

A Case Study in Vaccine Sharing Across Nations

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Research on social equity has grown substantially in recent years and has elevated the importance of addressing structural and systemic patterns of inequity in public service delivery. Through a social equity lens, this article explores the vaccine-sharing policies of China, India, the European Union, and the United States. Using the case of international vaccine sharing and a text-as-data approach, this article argues that the state actors' commitments to sharing COVID-19 vaccines were insufficient to uphold fairness, justice, and equity. The article concludes with recommendations for practice and public administration theory development to expand the scope of social equity research to between-nation cases.

Assessments of global inequity are critical to advancing the tenets of social equity scholarship in the United States and abroad (Aoki et al. 2022; Armstrong 2012). In general, social equity tends to be applied within a limited and controlled sphere of one society; applying it at the global level, particularly in comparison with other nations, is challenging. However, the emergence of SARS-CoV-2 (COVID-19) and its variants provides a case in point for how social equity is a global issue with administrative implications.

Immunization through vaccination is an essential component of public health administration against infectious diseases. However, there was a profound imbalance in the global distribution of COVID-19 vaccines that help stave off COVID-19 infection, deter serious illness, and prevent future virus mutations (Mathieu et al. 2021; Wells and Galvani 2022). The lack of access to vaccines led to severe disparities in vaccination rates across nations. While 68.5% of the world population was administered at least one COVID-19 vaccine dose, only 24.6% of the population in low-income nations was administered at least one dose by November 29, 2022 (Our World in Data 2022).

This case study is organized as follows. The next section summarizes the development of COVID-19 vac-

cines, which illustrates the need for vaccine-producing nations to share vaccines. We also visit the literature on social equity and contextualize the relationship between social equity and global issues. The literature review is followed by an exploratory qualitative analysis of the international vaccine-sharing policies of three state actors and one supranational organization, as gleaned from publicly available sources. The four cases—China, India, the European Union (EU), and the United States—were selected due to their association with vaccine production, as documented in the World Health Organization's (WHO) approved COVID-19 vaccines list, and because they represent varying wealth levels, regime types, and development statuses. For this case study, we included the EU in a paired comparison with the other three nations because of its coordinated response as a supranational organization. This approach is consistent with other analyses of COVID-19 vaccine sharing, such as the United Nations Children's Fund (UNICEF) COVID-19 Market Dashboard, which lists the EU in its data on vaccine agreements as a group. We do not claim nation-state status for the EU but rather that its activities related to COVID-19 merit inclusion for the purpose of understanding vaccine-sharing policies.

Table 1. COVID-19 Vaccines Approved by the World Health Organization (as of November 29, 2022)

Vaccine lead developer	Nations affiliated with the lead developer	Vaccine name	Vaccine type	Number of nations that approved the vaccine
Bharat Biotech	India	Covaxin (BBV152)	Inactivated	14
CanSino Biologics	China	Convidecia (c-nCoV)	Non-replicating viral vector—Adenovirus serotype 5 (Ad5)	10
Janssen (Johnson & Johnson)	U.S. and Belgium	Jcovden (Ad26. COV2.S, Ad-26COVS1, JNJ-78436735)	Non-replicating viral vector—Ad26	113
Moderna	U.S.	Spikevax (mRNA-1273, Elasmomeran)	Messenger RNA (mRNA)	88
Novavax	U.S.	Nuvaxovid (NVX-CoV2373)	Protein subunit	40
Oxford-AstraZeneca	UK and Sweden	Vaxzevria (AZD1222, ChAdOx1 nCoV-19)	Non-replicating viral vector—ChAdOx1 adenovirus vector	149
Pfizer-BioNTech	U.S. and Germany	Comirnaty (Tozinameran, BNT162b2)	mRNA	149
Serum Institute of India	India	Covishield (Oxford-AstraZeneca formulation)	Non-replicating viral vector—ChAdOx1	49
Serum Institute of India	India	COVOVAX (Novavax formulation)	Protein subunit	6
Sinopharm (China National Pharmaceutical Group Corporation)	China	Covilo (BBIBP-CorV)	Inactivated	93
Sinovac Biotech	China	CoronaVac	Inactivated	56

Sources: McGill COVID19 Vaccine Tracker (2022) and New York Times Coronavirus Vaccine Tracker (2022).

This case study discusses how social equity can serve as a theoretical lens for addressing global issues while maintaining nations' administrative functions and obligations to their citizens. This article also calls for more comparative studies on social equity. Another primary contribution to the literature is to show how vaccine access crashed on the shores of domestic needs, logistics, and philanthropic forces.

COVID-19 Vaccines as a Case Study

Before describing the development of COVID-19 vaccines, it is important to recapitulate the positive role

that vaccines play in improving social equity within and between nations. Vaccines have demonstrably reduced the disease burden in developed nations. To deliver these benefits globally, some of the same primary actors in the COVID-19 vaccine distribution effort, such as the WHO and the Global Alliance for Vaccines and Immunisation (GAVI), established the Expanded Programme on Immunization (EPI) in 1974 to convey six critical vaccines. The EPI also innovated cold chain transportation and storage logistics for the developing world. In 1974, only 5% of infants in the developing world were given vaccines. By 1980, that

number was around 80% (Levine and Robins-Browne 2009). However, EPI was allowed to wither and by the 1990s immunizations were falling again in developing nations (Cutts 1998). Disease burdens in developed nations continue to plummet owing to massive advancements in vaccine technology, yet the early success of efforts like EPI has not been able to decrease the inequity among developed and developing nations (Levine and Robins-Browne 2009). After the worst effects of the pandemic began to recede, a GAVI board member acknowledged that the routine immunization system in place was not adequate for the multiple requirements of COVID-19 vaccines and the extreme refrigeration required (Nolen 2022). It is in this context that the COVID-19 pandemic and related vaccine development happened.

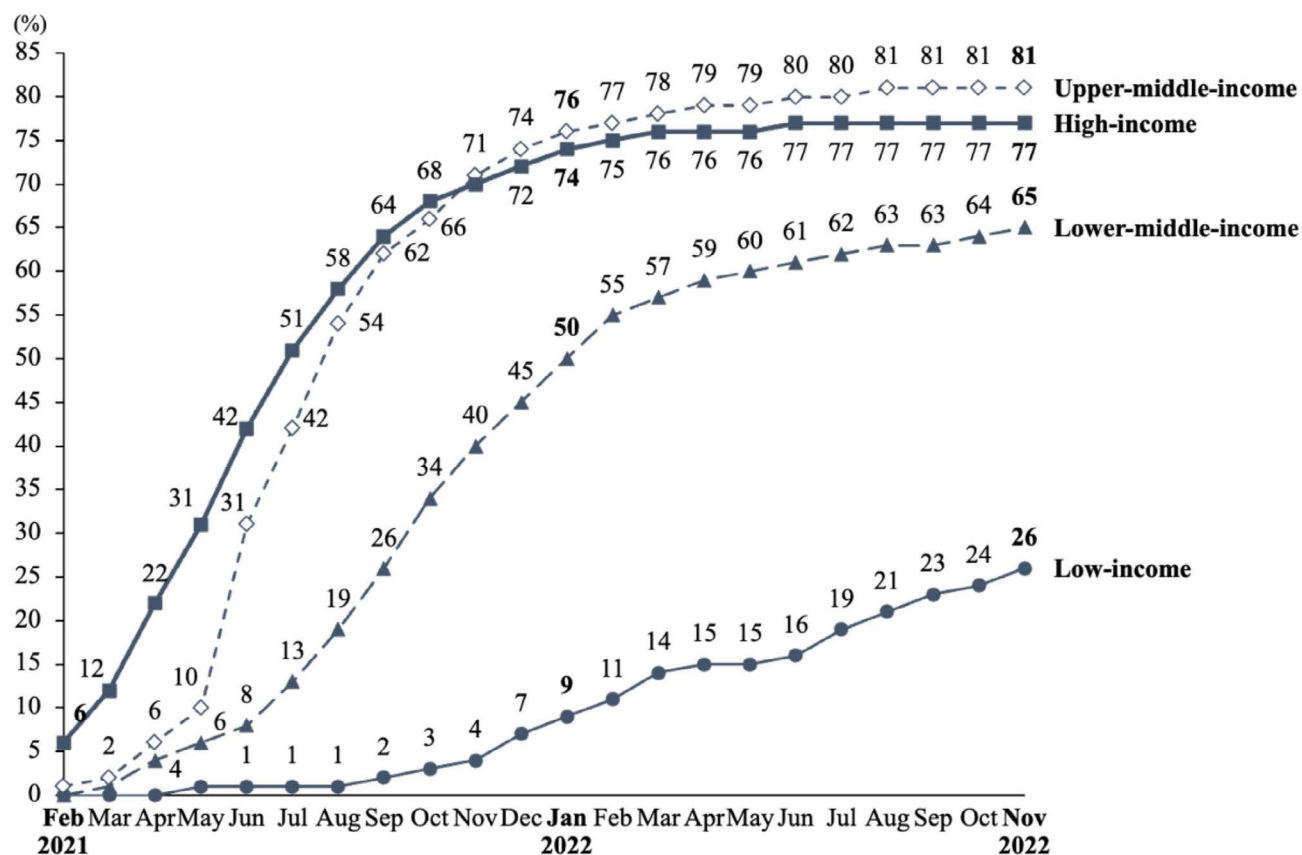
The unprecedentedly rapid adoption of COVID-19 vaccines is attributable to breakthroughs in vaccine technology, including the advancement made with the messenger RNA (mRNA) vaccine development. As of November 29, 2022, 11 COVID-19 vaccines were approved for use by the WHO. Table 1 summarizes five categories of information regarding the development of these 11 vaccines (not all vaccines listed are mRNA vaccines; see column, “Vaccine type”). In addition, 50 COVID-19 vaccines were approved or authorized for use by at least one national regulatory authority by that date.

This rapid progress was driven by large investments from the public, private, and philanthropic sectors and coordinated international cooperation. Governments, pharmaceutical companies, and foundations invested billions of dollars in research and development (R&D); allocated scientists, engineers, and health professionals to R&D projects; and expedited the permitting and regulatory process (e.g., the Operation Warp Speed program in the United States). Additionally, COVID-19 vaccines were developed much faster than traditional vaccines due to extensive and timely cooperation on a global scale. China publicly shared the genetic sequence of COVID-19 on January 12, 2020, within two weeks of a report by the Wuhan Municipal Health Commission on a cluster of pneumonia cases. This enabled vaccine producers to begin building COVID-19 vaccines (WHO 2021a). Since then, the Coalition for Epidemic Preparedness Innovations (CEPI)—a global vaccine development partnership launched in 2017 for fostering institutional partnerships between public and private sectors—has signed 19 COVID-19 vaccine develop-

ment agreements with 18 partners across the world to accelerate the development of vaccines, with a total agreed-upon budget of \$1.6 billion (CEPI 2021, 2022; Gouglas et al. 2019). Like the Global Coordination Mechanism for Research and Development and the Partnership for African Vaccine Manufacturing, multiple research initiatives and consortiums between public agencies, private companies, universities, and philanthropic funders have been formed globally. The partnerships have delivered safe and efficacious COVID-19 vaccines (Phelan et al. 2020; WHO 2021b). The extensive international cooperation on the COVID-19 vaccine is also evidenced by coauthorships of COVID-19-related articles (Maher and Van Noorden 2021).

Nevertheless, this speedy international cooperation to develop COVID-19 vaccines did not adequately translate into an equitable global distribution process. Historically marginalized nations, communities, and populations were disproportionately disadvantaged by the COVID-19 pandemic physically, economically, and educationally. Figure 1 illuminates the troubling and alarming unfairness in vaccine availability by nation. This graph indicates the share of the population that has received at least one COVID-19 vaccine dose, clustered by national income level, between February 2021 and November 2022. High-income nations and upper-middle-income nations ramped up their vaccination rate from 6% to 74%, and 1% to 76%, respectively, between February 2021 and January 2022. Yet only 9% of the population in low-income nations and 50% of the population in lower-middle-income nations had received at least one vaccine dose by January 2022. In November 2022, the rates of low-income nations and lower-middle-income nations remained at 26% and 65%, respectively, while the rates of high-income nations and upper-middle-income nations reached 77% and 81%, respectively.

Experts suggest it is likely to take years for lower-income nations to attain the same level of uptake as that of high-income nations (Kim et al. 2021). In addition to market and supply issues, early and sizable agreements and contracts between higher-income nations and COVID-19 vaccine producers have prohibited lower-income nations’ ability to access the already-constrained vaccine supply (Duke Global Health Innovation Center [GHIC] 2020, 2021). Other reasons include the cost burden of vaccines, barriers to local production (e.g., intellectual property rights, technical

Figure 1. COVID-19 Vaccination Rates by National Income Group

Notes: Numbers represent the average vaccination rates of each group on the tenth day of each month. The graph was simplified by the authors using data from the Kaiser Family Foundation (2023), which applied the World Bank income classification. The income group thresholds (Gross National Income per capita) are \$1,045 or less (low-income), between \$1,046 and \$4,095 (lower-middle-income), between \$4,096 and \$12,695 (upper-middle-income), and \$12,696 or more (high-income).

knowledge, and production capacity), and logistical and operational constraints of vaccination (Organisation for Economic Co-operation and Development 2021). The disparities in uptake are referred to as global vaccine inequity or the global immunization gap.

In reaction to the growing public outcry over vaccine inequity, political leaders stressed international solidarity and cooperation to supply COVID-19 vaccines. A series of meetings among global leaders led to commitments from nations and global health organizations to create the COVID-19 Vaccines Global Access (COVAX) program in April 2020. COVAX promotes equitable access to COVID-19 vaccines by pooling supplies and ensuring availability for all nations, particularly for lower-income nations (Eccleston-Turner and Upton 2021). This multilateral initiative is led by the GAVI, WHO, and CEPI. Under CO-

VAX, after the applicant nation's COVID-19 National Deployment and Vaccination Plan is reviewed by the WHO, UNICEF, and other partners, vaccines are shipped to the approved nation. According to the UNICEF COVID-19 Market Dashboard, as of November 29, 2022, COVAX has delivered 1.85 billion doses to 146 nations. Furthermore, WHO and other partners formed the COVID-19 Vaccine Delivery Partnership (CoVDP) to facilitate vaccine distribution to the 34 nations that had vaccine coverage rates at or below 10% in January 2022 (WHO 2022). The CoVDP partnership was integrated with the Gavi COVAX Advanced Market Commitment, which enabled it to cover 92 lower-income nations for COVID-19 vaccines (Gavi 2022).

However, as elaborated earlier, vaccination rates remain inequitable across nations. Many developing na-

tions contend that methods other than COVAX should be used to end the lingering pandemic, as the global society has witnessed how challenging it is to bring this pandemic to a close (Maxmen 2021). To augment the political commitments and financial pledges made by leaders toward global vaccine equity, the following sections apply social equity precepts to vaccine-sharing policies of four selected governments that are affiliated with WHO-approved COVID-19 vaccines.

Theoretical Foundation for This Case Study

Social equity is a complicated concept with varying or conflicting applications (for a summary of usage, see Cepiku and Mastrodascio 2021). Definitions of social equity range from fairness and equal treatment to the reversal of inequities (Gooden 2015; Svava and Brunet 2005). We follow the definition constructed by the National Academy of Public Administration's (NAPA) Standing Panel on Social Equity in Governance: "the fair, just and equitable management of all institutions serving the public directly or by contract, and the fair and equitable distribution of public services, and implementation of public policy, and the commitment to promote fairness, justice, and equity in the formation of public policy" (NAPA 2000).

Social equity demands that administrators, politicians, and citizens pay attention to the social impact of public actions (Berry-James et al. 2020; Guy and McCandless 2012). Since the first Minnowbrook Conference in 1968 and H. George Frederickson's theoretical justification for the concept in 1971 (Frederickson 1971), social equity has been recognized as one of the four pillars of public administration. While this pillar moved to the forefront of the field more belatedly than the other three pillars (economy, effectiveness, and efficiency), social equity research has matured and evolved from normative assertions to empirical investigations that demonstrate how social equity can serve multiple public values (Cepiku and Mastrodascio 2021; Hooker and Guy 2022). During this growth, public administration scholarship and practice have made notable

progress in advancing social equity and supporting systemically oppressed groups, including in areas of gender equity, family responsibility discrimination, and representative bureaucracy (Guy and Fenley 2014; Pandey et al. 2022; Riccucci 2019).

Social equity issues have been raised across subfields of public administration in the Global North and Global South with examinations of persistent and institutional racism, sexism, ageism, classism, socio-economic disadvantages, and other forms of injustice in the administration of public services.¹ What began as a primarily U.S.-focused body of literature has grown to include cases of within-nation inequity in other regions. However, the examination of social equity *between nations*, especially in contexts of divergent levels of wealth and development, has received much less attention than it deserves.

There are several reasons for the limited number of between-nation equity analyses. One explanation is that activism and social movements in the United States brought attention to the prevalence and impacts of inequity, demanding a scholarly and practitioner focus on U.S.-centric issues (Gooden and Starke 2021; Guy and McCandless 2020). Another explanation is the incomparability across regime types and cultural norms (McCandless et al. 2022). Some scholars also claim that the field of American public administration is generally preoccupied with domestic U.S. affairs to the exclusion of comparative work (Moloney and Gulrajani 2010; Roberts 2018).

We argue that social equity research focused on between-nation analysis is squarely within the domain of public administration scholarship. While there is less social equity research in non-Western contexts (Aoki et al. 2022; Blessett et al. 2019), this case study acknowledges a difference between the West and non-West that merits attention (Johansen 2019). Fortunately, scholarship suggests an avenue for further study in a global context. While social equity research has encompassed a range of topics, the focus has mainly centered on domestic public service.

1. In the United States, for instance, the effects of the COVID-19 pandemic disproportionately impact African Americans due to multiple and overlapping areas of systemic oppression (Millett et al. 2020; Tai et al. 2021; Wright and Merritt 2020). Wright and Merritt (2020) identify four strategies to address disparities: collect and release demographic data, engage nonprofits led by African Americans, establish election plans to ensure the ability to vote during a pandemic, and reduce barriers to digital equity. The granularity of these recommendations makes them valuable for public administrators but also makes those recommendations challenging to synthesize at the level of global vaccine sharing.

Global social equity research helps expand social equity research at larger scales of inquiry, which would allow comparative public administration among nations and place the topic in conversation around instances of within-nation injustice that have roots in transnational phenomena. The fruits of such inquiry will advance social equity scholarship and pressure nations to do better when building more diverse, equitable, inclusive, and accessible communities. This expansion will also increase knowledge of social equity and render practical insights into how transnational phenomena relate to within- and between-nation inequities. This contributes to developing a more precise operationalization of social equity derived from the insights of comparative social equity research.

Considering these needs, we propose four drivers that can serve as normative levers of social equity advancement. The four drivers are *a forward-looking stance*, *leadership*, *equitable distribution of resources*, and *promotion of self-sufficient capability*. The goal of this analysis is to understand whether nations enable the promotion of social equity in their policies related to vaccine sharing. The authors are under no illusions that intentions conveyed in statements constitute social equity. However, given the disparities in vaccine access, a point of entry to understanding the factors that contribute to inequity is to have criteria by which statements can be assessed.

The first driver is *a forward-looking stance*, or keeping collective attention anchored on making progress and eliminating inequity in society. Social equity is now a mainstream topic of public administration scholarship, from studies around New Public Administration to those countering the prevailing notions of status-quo bureaucracy (Frederickson 2010). Despite this progress, continuing instances of inequity in the COVID-19 pandemic require a forward-looking, proactive orientation toward solving systemic inequity (Guy and Williams 2023; Holzmann 2003). Some scholars criticize the slow progress to embed social equity in public administration and present calls to action. In one call to action, the focus is on the contributions that research can make to understanding whether the goals of social equity are being realized in practice (Blessett et al. 2019). The first driver of social equity takes up this call by thinking about systemic inequity in the future and making plans for reducing it.

The second driver is *leadership*. One of the recent calls to action is the duty of academics, practitioners,

and policymakers to stand up for good governance, strong communities, and social equity (Blessett et al. 2018). Leadership at a global scale is critical to achieving the missions of public service organizations (Vogel and Masal 2014). Given increasingly complex and collaborative environments, the significance of leadership across national boundaries—called global leadership—has been highlighted for securing such public values as social equity (Crosby and Bryson 2018; Hartley et al. 2019). Global leadership also means being a responsible leader in solving inequities constructively and proactively (Hotez 2021; Mendenhall et al. 2020).

The third driver is the *equitable distribution of resources*. In addressing the lack of social equity in socio-political and economic issues (e.g., public participation, housing, and healthcare), resources are essential to materializing social equity (Clark 2018; Guy and McCandless 2012). Resources to tackle identified problems must be planned, organized, distributed, and monitored fairly to match a policy need with a policy response (Collins and Gerber 2008; Wright and Merritt 2020). The dedication of resources are one measure for assessing the extent to which social equity considerations are meaningfully incorporated into actions (Dolamore and Kline 2020; Johnson and Svava 2011).

The fourth driver is the *promotion of self-sufficient capability*. As represented in related concepts, such as self-governance and co-production, self-sufficient capability plays an integral role in addressing collective problems by involving stakeholders in deliberative and collaborative approaches that increase capacity within administrative apparatuses among recipients of public policy (Moon 2020; Osborne 2018). Establishing a self-sufficient capability allows marginalized nations, communities, and populations to sustain the common good through their own efforts (Muthomi and Thurmaier 2021; Williams and Duckett 2020). It also helps those nations, communities, and populations to embrace and empower social equity (Offodile II et al. 2022).

Despite political commitments by global leaders to a collaborative solution to the COVID-19 pandemic, the vaccine shortfall produced devastating disparities for those in developed versus developing nations. Since pandemics transcend national boundaries, when *one* nation struggles to tackle a pandemic, *any* and *all* nations are likely to experience waves of circulating outbreaks (You 2021). However, the concerns over the virus' spread across nations were tempered by the concerns of leaders

in their home nations over perceptions of jeopardizing their own citizens' needs to meet vaccine demands elsewhere. There is tension between the desire to be seen globally as a good-faith actor that facilitates global vaccine equity and the centrifugal forces in favor of the status quo. Put differently, while many COVID-19 vaccine-producing nations face international pressure to supply vaccines to other nations, they also face internal pressure to retain their domestic supply. This situation propels governments to balance globalism with protectionism in forestalling wicked transboundary problems caused by the pandemic.

Recognizing this complex dilemma, we parallel the four drivers of social equity described above—a forward-looking stance, leadership, equitable distribution of resources, and promotion of self-sufficient capability—with a set of four policy dimensions of intergovernmental COVID-19 responses. These policy dimensions are derived from the Framework for a Global Action Plan for COVID-19 Response, which was developed by multiple COVID-19 global collaboratives (Pandemic Action Network 2021). Combining the social equity drivers with the Global Action Plan dimensions results in the following four criteria for this case study: (1) a forward-looking orientation toward equity as expressed in a global COVID-19 response roadmap, (2) strengthening global leadership in delivering vaccines, (3) sharing vaccine resources across nations, and (4) extending nation-level distribution and delivery capabilities.

This case study asks four questions. First, the call for a global COVID-19 response roadmap raises the question of whether a primary vaccine-producing nation proposed its own roadmap at the global level for worldwide vaccination. Secondly, strengthening global leadership raises the question of whether a nation demonstrated strong, sustained political leadership and accountability in co-

ordinating and galvanizing global responses. Thirdly, sharing vaccines raises the question of whether a nation shared vaccines with other nations through multilateral or bilateral channels. Lastly, extending nation-level distribution and delivery capabilities raises the question of whether a nation helped other nations cultivate capabilities for pandemic preparedness.²

Methods

We employed a cross-case analysis to examine patterns and mobilize knowledge from four individual case studies (Yin 2017). This method was chosen to synthesize recent events and elucidate contextual and temporal contingencies by comparing and contrasting cases. A comparative multi-case design has two major benefits. First, it produces new knowledge by describing a set of cases and making sense of complex public administration processes. Second, this cross-case analysis offers opportunities for further inquiry. The units of analysis are the governments of China, India, the EU, and the United States, as they are associated with the 11 COVID-19 vaccines that have reached the highest safety and efficacy standards and are approved for use by the WHO.

This article used a text-as-data approach. We conducted a document analysis, a form of qualitative research, which detects and interprets textual material to elicit evidence, construct meaning, and develop knowledge (Bowen 2009; You 2022). Publicly available documents published by relevant government departments were inductively collected via the internet and an online snowball sampling technique was adopted. We conducted the data collection and analysis during the first half of 2022 and again in November 2022, covering the period between January 2020 and November 2022.

We first visited the websites of the departments in charge of external affairs in each nation. From the

2. This article does not seek a single, unified framework for examining global social equity in public administration. However, we believe such an effort is worth pursuing and offers a beginning point for interested scholars. Another way of beginning is to build on the work of cosmopolitanism scholars; for example, to gain traction on the problem of responsibility across national boundaries. Cosmopolitanism is a theory of justice—who deserves what and why. This theory concerns itself with the moral worth of individuals and the challenges of global cohabitation in which individuals are not treated as morally equal. Global justice scholars, of the cosmopolitan bent, examine what individuals around the globe deserve and how the distribution of such entitlements is to be achieved (Brown 2012; Dietzel 2018; Pogge 1989). If a minimum demand of justice is that the actions of nations do not violate the negative rights of others (Pogge 2001), how do global structures such as the COVAX initiative affect the negative rights of individuals? What are the ontologies of responsibility operating in the global vaccine-sharing policies of nations? How do social determinants of health operate between nations? These are just a few of the intriguing questions that scholars could explore to develop normative and theoretical insights into social equity in global consideration.

websites, we closely read all statements and reports on COVID-19 and manually retrieved textual data that explicitly addressed any of the four drivers of social equity described above. We sought the original documents when we encountered statements and reports that referenced earlier sources. These documents were complemented with COVID-19 Vaccine Data and COVID-19 Market Dashboard. All data were findable, accessible, interoperable, and reusable. Selected data sources for this study ultimately included two databases, 11 reports, and 19 statements from the four governments and other related multilateral institutions. Appendix A provides the list of data and their sources. We also used topically relevant scientific articles to supplement our findings.

Results

Based on the four drivers of social equity articulated in the theoretical foundation section, this comparative review of vaccine policies is structured around assessing nations' inclusion of the four criteria: (1) the presence of a global COVID-19 response roadmap, (2) strengthening global leadership, (3) sharing vaccine resources with other nations, and (4) extending nation-level distribution and delivery capabilities. Next, we synthesize the results of our document analysis for each nation and the EU across the four criteria.

CHINA

CHINA 1: ROADMAP

On May 21, 2021, in a speech at the Global Health Summit, President Xi announced China's five initiatives to support global solidarity in combating the COVID-19 pandemic (Xinhua 2021). The five initiatives are to prioritize people's lives and health, ensure a coordinated and systemic response, promote solidarity and cooperation, uphold fairness and equity to close the immunization gap and improve the global health governance system. Especially in the fourth initiative, President Xi called for the responsibility of vaccine-producing nations to make COVID-19 vaccines more accessible to developing nations. This initiative also reflected a rejection of vaccine nationalism and called for collaborative solutions to increase the vaccine production and distribution capacity of developing nations.

CHINA 2: GLOBAL LEADERSHIP

In a speech at the 73rd session of the World Health As-

sembly on May 18, 2020, President Xi stressed the need for greater international cooperation in combating the COVID-19 pandemic and proposed that COVID-19 vaccines should be made a global public good (Xinhua 2020). The Chinese government has hosted several international meetings to discuss the global access gap in vaccines and resurrected the Health Silk Road Initiative. One example is the International Forum on COVID-19 Vaccine Cooperation ("Forum") on August 5, 2021, hosted by State Councilor and Foreign Minister Yi (Ministry of Foreign Affairs of the People's Republic of China [MFA] 2021a). In the Forum, the Chinese government emphasized its commitment to global vaccine cooperation. The direct shipment of vaccines was considered an accessible solution for developing nations that had been pushed aside by higher-income nations in securing such COVID-19 vaccines as those produced by Pfizer-BioNTech. This expansive approach with an active vaccine diplomacy program boosted China's global standing with its enhanced influence and soft power (Huang 2022; *The Economist* 2021).

CHINA 3: SHARING RESOURCES

As of November 18, 2022, the total number of vaccines pledged to be donated by the Chinese government for global use was 372 million doses (GHIC 2022). At terms of recipient nations, Asia accounts for 55% (29 nations), and Africa accounts for 25% (43 nations). In the Forum in August 2021, China also pledged to provide 2 billion doses for global use and \$100 million to COVAX (MFA 2021a).

CHINA 4: EXTENDING CAPABILITY

China has collaborated with five nations to allow them to start commercial production of Sinovac and Sinopharm and build up the in-state manufacturing capacity of COVID-19 vaccines. The initial five nations are Algeria (Sinovac), Brazil (Sinovac), Egypt (Sinovac), Indonesia (Sinovac), and the United Arab Emirates (Sinopharm) (MFA 2021b). As of October 2022, the number of vaccine manufacturing partnerships had risen to 17 with 15 nations (Wang 2022). China also led the vaccine research collaboration with Brazil, Russia, India, and South Africa, resulting in the launch of the BRICS Vaccine R&D Center on March 22, 2022 (MFA 2020; Ministry of Science and Technology of the People's Republic of China 2022).

INDIA

INDIA 1: ROADMAP

On January 10, 2021, Prime Minister Modi announced an initiative called Vaccine Maitri (“maitri” means friendship), aiming to supply and donate Indian-manufactured vaccines to low-income nations globally. Starting with the vaccine gifts to Bhutan and Maldives on January 20, 2021, India donated 10.7 million doses to 47 nations and supplied 19.8 million doses to COVAX as of May 29, 2021. During the same timeframe, India also commercially exported 35.8 million doses to 26 nations (Ministry of External Affairs, Government of India 2021).

INDIA 2: GLOBAL LEADERSHIP

The Indian government has affirmed its commitment to global vaccine cooperation. For instance, on June 4, 2020, in a speech at the Global Vaccine Summit 2020, Prime Minister Modi said India stood in global solidarity with its vaccine manufacturing capacity and its will to assist the world in a spirit of sharing and caring (Indian Prime Minister’s Office 2020). India is the world’s third-largest pharmaceutical producer and the nation that houses the Serum Institute of India—the world’s largest vaccine manufacturer by volume and the largest contracted producer of vaccines for COVAX. The Indian government has also actively engaged in vaccine diplomacy. However, because of the second wave of COVID-19, the Indian government gradually suspended Vaccine Maitri and then later any vaccine exports outside India between March and October 2021 to prioritize inoculating its own population. This suspension impeded COVAX’s acquisition plans and challenged other nations in the form of lags in planned distributions of vaccines (Asundi et al. 2021; Gavi 2021).

INDIA 3: SHARING RESOURCES

As of November 18, 2022, the total number of vaccines pledged to be donated by the Indian government for global use was 72 million doses (GHIC 2022). In terms of recipient nations, Asia accounts for 53% (18 nations) and Africa accounts for 44% (38 nations).

INDIA 4: EXTENDING CAPABILITY

Since early October 2020, the governments of India and South Africa have driven the campaign to temporarily exempt COVID-19 vaccines from intellectual

property rights. Over 100 nations, mostly developing nations, have backed the waiver request to the World Trade Organization (WTO) with the expectation that such an exemption can improve global COVID-19 vaccine access and equity (WTO 2021). Reflecting on the discussions among India, South Africa, the EU, the United States, and other nations, the WTO decided in June 2022 to partially waive intellectual property rights to COVID-19 vaccines (WTO 2022).

EUROPEAN UNION

EUROPEAN UNION 1: ROADMAP

On April 21, 2020, the European Commission issued “A Roadmap for Recovery,” incorporating discussions among EU members on a comprehensive COVID-19 recovery plan. This Roadmap underscores solidarity, agility, inclusivity, and common values and rights in the collaborative recovery effort. Four key areas for action are mutually defined as follows: 1) a fully functioning and revitalized single market, 2) an unprecedented investment effort, 3) acting globally, and 4) a functioning system of governance. The third action recognizes the EU as a global actor responsible for multilateralism and a rules-based international order, and it pledges to assist nations in need, especially African nations (European Commission 2020a).

EUROPEAN UNION 2: GLOBAL LEADERSHIP

The EU has demonstrated efforts to strengthen global leadership and intense collaboration in tackling the COVID-19 pandemic. The term “Team Europe,” made up of the EU, the European Investment Bank, and the European Bank for Reconstruction and Development, was introduced in April 2020 and represents the EU’s global response to the pandemic (European Commission 2020b). This approach includes joined-up strategies, combined financial packages, and support for global coordination and multilateralism (Burni et al. 2022). For example, the 6th EU-African Union (AU) Summit, held on February 17 and 18, 2022, convened to ensure fair and equitable vaccine access. During the Summit, the EU reaffirmed its commitment to provide over 450 million COVID-19 vaccine doses to Africa by mid-2022, in partnership with the Africa Vaccine Acquisition Task Team platform (European Commission 2022a).

EUROPEAN UNION 3: SHARING RESOURCES

As of November 18, 2022, the total number of vaccines pledged to be donated by the EU and its member nations

for global use was 671 million doses (GHIC 2022). In terms of recipient nations, Africa accounts for 44 % (48 nations), and Asia accounts for 34 % (24 nations).

EUROPEAN UNION 4: EXTENDING CAPABILITY

On March 24, 2022, the EU announced it would contribute €24.5 million to the AU to increase local vaccine production, along with three main action categories: technology transfer (€12 million), regulatory strengthening (€11.5 million), and demand consolidation and strategic purchasing (€1 million). This support is part of its €1 billion Team Europe initiative on manufacturing vaccines and providing access to vaccines, medicines, and health technologies in Africa (European Commission 2021, 2022b).

UNITED STATES

UNITED STATES 1: ROADMAP

On July 1, 2021, President Biden released the U.S. COVID-19 Global Response and Recovery Framework (“Framework”), under which U.S. federal agencies execute a whole-of-government response to the global pandemic. The Framework offers five objectives: to expand worldwide delivery of safe and effective COVID-19 vaccines, to strengthen global health systems, to address urgent humanitarian needs driven by COVID-19, to bolster economies and other critical systems, and to reinforce the international health security architecture (The White House 2021a). The Framework emphasizes Goal 7 of the National Strategy for the COVID-19 Response and Pandemic Preparedness released on January 21, 2021, which is to “restore U.S. leadership globally, advance health security, and build better preparedness for future threats” (The White House 2021b).

UNITED STATES 2: GLOBAL LEADERSHIP

The Biden-Harris Administration has continuously shown its willingness to lead global COVID-19 agendas. For example, in accordance with the Framework, President Biden convened the Global COVID-19 Summit on September 22, 2021, and he urged participants to reconfirm a shared vision for vaccinating the world, including fulfilling the Group of 20’s (G20) target of at least 40% of the global population by the end of 2021, as well as the WHO’s target of at least 70% of the global population by the United Nations General Assembly 2022 in September 2022. The U.S. government also led the discussion on enhancing equitable access to vaccines across the world (The White House 2021c, 2021d).

UNITED STATES 3: SHARING RESOURCES

The United States donated more COVID-19 vaccine doses than all other nations combined. The total number of vaccines pledged to be donated by the U.S. government for global use before 2023 was over 1.2 billion doses. Of these pledges, as of November 29, 2022, the United States had shipped 665.8 million doses to 116 nations. Most of these vaccines (about 89%) were delivered through COVAX, though some were delivered directly to the recipient nation (U.S. Department of State 2022).

UNITED STATES 4: EXTENDING CAPABILITY

The U.S. government attempted to expand regional and local capacity for manufacturing COVID-19 vaccines. For instance, the U.S. International Development Finance Corporation (DFC) invested about \$2 billion into over 25 projects that strengthen the COVID-19 response and health resilience through the Global Health and Prosperity Initiative; one such investment was a \$3.3 million technical assistance grant for La Fondation Institut Pasteur de Dakar in Senegal (DFC 2021). Also, U.S. Trade Representative (USTR) Katherine Tai supported a waiver of intellectual property protections for COVID-19 vaccines, which—as previously noted—would help to expand vaccine manufacturing and distribution in developing nations (USTR 2021, 2022).

Discussion

This study asserts that taking an international and comparative perspective on inequity will expand social equity research and offer insights into the connection between transnational phenomena and within-nation inequities. Since the beginning of the COVID-19 pandemic, national governments have faced agonizing decisions on COVID-19 countermeasures under conditions of uncertainty. Vaccine inequity creates further social inequity and imperils the global recovery from the COVID-19 pandemic (Hotez 2021). China, India, the EU, and the United States have a moral responsibility to be at the leading edge of global COVID-19 vaccine-sharing policies because vaccines were largely developed in these nations.

Figure 1 demonstrates that vast inequities persist in access to vaccines. However, a paradox emerges in at least on the four drivers of social equity assessed in this article, the global program is performing reasonably well on the surface in expanding access to COVID-19

vaccines to low-income nations. We speculate that this paradox could be due to the limitations of this study, as detailed at the end of this discussion section.

Although China, India, the EU, and the United States have made significant commitments to providing vaccines to other nations, critics claim that COVAX and similar charity-based models of vaccine distribution fall short of addressing core concerns revealed by the global pandemic. Rather than protecting the interests of the state or the profits of private vaccine companies with pledged donations, these major vaccine-producing nations can better promote equity by enabling other nations to produce their own vaccines. We observe some movement in this direction, despite fiscal and legal liability constraints. Nevertheless, much would need to change to prioritize global public health ahead of financial gains, such as licensing vaccines more widely to nations in need (consistent with the driver of self-sufficient capability).

In addition to building more robust multilateral cooperation (e.g., through COVAX), global engagement by individual nations is essential to mitigate the grave inequities between nations caused by the pandemic. However, the global engagement around COVID-19 vaccines cannot be taken for granted. Even nations with enough vaccine manufacturing capacities can face internal pressures that conflict with the government's decisions, such as those which bar distribution of vaccines outside of their nations (Boin and 't Hart 2010). As shown in the case of India, when facing a public health emergency, governments may sacrifice their international commitments to meet domestic needs first. This effect stands in the way of vaccine equity. Like climate change agreements, enforcing commitments has proven difficult to accomplish. Such wicked transboundary problems as the COVID-19 pandemic led to uncertainty and fear, pushing governments to follow a protectionist approach, despite the detrimental costs of vaccine nationalism (Çakmaklı et al. 2021; Hafner et al. 2020).

The COVID-19 pandemic affords an opportunity to anticipate and reimagine what the measures of social equity could look like in a comparative context. The four case studies in this article illustrate that even when governments put social equity at the forefront in plans and statements, the pressure to serve domestic imperatives outweighs effective action that can meaningfully reduce the gap in vaccine access. It is possible that outcomes may improve over time to reflect a more globally coordinated

action with the establishment of a global COVID-19 response roadmap (as opposed to sporadically announcing vague commitments), the strengthening of global leadership (as opposed to focusing inward), the sharing of vaccines (as opposed to stockpiling them), and the extension of nation-level distribution and delivery capabilities (as opposed to taking part in ad-hoc charity). This integrated approach could have a considerable impact not only on public administration's ability to deliver the promise of public service but also on redefining public administration at a time of global turbulence.

Some scholars contend that social equity is a concept that can only apply to people who are citizens of the same political community or state (Miller 2007; Rawls 1971). This view stems from the idea that equity and justice are socially constructed concepts that are dependent on shared political circumstances. However, this view ignores the role of globalization in the question of justice for all humans, regardless of their citizenship status (Brown 2012). Despite the commitments to advancing vaccine access across the globe, defection from commitments and vastly inequitable distribution demonstrate the inadequacy of existing approaches.

Limitations exist in this case study. This article has not effectively engaged with previous experiences in which global vaccine distribution and social equity had arisen (e.g., Ebola, HIV/AIDS, MERS, SARS, and Zika). Also, concerns about the full life cycle of vaccines, which include cold chain logistics and disposal management, may disclose new equity aspects. Additionally, in terms of the four social equity drivers used in this study, further research needs to investigate the extent to which politics or political power influences the initiative of resource production and distribution capacity. Each driver necessitates a more in-depth examination of how it contributes to social equity or inequity. Potential research questions are as follows: What is the basis for distributing the vaccines to other nations compared to each nation's own production capacity? Do political relationships matter in distributing the vaccines? How can we measure the success rates of extending self-sufficient capabilities to other nations?

Another limitation of this article is that social equity has been operationalized as accessibility to vaccines in low-income nations. This blunt measure tells us how wealthier nations prioritized vaccine sharing, leaving out nuances that these data do not reveal. An example of such an omission is that healthcare professionals

in sub-Saharan Africa were operating while unvaccinated (Kupferschmidt 2021). The failure to prioritize the vaccination of healthcare workers is perceived as a moral failure by the global public health community. However, such nuances are not evident from the analysis of COVAX and collaboration among China, India, the EU, and the United States. Finally, COVID-19 is unique in the amount of attention and pressure that was applied to nations to share vaccines. A comparative case study of a less salient public health issue may shed light on a different set of calculations and behaviors by nations.

Conclusion

When public administration scholars discuss social equity between nations, the scope of public service delivery becomes too broad to fit into the domain of a single nation. While every nation has its own design of public service provision with strengths and weaknesses, it is challenging to discuss a broader perspective. However, as COVID-19 offers a case in point for how social equity is a global issue, this article brings attention to a relatively overlooked issue. Reckoning with future global issues that exacerbate preexisting inequities and injustices between nations, we propose a pathway for practice and theory development. In doing so, this article contributes to developing a more contextual understanding of social equity and redefining public administration in an era of turbulence.

Engaging with social equity analysis in a comparative and global context enables scholars to expand the scale of equity research and draw the role of transnational phenomena in perpetuating inequities as well as overcoming them. This article uses vaccine sharing between nations as a case study of how nations place importance on justice and equity in the global response to the COVID-19 pandemic. The analysis finds that while the policies of China, India, the EU, and the United States perform well on the surface when compared along four social equity drivers, the reality on the ground in low-income nations indicates a dismal performance. However, there is cause for hope. The global outcry over vaccine inequity led to more international cooperation than would have otherwise occurred. Moreover, nations have the ability to realign their commitments and achieve substantial improvements to infuse social equity into public administration, not only for COVID-19 but also for future transboundary

issues. Public administration scholars are encouraged to help reshape the design and implementation of social equity initiatives and programs across nations.

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Appendix A. List of Data Sources

No.	Category	Nation	Title	Source
01	Databases	General	COVID-19 Vaccine and Therapeutics Data	Duke Global Health Innovation Center
02	Databases	General	COVID-19 Market Dashboard	United Nations Children’s Fund
03	Statements	General	Listings of WHO’s Response to COVID-19	World Health Organization
04	Statements	General	COVID-19 Research and Innovation Achievements	World Health Organization
05	Statements	General	Waiver from Certain Provisions of the TRIPS Agreement for the Prevention, Containment and Treatment of COVID-19	World Trade Organization
06	Statements	General	Ministerial Decision on the TRIPS Agreement	World Trade Organization
07	Reports	General	Request for Proposals: Equitable Access Review of CEPI’s COVID-19 Vaccine Development Agreements	Coalition for Epidemic Preparedness Innovations
08	Reports	General	Our Portfolio: COVID-19	Coalition for Epidemic Preparedness Innovations
09	Reports	General	COVAX Global Supply Forecast	Gavi
10	Reports	General	Coronavirus (COVID-19) Vaccines for Developing Nations: An Equal Shot at Recovery	Organisation for Economic Co-operation and Development

No.	Category	Nation	Title	Source
11	Statements	China	Full Text: Speech by President Xi Jinping at the Opening of the 73rd World Health Assembly	Xinhua
12	Statements	China	Full Text: Remarks by Chinese President Xi Jinping at the Global Health Summit	Xinhua
13	Statements	China	Wang Yi Hosts the First Meeting of the International Forum on COVID-19 Vaccine Cooperation	Ministry of Foreign Affairs of the People's Republic of China
14	Statements	China	Wang Yi: China Makes "Four Firsts" in International Vaccine Cooperation	Ministry of Foreign Affairs of the People's Republic of China
15	Statements	China	BRICS Vaccine R&D Center Online Launch Ceremony and Vaccine Cooperation Seminar Successfully Held	Ministry of Science and Technology of the People's Republic of China
16	Reports	China	The COVID-19 Pandemic and China's Global Health Leadership	Council on Foreign Relations
17	Statements	India	Vaccine Maitri	Ministry of External Affairs, Government of India
18	Statements	India	Prime Minister Addresses the virtual Global Vaccine Summit 2020	Indian Prime Minister's Office
19	Statements	EU	€1 billion Team Europe Initiative on Manufacturing and Access to Vaccines, Medicines, and Health Technologies in Africa	European Commission
20	Statements	EU	6th European Union - African Union Summit: A Joint Vision for 2030	European Commission

No.	Category	Nation	Title	Source
21	Statements	EU	EU Strengthens Partnership with WHO to Boost Local Manufacturing and Access to Vaccines, Medicines, and Health Technologies in Africa	European Commission
22	Reports	EU	A Roadmap for Recovery: Towards a More Resilient, Sustainable and Fair Europe	European Commission
23	Reports	EU	Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Communication on the Global EU response to COVID-19	European Commission
24	Statements	U.S.	COVID-19 Vaccine Deliveries: COVID-19 Vaccine Donations	U.S. Department of State
25	Statements	U.S.	Expanding Vaccine Manufacturing in Africa	U.S. International Development Finance Corporation
26	Statements	U.S.	Statement from Ambassador Katherine Tai on the COVID-19 TRIPS Waiver	U.S. Trade Representative
27	Statements	U.S.	Statement from Ambassador Katherine Tai on an Intellectual Property Response to the COVID-19 Pandemic	U.S. Trade Representative
28	Reports	U.S.	U.S. COVID-19 Global Response and Recovery Framework	The White House
29	Reports	U.S.	National Strategy for the COVID-19 Response and Pandemic Preparedness	The White House

No	Category	Nation	Title	Source
30	Reports	U.S.	FACT SHEET: President Biden's Global COVID-19 Summit: Ending the Pandemic and Building Back Better	The White House
31	Reports	U.S.	FACT SHEET: Targets for Global COVID-19 Summit	The White House

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