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THE HONG KONG
UNIVERSITY OF SCIENCE
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PPOL DIVISION OF
PUBLIC POLICY
公共政策學部

コロナ対策におけるデータ活用の可能性と課題： 公衆衛生・プライバシー・イノベーション

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緊急WEBシンポジウム

「新型コロナ感染症対策におけるIT活用とプライバシー」

2020年7月30日

共同研究・協力

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各国におけるコロナ対策

- Singapore - High Policy capacity but societal blind spots regarding foreign workers negatively affected the national-level COVID-19 response.
- South Korea - Organizational learning from recent past experiences with similar events such as SARS-CoV-1, H1N1 and MERS led to effective anti-COVID-19 measures.
- Hong Kong - Social values, community resilience and experience with similar diseases and other crises led to an effective response.
- Israel - The COVID-19 response was colored by local politics and a history of deliberate over-reactions to threats for electoral and other purposes.
- Italy - Existing poor policy design and institutional arrangements favoring discord along with no recent relevant experience with similar diseases
- Sweden - Social values and governments favoring nudging combined with health decentralization undermined co-ordinated national action and led to a more 'laissez-faire' approach to pandemic management.
- Canada - Well-functioning federalism and lesson-drawing from SARS-CoV-1 and H1N1 but with a serious blind spot towards vulnerable senior populations in long-term care facilities led to a less than satisfactory response.
- USA - The vagaries of federalism led to disjointed responses across the nation and ineffective responses to the pandemic.

中国におけるコロナ対策

- Not well prepared to deal with the virus when it first appeared.
- Had enough recent experience with similar diseases such as SARS-CoV-1 and H1N1 to realize the danger it faced.
- As the first country stricken by the COVID-19 pandemic, its policy response featured chaos at the start and effectiveness in the end.
- The pandemic was an exogenous shock which overcame the normal policy logic followed by Chinese policy actors, resulting in some initial policy inconsistency.
- When centralized control was re-asserted, the policy mix adopted in the country comprised of traditional public health measures such as strict community lockdowns, cross-jurisdictional mobilization of resources and the firing of poorly performing officials contributed to the country's eventual return to effectiveness.

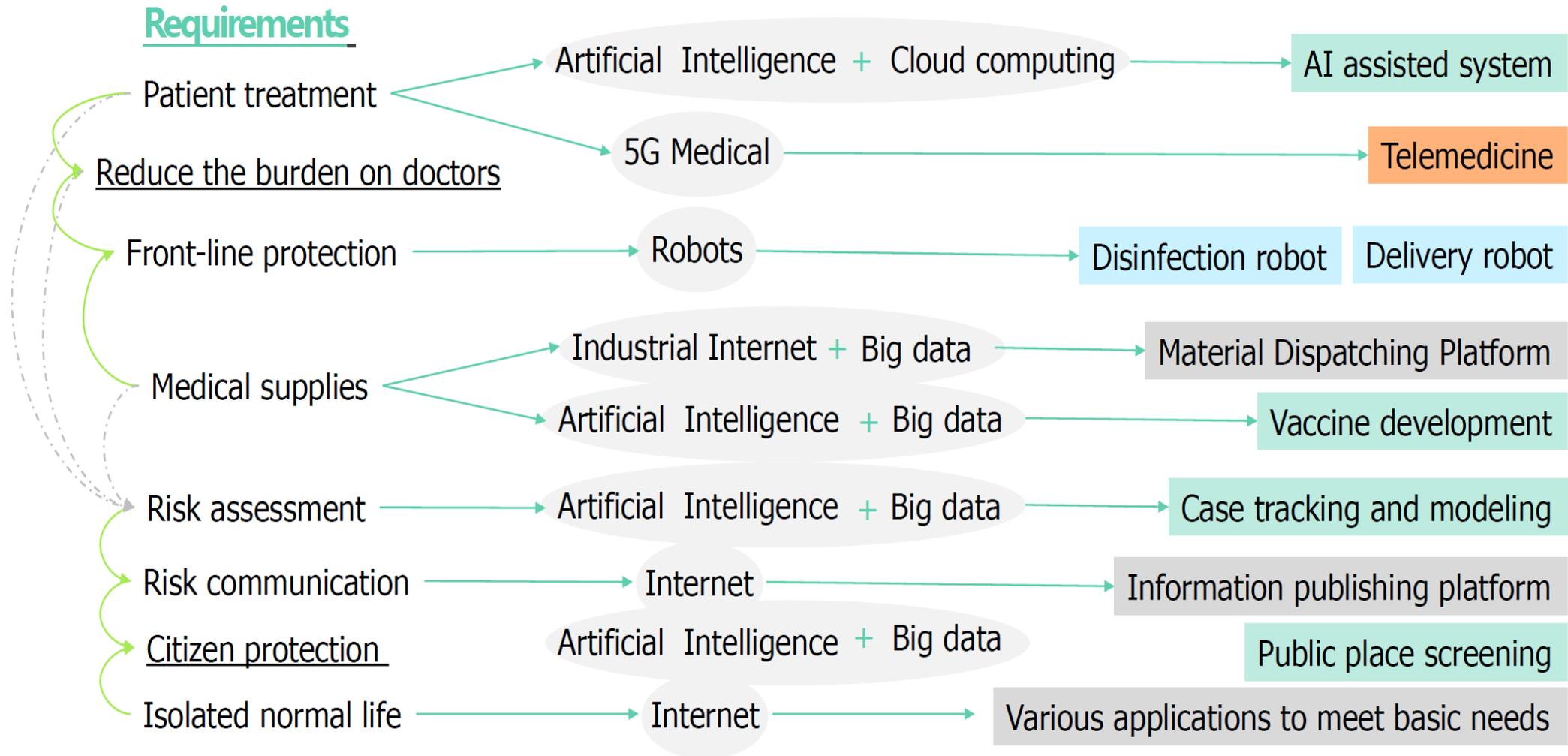
コロナ対策におけるデータの活用

- Extent of infection among the population
 - Indispensable for understanding the current situation accurately and forming reliable predictions about the spread of the disease in the future.
- Tracing of the movement of people
 - Use a vast amount of data on the mobile phones they possess and the sensors installed across the city
 - Make it possible to identify and isolate those who are infected or likely to get infected more precisely, avoiding full-scale lockdown.
- Supplies of personal protective materials such as masks and medical devices such as ventilators
 - Provide valuable information for developing and executing plans to match the distribution of critical resources with the locations where there are urgent demands.
- Combining with other types of data, including geographical and environmental data
 - can contribute to improving decision making by policy makers in tackling the coronavirus disease.

COVID-19感染者のトレーシング

- Taiwan
 - Identification of the location of people in quarantine by GPS
- South Korea
 - Tracking and tracing of patients and contacted people through the locational data of mobile phones, surveillance cameras, and credit card uses
- Hong Kong
 - Monitoring of the locational data of people in home quarantine with wristbands
- Singapore
 - *TraceTogether* as a mobile app used for individuals' contact recording via Bluetooth in the phone, *SafeEntry* as a check-in system to record one's visits to public places such as supermarkets and restaurants, and a wearable device for contact tracing also distributed to the country's vulnerable seniors
- Israel
 - HaMagen app "The Shield" taking location data, identify possible contacts
- Effective in tracking and tracing patients and potential contacts in Asia
- United States, United Kingdom, European Union
 - Considering contact tracing with digital tools
- How to make a balance among facilitating innovation, public health, and privacy in utilizing data for tackling COVID-19

中国におけるコロナ対策でのデータ活用の分野



Source: CAICT

中国における健康コードの開発

- As the virus spread rapidly across China in early February, the ability to distinguish the suspected cases and people who may have been in close contact with the confirmed cases was critical for controlling the virus infection.
- Health code apps for contact tracing were developed in several cities, such as Hangzhou and Shenzhen, in early February 2020.
- Subsequently adopted nationwide in less than a month.
- Using a smart phone, users simply fill in the required information via the app.
- The mastermind back-stage algorithms quickly decide whether the user could “free-pass” or should be “quarantined” by assigning codes of different colors.

健康コード(杭州)

- Alibaba's payment system as a platform
 - e-registration
 - Travel history
 - Real-time location
 - Online inquiry
- Evaluating individual risk of infection
- Alipay and WeChat
- Limiting personal movement depending on risk
 - Green code: Can move around unrestricted
 - Yellow code: Seven-day quarantine
 - Red code: Two-week quarantine
- Person's location and an identifying code number sent to the server

杭州健康码



【绿码】

凭码通行



【黄码】

实施7天内隔离, 连续
(不超过) 7天健康打卡正常
转为绿码



【红码】

实施14天隔离, 连续14天
健康打卡正常转为绿码

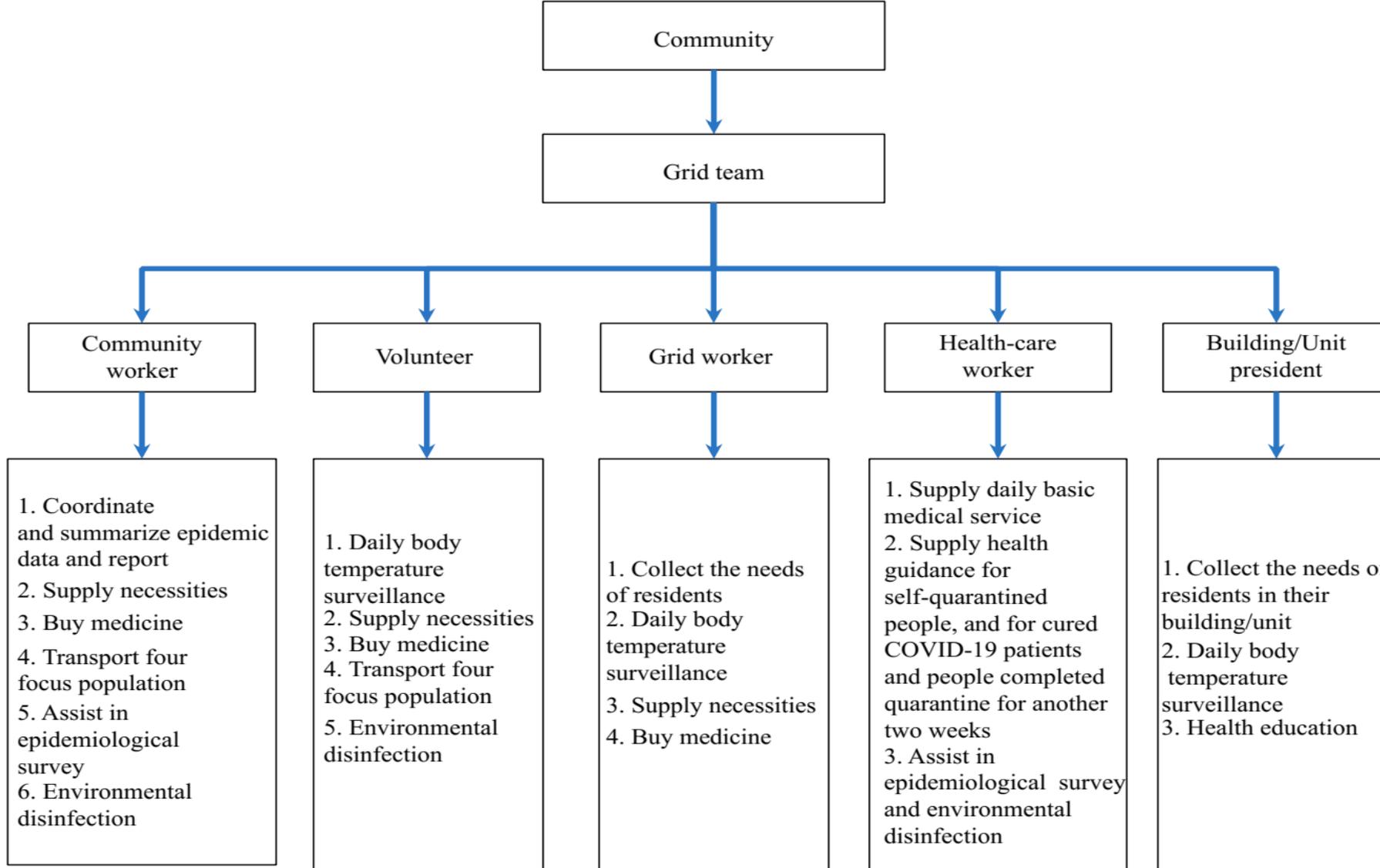
中国における健康コードの開発

- Much of the attention focused on trade-off between effectiveness and protection of privacy with the use of health code apps.
- Limited understanding of the circumstance in which health code apps originated and flourished.
- While often assumed that health code might be a product of top-down approach to smart cities, it was actually the exact opposite.
- First developed by Yuhang District of Hangzhou City, responding to the street-level officials' request of a technological tool to relieve their imploding burden of work and to improve the efficiency of managing the mobility both inter- and intra-district.
- Within days a prototype was developed under the name of “Yuhang Health Code”, as it was adopted by the District showing good results.
- Recommended to and adopted by Hangzhou City, quickly followed by Zhejiang Province, changing its name to “Hangzhou Health Code” and “Zhejiang Health Code”.

健康コードの効率性・正確性

- Efficiency
 - The code is embedded within the Alipay and WeChat apps.
 - Unlike SafeEntry, which opens up a webpage on the mobile device, the health code appears as a native app on the phone.
 - Makes it more convenient to use, because opening a mobile app is much faster than loading a webpage on the mobile device.
- Complete information both real-time and past
 - The health code acts as a de facto digital health ID, reflecting both one's travel history and real-time location.
 - Any risks posed by possible asymptomatic virus carriers can be managed, which is the government's ex-ante action towards eliminating any potential Covid-19 transmission.
- A high adoption rate, compared to TraceTogether
 - The health code now used by more than one billion Chinese among the 1.4 billion population and covers most cities and many rural areas
 - Main tool via which one gains entry to public venues.
 - Installed in Alipay and WeChat, the two biggest mobile apps used in China
 - Easy to learn and use. With one click, the colored health code can be showed and scanned automatically, working well with both Android and iOS systems.

グリッド管理システムの機能(武漢)



CDC recommended building an information sharing mechanism among the communities, community health service center, and local CDC so that information on newly diagnosed COVID-19 cases, suspected cases, patients with fever, and close contacts could be shared promptly and would help recognize high risk populations and decrease delays for hospitalization and quarantine.

コミュニティ出入登録システム

The screenshot shows a mobile application interface for a community entry/exit registration system. The app is titled "社区出入系统" (Community Entry/Exit System). The user is identified as "李四, 您好!" (Li Si, Hello!) and is logged in as an "管理员" (Administrator). The current community is "迎春小区" (Yingchun Residential Area) and the current time is "2020.2.12 23:49". A special notice states: "特别提醒 | 出入小区请注意身体防护, 戴好口罩!" (Special Reminder | When entering/exiting the residential area, please pay attention to body protection, wear a mask!). Below this, there is a section for "本日出入记录" (Today's Entry/Exit Record) with a link to "查看历史记录" (View Historical Record). The record is divided into three tabs: "进门记录" (Entry Record, 5 items), "出门记录" (Exit Record, 7 items), and "异常记录" (Abnormal Record, 4 items). The "出门记录" tab is selected, showing a table of exit records. At the bottom, there is a large blue button labeled "扫码出入登记" (Scan QR Code for Entry/Exit Registration).

小区名称	姓名	门牌号	出门时间	人数
迎春小区	小瓶30	1-2-305	23:40	1
迎春小区	小瓶子1	2-4-306	23:34	2
迎春小区	汤维	1-2-305	21:44	1
迎春小区	汤维	1-2-305	20:41	1
迎春小区	李宝	1-2-305	20:32	3

重要医療物資調達システム



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工业和信息化部党组：全力抓好医疗物资保障 扎实推进企业复工复产... 03 26

国务院联防联控机制医疗物资保障组印发《医用一次性防护服辐照灭... 02 23

疫情防控重点保障物资（医疗应急）清单 02 14

医療物資供給・需要プラットフォーム

数字健康资源供给对接平台

请输入资源, 机构或者应用场景名称

全部

医疗物资

软件应用

智能设备

解决方案

算法算力

其它

资源供应

资源需求

全部

5G智慧医疗

远程医疗

移动健康应用

医疗云计算

人工智能医疗

医疗信息安全

医用物资

医用设备

其它



智慧病房/护理管理信息系统/临床护理信息系统/智能血透...
2020-03-23 01:13

应用场景: 医院智能管理,其它

供应机构: 四川博世科技信息产业有限公司

产品描述: 1、智慧病房: 智能呼叫系统、床旁交互系统、IPTV系统、医疗物联网 2、护理管理信息系统: 人事系统、排班系统、护理质量检...

我有需求

查看详情



智慧哨兵
2020-03-23 01:01

应用场景: 5G疫情指挥监测,5G云端智能设备,医院智能管理
供应机构: 云与链(江苏)互联科技有限公司
产品描述: 3.智慧哨兵是一套将三维空间内的人体运动识别技术用于城市空间内人员活动的实时监控和行为合规管理的应用系统。产品集成多传感...

我有需求

查看详情

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【搜狐网】新冠肺炎肆虐全国, 视联动力“一张网”防控疫情
2020-2-28



【大风号】“5G+医疗”联通北上广鄂 四地专家远程会诊雷神山危重患者
2020-2-27



【千龙网】慢病患者可在京东健康购买处方药 享免费问诊、复诊续方、送药上门一站式服务
2020-2-26



【新浪网】四川电信5G诊疗平台完成远程会诊超300次
2020-2-25

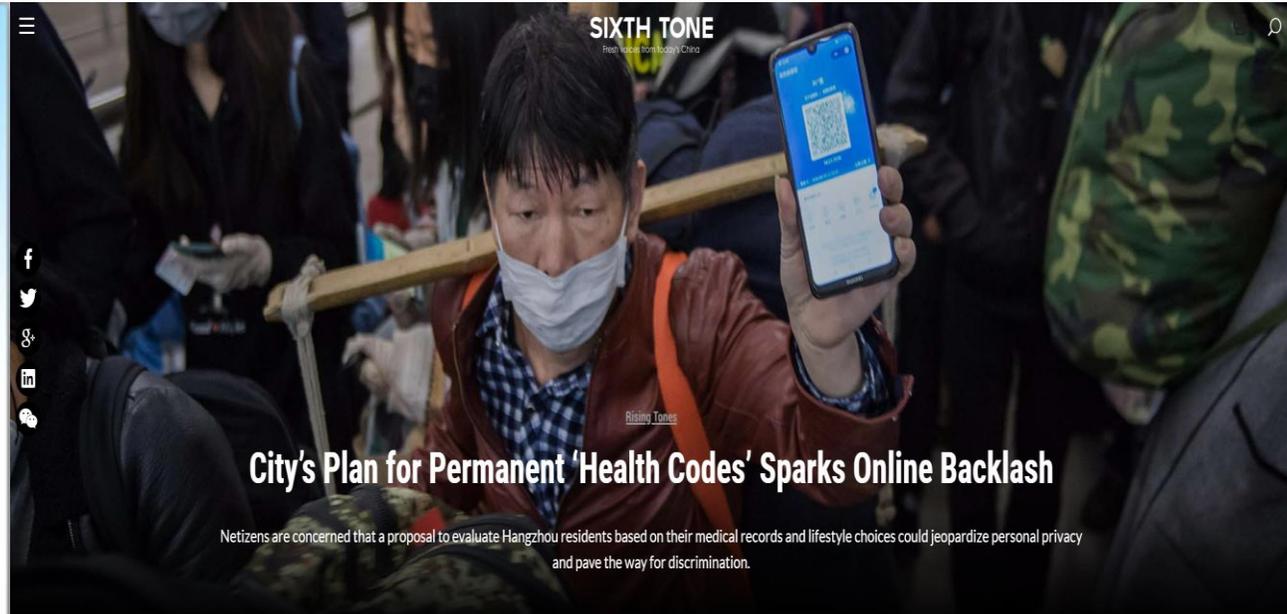


【中华网科技】心医国际抗疫云平台助力陕西等10余省市织密织牢疫情防控网
2020-2-24

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感染データと健康データの結合の可能性と課題

群体健康评价-渐变色健康码



Ye Ruolin
May 25, 2020 | 3-min read

Authorities in the eastern Chinese city of Hangzhou have announced plans to launch a health-tracking QR code for monitoring people's health status at all times – regardless of whether there is a public health emergency.

According to an official announcement reported by local media, the code would be

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Latest Situation of Coronavirus Disease (COVID-19) in Hong Kong

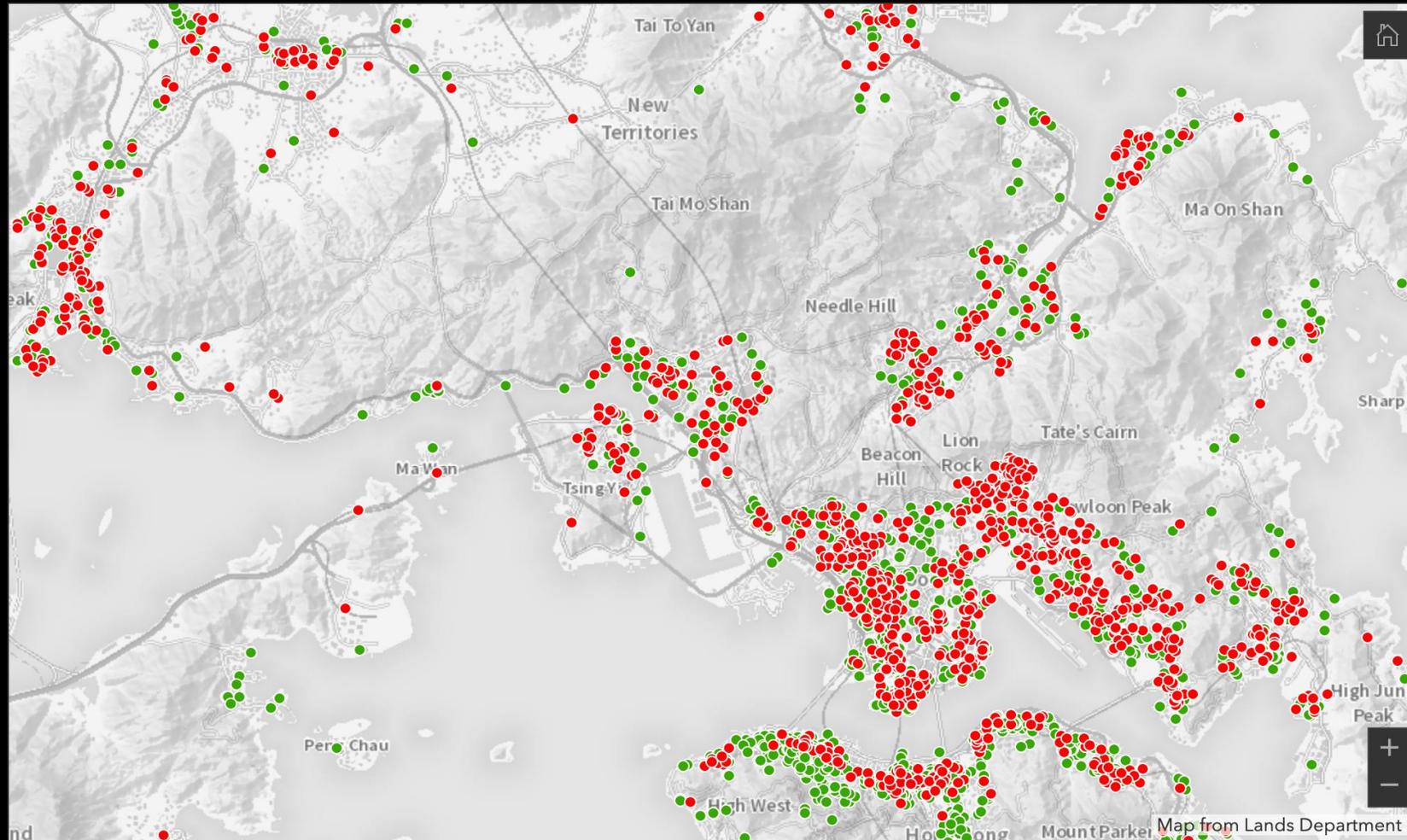
Confirmed/Probable
3,003
▲118

Discharged
1,527
▲0

Hospitalized
1,099
▲0

Critical
39

Death
24
▲0



Status and report date of cases

- Buildings with cases in the past 14 days
- Buildings with cases beyond 14 days

Case 2885: M 27 28/07/2020
year(s) old (Confirmed)

Unknown To be provided Imported case

Case 2884: M 70 28/07/2020
year(s) old (Confirmed)

HK Resident To be provided Epidemiologically linked with local case

Case 2883: M 11 28/07/2020
year(s) old (Confirmed)

HK Resident To be provided Local case

Case 2882: M 32 28/07/2020
year(s) old (Confirmed)

HK Resident To be provided Epidemiologically linked with local case

Case 2881: F 56 28/07/2020
year(s) old (Confirmed)

HK Resident To be provided Local case

Case 2880: F 43 28/07/2020
year(s) old (Confirmed)

Case Details

香港一般市民によるダッシュボード

中文 | English

COVID-19 in HK

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Pentahotel Hong Kong Kowloon

- 7.27

Stay

#2882

[link](#)

[link](#)

Accommodation

#1633

[link](#)

Grand Waterfront Plaza

- 7.27

Stay

#2333

[link](#)

[link](#)

Metropole Building

- 7.26

Stay

#1840

[link](#)

[link](#)

Wing Sam House Lung Hang Estate

- 7.26

Stay

#2224

[link](#)

[link](#)

Kam Pik House Choi Hung Estate

- 7.26

Stay

#2009

[link](#)

[link](#)

- 7.26

Stay

#2766

[link](#)

[link](#)

Lok Fu Place

- 7.26

Stay

#2191

[link](#)

[link](#)

Senior Building

- 7.25

Stay

#2490

[link](#)

[link](#)

Pei Ho Street Municipal Services Building

- 7.25

Stay

#1905

[link](#)

[link](#)

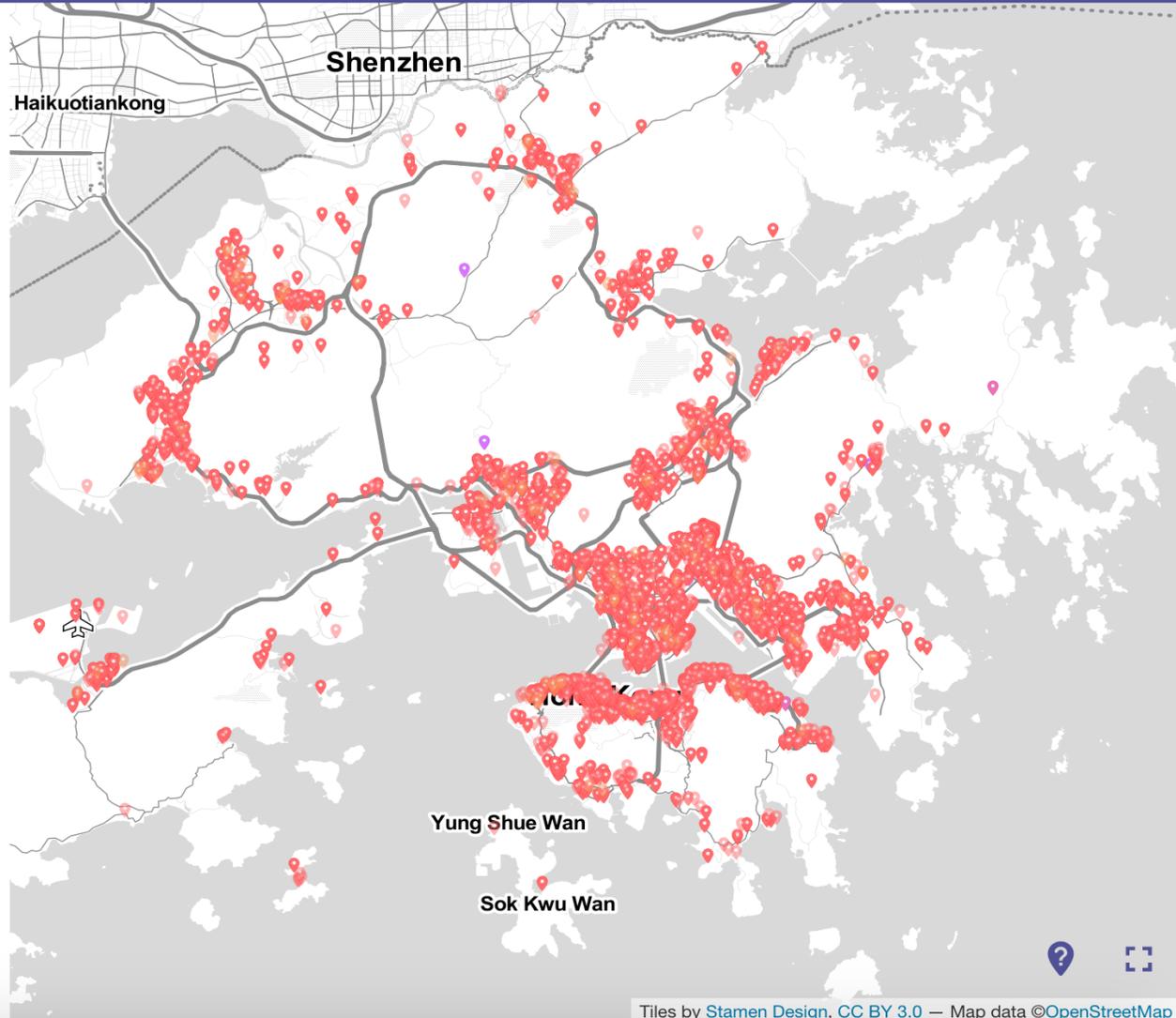
- 7.23

Stay

#1808

[link](#)

[link](#)



Who are we?

Politics

Hong Kong protesters cast 'dark day' over city's innovation sector by vandalising smart lamp posts, says technology chief Nicholas Yang

About 20 lights damaged during Kowloon Bay protests as concerns raised over whether cameras linked to mainland China

Yang slams people who ignored facts and spouted conspiracy theories to cast aspersions on project, which had been 'clear and transparent' from the start

Topic | **Hong Kong protests**



Elizabeth Cheung

Published: 9:53pm, 26 Aug, 2019 ▾



香港－中国のクロス・ボーダー・データ移転

- In Hong Kong, the Personal Data (Privacy) Ordinance (PDPO) was introduced in 1995 and took effect from December 1996 as a comprehensive data protection law, applicable to both the private and the public sectors.
- The Data Protection Principles (DPPs) in PDPO outline how data users should collect, handle and use personal data.
- The Office of the Privacy Commissioner for Personal Data (PCPD) is a statutory body created to enforce PDPO and would be working on how privacy-friendly approaches can be deployed by increasing transparency and accountability in data governance.
- PDPO has a section about a general prohibition of transfers of personal data to places outside Hong Kong.
 - Has not come into operation since its enactment in 1995, due to some difficulties identified for businesses, especially small- and medium-sized enterprises (SMEs).
- No clear rule in place to regulate cross-border data transfer to outside Hong Kong, including mainland China, creating a significant degree of ambiguities and concerns in the public.
- A robust, trustworthy system for data governance would help Hong Kong establish itself as a data center hub in the Greater Bay Area
 - Properly regulating cross-border data flow while providing adequate protection of privacy and security in the framework of one country, two systems.

香港—広東間の交流再開に向けた健康コード・システムの導入



Hong Kong / Health & Environment

Coronavirus: Hong Kong to get its own health code system for travels to Guangdong, Macau after Covid-19 border restrictions are lifted

A source says the system, meant to certify whether a traveller is free of the virus, will not contain transfer of any personal data
Authorities in Macau and Zhuhai have had their own health code systems in place since May 10

Topic | **Tourism**



Lilian Cheng

Published: 8:00am, 1 Jun, 2020 ▾

Why you can trust SCMP

今後に向けた可能性と課題

- データの結合・統合
 - 感染に関するデータと他の健康状態などに関するデータ
- 国際的なデータの連携・標準化
 - 香港－広東間でのアプリの相互認証
 - 海外との交流再開に向けた仕組み
- 社会実験を通じたイノベーションの促進
 - スマート・シティ、スーパー・シティにおける規制のサンドボックス

G20 Global Smart Cities Alliance on Technology Governance Working Group for Policy Framework



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- Equity, inclusion and social & environmental impact



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Featured participants include:

- **Jeffrey Schlagenhauf**, Deputy Secretary General of the Organisation for Economic Co-operation and Development (OECD)
- **Sir Peter Gluckmann**, Former Chief Scientific Advisor, New Zealand
- **Zuena Aziz**, Chief Co-ordinator for Sustainable Development Goals Affairs in the Prime Minister's Office, Bangladesh
- **Samia Melhem**, Global Lead on Digital Capabilities, Digital Development Practice, World Bank
- **Masaru Yarime**, Associate Professor, Hong Kong University of Science and Technology, Hong Kong; UCL STEaPP, UK; and The University of Tokyo, Japan.
- **Torbjörn Fredriksson**, Head of ICT Analysis Section of the Division on Technology and Logistics, UN Conference on Trade and Development (UNCTAD)
- **Barbara Ubaldi**, Head of Reform of the Public Sector Division, OECD
- **Stefaan Verhulst**, Co-Founder of the Government Laboratory (GovLab), New York University
- **Christoph Lütge**, Professor, Institute of Ethics and AI, ITM, Munich
- **Helen Margetts**, Director of the Oxford Internet Institute, University of Oxford; The Alan Turing Institute
- **C. Leigh Anderson**, Marc Lindenberg Professor for Humanitarian Action, International Development, and Global Citizenship, University of Washington

- **Professor David Hand**, Imperial College
- **Professor Alessandro Vespignani**, Northeastern University
- **Professor Yi Zeng**, Beijing Academy

Special sessions include:

- **"Data Governance in the Public Interest"** – comprising individual presentations and a Special Panel **"Brave New Worlds? Ethics in Theory and Practice in Public Data Provision"** – organised by LSE and the Ada Lovelace Institute
- **"Data, analytics and digital transformation in the private sector"** – a panel discussion organised by the UCL School of Management
- **"'For good measure': The challenges of quantifying complex problems for policymaking"** – individual presentations and a special session on "The co-production of value from data by users and producers" – organised by Leiden University
- **"Data Quality and Development Policy"** - individual presentations – organised by the University of Washington
- **"Data Governance for Innovation for Sustainable Smart Cities: Opportunities and Challenges in Public Policy and Institutional Design"** – two sessions of individual presentations – organised by the Hong Kong University of Science and Technology
- **"Opportunities and Challenges for Data-Driven Research in Response to the COVID-19 Crisis"** – presentations and discussion - organised by the Alan Turing Institute
- **"Data technologies and governance frameworks used for gathering, storing, managing, processing, analyzing and sharing data in the public administrations"** – individual presentations – organised by Lisbon Council and the GovLab, NYU

Organisations represented include:

Aapti Institute, India | Bill and Melinda Gates Foundation | Monash University, Australia | The Center for Economic Research and Teaching, Mexico | Department for Digital, Culture, Media and Sport, UK | Hong Kong University of Science and Technology | Information and Training Outreach Centre for Africa | International Digital Accountability Council, USA | Qatar Computing Research Institute | Simon Fraser University, Canada | The Chinese University of Hong Kong | The Hebrew University of Jerusalem | United Nations University Institute in Macau | University College Dublin | Unicamp, Brazil | The Alan Turing Institute, UK | University of Oxford | University of the Aegean | University of Tokyo | World Wide Web Foundation, Indonesia | UK Statistics Authority | Ministry of Justice, UK | Sharif Governance Think Tank, Iran | Max Planck Institute for Intelligent Systems, Germany | Leiden University, Netherlands | Lapin Limited, Jersey | KIMEP University, Kazakhstan | National Institute for Economic and Social Research, UK | Ada Lovelace Institute, UK | Future of Privacy Forum, USA | University of Cambridge | European Commission | Office for National Statistics, UK | Quinten, France

Data Governance for Innovation for Sustainable Smart Cities: Opportunities and Challenges in Public Policy and Institutional Design

Chair: Masaru **Yarime**, Hong Kong University of Science and Technology, Hong Kong; UCL STEaPP, UK; and The University of Tokyo, Japan.

Smart cities are expected to play a crucial role in tackling many issues concerning sustainability, ranging from reducing air pollution and increasing energy efficiency to mitigating traffic congestion and maintaining resilience to accidents and natural disasters. Data-driven innovation, including the Internet of Things (IoT), blockchain, and artificial intelligence (AI), has significant potential to address these multifaceted, interdependent issues. Vast amounts of various kinds of data are increasingly available from a variety of sources through sophisticated equipment and devices installed in buildings, automobiles, and infrastructure across cities.

Effective collection, sharing, and use of data through cooperation and collaboration among stakeholders would be critical for facilitating innovation for smart cities. While open data access and management can contribute to creating innovation, however, there are many challenges that we need to address in promoting societal benefits. There are technical issues related to data, such as metadata tagging, quality control, cleaning and error elimination, and interoperability between various standards, which must be addressed to support data sharing. Stakeholders might have different interests and motivations and would not necessarily be willing to disclose or exchange data with each other. A balance needs to be considered between open and proprietary data.

Serious concerns are also raised about collecting, sharing, and using sensitive data, particularly personal data, in terms of safety, security, and privacy. A variety of ideas are proposed for institutional arrangements for data governance in smart cities. There are debates about who should be in charge of governing data in the public or private sector. Another possibility would be to establish a data trust as an independent institution to make decisions about who has access to data under what conditions, how that data is used and shared for what purposes, and who can benefit from it.

Data-driven innovation poses a particularly difficult challenge to policymaking. The speed of technological change is rapid and the path of its evolution would not be entirely predictable or explainable, which would produce a widening gap between technological change and institutional readiness. Also, various sectors, such as energy, housing, and transportation, which were not always interconnected, are increasingly integrated through data in smart cities as cyber-physical systems. Hence institutional arrangements for data governance need to incorporate the ability to learn from real-world use and experience and the capability to improve the performance through adaptation.

A key question is what kinds of data governance systems would be appropriate to maximize the potential of innovation while minimizing risks to individuals and communities. In-depth research is required to investigate how institutional arrangements for data governance influence the collection, management, and use of data in smart cities and what impacts would be made on facilitating data-driven innovation while addressing societal concerns.

This session aims to present and share theoretical as well as empirical research findings that examine the current situations concerning the collection, sharing, and use of data in the context of smart cities and the effects of organizational and institutional arrangements for data governance on innovative efforts in the public and private sectors.

Possible questions we would discuss in this session include:

- What kinds of data are collected in smart cities?
- Who owns and has access to the data?
- For what purposes are the collected data used?
- How are the data managed by whom?
- What incentives are provided to encourage data sharing?
- What kinds of platforms are established to manage the data collected?
- What impacts are made on stimulating innovation?
- What kinds of policies and institutional arrangements are implemented to address concerns about safety, security, and privacy?

Case studies in different countries and regions are particularly welcome to understand the mechanisms and processes that promote collaboration on data, which reflect the structure of motivations and incentives that would be specific to local contexts and conditions. Various types of data governance would be addressed, including government-led, industry-led, and public-private partnership approaches. Based on theoretical and empirical research on data governance, implications for public policy and institutional design will be discussed to facilitate data-driven innovation through open data while addressing societal concerns about safety, security, and privacy in sustainable smart cities.

Submissions are made via [Data for Policy website](#).

Please send enquiries to the session chair, Masaru Yarime (yarime@ust.hk).