent accountability. Initially hesitant to hold officials accountable, Henan provincial

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<sup>146</sup> Mozur, *supra* note 14.

<sup>147</sup> Dong, *supra* note 75; Reuters Staff, *Chinese Officials Punished for Changing Health Codes of Bank Depositors - State Media*, Reuters (Jun. 23, 2022), <https://www.reuters.com/article/china-banks-henan-chinese-officials-punished-for-changing-health-codes-of-bank-depositors-state-media-idINL4N2YA03D>.

<sup>148</sup> Wenxin Fan, *In One Chinese City, Protesters Find Themselves Thwarted by a Red Health Code*, WALL ST. J., SPECIFIC PAGES CITED (Jun. 16, 2022).

<sup>149</sup> Ryan McMorro & Cheng Leng, *'Digital Handcuffs': China's Covid Health Apps Govern Life but Are Ripe for Abuse*, FIN. TIMES (Jun. 28, 2022), <https://www.ft.com/content/dee6bcc6-3fc5-4edc-814d-46dc73e67c7e>; Peiyue Wu, *Henan Bank Depositors Hit with Red Health Codes*, SIXTH TONE (Jun. 14, 2022), <https://www.sixthtone.com/news/1010547>.

authorities, under mounting societal pressure, shifted blame to lower-ranking individuals for mishandling health QR codes.<sup>150</sup> The aggrieved depositors in this case had little recourse as they possess little information as to 1) what data were fed into the health QR codes' algorithmic models, 2) the rules and criteria for computing risk scores, 3) which governmental body is responsible for the abuse of the health QR code systems, and 4) channels for seeking remedies and appealing the unjust outcomes. Ironically, a Communist Party social media account admitted that even the national officials were unaware of "which department or individual instigated...the epidemic prevention and control measures for 'social governance' or 'stability maintenance.'"<sup>151</sup> The revelation that even Communist Party officials could not pinpoint the origins of manipulation of health QR code algorithms indicates a concerning lack of coordinated strategy behind the health code's expansive implementation, especially at the local levels.

### a. Health QR Codes as A Subtle Form of Sanction

The problem of opacity is not confined to such high-profile cases. Instances have emerged where individuals find themselves subjected to restrictions or denied access to public spaces or services without a clear understanding of the underlying reasons.<sup>152</sup> Some users find themselves in situations where their health code status changes abruptly, with an algorithmic twist of fate turns their code from green to red overnight.<sup>153</sup> The exact criteria or triggers for such changes remain obscure.<sup>154</sup> Furthermore, individuals have reported disparities in health code assignments among individuals with similar health conditions or travel histories.<sup>155</sup> The lack of transparency in these important aspects of the health QR code regimes thwarts the capacity of individuals to make informed decisions and seek effective remedies. The opacity conceals a dual-purpose functionality of the health QR code regimes: they are not only digital tools to manage public health risks but also seemingly apolitical instruments for controlling civil discontent.

Health QR codes symbolizes an extreme example of a black box society"<sup>156</sup>. Compared to physical coercion and detention, "digital handcuffs" are smarter and less costly. However, health QR codes are an equally effective, if not more effective, form of social control as they leverage individuals' dependency on digital access to induce compliance, even though it may appear that such surveillance systems are less detrimental to the rights and interests of those facing adverse outcomes. However, I argue that this "scientific," "neutral," and "flexible"

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<sup>150</sup> Zhongguo henan jiu "hongma" shijian chengchu duoming guanyuan dan minyuan weixiao (中国河南就“红码”事件惩处多名官员 但民怨未消) [Several Officials in Henan Province Have Been Punished for the "Red Code" Incident, but Public Grievances Remain Unresolved], BBC (Jun. 23, 2022), <https://www.bbc.com/zhongwen/simp/chinese-news-61907664>.

<sup>151</sup> Huizhong Wu, *Residents Say China Used Health Tracker for Crowd Control*, AP NEWS (Jun. 17, 2022), <https://apnews.com/article/covid-technology-health-government-and-politics-7b1ea828f10f76e8190410457a05286f>.

<sup>152</sup> McMorrow, *supra* note 151.

<sup>153</sup> Mozur, *supra* note 14.

<sup>154</sup> Yi'er Shu (舒怡尔) et al., *Gesheng zhengce he 98 tiao guzhang liuyan gaosuni, jiakangma shi zenyang bianhuang de* (各省政策和98条故障留言告诉你，健康码是怎样变黄的) [Provincial Policies and 98 Fault Messages Tell You How the Health QR Code Turns Yellow], PENGPAI (澎湃) [THE PAPER] (Jan. 18, 2022), [https://m.thepaper.cn/newsDetail\\_forward\\_16337494](https://m.thepaper.cn/newsDetail_forward_16337494).

<sup>155</sup> Fan, *supra* note 145.

<sup>156</sup> See FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* (2015).

method exacerbates the vulnerabilities of individuals. By outsourcing law enforcement functions to tech corporations, rather than to law enforcement departments, the state has gained an expedient and powerful tool for social control. I will explain four ways in which this is true below:

First, health QR codes encourage self-policing and nudge individuals towards compliance. By restricting mobility based on opaque algorithmic judgments, digital surveillance via health QR codes encourage self-policing in such a way that those deviating from the state's aims face nudges instead of direct coercion or physical torture. This results in chilling effects on resistance against the state, as the non-transparent basis for algorithmic judgments fosters over-compliance out of a sense of caution. A man from Zhejiang province was so terrified of the consequences of having a red health QR code, which could adversely affect his child's schooling, that he fled to the mountains and spent the night there after his code suddenly changed color in 2021.<sup>157</sup>

Second, health QR codes promote individualized sanctions. They enable authorities to calibrate punishments finely, curtailing liberty in a manner proportionate to the degree of perceived threats. This flexibility allows for the targeting of specific deviants for deterrence, bypassing mass crackdowns that could trigger wider backlash. Coded control is a subtler art of sanction than physical might. This nuanced form of authority shapes behavior proactively through automated, tailored incentives and sanctions.

Third, opaque automated systems like the health QR code system foreclose remedies. Unlike formal trials involving human decision makers, citizens can hardly confront digitized accusers or challenge the automated processes which impose restrictions upon them. In contrast, formal law enforcement processes are constrained by well-established due process protections and relatively transparent procedures. Health QR codes impose restrictions on personal liberties through unverifiable data and algorithms shrouded from scrutiny, leaving citizens defenseless against erroneous judgments made in the shadows.<sup>158</sup> Being stuck in a place far from home for months, waiting for a green code to let them go back, is far from being a rare situation that cross-regional travelers face.<sup>159</sup> Many fear waking up to find their health QR code suddenly yellow or red, resulting in the cancellation of all plans and confinement to one's home.<sup>160</sup>

Finally, surveillance through health QR codes is absent of due process safeguards. While prisons require visibility, virtual conceals abuses of power under the guise of scientific precision. Authorities evade accountability by cloaking codified punishments in opacity, unlike formal charges for physical arrests, detentions, and punishment. Opacity enables "digital handcuffs" to advance coercive agendas through covert technical means rather than through

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<sup>157</sup> Xiaozhen gushi zhiduoshao (小镇故事知多少) [How Much Do You Know about Small Town Stories?], Ningbo youren yinwei "hongma" duozai shanshang bugan huijia ... (宁波有人因为“红码”躲在山上不敢回家...) [Some People in Ningbo Dare Not Go Home Because They Are Hiding On The Mountain Due To The "Red Code"], Souhu (搜狐) [SOHU] (Dec. 13, 2021), [https://www.sohu.com/a/507671604\\_121123826](https://www.sohu.com/a/507671604_121123826).

<sup>158</sup> Jiahong He (何家弘), "Tanchuang" de suanfa bushifa, pingshenme neng xianzhi renshen ziyou? ("弹窗"的算法不是法, 凭什么能限制人身自由?) [The Algorithm of 'Pop-up Window' Is Not a Law, Why Can One Limit Personal Freedom?], Zhongguo Liaowang (中国瞭望) [CHINA NEWS] (Nov. 17, 2022), <https://news.creaders.net/china/2022/11/17/2547796.html>.

<sup>159</sup> Zhenshi gushi jihua (真实故事计划) [Real Story Plan], *Yangmaren zai tianya* (养码人在天涯) [People Stay Outside the City to Restore the Green QR Code], XINLANG (新浪) [SINA] (Nov. 18, 2022), [https://k.sina.cn/article\\_5892736543\\_15f3c061f01900wp92.html?from=news&subch=onews](https://k.sina.cn/article_5892736543_15f3c061f01900wp92.html?from=news&subch=onews).

<sup>160</sup> Shu, *supra* note 155.

transparent legal procedures. This prompted He Jiahong, a distinguished legal scholar from China to question: “The algorithm does not possess the essential attributes of law. On what grounds, then, can it claim the power to limit personal liberty?”<sup>161</sup>

### b. An Eight-Fold Gap in Transparency

A comprehensive survey of the operation of health QR code systems reveals that the opacity surrounding the health QR code system manifests in at least eight ways. Obscurity permeates critical aspects of the system across the data lifecycle, from input collection to algorithmic logic. Here, I divide these eight dimensions into three groups: input opacity, process opacity, and output opacity. This conceptual scaffolding is helpful to clarify the different ways in which the absence of transparency impinges upon individual agency. Input opacity refers to the lack of transparency regarding the sources of data fed into the health code algorithm models (Data Collection). Process opacity includes the obscurity surrounding the use of input data (Data Retention), the computing of risk scores (Algorithmic Black Box), the lack of participatory mechanism (Public Input), and third-party sharing of the data (Cross-Agency Data Sharing). The last concept, output opacity, consists of the lack of oversight mechanisms governing the health QR code system (Oversight Mechanisms) and the lack of clarity and transparency on the responsible authorities for the health code system (Responsible Authorities). Together, deficiencies in transparency regarding the following eight-dimensions erodes the public's ability to make informed decisions about the utilization of their personal data:

1. **Data Collection:** The sources of data contributing to health code assignments remain undisclosed, leaving citizens unaware of the inputs influencing their risk scores and the agencies responsible for data collection and integration. While anecdotal analysis suggests that data sources like location trackers, travel history, health records, and personal information serve as potential basis for risk assessment within health QR code regimes, the precise details of these sources are still rarely disclosed, even as they remain subject to dynamic changes.
2. **Data Retention:** The duration for which personal data is stored, the purposes for which it is used beyond pandemic control, such as for social credit or behavior monitoring, lack transparency. Mechanisms for data anonymization or deletion are unclear.
3. **Algorithmic Black Box:** The algorithms used to determine health code assignments, including the formulas for risk calculation, scoring criteria, and weighting remain undisclosed. Specific data points and risk factors are concealed, hindering full comprehension of how behaviors influence health code classifications. Even the Alibaba Cloud Data Intelligence team admitted that the health QR code algorithms were like “a series of ‘black boxes’”, which they examine like “an ancient traditional Chinese medicine practitioner pulse-checks the patient's wrists from behind a curtain.”<sup>162</sup>
4. **Oversight Mechanisms:** The absence of audit mechanisms or accountability procedures to inspect, challenge, or remedy erroneous or unfair determinations exacerbates issues. The absence of clear avenues for individuals to contest, appeal or seek clarification on their health codes limits recourse for erroneous or unfair determinations and diminishes individuals' ability to hold relevant authorities accountable.

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<sup>161</sup> He, *supra* note 159.

<sup>162</sup> Yun, *supra* note 34.

5. **Individual Rights:** Transparency regarding the extent to which individuals can access, correct, or delete their personal data, as well as the procedures for doing so, is absent. This lack of transparency limits individuals' ability to exert control over their own data.
6. **Responsible Authorities.** Administrative bodies overseeing the health code system lack clarity, obscuring the chain of authority governing the system's operations. Weeks after the Henan Rural Bank scandal, for instance, various departments in Henan province linked to the health QR code system all claimed to be unaware of the situation and assert their innocence.<sup>163</sup> This disjointed response underscores the complexities of ensuring accountability in technologically mediated opaque surveillance systems.
7. **Public input:** Civil society lacks participatory roles in system design and implementation, curtailing public influence. The lack of avenues to provide popular perspectives or feedback leaves the public with no voice in its operation.
8. **Cross-Agency Data Sharing:** The sharing of data among government bodies or third parties is obscure, raising concerns of unauthorized access or leakage, particularly involving third-party service providers. These include law enforcement or tech companies or data analytics firms for commercial purposes like advertising or credit scoring.

### c. A Toothless Right to Explanation

Transparency, ironically, has been established as a fundamental principle in the national legal framework for personal information protection in China. For example, both the PIPL and the Civil Code stipulate that personal information processors must be transparent with respect to “the purpose, method and scope”<sup>164</sup> of data processing and rules for “automated decision making”<sup>165</sup>. As opacity shields data processors from liability and impedes data subjects from mounting successful legal challenges against unfair discrimination or right deprivation, Chinese law provides “the right to explanation” for the sake of empowering data subjects. The PIPL first stipulates that, generally, an individual data subject “has the right to demand personal information processors to explain the procedures for managing data.”<sup>166</sup> In particular, when automated decision-making significantly affects an individual's rights and interests, just as algorithmic decisions are made under the regime of health QR codes, the individual “has the right to request an explanation from the personal information processor.”<sup>167</sup>

Such a right to explanation, however, is largely toothless for at least six reasons. First, the law emphasizes explainability only when explicitly requested by individuals. This approach fails to impose a proactive duty on data processors to provide insights into the functioning of automated systems, thereby reducing the potential for systemic accountability. While Chinese law does grant individuals the right to make demands and requests, such demands may well fall on deaf ears.

Second, there are no specified standards or methods set out for how understandable or actionable these explanations need to be. The law does not define what constitutes a satisfactory explanation, leaving the nature of disclosure at the authorities' discretion. The PIPL requires the processor to explain the “procedures for managing data” and the “automated decision-

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<sup>163</sup> Hao Feng (冯皓) & Ying Nan (南英), *Shuizai “zhangkong” hongma? Henan duoge bumen doucheng buliaojie* (谁在“掌控”红码? 河南多个部门都称不了解), *DIYI CAIJING* (第一财经) [YICAI] (Jun. 15, 2022), <https://www.yicai.com/news/101445091.html>.

<sup>164</sup> Personal Information Protection Law, *supra* note 84, art. 7; Civil Code, *supra* note 83, art. 1035 (3).

<sup>165</sup> Personal Information Protection Law, *supra* note 84, art. 24 (1); Civil Code, *supra* note 83, art. 1035 (2).

<sup>166</sup> Personal Information Protection Law, *supra* note 84, art. 48.

<sup>167</sup> *Id.* art. 24 (3).

making mechanism”, but it does not require the processor to disclose the specific logic, algorithm, or criteria behind the decision-making. Moreover, the complex algorithms and secretive data sources that underpin these codes render the explanations that could be offered superficial and lacking in meaningful detail. As a result, individuals may receive only vague or generic responses that fail to address the specific concerns at hand. These justifications may also be too technical for individuals to meaningfully understand or contest coded judgments affecting them.

Third, the PIPL provides no defined mechanisms for individuals to appeal or contest automated decisions based on inadequate explanations. The “right to explanation” clause merely encourages individuals to “refuse” “entirely automated” decisions such as health codes’ algorithmic decisions, which is meaningless when participation is mandatory, and no alternatives are available. If refusing to surrender personal biometrics to the health code regime means that an individual loses their personal liberties entirely, do they possess the option to reject such decisions? In addition, one of the nightmarish scenarios many individual users found themselves in was that their health QR codes turned amber or red overnight due to errors in algorithmic computation. Without knowing who is responsible for assigning the codes, how can one demand an explanation or reject such a code? This “right to explanation” clause can also be easily bypassed if the data processor blends algorithmic and human decisions, even if the latter is nominal in nature.

Fourth, and most importantly, the law does not establish penalties for non-compliance with explanation requirements or avenues to dispute unsatisfactory responses, leaving individuals without a reliable means to compel personal information processors to provide transparent explanations. No independent oversight or enforcement mechanisms are established to ensure meaningful transparency or recourse around algorithmic determinations.

Fifth, the PIPL’s limited focus on individualized explanations disregards the broader need for transparency into the design and operation of automated systems. This limitation perpetuates the opacity surrounding health codes’ decision-making mechanisms, preventing a comprehensive understanding of their functions.

Last but not least, the broader context of power dynamics and limited oversight within which health QR codes operate compounds the toothlessness of the right to explanation. The intertwining of strong governmental and corporate interests can create an environment where superficial explanations are accepted without substantial scrutiny, thereby perpetuating the lack of transparency. In sum, while this PIPL “right to explanation” provision nominally affirms some individual rights, in practice its vagueness (as to the quality of explanation and the nature of the right), limitations, lack of enforcement and remedial measures and embeddedness in the broader power relations render it ineffective in providing accountability or transparency around health codes’ automated judgments. Ultimately, PIPL’s right to explanation offers an illusion of accountability around automated systems like health QR codes.

### 3. *The Scarlet Code: Disparity, Discrimination and Exclusion*

Like transparency, fairness is another cardinal principal that has been enshrined in the legal framework protecting personal data. Article 24 of PIPL provides that personal information process “shall ensure fairness and impartiality of the outcomes of automated decision-making process.”<sup>168</sup> This aspiration for equality, however, was thwarted by reality. At least three types of inequality can emerge from China’s health QR code regime for individuals: access inequality, algorithmic inequality, and derivative inequality. The last one refers to instances where some employers may discriminate against job applicants or employees based

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<sup>168</sup> *Id.* art. 24 (1).

on their health QR codes. As this last type of inequality is tangentially related to the operation of health QR code systems, I will focus on the first two types, describing them in sequence.

### a. Access Inequality: Age-based and Social Status-based Digital Divide

The first type of inequality affects some social groups who have difficulties with the digital aspects of QR code registration and use because of their demographic or socio-economic characteristics. This results in them being excluded or disadvantaged in accessing essential services and public spaces.<sup>169</sup> In January 2021, an elderly passenger was forced off the bus because she didn't have a health code! The video footage depicts a scenario wherein the bus driver requested an elderly passenger who indicated she was willing to perform registration procedures to get off the bus. In the midst of this interaction, another passenger impatiently shouted, "What are you registering for? Just get off!"<sup>170</sup> The age-related digital divide between older generations and younger citizens is not a new development. Prior to the pandemic, an instance involved a 94-year-old individual whose family had to physically transport him to the bank for his annual social security verification, which required facial recognition.<sup>171</sup>

The age-based digital divide, however, sharply widened during the pandemic.<sup>172</sup> Senior citizens often found navigating the digital world, including using the health QR code system, is both mentally and physically challenging.<sup>173</sup> A survey revealed that 70 percent of elderly citizens in China's major metropolitan areas are unable to use the health QR code system independently.<sup>174</sup> As a result, these individuals are often excluded from public venues, public transportation, medical treatment, and online transactions. Such exclusion leads to their marginalization and potential neglect of these populations from mainstream social

<sup>169</sup> Haiqing Yu, *Living in the Era of Codes: A Reflection on China's Health Code System*, 18 BIOSOCIETIES 1 (Dec. 2022).

<sup>170</sup> Qianjiang Shipin (钱江视频) [Qianjiang Video], "Ni dengji shenme, xiaquba!" laoren meiyou jiankangma bei ganxiache! "shuzi honggou" gai ruhe kuaguo ("你登记什么，下去吧！"老人没有健康码被赶下车！"数字鸿沟"该如何跨过) [ "No Registration Is Provided. Get off the Bus!" The Old Man Was Required to Get off the Bus without a Health QR Code! How to Cross the "Digital Divide"], TENGXUN (腾讯) [TENCENT] (Jan. 11, 2021), <https://new.qq.com/rain/a/20210111A0202A00>.

<sup>171</sup> Eva Xiao, *China's Digital Response to Covid-19 Hits a Glitch—Seniors Don't Understand It*, THE WALL STREET JOURNAL, Dec. 4, 2020; Jinqian Ma (马瑾倩), *Shuzi shidai "diaodui" de laonianren ruhe pochu shuzi quge?* (数字时代“掉队”的老年人 如何破除数字区隔?) [How Can Elderly People Who Have Fallen Behind in the Digital Age Break the Digital Divide?], RENMIN RIBAO (人民日报) [PEOPLE'S DAILY], Jan. 4, 2021.

<sup>172</sup> Yu Song et al., *Age-Related Digital Divide during the COVID-19 Pandemic in China*, 18 INT'L J. OF ENV'T RSCH. AND PUB. HEALTH 11285 (2021).

<sup>173</sup> Zhai Jin (翟锦), *Yinwei buhui shiyong zhineng shouji, tamen zai saoma de shidai paihuai* (因为不会使用智能手机，他们在扫码的时代徘徊) [Because They Don't Know How to Use Smartphones, They Are Wandering in the Era of Scanning Code], RENWU (人物) [CHARACTER] (Jun. 1, 2020), <https://mp.weixin.qq.com/s/qX77AhqwxSA6cAVbET0FVQ>.

<sup>174</sup> 70% yixian chengshi laoren wufa duli caozuo jiankangma shuzi honggou ruhe mihe (70%一线城市老人无法独立操作健康码 数字鸿沟如何弥合) [70% of Elderly People in First Tier Cities Are Unable to Independently Operate Health Codes. How to Bridge the Digital Divide], XINLANG (新浪) [SINA] (Mar. 9, 2021), <https://finance.sina.com.cn/chanjing/cyxw/2021-03-09/doc-ikkntiak6488848.shtml>.



interactions.<sup>175</sup> As of June 2020, China had a massive 940 million internet users, yet more than 157 million seniors still haven't embraced the digital world, who are often called "digital refugees" from the digital age.<sup>176</sup>

China's peasant and migrant workers are also among the vulnerable social groups displaced by the digital age.<sup>177</sup> Peasants and migrant workers already faced stigmatization and marginalization before the COVID-19 pandemic, as the process of urbanization, globalization, and digital transformation left them unequipped for the digital age.<sup>178</sup> These workers share a similar plight to senior citizens, as financial and educational barriers limit access to smart devices, thus creating a similar void of digital literacy.<sup>179</sup> Furthermore, the urban-rural digital divide is embedded in a duality of government-centered and market-driven structures<sup>180</sup> and has been shaped by institutional and technological forces.<sup>181</sup> The pandemic further exacerbated such divisions.<sup>182</sup> Hundreds of migrant workers were stranded and left homeless on the streets in metropolitan cities such as Guangzhou<sup>183</sup> and Shanghai<sup>184</sup> under lockdowns. The lives of migrant and peasant workers under the governance of the biometric surveillance regime of health QR codes face ever deeper exclusion and inequalities through underlying algorithmic bias.<sup>185</sup>

## b. Algorithmic Inequality

<sup>175</sup> Tiantian Wang & Fei Jia, *The Impact of Health QR Code System on Older People in China During the Covid-19 Outbreak*, 50 AGE AND AGEING 55 (2021).

<sup>176</sup> Ma, *supra* note 168.

<sup>177</sup> Xu Yunfeng (许云峰), *Rang laonianren, nongmingong zai yidong hulian shidai tongyang you zunyan* (让老年人、农民工在移动互联时代同样有尊严) [*Let the Elderly and Migrant Workers Have the Same Dignity in the Era of Mobile Internet*], DIYI CAIJING (第一财经) [YICAI] (Nov. 25, 2020), <https://www.yicai.com/news/100852157.html>.

<sup>178</sup> Xiaoming Li, *Stigmatization Experienced by Rural-to-Urban Migrant Workers in China: Findings from a Qualitative Study*, 9 WORLD HEALTH & POPULATION 29 (2007).

<sup>179</sup> Yuhua Guo & Peng Chen, *Digital Divide and Social Cleavage: Case Studies of ICT Usage Among Peasants in Contemporary China*, 207 CHINA Q. 580 (2011).

<sup>180</sup> SUN LIPING (孙立平) et al., *ZHUANXING YU DUANLIE: GAIGE YILAI ZHONGGUO SHEHUI JIEGOU DE BIANQIAN* (转型与断裂: 改革以来中国社会结构的变迁) [TRANSITION AND CLEAVAGE: CHANGES IN CHINESE SOCIAL STRUCTURE SINCE THE REFORM] 318-22 (2004).

<sup>181</sup> Gao Xiaowei (高小卫), *Zhongguo chengxiang shuzi honggou wenti yanjiu* (中国城乡数字鸿沟问题研究) [*The Research of Chinese Urban–Rural Digital Divide*] (June 1, 2007) (M.A. Dissertation, Nanjing Agricultural University), at 8–26.

<sup>182</sup> Cui Jingjing (崔晶晶), *Bangzhu nongmingong tingguo nanguan* (帮助农民工挺过难关) [*Helping Migrant Workers Overcome Difficulties*], JINGJI RIBAO (经济日报) [ECON. DAILY], (Mar. 24, 2020), at 4.

<sup>183</sup> Xinlu Liang, *Chinese Migrant Workers Stranded in Guangzhou's Covid-19 Homeless Crisis*, S. CHINA MORNING POST (Nov. 24, 2022), <https://www.scmp.com/news/china/article/3200743/chinese-migrant-workers-stranded-guangzhou-covid-19-homeless-crisis>.

<sup>184</sup> Xin Kelin (辛克林) et al., *Yiqingxia beifangzhu de laogong: dang shanghai chengwei tamen de wuyi zhidi* (疫情下被放逐的劳工：当上海成为他们的无依之地) [*Laborers Exiled under the Epidemic: When Shanghai Becomes Their Nomadland*], DUANCHUANMEI (端传媒) [THE INITIUM] (May 25, 2022), <https://theinitium.com/article/20220525-mainland-covid-shanghai-lockdown-castout-workers/>.

<sup>185</sup> Liu Xu (刘旭), *Zhonglaonian nongmingong ruhe baituo shuzi honggou jiongjing?* (中老年农民工如何摆脱数字鸿沟窘境?) [*How Can Middle-Aged and Elderly Migrant Workers Break Free from the Digital Divide?*], GONGREN RIBAO (工人日报) [WORKERS' DAILY], (Dec. 18, 2020), at 5.

In addition to the digital literacy gap, a second type of inequality relates to how the health QR code algorithms produce outcomes that are linked to legally protected demographic attributes. Such attributes include ethnicity, and employment-affecting socioeconomic characteristics such as job status and education levels. Biased outcomes arise when the data used to train algorithms mirrors imbalanced social realities. The health QR code is a digital program that assigns a color code (green, yellow, or red) to each individual based on various personal, health, location and activity data.<sup>186</sup> An official from Hangzhou disclosed that individuals are assigned red or amber codes based on three criteria: time, location, and interpersonal interactions, aiming to identify those at higher risk of exposure to confirmed patients and virus carriers.<sup>187</sup> However, proxy variables linked to these three dimensions, which on their face may seem neutral and nondiscriminatory, might potentially associate with protected socioeconomic characteristics. The calculation of risk scores based on these mediating factors, therefore, would lead to de facto discrimination against individuals and groups holding a certain socioeconomic status.

For instance, migrant workers and rural populations may be considered high risk to public health. Such algorithms may include factors such as household status, postcodes, or residential addresses to conclude their occupation or social status (e.g. people living on the outskirts of Chinese cities are vegetable farmers or hawkers). As a consequence of these factors, they are more likely to receive unfavorable codes. These factors are likely to link individuals, such as migrant workers, to higher infection rates. While the socioeconomic status of an individual might not *per se* lead the algorithm to indicate high public health risks, social conditions are obliquely tied to red or amber codes through such proxy factors.

Furthermore, socioeconomic inequities may also limit the ability of urban residents in rundown “villages in cities” to adhere to social distancing measures. Migrant workers often occupy these conditions, and as a result receive lower health codes. However, the association of these conditions to occupation creates the inherent bias that all members within an occupation should be labeled as higher health risks to the total population. It is also possible that certain job statuses - such as delivery drivers, cleaners, or quarantine workers - expose these individuals to precarious working conditions and more contact with potential virus carriers. In these instances where China’s health QR code systems fail to ensure equitable outcomes, such outcomes are distinguishable from the criticisms about technical errors where the algorithms fail to achieve classification parity or anti-classification.<sup>188</sup>

These examples show that the health QR code system may not directly discriminate against people based on their demographic or socioeconomic attributes, but it may indirectly affect them through other factors that are related to their social and economic status. When technology intersects with existing societal structures, it may amplify inequalities that are embedded in such social conditions prior to the advent of such technologies. The health QR code system relies on algorithmic decision-making, driven by artificial intelligence (AI), to assess risk. However, AI models trained on biased data or based on protected demographic (such as age and disability) and socioeconomic factors (such occupation) can perpetuate

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<sup>186</sup> For details, see Figure One.

<sup>187</sup> Hangzhou Ribao (杭州日报) [Hangzhou Daily], Zhang Zhongcan jieshou yangshi <xinwen 1+1> lianxian caifang (张仲灿接受央视《新闻1+1》连线采访) [Zhang Zhongcan Accepts CCTV's "News 1+1" Online Interview], HANGZHOU SHI RENMIN ZHENGFU (杭州市人民政府) [PEOPLES' GOVERNMENT OF HANGZHOU CITY] (Feb. 14, 2020), [https://www.hangzhou.gov.cn/art/2020/2/14/art\\_812259\\_41915465.html](https://www.hangzhou.gov.cn/art/2020/2/14/art_812259_41915465.html).

<sup>188</sup> For the concept of “algorithmic fairness”, see, e.g., Sahil Verma & Julia Rubin, *Fairness Definitions Explained*, (2018) PROCEEDINGS OF THE INTERNATIONAL WORKSHOP ON SOFTWARE FAIRNESS 1; Sam Corbett-Davies & Sharad Goel, *The Measure and Mismeasure of Fairness: A Critical Review of Fair Machine Learning*, 1808 ARXIV 1, 5-12 (2018).

existing biases, further exacerbating discrimination. This results in further discriminatory divide between socioeconomic classes, as lower classes are inherently labeled as “unhealthy” compared to higher classes.

### III. A BOLD SOCIAL EXPERIMENT AND ITS UNDERLYING LOGIC

The implementation of the health QR code system in China during the COVID-19 pandemic represent a trailblazing experiment aimed at regulating individual freedoms and behaviors in the context of epidemiological prevention.<sup>189</sup> The expansion and normalization of this regime to exert influence over individual conduct in the aftermath of the pandemic constitute an even more audacious undertaking. As the health QR code system transcends its initial purpose and becomes deeply embedded in various societal domains, it underscores a broader ambition of behavioral governance. This experiment marks a pivotal shift towards utilizing data-driven technologies to mold social norms and steer individual behavior. This is uncharted territory in human history, as it dismantles traditional norms of autonomy and privacy and redefines the contours of citizenship in a technologically mediated society. Such a paradigm shift in the governance of individuals has far-reaching ramifications for the future of digital governance, state-society relations, the rule of law, and human rights.

As with other AI-powered algorithmic tools,<sup>190</sup> the expansion and entrenchment of China’s health QR code regime calls for a close examination of the broader socio-political and economic architectures that inform, shape, and sustain its continued uses. The tensions and inadequacies within the legal-regulatory framework highlighted above reflect such underlying rationales. The legal deficiency is a mere symptom. Indeed, China’s expansion of surveillance cannot be solely attributed to a dearth of robust laws and regulations, but rather by the prevailing political and economic imperatives underpinning authoritarian control. The absence of law is not the main *reason* for China’s expansion of surveillance; rather, it is the *result* of a political system that grants unlimited power to the state over its citizens. Conversely, the presence of law is not a sufficient guarantee for protecting privacy and liberty; rather, it is a necessary condition for enabling public participation and oversight in shaping technological policies and political practices.

Health QR codes are a manifestation of this logic, as they enable the state to monitor, track and restrict the movements and activities of its citizens by seamlessly integrating digital surveillance into daily life. I will highlight two of the underlying justifications in the next section: 1) the profound power imbalance between the state and its tech giants and individuals, and 2) an ideological commitment to collectivist security imperatives at the cost of individual rights. The former political-economic rationale *enables* the normalization of health QR codes and the latter *legitimizes* its extended operation.

#### A. A STATE-TECH PARTNERSHIP: THE NEW POLITICS OF SURVEILLANCE

The health QR codes regime is a product of two powerful entities: the government and giant tech companies. While China’s central government provides general guidance and supervision to tech partners, it does not directly intervene in the system’s design or

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<sup>189</sup> Mozur, *supra* note 13.

<sup>190</sup> Christine Satchell & Paul Dourish, *Beyond the User: Use and Non-use in HCI*, in 21ST ANNUAL CONFERENCE OF THE AUSTRALIAN COMPUTER-HUMAN INTERACTION SPECIAL INTEREST GROUP (CHISIG) OF THE HUMAN FACTORS AND ERGONOMICS SOCIETY OF AUSTRALIA (HFESA) 9 (2009).

implementation.<sup>191</sup> The National Health Commission, the main health authority, does not have direct access or control over the data collected and processed by the system.<sup>192</sup> Primarily, it relies on local governments and tech companies to report and maintain the operation of the health QR code systems.<sup>193</sup>

WeChat and Alipay are two big-tech conglomerates that have the national leading capacity and rich resources to develop such a technological tool. In addition, these giant digital platforms with extensive user bases have significant power over user privacy due to their central role in collecting and managing massive repositories of user data.<sup>194</sup> Since these companies collect and maintain large user datasets consisting of biometric, location, and behavioral data, they are often perceived as custodians of user privacy.<sup>195</sup> Their custodial authority over these sensitive datasets confer an ethical imperative upon them to institute robust privacy safeguards, thereby engendering user trust and regulatory adherence.

Before the COVID-19 pandemic, both companies took proactive measures to preserve user privacy and protect user data.<sup>196</sup> However, during and after the pandemic, they pivoted to enabling state-sanctioned surveillance by establishing the health QR codes throughout the nation. Their transformation from privacy gatekeepers into conduits of state-mandated biometric surveillance marks a paradigm shift in corporate ethics and social responsibility. This evolution underscores a pronounced juncture in China's shifting ethical landscape and tech-politics.

In a comparative perspective, these practices would certainly provoke legal challenges in the United States. The US tech sector resisted cooperating with contact tracing efforts due to concerns over government overreach, discrimination, and impacts on proprietary data. But China's lax regulatory approach enabled unrestrained integration of health codes into a ubiquitous system of social monitoring and control. For instance, US contact tracing apps by Apple and Google permitted only voluntary download preserving user anonymity. Such a feature faced abandonment if perceived as intrusive invasions of privacy. But China merged data from corporations like Tencent and Alibaba with official records absent public knowledge or consent.

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<sup>191</sup> Yuan, *supra* note 128.

<sup>192</sup> *Id.*

<sup>193</sup> *Id.*

<sup>194</sup> China.com.cn, *supra* note 125.

<sup>195</sup> ZOL.com.cn, *supra* note 126; Lujiu Shangye Pinglun (陆玖商业评论) [Lujiu Commercial Review], *Zhifubao, haisuan guomin APP ma? (支付宝, 还算国民级APP吗?)* [Alipay, Is It Still a National APP?], TENGXUN (腾讯) [TENCENT] (Mar. 20, 2023), <https://new.qq.com/rain/a/20230320A014Z300>.

<sup>196</sup> For instance, Tencent published its "Tencent Privacy Protection White Paper" in 2018, explaining its efforts to establish a full lifecycle data management system and multidimensional privacy protection mechanism. See Xiuli Li (李秀莉), *Tengxun fabu yinsi baohu baipishu shouci duiwai pilou tengxun shuju anquan jishu nengli* (腾讯发布隐私保护白皮书 首次对外披露腾讯数据安全技术能力) [*Tencent Releases Privacy Protection White Paper, First Disclosure of Tencent's Data Security Technology Capabilities to the Public*], EEO (经济观察网) [EEO] (Jan. 2, 2019), <https://m.eeo.com.cn/2019/0102/344494.shtml>; Alipay and Tencent were both among the first business entities that received national "Personal Information Security Management System Certification" given that their personal information management security systems met "national standards and privacy policy requirements." See *Geren xinxi ji yinsi baohu tixi guojia renzheng laile, zhifubao tengxunyun he baiduyun deng huoshoupi renzheng* (个人信息及隐私保护体系国家认证来了, 支付宝、腾讯云和百度云等获首批认证) [*National Certification of Personal Information and Privacy Protection System Has Come, and Alipay, Tencent Cloud and Baidu Cloud Have Won the First Batch of Certification*], JIEMIAN XINWEN (界面新闻) [JIEMIAN.COM] (Feb. 3, 2019), <https://m.jiemian.com/article/2847514.html>.

The relative success of China's COVID crisis management<sup>197</sup> was proof of the efficacy of this model of collaboration between China's tech giants and governmental bureaucracy. Take the early deployment of the health QR codes as an example: companies completed its infrastructure-building, programming, and implementation at lightning speed - within a few days - in early 2020.<sup>198</sup> It's a win-win for both the state and the tech sector. While government officials gained public support and political legitimacy, Internet giants like Alibaba and Tencent also benefited financially. These companies view the health QR codes schemes as opportunities to strategically position themselves to win the battle over China's healthcare market and tap into previously inaccessible offline community data, a digital "long march" that took them years to accomplish.<sup>199</sup> The government-platform facilitated this surveillance into offline data through its tight grip and deep penetration into the Chinese Civil Society.

The Health Code partnership between the state and its corporate powers marked an unprecedented change in policy. The Effort was lauded as the "first-ever experiment in the collection and control of personal information at a nationwide scale, characterized by high efficiency and precision."<sup>200</sup> Some extol the codes as groundbreaking epidemic controls manifesting China's vaunted "digital governance capacity"<sup>201</sup>—lauding the codes as "health partners of the ordinary folks"<sup>202</sup> and a "digital defensive great wall for China"<sup>203</sup>. Less sanguine views decry their intrusiveness as "digital shackles" severely curtailing rights and liberties.<sup>204</sup> There are still others who question the health QR codes' legality and legitimacy outright.<sup>205</sup>

Irrespective of these different viewpoints, the health QR codes' extensive deployment has unquestionably engendered a transformative shift in how China amasses, analyzes, and retains sensitive personal data. These ubiquitous, penetrating surveillance regimes have fundamentally altered relationships between data subjects (individuals and civil society) and data controllers/processors (both in the government and in the wider industry). By enabling unbridled biometric data sharing via digital media, health codes have redefined state-society-technology relationships, cementing unprecedented dominance of the state-technology complex over both individuals and society. Tech giants, boasting enormous resources and sophisticated AI capabilities, wield substantial influence over the creation, implementation, and management of state-backed surveillance systems. These companies have formed a formidable partnership with governments, resulting in a powerful state-tech leviathan where individuals often find themselves in a precarious situation. The pervasive nature of this

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<sup>197</sup> Alex Jingwei He et al., *Crisis Governance, Chinese Style: Distinctive Features of China's Response to the Covid-19 Pandemic*, 3 POLICY DESIGN AND PRACTICE 242 (2020).

<sup>198</sup> Shi, *supra* note 36.

<sup>199</sup> Yun, *supra* note 33.

<sup>200</sup> Jiaying Yao (姚佳莹), *Yiqinghou, jiankangma kefou shengji "quannengma"? (疫情后, 健康码可否升级“全能码”?)* [After the Epidemic, Can the Health QR Code Be Upgraded to A "Universal Code"?], CAIJING (财经) [CAIJING], Apr. 16, 2021.

<sup>201</sup> Xinbao Zhang (张新宝), *"Liangma" tuichu hou xiangguan geren xinxi de chuzhi ("两码"退出后相关个人信息处置)* [Disposal of Relevant Personal Information After Exit from "Two Codes"], SHANGHAI FAZHIBAO (上海法治报) [SHANGHAI LAW JOURNAL], Dec. 28, 2022.

<sup>202</sup> BBC, *supra* note 50.

<sup>203</sup> Yuan, *supra* note 124.

<sup>204</sup> Fan, *supra* note 145; Nectar Gan, *China's Bank Run Victims Planned to Protest. Then Their Covid Health Codes Turned Red*, CNN (Jun. 15, 2022), <https://edition.cnn.com/2022/06/15/china/china-zhengzhou-bank-fraud-health-code-protest-intl-hnk/index.html>.

<sup>205</sup> Yao, *supra* note 194.

surveillance system often leaves individuals vulnerable, with their every action potentially being monitored and analyzed.

As a result, individuals may face challenges in asserting their rights and seeking redress when their sensitive data is collected, analyzed, and shared without their full understanding or control. Data controllers and processors, on the other hand, may exploit this disconnect to maintain greater control and authority over personal data. Righting the power imbalance entails addressing specific issues in the realm of personal data processing and control such as the transparency, privacy and autonomy of data processing, the scope and proportionality of data collection, and the establishment of robust legal safeguards to ensure the fair and equitable treatment of individuals. The presence of ethical concerns raises profound questions regarding the legitimacy, efficacy, and ethical integrity of health QR code regimes.

## B. INDIVIDUAL RIGHTS VS. COLLECTIVE SECURITY: THE AUTHORITARIAN IDEOLOGY

In addition to its underlying political and economic structures, the tech-state partnerships justified the health QR code system by reference to the exigencies of addressing public health crises. To do so, the State emphasized the prioritization of collective well-being over individual freedoms that resonates with the concept of “Asian values.”<sup>206</sup> This dynamic is particularly pronounced in the case of China, where the government’s swift implementation of stringent disease prevention and control measures are believed to align with the prevailing communitarian values in sacrificing certain individual freedoms for the greater good and the cultural emphasis on conformity and respect for authority.<sup>207</sup>

In the context of the fight against COVID-19, these arguments have at least two main components. The first is its emphasis on the paramount importance of national and collective interests. For instance, along with the lines of the “Asian values” thesis, some argued that a superior model of pandemic governance aspires to increase or improve conformation to the concepts of “collectivity, national interests, family, harmony and symbiosis, which are part of Asian values, [and] have played a vital role in Asian countries’ fight against the virus.”<sup>208</sup> Second, these arguments stress the singularity of Asian cultures and compare it to Western societies. China’s Ministry of Foreign Affairs argued that China prioritized safeguarding lives and health of its people, winning notably low COVID-19 infection and mortality rates globally. In contrast, despite advanced medical capabilities, the West faces high infection and mortality rates, the consequence of disregarding its citizens’ well-being with irresponsible pandemic control strategies.<sup>209</sup>

<sup>206</sup> Mark R. Thompson, *Whatever Happened to “Asian Values”?*, 12 JOURNAL OF DEMOCRACY 154 (2001); MICHAEL D. BARR, CULTURAL POLITICS AND ASIAN VALUES: THE TEPID WAR (2004).

<sup>207</sup> *Zhongguo yangshi: wu hushi yin dongtai qingling celue er zuochu xisheng de “shaoshupai”* (中国央视：勿忽视因动态清零策略而作出牺牲的“少数派”) [CCTV: Don't Neglect the “Minority” Who Make Sacrifices

*Due to Dynamic Zeroing Strategies*], LIANHE ZAobao (联合早报) [LIANHE ZAobao] (Jan. 15, 2022), <https://www.kzaobao.com/shiju/20220115/108681.html>; Mark Beeson, *A Plague on Both Your Houses: European and Asian Responses to Coronavirus*, 18 ASIA EUROPE JOURNAL 245 (2020).

<sup>208</sup> Shilei Zhai, *Pandemic Highlights the Importance of Asian Values*, CHINA DAILY, May 14, 2020.

<sup>209</sup> *Meiguo duihua renzhi zhong de miuwu he shishi zhenxiang* (美国对华认知中的谬误和事实真相) [*The Fallacies and Facts in the United States’ Cognition of China*], ZHONGHUA RENMIN GONGHEGUO WAIJIAO (中华人民共和国外交部) [MINISTRY OF FOREIGN AFFAIRS OF THE PEOPLE’S REPUBLIC OF CHINA] (Jun. 19, 2022), [https://www.fmprc.gov.cn/wjbxw\\_new/202206/t20220619\\_10706065.shtml](https://www.fmprc.gov.cn/wjbxw_new/202206/t20220619_10706065.shtml).

Behind these two dichotomies – individual *vs* collectivity and Asian *vs* Western – is their utility in legitimizing the technocratic rationality exemplified through the regime of health QR codes. As Amartya Sen succinctly summarized, “the so-called Asian values that are invoked to justify authoritarianism are not especially Asian in any significant sense. Nor is it easy to see how they could be made into an Asian cause against the West.”<sup>210</sup> I would like to refute the claim that “Asian Values are destiny, following the footsteps of many renowned theorists.”<sup>211</sup> Drastic pandemic strategies that many Asian countries adopted are not determined by their cultural heritage.

The antagonism between individuals and society and between Asian and Western cultures is by and large a constructed one. Protecting individual privacy and dignity without resorting to large-scale biometric surveillance does not have to harm society. By ensuring that health QR code systems are accountable and that individuals who suffer injustice and “wrongful conviction” by health QR code algorithms have effective remedies, the trust in epidemiological surveillance can be increased. Carefully evaluating the proportionality and necessity of surveillance measures to stay in line with constitutional safeguards for individual liberty and dignity, similarly, serves to enhance, rather than diminish collective welfare.

Furthermore, personal freedoms and rights are not “traditional” values that only belong to Western cultures and are absent in Chinese culture. In fact, China has its own noble traditions of valuing individual dignity, equality, and empowerment, even if different in expression from Western ideals.<sup>212</sup> In contemporary China, the integration of human rights into the Chinese constitution,<sup>213</sup> in its own rights, is one of the landmark developments in the history of the Chinese legal system. The Constitution recognizes a bundle of human rights, not only the right to life and right to development which were prioritized during the pandemic,<sup>214</sup> but also liberty and dignity of every Chinese citizen,<sup>215</sup> the most fundamental values underpinning citizenship and humanity.

## CONCLUSION

The coronavirus pandemic has no doubt accelerated the arrival of this machine-dominated era where human governance succumbs to algorithmic rules. “I had believed that the days when we, as humans, would be governed by machines and algorithms was supposed to be at least half a century away. However, the sudden outbreak of the COVID-19 pandemic has accelerated its arrival... with a health red code issued by big data and machines,” wrote by

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<sup>210</sup> Amartya Sen, *Human Rights and Asian Value*, 30 (1999).

<sup>211</sup> WM. THEODORE DE BARY, ASIAN VALUES AND HUMAN RIGHTS: A CONFUCIAN COMMUNITARIAN PERSPECTIVE (2000); Richard Robison, *The Politics of ‘Asian Values’*, 9 THE PACIFIC REVIEW 309 (1996); Russell J. Dalton & Nhu-Ngoc T. Ong, *Authority Orientations and Democratic Attitudes: A Test of the ‘Asian Values’ Hypothesis*, 6 JAPANESE JOURNAL OF POLITICAL SCIENCE 211 (2005); Christian Welzel, *The Asian Values Thesis Revisited: Evidence from the World Values Surveys*, 12 JAPANESE JOURNAL OF POLITICAL SCIENCE 1 (2011).

<sup>212</sup> Throughout Chinese history, great philosophers like Confucius put forth bold visions for uplifting the common people and securing their welfare against repression. Concepts of justice, morality, and civic participation have long roots in China’s ethical foundations. See, e.g., WEI-MING TU, *HUMANITY AND SELF-CULTIVATION: ESSAYS IN CONFUCIAN THOUGHT* (1979); Sungmoon Kim, *Confucianism, Moral Equality, and Human Rights: A Mencian Perspective*, 74 THE AMERICAN JOURNAL OF ECONOMICS AND SOCIOLOGY 149 (2015); R.P. Peerenboom, *Confucian Justice: Achieving a Humane Society*, 30 INTERNATIONAL PHILOSOPHICAL QUARTERLY 17 (1990).

<sup>213</sup> Constitution, *supra* note 86, art. 33.

<sup>214</sup> Ministry of Foreign Affairs, *supra* note 203.

<sup>215</sup> Constitution, *supra* note 86, arts. 37 & 38.

a blogger on China's popular knowledge-exchange forum Zhihu.<sup>216</sup> In an act of self-irony, the blogger described himself as “a red code holder under the tyranny of big data and machines” and expressed his helplessness and frustration, like many others, who had no option but to “wait for machines to grant me freedom.”<sup>217</sup>

We stand at a historical juncture when surveillance has never before exerted such a “lightweight” yet profoundly and pervasive impact over every aspect of human existence, spanning from the physical to the mental realms, as it does today. China's health QR codes is a pioneering tool which signals this ambitious fusion between the dictates of political authority and the power of algorithms. Contrary to the assumption that biometric surveillance enabled by big data and AI has vanished from the post-pandemic life is ample evidence that the coded control of health QR codes continues to offer a subtle art of sanction.

This article critically examines China's health QR code system against the fragmented and deficient legal-regulatory framework governing its operation and the ethical tenets that define the moral responsibilities of data processors. While the pandemic's exigencies spurred rapid adoption of these nascent systems without rigorous safeguards, their persistence after the pandemic has been enabled by a concerted collaboration between state and tech powers as well and legitimized by an ideological commitment to safeguard collective security.

As such, China's pandemic responses prioritize public health over individual liberties and privacy, and political as well commercial interests over personal rights, thereby resulting in a state-industry *dominance* model of pandemic governance, in contrast to the *rights-oriented* approach adopted by Western democracies. This explains why China's legal system plays such a limited role in reshaping the dynamics and balance between power, technology, and individual rights.

The COVID-19 pandemic underscores advanced technology's capacity to either empower or subordinate humanity - depending on whether its arc bends toward justice. The interplay between technology and ethical accountability prompts a fascinating inquiry: Is it the innovation of technology that diminishes our sense of responsibility, or is it an inherent desire to evade moral duty that spurs the adoption of emerging technologies? This present study suggests that the real problem, perhaps, is not whether surveillance technology diminishes our autonomy, privacy and rights. Rather, it is the desire, political and commercial, to be relieved of moral responsibility that drives the adoption and perpetuation of new technology.

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<sup>216</sup> Lüjiang Matt (律匠Matt), *Tucao hangzhou jianmangka, bei dashuju he jiqi zhipai de hongpai chiyouzhe* (吐槽杭州健康码, 被大数据和机器支配的红牌持有者) [Roast about Hangzhou Health QR Code, a Red Code Holder Dominated by Big Data and Machines], ZHIHU (知乎) [ZHIHU] (May 26, 2020),

[https://www.zhihu.com/tardis/zm/art/107085476?source\\_id=1003](https://www.zhihu.com/tardis/zm/art/107085476?source_id=1003).

<sup>217</sup> *Id.*



## APPENDIX

*Table One: Chinese Provincial Regions Classified Based on Health QR Code-Related Regulatory Efforts and Status of Implementation Status*

Provinces	Implementation Status	Regulatory Attitudes
Anhui	Active Practitioner	Self-Regulator
Beijing	Active Practitioner	Self-Regulator
Chongqing	Active Practitioner	Self-Regulator
Fujian	Active Practitioner	Ruleless Enforcer
Gansu	Active Practitioner	Self-Regulator
Guangdong	Abolitionist	Annulled
Guangxi	Active Practitioner	Self-Regulator
Guizhou	Active Practitioner	Formal Rule Follower
Hainan	Active Practitioner	Self-Regulator
Hebei	Active Practitioner	Ruleless Enforcer
Heilongjiang	Active Practitioner	Self-Regulator
Henan	Active Practitioner	Formal Rule Follower
Hubei	Active Practitioner	Ruleless Enforcer
Hunan	Active Practitioner	Self-Regulator
Inner Mongolia	Active Practitioner	Self-Regulator
Jiangsu	Active Practitioner	Self-Regulator
Jiangxi	Active Practitioner	Self-Regulator
Jilin	Active Practitioner	Self-Regulator
Liaoning	Active Practitioner	Ruleless Enforcer
Ningxia	Active Practitioner	Self-Regulator
Qinghai	Active Practitioner	Self-Regulator
Shaanxi	Active Practitioner	Self-Regulator
Shandong	Active Practitioner	Self-Regulator
Shanghai	Active Practitioner	Formal Rule Follower
Shanxi	Mere Retentionist	Self-Regulator
Sichuan	Active Practitioner	Self-Regulator
Tianjin	Active Practitioner	Self-Regulator
Tibet	Mere Retentionist	Ruleless Enforcer
Xinjiang	Active Practitioner	Self-Regulator
Yunnan	Active Practitioner	Self-Regulator
Zhejiang	Active Practitioner	Self-Regulator

*Table Two: Health QR Codes on Alipay and WeChat Mini Programs*

Province	Heath QR Code Regimes	Privacy Terms on Alipay	Privacy Terms on WeChat
Beijing	Jing Tong	No	Yes
Shanghai	Sui Shen Code	Yes	Yes
Tianjin	Tianjin Health QR Code	No	Yes
Hebei	Hebei Health QR Code	No	Yes
Shanxi	Shanxi Health QR Code	No	No
Inner Mongolia	Inner Mongolia Health QR Code	No	Yes
Liaoning	Liaoning Health QR Code	Yes	Yes
Jilin	Ji Xiang Code	No	Yes
Jiangsu	Su Kang Code	No	Yes
Zhejiang	Zhejiang Health QR Code	Yes	Yes
Anhui	An Kang Code	No	Yes
Fujian	Ba Min Health QR Code	No	Yes
Jiangxi	Gan Tong Code	No	Yes
Shandong	Shandong Electronic Health Pass	No	Yes
Henan	He'nan Health QR Code	No	No
Hubei	Hubei Health QR Code	No	Yes
Hunan	Hunan Provincial Resident Health Card	Yes	Yes
Guangdong	Yue Kang Code	No	Yes
Guangxi	Gui Kang Code	No	Yes
Hainan	Hainan Health QR Code	No	Yes
Chongqing	Yu Kang Code / Chongqing Health QR Code One Pass	No	Yes
Sichuan	Sichuan Tian Fu Health Pass	No	Yes
Guizhou	Guizhou Citizen Code	No	Yes
Yunnan	Yunnan Health QR Code	No	Yes
Tibet	Zang Yi Tong	No	Yes
Shaanxi	Shaanxi Onepass	No	Yes
Gansu	Gansu Health QR Code	Yes	No
Qinghai	Credit Health QR Code	No	Yes
Heilongjiang	Heilongjiang Health QR Code	No	No
Ningxia	Ningxia Health QR Code	No	No
Xinjiang	Xinjiang Health QR Code	No	Yes

*Figure One: The Data Structure of Personal Health Information Code*

Data Sources of Personal Health Information Code			
Basic Personal Data	Personal Health Information	Travel History	Certified Health Data
Name Gender Nationality Type of ID ID Number Household Registration Detailed Address Telephone Number Underlying Health Conditions	Body Temperature Current Symptoms Residence and Stay in High-risk Areas Exposure of High- risk Personnel Time of Health Information Declaration	Province City District Verified Travel History	Health Risk Level Time of Health Risk Level Assessment Reason for Health Risk Level Assessment Medical Testing Results Medical Testing Institutions Medical Testing Time Sources of Data

*Figure Two: The Operational Status of Health QR Codes*



*Figure Three: Attitudes Towards Formal Rules Concerning Health QR Codes*

