Vaccine Allocation Under Global Inequality

Cindy Tran

Abstract

The COVID-19 pandemic exposed deep inequities in global vaccine distribution, as high-income countries secured early and surplus access while low- and middle-income countries faced prolonged shortages. Existing allocation mechanisms shaped by market forces and voluntary humanitarian initiatives failed to provide a just framework for equitable access. This paper applies John Rawls's theory of justice, particularly the difference principle and the just savings principle, to evaluate global vaccine allocation practices and ethical shortcomings. By analysing current models such as the Fair Priority Model, the paper argues that treating vaccine equity as discretionary charity undermines justice within a global cooperative system. A Rawlsian perspective requires that inequalities in access and capacity be justified only as they benefit the least advantaged and sustain just institutions over time. On this basis, the paper proposes a set of justice-based reforms, including binding allocation obligations, temporary intellectual property waivers during global health emergencies, and the development of regional vaccine manufacturing capacity. Together, these measures aim to align global vaccine governance with principles of fairness, reciprocity, and intergenerational justice, strengthening both immediate pandemic response and long-term global health preparedness.

Introduction

During the COVID-19 pandemic, the challenge of equitable global vaccine distribution emerged as a major issue, exposing profound injustices. I argue that adopting John Rawls's principles of justice provides a clearer and more equitable framework for vaccine distribution. This essay outlines the failures of current vaccine allocation methods, explains how Rawls's theory addresses these gaps, and proposes reforms to create a fairer and more sustainable global allocation model.

Global vaccine allocation operates through a hybrid model that combines market-based bilateral procurement with voluntary multilateral cooperation. Without a single coordinated framework, equal vaccine access was obstructed by conflicting pressures and misaligned incentives. These impediments stemmed from disparities in national purchasing power, private manufacturing control, as well as ad hoc global initiatives.

In practice, high-income countries (HICs) negotiated advance purchase agreements (APAs) directly with pharmaceutical manufacturers. This allowed them to secure vaccine doses to cover 150-500% of their populations' predicted needs (Padma, 2021). These bilateral deals enabled rapid domestic access but also concentrated supply among a few wealthy nations during the critical early months of the pandemic.

Alongside negotiated APAs, a multilateral mechanism known as COVAX, coordinated by the World Health Organisation (WHO), Gavi, and the Coalition for Epidemic Preparedness Innovations (CEPI), was established to promote equitable global distribution. COVAX aimed to deliver vaccines to cover 20% of the populations of participating countries, prioritising healthcare workers and high-risk groups (Gavi, the Vaccine Alliance, 2021). However, participation was

voluntary, and wealthier nations often joined as a form of insurance, withdrawing or reducing commitments once their domestic supply chains were secured (Jecker, 2022).

Currently, no binding international governance framework exists to enforce equitable access to or regulation of vaccine distribution. Unlike trade or finance, global health lacks an enforceable regulatory regime. Thus, resolutions remain non-binding. Power is concentrated among individual nations and private pharmaceutical companies, which determine pricing, supply contracts, and production priorities. Consequently, global vaccine access increasingly depends on economic capacity and political influence rather than collective need or justice-based principles.

The COVID-19 pandemic demonstrated that this hybrid model resulted in unequal global vaccine distribution. COVAX aimed to distribute 2 billion COVID-19 vaccine doses globally, “in the places of greatest need”, by the end of 2021 (WHO, 2020) however, it delivered only around 910 million doses within this timeframe (de Bengy Puyvallée et al., 2022). By early 2022, 73.7% of people in HICs were fully vaccinated, compared to only 9.9% in low-income countries (LICs) (Our World Data, 2022). These disparities led WHO Director-General Tedros Adhanom Ghebreyesus to describe the situation as “vaccine apartheid” (Ghebreyesus, 2021).

Ethically, these outcomes indicate a system governed by conflicting and inconsistent principles rather than a coherent framework of justice (Jecker, 2022). Market logic prioritised efficiency and economic return, allowing wealthy nations to secure supply through purchasing power. Humanitarian logic advocated for global solidarity but operated primarily as voluntary charity rather than as a binding obligation. National security logic justified vaccine hoarding under the premise of protecting domestic populations, even at the expense of global containment. Diplomatic logic positioned vaccines as instruments of influence, distributed strategically to strengthen alliances and project soft power (Jecker, 2022).

The resulting system is not merely inefficient but ethically incoherent, lacking a shared normative foundation to determine what justice requires in cases of vaccine distribution. This absence of principle leaves global health governance reactive and inconsistent, unable to guarantee equitable outcomes in the face of future crises. The fragmented ethical foundations of vaccine allocation highlight the necessity of not just operational improvement, but also fundamental moral reinterpretation. To move from this context to a principled system, it is vital to ground global vaccine justice within a more unified theoretical perspective. Accordingly, this paper turns to John Rawls’s theory of justice, particularly the difference principle, as a framework for structuring inequality so that it systematically benefits the least advantaged.

Rawls Principles in Context

John Rawls’s *A Theory of Justice* (1971) offers a robust framework for rethinking how societies should dictate scarce resources fairly. Rawls proposed that a just system is one whose principles are such that free and equal individuals would endorse them under a “veil of ignorance.” The veil of ignorance is a thought experiment that removes knowledge of one’s nationality, wealth, or social status. From this impartial perspective, Rawls argues, rational individuals would choose principles that safeguard fairness and equality, as no one would know their eventual position in society. Rawls’s model does not seek to eliminate inequality entirely

but to structure it so that social and economic advantages work to the benefit of all, particularly those who are the least advantaged.

Two of Rawls's principles are particularly relevant to the problem of global vaccine allocation. The *difference principle* asserts that "social and economic inequalities are to be arranged to the greatest benefit of the least advantaged." (Rawls, 1999, p. 266) The *just savings principle*, meanwhile, concerns duties of intergenerational justice. Here, Rawls argues, the main duty owed to our successors is the saving of sufficient capital (material, institutional, etc.) to maintain just institutions over time. (Rawls, 1999 p. 251)

Rawls' conception of justice as fairness characterises justice in terms of two principles: a guarantee of equal basic liberties and a regulation of social inequalities through fair equality of opportunity and the difference principle. (Rawls, 1999, p. 266) Importantly, satisfying the difference principle is a necessary but not a sufficient condition for justice. While any just society must ensure that inequalities work to the greatest benefit of the least advantaged, this condition alone does not render a society just; it must also uphold fundamental freedoms and guarantee genuinely fair opportunities.

The violation of the necessary condition the difference principle sets out is clearly observed in current global vaccine allocation. According to the *difference principle*, disparities in access, wealth, or production capacity are justifiable only if they improve the situation of those who are least advantaged. However, global vaccine distribution in the pandemic fell short on this score. HICs leveraged their economic and political power to secure disproportionate vaccine supplies and restrict technology transfer, concentrating benefits among themselves and leaving LICs and LMICs dependent on delayed charity. Of course, HICs possessing greater manufacturing capacity, research infrastructure, or purchasing power is not inherently unjust, but these advantages must function to benefit LMICs as well to stand as part of a just distribution system.

Within a Rawlsian framework, however, the standards for fairness extend beyond the difference principle alone. The first principle of equal rights requires individuals to have access to the fundamental conditions necessary to exercise their rights, which includes a baseline level of health protection. Therefore, securing minimum vaccine access for all populations becomes a requirement of justice, not an act of charity. The second principle's demand for fair equality of opportunity further implies that allocations must counteract structural disadvantages, such as weak health systems or high disease burden[1] which limits access to quality care.

Only after these conditions are met do inequalities become permissible, and even then, only if they satisfy the difference principle by improving the position of the least advantaged. In this view, fairness in vaccine distribution is not measured by aggregate dose counts or speed of economic recovery. Rather, it is measured by whether the system protects basic rights to fair healthcare opportunities and structures inequalities to support those most disadvantaged by global arrangements.

[1]An indicator of the state of health of a population, measured as the frequency of a condition or its effects including fatal and non-fatal health loss from disease, and financial costs (Udompap, Kim and Kim, 2015)

Furthermore, reciprocity plays a central role within Rawls's conception of a fair social system. Rawls understands justice as governing a cooperative scheme among free and equal participants, where its benefits are distributed according to fair terms that all could reasonably accept. This implies that when HICs reap advantages from early vaccine access, such as faster economic reopening or reduced exposure to new variants, these gains cannot stand alone. They must be paired with predictable and enforceable improvements for LMICs and LICs participating in the same global health system. Reciprocity therefore requires that mutual advantage be built directly into the design of vaccine distribution, rather than left to discretionary goodwill. For this reason, equity cannot remain an optional act of generosity. Under a Rawlsian account, it becomes a justice-based obligation binding participants to share the gains of cooperation fairly.

While reciprocity governs fairness among present participants in a cooperative scheme, Rawls also insists on fairness across generations. Applied to global vaccine allocation, the *just savings principle* requires more than distributing existing doses fairly. It demands that today's global health arrangements be structured so that future populations, regardless of nationality or wealth, are not left vulnerable to similar patterns of scarcity and inequality when the next pandemic arrives. In this sense, the just savings principle complements the difference principle by extending justice from the present moment to the long-term design of global health institutions. A system that fails to reduce structural dependency, strengthen global resilience, or secure fair opportunities for future societies falls short of Rawls's requirements for intergenerational justice.

Suggestions for a Better System

A Rawlsian approach offers a constructive template for a just allocation model. If inequalities are to benefit the least advantaged and all societies are to retain fair opportunities to protect health, the existing hybrid model of bilateral procurement and voluntary multilateralism is structurally incapable of meeting these requirements. Collectively, these mechanisms systematically fail to secure baseline protection for the most disadvantaged and therefore violate Rawlsian constraints.

A more just system would require re-ordering the criteria that guide global allocation. Instead of beginning from market efficiency or purchasing power, a Rawls-aligned framework would begin from structural vulnerability. First, early vaccine doses should be allocated to countries with the weakest health infrastructure, greatest barriers to access, or highest disease burden. This does not reject efficiency outright but insists that efficiency be subordinate to justice. In this sense, logistical capacity or speed cannot override the duty to protect those at greatest disadvantage. In this way, Rawlsian justice shifts its starting point for global allocation away from aggregate welfare and toward fair equality of opportunity.

Beyond immediate allocation, a Rawlsian system also requires reforming global health institutions so that they secure just conditions over time. As opposed to relying on episodic redistribution of finished vaccines, a just system would pre-distribute capability, ensuring that countries possess a basic level of scientific, technological, and public health capacity. This aligns with the just savings principle, which obliges present societies to maintain institutions that

future generations, regardless of national wealth, can depend upon. It suggests that vaccine equity is not a one-off task but a structural requirement of global justice.

These considerations outline the broad features of a more just allocation framework: distributive priority grounded in vulnerability rather than market capacity, global institutions that impose obligations instead of relying on charity, and long-term investments that prevent future inequity. The following section develops these ideas into concrete implementation pathways and examines the associated political and practical challenges.

Implementation Pathways

Translating Rawlsian principles into practice requires global health governance to move from voluntary charity to binding obligations. Recent proposals for a WHO Pandemic Treaty argue that global vaccine equity cannot rely solely on goodwill. Instead, it necessitates enforceable cross-border duties that prioritise solidarity and address the needs of the least well-off (Jecker, 2022).

A practical approach is to embed equity requirements directly into the contractual frameworks of institutions such as WHO or COVAX. Rather than relying on goodwill, member states would be obligated to contribute a fixed share of early vaccine supply to LICs before securing additional domestic doses. This would transform participation in multilateral mechanisms from an optional insurance policy into an enforceable agreement.

Implementing such binding obligations could, however, encounter substantial political resistance. Mandatory early-dose contributions may be viewed as constraints on national sovereignty and the right to prioritise domestic populations. This pursuit of vaccines in the national interest, is known as “vaccine nationalism”.. For example, Canada secured APAs amounting to 9.5 doses per capita (So and Woo, 2020), and was the only G7 nation to draw from COVAX’s first allocation, receiving approximately 1.9 million AstraZeneca doses intended primarily for lower-income countries (Lexchin, 2023). The decision was publicly defended as necessary under conditions of uncertainty. As Canada’s International Development Minister Karina Gould stated, “Our top priority is to ensure Canadians have access to vaccines… Canada made the decision… to take on this first allocation, because we recognise how important it is that all Canadians have access to vaccines.” (BBC News, 2021) This choice constrained early global supply and exemplified vaccine nationalism in practice, illustrating how political pressures to prioritise domestic populations can undermine equity-based allocation frameworks.

Furthermore, binding obligations require robust oversight, monitoring, and enforcement, which may be perceived as intrusions into national decision-making. Some states may resist transferring authority to WHO or similar institutions, particularly if non-compliance could result in penalties or sanctions. Additionally, pharmaceutical industry stakeholders may lobby against frameworks that diminish their bargaining power or require advance licensing commitments. These tensions underscore the political challenges of converting equity from voluntary generosity into enforceable duty, even when such transformation is morally justified under Rawls’s framework.

Despite these political costs, binding obligations provide significant advantages by aligning the self-interest of HICs with the global common good. Persistent large unvaccinated populations

increase the risk of new variants that could undermine HICs' protection and trigger repeated economic shutdowns. Early and predictable vaccine access for LICs would accelerate global herd immunity, stabilise international supply chains, and reduce the likelihood that HICs will bear the economic consequences of prolonged trade disruptions. Thus, sharing early vaccine doses constitutes a strategic investment in preventing new mutations, border closures, and supply-chain shocks that threaten the prosperity and health of HIC populations

Nations already participate in treaties that require disproportionate contributions to collective defence, recognising two key features of cooperation. First, relative advantage is temporary; geopolitical power, vaccine production capacity, scientific leadership, and outbreak epicentres can shift unpredictably. A state that produces vaccines in one pandemic may become a dependent recipient in the next. Second, binding cooperative frameworks generate side-benefits that surpass those of unilateral control. For example, the North Atlantic Treaty Organization (NATO) enhances security, diplomatic stability, and deterrence among member states with varying military strength. Similarly, a binding vaccine-equity framework would foster global surveillance, information sharing, research collaboration, and political trust between HICs and LICs. These benefits are unattainable through unilateral action. The logic that justifies asymmetric military commitments thus applies to global health: binding obligations establish infrastructure that ultimately strengthens all members, including those contributing more.

A Rawlsian approach closely aligns with the Fair Priority Model (FPM) (Emmanuel *et al*., 2020), which offers a structured framework for vaccine allocation, specifying who should receive vaccines first and when. The FPM's three phases—preventing premature deaths, reducing social and economic harms, and limiting transmission—move beyond national-interest allocation toward a global, needs-based system. These recommendations are broadly consistent with Rawls's difference principle. At this level, both the Rawlsian and FPM approaches prioritise those at greatest risk and communities least able to protect themselves.

The Rawlsian framework extends beyond the FPM by addressing structural injustice. While the FPM is primarily an allocation model focused on distributing existing doses, Rawlsian justice requires confronting the underlying conditions that lead to inequitable distribution in the global vaccine system. This approach introduces a fourth phase, guided by the just savings principle, which obligates states to ensure that future generations are not dependent on the goodwill or production capacity of a few wealthy countries. Measures such as temporary intellectual property waivers during global health emergencies, mandatory technology sharing, and early investment in regional manufacturing hubs directly follow from this requirement (Kavanagh, Gostin and Sunder, 2021).

Temporary intellectual property waivers during global health emergencies expand global manufacturing capacity at the moment it is most needed. Supportive governments, such as the United States and France, acknowledged that existing World Trade Organisation (WTO) rules make it legally difficult for countries to produce or import vaccines rapidly (Kavanagh, Gostin and Sunder, 2021), especially for technologies like mRNA vaccines that are tied to more than 100 separate patents across multiple patent holders (Correa, 2021). A temporary WTO waiver would not abolish patents outright but would allow governments to authorise local production, importation, and exportation of vaccines without the threat of litigation. This would remove a major bottleneck for LMICs with technical capacity but no legal freedom to manufacture.

However, waiving intellectual property alone may not immediately provide certain LMIC manufacturers the ability to produce vaccines. They also need access to the underlying know-how, production methods, and quality-control protocols. This knowledge is currently concentrated within a few pharmaceutical companies, creating structural dependency. Objections against technology transfer stems from arguments that local manufacturers "cannot scale quickly," but this suggestion is empirically unfounded.

A global initiative to transfer technology and equip countries with the capacity to manufacture vaccines is underway. In 2021, WHO partnered with the Medicines Patent Pool (MPP) and established a technology-transfer hub in South Africa, which initially focused on mRNA COVID-19 vaccine development. The programme successfully completed technology transfers to four of its partners in 2024 and has helped "increase capacity to produce safe and effective mRNA health products in countries that did not possess prior foundation of skills, equipment, technology and know-how" (World Health Organisation, n.d.). As of 1 May 2025, the programme has 15 partners across the 6 WHO regions, with participation still expanding.

By incorporating the just savings principle, the focus expands from merely allocating existing vaccines to ensuring equitable distribution of vaccine production capacity. Establishing distributed manufacturing hubs in Africa, Asia, and Latin America would substantially reduce the delays caused by export bans, bottlenecked supply chains, and concentration of production in a few wealthy countries. Although such reforms require moderate upfront investment and cooperation from pharmaceutical firms and trade bodies like the WTO, they deliver significant long-term benefits: strengthened regional autonomy, greater resilience to supply shocks, and a global system no longer vulnerable to concentrated monopolies. In this way, a Rawlsian extension of the FPM not only guides fair distribution during crises but builds the conditions necessary for equitable outcomes across generations.

Objections

Two objections may be raised against a Rawlsian framework for global vaccine justice. First, critics may argue that imposing binding obligations on HICs risks incentivising free-riding by LMICs and LICs. However, this concern misunderstands Rawls's conception of justice as governing a cooperative scheme among free and equal participants. Rawlsian reciprocity does not require identical contributions from all parties, but fair terms of cooperation proportional to individual capacity. LMICs and LICs would commit to participating in transparent allocation mechanisms, investing received resources into public health infrastructure, cooperating in disease surveillance and data-sharing, and working toward building sustainable domestic capacity where feasible.

A second objection concerns the scope and duration of this framework. Rawls's theory rejects both permanent dependency and the elimination of all inequality. The difference principle and just savings principle operate according to threshold conditions rather than open-ended equalisation. This means that once countries possess sufficient vaccine access, regional production capacity, and resilient health systems, the moral basis for heightened obligations diminishes. The just savings principle frames redistribution as transitional and forward-looking, aimed at enabling future self-sufficiency rather than perpetuating reliance. Rawlsian obligations

are therefore time-limited, purpose-bound, and self-extinguishing once fair background conditions are secured.

To assess a country's need for continued aid, this framework adopts a qualitative triage approach, categorising states by urgency of vulnerability. Countries may be broadly distinguished by their capacity to secure vaccines independently during a global health emergency: those with sufficient domestic or regional production and procurement ability, those partially dependent on external support, and those unable to meet basic vaccine needs without international assistance. Priority of aid is strongest toward the latter group and diminish as countries move out of acute vulnerability.

Conclusion

The COVID-19 pandemic revealed not only an unequal vaccine distribution system but also the structural conditions that render such inequity predictable. A Rawlsian framework clarifies that justice in global health requires protecting basic liberties, counteracting structural disadvantage, and ensuring that inequalities benefit the least advantaged. While the Fair Priority Model guides fair allocation, Rawls's principles demonstrate that equal access cannot be achieved without reshaping the background institutions that determine vaccine production and access.

The reforms outlined in this essay— technology sharing, regional manufacturing capacity, and binding multilateral commitments—demonstrate how Rawlsian justice can inform practical policy. Though these measures carry political costs, their collective benefits are substantial: faster global recovery, reduced variant emergence, and a more resilient and cooperative international system.

A just vaccine system cannot rely on voluntary goodwill. Obligations must be institutionalised so that access to life-saving technologies is not determined by national wealth or historical advantage. Embedding Rawlsian principles into global health governance is therefore essential for building a fairer and more sustainable response to future pandemics.

References

BBC News (2021) 'Covax: Canada defends taking vaccines from sharing scheme'. 4 February. Available at: https://www.bbc.com/news/world-us-canada-55932997 (Accessed: 23 December 2025).

Correa CM. 'Expanding the production of COVID-19 vaccines to reach developing countries: lift the barriers to fight the pandemic in the global south'. *South Centre*. April 2021. https://www.southcentre.int/wp-content/uploads/2021/04/PB-92.pdf

de Bengy Puyvallée, A., Storeng, K. T., & Tagmatarchi Storeng, K. (2022). 'COVAX, vaccine donations and the politics of global vaccine inequity'. *Globalization and Health,* 18(1), pp. 26. https://doi.org/10.1186/s12992-022-00801-z

Emanuel, E.J., Persad, G., Richardson, H.S. *et al.* (2020) 'An ethical framework for global vaccine allocation', *Science*, 369(6509), pp. 1309–1312. doi: 10.1126/science.abe2803.

Gavi, the Vaccine Alliance (2021) *COVAX explained*. https://www.gavi.org/vaccineswork/covax-explained

Ghebreyesus, T.A. (2021) *Opening remarks at Paris Peace Forum Spring Meeting* (17 May). World Health Organization. https://www.who.int/director-general/speeches/detail/director-general-s-opening-remarks-at-paris-peace-forum-spring-meeting-17-may-2021

Jecker, N.S. (2022) 'Achieving global vaccine equity: The case for an international pandemic treaty', *Yale Journal of Biology and Medicine*, 95(2), pp. 271–280. https://pubmed.ncbi.nlm.nih.gov/35782474/

Kavanagh, M.M., Gostin, L.O. and Sunder, M. (2021) 'Sharing technology and vaccine doses to address global vaccine inequity and end the COVID-19 pandemic', *JAMA*, 326(3), pp. 219–220. doi:10.1001/jama.2021.10823

Lexchin J. (2023). 'Canada and the pharmaceutical industry in the time of COVID-19'. *International journal of social determinants of health and health services*, *53*(4), 508–517. https://doi.org/10.1177/27551938231195434

Our World in Data (2022) *Share of people who completed the initial COVID-19 vaccination protocol* (17 March). https://ourworldindata.org/grapher/share-people-fully-vaccinated-covid

Padma, T.V. (2021) 'COVID vaccines to reach poorest countries in 2023 – despite recent pledges', *Nature*, 595(7867), pp. 342–343. doi:10.1038/d41586-021-01762-w

Rawls, J. (1999) *A Theory of Justice*. Revised edition. Cambridge, MA: Harvard University Press.

So A.D., Woo J. 'Reserving coronavirus disease 2019 vaccines for global access: cross sectional analysis'. *BMJ*. 2020;371 https://doi.org/10.1136/bmj.m4750

Udompap, P., Kim, D. and Kim, W.R. (2015) 'Current and future burden of chronic nonmalignant liver disease', *Clinical Gastroenterology and Hepatology*, 13(12), pp. 2031-2041. https://doi.org/10.1016/j.cgh.2015.08.015

World Health Organization. (2020). 'ACT-Accelerator Investment Case'. https://www.who.int/publications/m/item/act-a-investment-case

World Health Organization (WHO) (n.d.) 'mRNA Technology Transfer (mRNA-TT) Programme'. https://www.who.int/initiatives/mrna-technology-transfer-(mrna-tt)-programme (Accessed: 12 December 2025)