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Tragic Allocation Challenges in the COVID-19 Era

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TRAGIC ALLOCATION CHALLENGES IN THE COVID-19 ERA

RONEN PERRY* AND TAL Z. ZARSKY**

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INTRODUCTION

Human society is facing its worst nightmare—a global pandemic caused by a highly infectious, resilient, and enigmatic virus,¹ which has already mutated into more transmissible and possibly even more virulent variants.² Nations have been slow to respond and adapt to the new scientific information made available. Medications and vaccinations took time to develop and their distribution has faced many hurdles.³ The elusive virus generates respiratory illness and an abundance of other symptoms, and might result in serious health complications or even death.⁴ Questions that have occupied moral philosophers for ages have transformed into urgent practical predicaments for doctors facing impossible situations and the need to “play God” on a daily basis. Societies, grown accustomed to the notion of plentifulness, have been forced to grapple with the prospect and unfortunate reality of scarcity.

More specifically, global reports indicate that many countries, including the United States, have prepared for scarcity in life-saving resources.⁵ Health ethicists worldwide have therefore been cleaning the dust off their theoretical papers and preparing (or updating) actual policy recommendations for these fundamental dilemmas.⁶ Even as another wave of this pandemic passes, vaccination rates rise, and the treatment of patients improves,⁷ the fears of future waves and

1. See, e.g., David Leonhardt, *A New Covid Mystery*, N.Y. TIMES (Apr. 6, 2022), <https://www.nytimes.com/2022/04/06/briefing/covid-cases-us-omicron-subvariant.html> [<https://perma.cc/PYF9-YNZT>] (explaining that much remains unknown even more than two years after the emergence of the original strain of the virus).

2. *Variants of the Virus*, CDC, <https://www.cdc.gov/coronavirus/2019-ncov/variants/index.html> [<https://perma.cc/QL5P-PPD9>] (last updated Aug. 11, 2021).

3. See Ricardo Alonso-Zaldívar & Matthew Perrone, *Fauci Confident Virus Vaccine Will Get to Americans in 2021*, AP NEWS (July 31, 2020), <https://apnews.com/article/virus-outbreak-ap-top-news-understanding-the-outbreak-health-anthony-fauci-2a4c1d64f8cb8efbadfd581594db8819> [<https://perma.cc/3SNB-KW6E>].

4. See *Coronavirus Disease (COVID-19)*, WORLD HEALTH ORG., https://www.who.int/health-topics/coronavirus#tab=tab_1 [<https://perma.cc/43BX-MUF5>] (last visited Aug. 11, 2022).

5. See Yascha Mounk, *The Extraordinary Decisions Facing Italian Doctors*, ATLANTIC (Mar. 11, 2020), <https://www.theatlantic.com/ideas/archive/2020/03/who-gets-hospital-bed/607807/> [<https://perma.cc/EE6S-4KBV>]; see also Lisa Rosenbaum, *Facing Covid-19 in Italy—Ethics, Logistics, and Therapeutics on the Epidemic’s Front Line*, 382 NEW ENG. J. MED. 1873, 1873-75 (2020) (discussing how Italian doctors lowered the “cut off” age for receiving ventilation support to seventy-five).

6. For a good example of a previously developed protocol that the COVID-19 pandemic rendered relevant, see N.Y. STATE DEP’T OF HEALTH, VENTILATOR ALLOCATION GUIDELINES 51 (2015), https://www.health.ny.gov/regulations/task_force/reports_publications/docs/ventilator_guidelines.pdf [<https://perma.cc/GM96-FD3U>] [hereinafter N.Y. VENTILATOR ALLOCATION GUIDELINES].

7. See The Editorial Board, *Coronavirus Good News*, WALL ST. J. (June 7, 2020, 9:40 PM), <https://www.wsj.com/articles/coronavirus-good-news-11591399491> [<https://perma.cc/XF47-F3PF>].

mutated viruses loom. Preparation for additional waves and future pandemics calls for finding responses not only to medical and public health issues but also to philosophical dilemmas.

In an early response to these events and in preparation for those to come, teams of leading health ethicists and other professionals have penned articles addressing the new rationing protocols, some of which have been published in the most distinguished journals, such as the *Journal of the American Medical Association (JAMA)*⁸ and the *New England Journal of Medicine*.⁹ These articles map out the analytical terrain and provide some concrete recommendations. The studies addressed and took as a given the potential scarcity of (1) medical equipment, such as ventilation and ECMO machines, (2) intensive care unit (ICU) beds, (3) personal protective equipment (PPE) and sanitizers, (4) trained medical staff, and (5) the limited stock of medications¹⁰ and vaccines, once developed, approved, and produced. The healthcare bottleneck may change over time, as the COVID-19 experience quite vividly demonstrates,¹¹ but the prospects of scarcity promise that very difficult decisions might be required at every stage.¹² Relying on bioethical principles¹³ rather than market forces to guide allocation,¹⁴ the ethicists draw out several influential recommendations. These include

8. See generally Douglas B. White & Bernard Lo, *A Framework for Rationing Ventilators and Critical Care Beds During the COVID-19 Pandemic*, 323 *JAMA* 1773 (2020).

9. See generally Ezekiel J. Emanuel et al., *Fair Allocation of Scarce Medical Resources in the Time of Covid-19*, 382 *NEW ENG. J. MED.* 2049 (2020).

10. See generally MINN. DEP'T OF HEALTH, *ETHICAL FRAMEWORK FOR ALLOCATION OF MONOCLONAL ANTIBODIES DURING THE COVID-19 PANDEMIC* (2021), <https://www.lrl.mn.gov/docs/2022/other/220445.pdf> [<https://perma.cc/J4W8-BCKC>] (mapping out the various strategies for allocating monoclonal antibodies, also under conditions of scarcity).

11. For instance, during certain stages of the pandemic, a shortage of oxygen emerged. See Luke Money et al., *Short on Equipment, Ambulances and Oxygen, L.A. County Hospitals Face Darkest Month*, *L.A. TIMES* (Jan. 5, 2021, 6:42 AM), <https://www.latimes.com/california/story/2021-01-05/short-on-equipment-ambulances-los-angeles-medical-systems-hit-dire-crisis-point> [<https://perma.cc/X96K-L6SF>].

12. Emanuel et al., *supra* note 9, at 2051 (“The choice to set limits on access to treatment is not a discretionary decision, but a necessary response to the overwhelming effects of a pandemic.”).

13. *Id.* (discussing “maximizing the benefits produced by scarce resources, treating people equally, promoting and rewarding instrumental value, and giving priority to the worst off”).

14. Reports indicate that in some countries, super-rich people secured access to ventilators. Denise Roland & Georgi Kantchev, *World's Wealthy Tap Personal Ventilators, On-Demand Doctors to Fight Coronavirus*, *WALL ST. J.* (Apr. 7, 2020, 1:46 PM), <https://www.wsj.com/articles/worlds-wealthy-tap-personal-ventilators-on-demand-doctors-to-fight-coronavirus-11586251553> [<https://perma.cc/4GRB-3CF9>].

prioritizing younger patients, applying lotteries, and providing priority in some instances to those benefiting society, such as healthcare providers.¹⁵ This is no doubt important and serious work.

We believe that given the severity and centrality of the issues before us, stepping outside of the realm of bioethical scholarship and thought may be valuable. In this Article, we move forward to illuminate these difficult questions from a somewhat different angle—that of legal experience and scholarship. At some points, this leads us to disagree with the scholarly advice provided in the bioethical literature. In terms of underlying methodology and ideology, health ethicists and related researchers have primarily called for maximization of benefits (which is perhaps a more liberal sounding version of the economic terms “efficiency” and “welfare maximization”). In the health context, this boils down to “doing the greatest good for the greatest number of patients.”¹⁶ Yet defining “good” is open to interpretation and debate. Additionally, these researchers strive to promote allocative equality and fairness. Inter alia, they need to confront seemingly discriminatory practices. Findings indicate that biases might be sneaking into existing allocation practices and considerations, thus leading to discriminatory outcomes, among others, based on age and disability.¹⁷ Ultimately, researchers examine which models can best achieve the underlying objectives of efficiency and fairness—tasks legal practitioners and scholars have grappled with for centuries while considering a variety of scarce resources.

This Article joins the growing debate regarding the proper allocation of scarce resources when facing a threat like COVID-19, adding a unique and important perspective. It calls on the policy and health communities to reconsider some of the recently published recommendations, while still accounting for existing legal literature and critical thinking about allocation methods and benefiting from accumulated

15. See Luigi Riccioni, et al., *Raccomandazioni di Etica Clinica per L'ammissione a Trattamenti Intensivi e per la Loro Sospensione, in Condizioni Eccezionali di Squilibrio tra Necessità e Risorse Disponibili* [*Clinical Ethics Recommendations for Admission to and Suspension of Intensive Care, in Exceptional Conditions of Imbalance Between Needs and Available Resources*], 111 *RECENTI PROG. MED.* 207 (2020), https://www.recentiproggressi.it/r.php?v=3347&a=33183&l=340302&f=allegati/03347_2020_04/fulltext/Rassegna%20-%20Riccioni.pdf [<https://perma.cc/RZ2T-KLDT>].

16. See White & Lo, *supra* note 8, at 1773.

17. Sheri Fink, *U.S. Civil Rights Office Rejects Rationing Medical Care Based on Disability, Age*, *N.Y. TIMES* (Mar. 30, 2020), <https://www.nytimes.com/2020/03/28/us/coronavirus-disabilities-rationing-ventilators-triage.html> [<https://perma.cc/RF63-BQBj>]; see also U.S. DEP'T OF HEALTH & HUM. SERVS., OFF. FOR C.R. IN ACTION, CIVIL RIGHTS, HIPAA, AND THE CORONAVIRUS DISEASE 2019 (COVID-19) 1 (2020), <https://www.hhs.gov/sites/default/files/ocr-bulletin-3-28-20.pdf> [<https://perma.cc/UA74-Y7WB>] (“As such, persons with disabilities should not be denied medical care on the basis of stereotypes, assessments of quality of life, or judgments about a person’s relative ‘worth’ based on the presence or absence of disabilities or age. Decisions by covered entities concerning whether an individual is a candidate for treatment should be based on an individualized assessment of the patient based on the best available objective medical evidence.”).

wisdom. Admittedly, some of the scarcity problems previously discussed in legal research were not as dramatic and tragic as those faced in the midst of the COVID-19 pandemic, but are comparatively rather mundane. Therefore, readers might be skeptical and even critical of our comparison to or reliance on allocations of other resources often discussed in the legal literature, such as water, fishing rights, family heirlooms, land, telegraph messages, and event tickets. We acknowledge that the COVID-19 pandemic at its peaks has been far direr. Still, the literature has considered higher-stake allocations, such as selective military drafts¹⁸ and the selection of patients for organ transplantation.¹⁹ Moreover, having a broad perspective of allocative problems enables the application of relevant insights derived from prior incidents, regardless of the stakes involved. The integration of the legal discourse into the COVID-ethical discussion introduces powerful concepts, insights, distinctions, taxonomies, tools, and methodologies, which will promote fair and efficient responses to the vexing issues that the COVID pandemic has brought forward.

The Article unfolds as follows. Part I presents the primary medical allocation principle, explains its limits, and outlines possible solutions. Part II closely examines and challenges the recent recommendations to opt for allocation via lotteries when patients are relatively equal, explaining why applying queues is often preferable from a fairness perspective. Part III compares the two methods (lotteries and queues) from an efficiency perspective. Part IV addresses key exceptions to the application of nonconventional allocation models: consent, merit, and skill. As opposed to other proposals addressing this matter, we argue that the exceptions should be applied carefully and narrowly. Part V examines the feasibility, utility, and fairness of reallocating scarce life-saving resources after their initial allocation. It focuses on the reallocation of ventilators and medical staff among patients in critical condition over time, frames the policy discussion regarding these matters within the broader debate on reallocating resources (“time-sharing”), and explains how relying on this paradigm can prove fruitful to the analysis.

I. THE PRIMARY CRITERION AND ITS LIMITS

The reality of healthcare systems is that demand often exceeds supply, and this problem is taken to the extreme in the case of a devastating global pandemic. Policymakers must establish (1) how to choose (or prioritize) among new patients in need of life-saving resources who enter the healthcare system’s queue, and (2) whether to prioritize

18. Ronen Perry & Tal Z. Zarsky, “*May the Odds Be Ever in Your Favor*”: Lotteries in Law, 66 ALA. L. REV. 1035, 1040, 1052 (2015) (discussing the drafts).

19. *Id.* at 1068-69 (discussing organ transplants).

them over patients already receiving treatment, to the extent that this is possible (if a vaccine, a drug, or oxygen has already been administered to patient X, changing patient X's position may be no longer feasible). We begin with the former question and turn to the latter in the last Part of the Article.

The primary and intuitively compelling allocation principle is "doing the greatest good for the greatest number of patients."²⁰ In more concrete terms, if the greatest good for the greatest number of patients is measured by the number of lives saved, life-saving resources must be allocated in a way that maximizes the number of lives saved. If the resource will increase A's probability of survival to ninety percent, and B's probability of survival to fifty percent, then in the case of scarcity, the resource should be allocated to A. According to an alternative view, the greatest good for the greatest number of patients should be measured by the number of years-of-life saved.²¹ Thus, if the resource can equally increase the probability of survival of two patients, but one has a longer life expectancy, this person must be saved first.²² The choice between these two yardsticks is difficult and highly controversial. Although we tend to favor maximization of years-of-life,²³ the insights offered by this Article are equally applicable to the maximization of lives saved.

Probability of survival, which is relevant under both criteria, can depend on the patient's age and prior medical condition.²⁴ If the patient had already been diagnosed with a life-threatening illness, such as cancer or heart disease, at the time of the infection, this diagnosis can be used to establish reduced probability of survival and a reduced life expectancy.²⁵ If the patient was exposed to factors increasing the likelihood of disease, such as using drugs, alcohol, or tobacco, this evidence can also be used in assessing the probability of survival and life

20. See White & Lo, *supra* note 8, at 1773.

21. See UNIV. OF PITTSBURGH, ALLOCATION OF SCARCE CRITICAL CARE RESOURCES DURING A PUBLIC HEALTH EMERGENCY 2 (2020), https://ccm.pitt.edu/sites/default/files/UnivPittsburgh_ModelHospitalResourcePolicy_2020_04_15.pdf [<https://perma.cc/4M88-KDKY>] [hereinafter ALLOCATION OF SCARCE RESOURCES]; Douglas B. White et al., *Who Should Receive Life Support During a Public Health Emergency? Using Ethical Principles to Improve Allocation Decisions*, 150 ANNALS INTERN. MED. 132, 135 (2009).

22. Emanuel et al., *supra* note 9, at 2052.

23. For an opposing view which calls for the rejection of any reliance on the notion of life expectancy, see MINN. DEP'T OF HEALTH, *supra* note 10, at 21.

24. N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 14 (recommending use of a Sequential Organ Failure Assessment).

25. See Mark A. Rothstein, *Preventing the Discovery of Plaintiff Genetic Profiles by Defendants Seeking to Limit Damages in Personal Injury Litigation*, 71 IND. L.J. 877, 885 (1996).

expectancy.²⁶ Indeed, protocols used in various U.S. states have indicated the reliance on existing medical preconditions as reasons to assign patients lower priority in the allocation of life-saving resources.²⁷

The application of either criterion (probability of saving life or increase in life expectancy) raises two fundamental problems. First, the number of patients in need of life-saving resources within the medically prioritized group at any given time might still exceed the availability of the resource. Prioritization within each category is required.²⁸ Second, there is a continuous flow of patients from different medical priority groups into and out of the healthcare system. An allocation model cannot assume that the number and medical state of all patients in need will be known in advance. Consequently, prioritization based on abstract criteria like saving the most lives is insufficient for a real-life allocation of life-saving resources during a pandemic. How can these additional allocation problems be resolved?

Market-based allocation models, notably the allocation of resources and burdens on the basis of willingness-to-pay or willingness-to-accept, are very often morally objectionable when scarce life-saving resources are in question.²⁹ “Nonconventional” allocation methods are used when conventional methods are deficient and might seem more difficult to defend and accept.³⁰ Prime examples are lotteries,³¹ queues (the principle of first-in-time-first-in-right, or first-come-first-served (FCFS)),³² and different forms of time-sharing.³³ These may facilitate faster and cheaper allocations, which are potentially more suitable for emergencies. Yet these benefits come at a price: the very limited ability to assure that the recipients of the resource (or the bearers of the burden) are those most suited to receive (or bear) it, from both fairness

26. *Id.* at 885-86.

27. See, e.g., WASH. STATE DEPT OF HEALTH, SCARCE RESOURCE MANAGEMENT AND CRISIS STANDARDS OF CARE 34 (2020), <https://int.nyt.com/data/documenthelper/6853-washington-state-triage-guidel/02cb4c58460e57ea9f05/optimized/full.pdf> [<https://perma.cc/U6FV-3UR2>]; Mike Baker, *Whose Life is Worth Saving? In Washington State, People with Disabilities Are Afraid They Won't Make the Cut*, N.Y. TIMES (Mar. 23, 2020), <https://www.nytimes.com/2020/03/23/us/coronavirus-washington-triage-disabled-handicapped.html> [<https://perma.cc/NJ9J-GRSW>] (discussing protocols used in Washington).

28. Using the same parameters (e.g., age, medical state) to create high-resolution prioritization within groups is impractical and never sufficiently accurate.

29. MICHAEL SANDEL, *WHAT MONEY CAN'T BUY: THE MORAL LIMITS OF MARKETS* *passim* (2013); MICHAEL WALZER, *SPHERES OF JUSTICE: A DEFENSE OF PLURALISM AND EQUALITY* *passim* (1983); see also E. Lee Daugherty Biddison et al., *Scarce Resource Allocation During Disasters: A Mixed-Method Community Engagement Study*, 153 CHEST 187, 191 (2018) (reporting survey data indicating a rejection of these notions); MINN. DEPT OF HEALTH, *supra* note 10, at 21 (noting that allocation based on paying is rejected).

30. They are also considered “nonclinical approaches.” See N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 42.

31. Perry & Zarsky, *supra* note 18, *passim*.

32. Ronen Perry & Tal Z. Zarsky, *Queues in Law*, 99 IOWA L. REV. 1595 *passim* (2014).

33. Ronen Perry & Tal Z. Zarsky, *Taking Turns*, 43 FLA. ST. U. L. REV. 187 *passim* (2015).

and efficiency perspectives. It also “flattens” the allocation process while muting the relevant individuals’ personal life stories, which are removed from the allocation discourse.³⁴

A significant advantage of nonconventional allocation methods pertains to the burden of decisionmaking. Ethicists note that lotteries (and most likely queues as well) are advantageous because they allow the decisionmaker to maintain a clean conscience.³⁵ Healthcare providers are emotionally burdened by their horrific and stressful reality. The ability to defer to luck or other technical procedures could improve their ability to carry on their tasks and limit the torment of previous decisions. Introducing luck might also soften the blow of harsh decisions for those subjected to them. Healthcare providers (and perhaps also patients) will be able to blame luck (or providence, for some) rather than unfairness or error on behalf of a human decisionmaker.³⁶ Deferring to lotteries in order to alleviate the decisionmaker’s burden is far from novel. To some extent, it could even partially explain the historical use of lotteries in military drafts, particularly in the United States.³⁷

Intuitively, however, nonconventional methods might seem problematic in the allocation of scarce resources during a pandemic.³⁸ The same can be said for many legal contexts. Applying lotteries or other nonconventional allocation methods as a measure of achieving justice is unacceptable. For instance, in 1982, a New York City Criminal Court judge determined a prison term in a misdemeanor case by the flip of a coin.³⁹ Consequently, the State Commission on Judicial Conduct removed the judge from office, denying him any future service on the bench.⁴⁰ This forceful reaction can be explained, *inter alia*, by the public’s disdain for having important decisions driven by mere chance, or more broadly, by lack of discretion without substantive compelling reasons.⁴¹ Similarly, while in some cases society may accept the argument “because they were here first” as an allocation justification, in

34. Govind Persad, *Disability Law and the Case for Evidence-Based Triage in a Pandemic*, 130 YALE L.J.F. 26 *passim* (2020) (discussing the importance of voicing such life studies in this context).

35. Emanuel et al., *supra* note 9, at 2054.

36. Perry & Zarsky, *supra* note 18, at 1061-62.

37. *Id.* at 1061.

38. Biddison et al., *supra* note 29, at 192-93.

39. See William G. Blair, *Flip of Coin Decides Jail Term in a Manhattan Criminal Case*, N.Y. TIMES (Feb. 2, 1982), <http://www.nytimes.com/1982/02/02/nyregion/flip-of-coin-decides-jail-term-in-a-manh-attan-criminal-case.html> [<https://perma.cc/42XQ-XS3L>].

40. See E.R. Shipp, *Friess Is Barred from Ever Being New York Judge*, N.Y. TIMES (Apr. 7, 1983), <http://www.nytimes.com/1983/04/07/nyregion/friess-is-barred-from-ever-being-new-york-judge.html> [<https://perma.cc/54S7-GZ2L>]; see also *In re Brown*, 662 N.W.2d 733, 737 (Mich. 2003) (holding that tossing a coin to decide a case was judicial misconduct).

41. NEIL DUXBURY, RANDOM JUSTICE: ON LOTTERIES AND LEGAL DECISION-MAKING 13 (1999) (explaining that lotteries are unreasoned); BARBARA GOODWIN, JUSTICE BY LOTTERY 47 (1992) (same).

others, such an argument may be deemed inappropriate.⁴² For that reason, merely softening the emotional blow for healthcare providers and (in some cases) patients is an insufficient justification for using lotteries or queues.

Once confronted with the need to allocate resources among relatively equally situated candidates (which might fall within a broad predefined category, such as age group), society faces a very difficult choice as to how to do so. Society might delve deeper and apply conventional allocation methods to distinguish between potential recipients, asking who has greater need, skill, merit, or expected utility from using the resource. However, rather than trying to gather information necessary to distinguish between potential recipients, and given the current situation's intensity, many policymakers tend to gravitate towards nonconventional methods with some exceptions. More importantly, when confronting difficult allocation questions, many experts advocate the use of lotteries rather than queues, or the FCFS principle (with possible reallocation to be discussed below), pointing to specific benefits of the former and detriments of the latter.⁴³ Yet the discussion is somewhat partial and selective, focusing on merely a portion of the relevant arguments made elsewhere in legal scholarship. We will address the key arguments already made in this context and assess them in view of the unique (and tragic) situation before us.

Applying lotteries to decide who will receive a ventilation machine or a vaccine dose and thus a higher probability of survival is intuitively cruel. It brings to mind historical examples, such as using decimation as a punishment for military mutiny,⁴⁴ deciding which passengers to save when lost at sea,⁴⁵ and—an example already mentioned above—selecting draftees from a pool of qualified individuals.⁴⁶ Explaining when society may and should accept lotteries is a very difficult task.⁴⁷ Thus far, lotteries have not been applied in triage-like situations like the one under scrutiny here, but drastic times may call for drastic measures.

The analysis below focuses on normative arguments, yet the public's acceptance and perception of the process—or the concept of “positive fairness”—is important as well. Public dissatisfaction might lead to unrest and unwillingness by the relevant political and professional entities to execute the discussed protocols.⁴⁸ In addition, the public's opinion is in many cases a valuable proxy for the normatively

42. Biddison et al., *supra* note 29, at 192-93.

43. See Emanuel et al., *supra* note 9, at 2051; Fink, *supra* note 17 (explaining how lotteries can be used for selection among those with the same score).

44. Perry & Zarsky, *supra* note 18, at 1070, 1075.

45. *United States v. Holmes*, 26 F. Cas. 360, 367 (C.C.E.D. Pa. 1842).

46. Perry & Zarsky, *supra* note 18, at 1040.

47. *Id.* at 1096.

48. *Id.* at 1045.

defensible procedures or outcomes.⁴⁹ At this point, one can only speculate as to the public's acceptance of lotteries, but it is fair to assume that the public would not embrace this nonconventional method unless a strong case for its use is introduced. Queues, however, might be a more acceptable option. Some preliminary studies concerning the allocation of life-saving resources in the context of a pandemic found a public preference for queues (the FCFS principle) over lotteries.⁵⁰ These are generally in line with previous findings in other allocative contexts.⁵¹ Society has already demonstrated its averseness by moving away from lotteries in an abundance of contexts, such as electing officials or deciding who must be thrown off a ship at a time of need (both contexts in which lotteries were applied in the past but are seldom used today).⁵²

II. FAIRNESS

A. Arguments in Support of the Lottery

This Part focuses on the central fairness-based arguments set forth in the academic debate on the use of lotteries and queues in the allocation of life-saving resources necessitated by the COVID-19 outbreak. It will also examine the critique of both queues and lotteries, attempting to establish which of the two is preferable insofar as fairness is concerned. The primary fairness-oriented consideration derives from the notion of egalitarianism.⁵³ Treatment in accordance with relative rank is a common feature of hierarchical societies.⁵⁴ Higher ranked individuals get preferential treatment, and vice versa. By contrast, as

49. Perry & Zarsky, *supra* note 32, at 1603-07 (discussing positive fairness).

50. E. Lee Daugherty Biddison et al., *Too Many Patients . . . A Framework to Guide Statewide Allocation of Scarce Mechanical Ventilation During Disasters*, 155 CHEST 848, 851 (2019). For a general discussion of this project, see Sheri Fink, *Whose Lives Should Be Saved? Researchers Ask the Public*, N.Y. TIMES (Aug. 21, 2016), <https://www.nytimes.com/2016/08/22/us/whose-lives-should-be-saved-to-help-shape-policy-researchers-in-maryland-ask-the-public.html> [<https://perma.cc/MCH2-CASQ>].

51. Perry & Zarsky, *supra* note 18, at 1045-49 (surveying literature and critique).

52. *Id.* at 1040 (providing examples of the past use of lotteries in electing public officials and leaders).

53. See EDWARD T. HALL, *THE SILENT LANGUAGE* 201 (1959) (explaining that FIFO is based on the idea that everyone should be treated equally); Markus Groth & Stephen W. Gilliland, *The Role of Procedural Justice in the Delivery of Services: A Study of Customers' Reactions to Waiting*, 6 J. QUALITY MGMT. 77, 81 (2001); Neil MacCormick, *Norms, Institutions, and Institutional Facts*, 17 L. & PHIL. 301, 307 (1998); Stanley Milgram et al., *Response to Intrusion into Waiting Lines*, 51 J. PERSONALITY & SOC. PSYCHOL. 683, 683 (1986); Perry & Zarsky, *supra* note 32, at 1608; Bernd H. Schmitt et al., *Intrusions into Waiting Lines: Does the Queue Constitute a Social System?*, 63 J. PERSONALITY & SOC. PSYCHOL. 806, 806 (1992).

54. HALL, *supra* note 53, at 201 ("In cultures where a class system or its remnants exist, such ordinality may not exist . . . where society assigns rank for certain purposes . . . the handling of space will reflect this.").

legal philosopher Neil MacCormick opined, in modern egalitarian societies, “the provision of a service or opportunity should be based on some ground that is universalistic rather than personally discriminatory.”⁵⁵

In providing a public service or allocating public resources, including public health services, people should not be discriminated against on the basis of gender, race, religion, political orientation, socioeconomic status, or other characteristics deemed irrelevant for purposes of the allocation.⁵⁶ If candidates are equal in all relevant respects,⁵⁷ they should be treated equally.⁵⁸ Queues and lotteries treat candidates equally by being blind to irrelevant interpersonal differences.⁵⁹ Even if different groups of candidates can be distinguished on the basis of normatively relevant features, queues or lotteries can be applied to the allocation of resources or burdens among members of each group (deserving equal treatment).⁶⁰ The two methods can also be used to afford equal treatment when the differences between individuals are limited and very costly to measure. But which one is fairer?

Queues based on the order of demonstrating or indicating medical need to the allocator have often been endorsed in the bioethics sphere, for instance when allocating vital organs, such as kidneys, for transplantation.⁶¹ However, many scholars find them inadequate in the current context. Let us introduce the two central critiques of the queue and offer our hopefully convincing responses. First, scholars and public opinion seem discontent with the FCFS principle, as it appears to unfairly advantage individuals whose earlier entry into the queue resulted from a normatively irrelevant factor,⁶² such as the distance between their homes and the hospital. People are given differential treatment with no apparent justification, as proximity to the hospital seems

55. MacCormick, *supra* note 53, at 307.

56. HALL, *supra* note 53, at 201 (“[I]t is regarded as a democratic virtue for people to be served without reference to the rank they hold in their occupational group. The rich and poor alike are accorded equal opportunity to buy . . . in the order of arrival.”).

57. JON ELSTER, SOLOMONIC JUDGEMENTS: STUDIES IN THE LIMITATIONS OF RATIONALITY 67, 75, 107 (1989) (“[The] candidates . . . are equally and maximally good . . .”).

58. *Id.* at 113 (explaining that fairness means “that relevantly like cases should be treated alike”).

59. See, e.g., *id.* at 38 (“In the absence of reasons for choosing one alternative, one candidate, one recipient or one victim rather than another, we might as well select one at random.”); MacCormick, *supra* note 53, at 307 (“The very arbitrariness of making priority depend on temporal order of arrival at the point of service or of opportunity is usually satisfactory from [the egalitarian] point of view.”); George Sher, *What Makes a Lottery Fair?*, 14 NOÛS 203, 203 (1980) (“[W]hen two or more people have equal claims to a good that cannot be divided . . . the morally preferable way of allocating that good is through a tie-breaking device, or *lottery*, which is fair.”). For an opposing view, see MINN. DEP’T OF HEALTH, *supra* note 10, at 22 (arguing that queues must be rejected given their discriminatory nature).

60. MacCormick, *supra* note 53, at 307.

61. James F. Childress, *Who Shall Live When Not All Can Live?*, 4 SOUNDINGS 339, 348-49 (1970).

62. Emanuel et al., *supra* note 9, at 2053; see also MINN. DEP’T OF HEALTH, *supra* note 10, at 22.

highly irrelevant to patient prioritization. This observation becomes even more troubling if some people, particularly the affluent, can “game” the system by paying for temporal advantage. This could be done *ex ante*, by buying houses near hospitals, or *ex post*, by reaching the hospital with faster means of transportation. Lotteries, on the other hand, treat everyone equally, regardless of normatively irrelevant interpersonal differences, such as geographical proximity, thus eliminating any form of gaming or advantage.⁶³

Second, commentators point at an allegedly key difference between organ and ventilator queues.⁶⁴ In the former case, bioethics has accepted queues because “scarcity is long-standing” and patients can survive, though with some level of pain, while waiting.⁶⁵ On the other hand, in the case of ventilators, patients do not have the luxury of waiting, and therefore affording equal treatment to all candidates becomes crucial. For that reason, arguably, the arbitrary and potentially biased nature of the queue cannot be tolerated.

The latter argument points to an existing taxonomy of various applications of the FCFS principle in the legal realm. We have conceptualized this taxonomy elsewhere, in discussing different operation modes of queues. In some cases, a queue-based model merely determines the sequence of the allocation, which may be important *per se*. Consider the antiquated yet surprisingly still relevant Pacific Telegraph Act of 1860,⁶⁶ which was intended to facilitate communication between the Atlantic and Pacific states. This law provides that received messages “shall be impartially transmitted in the order of their reception, excepting that the dispatches of the government shall have priority.”⁶⁷ Each participant technically received equal service, and his or her place in the queue determined only the time of service. We called this a simple-ordering effect. In other instances, queue-based models determine the quality or the quantity of the resource allocated to each participant. Consider a parking lot adjacent to an office building, where the expected number of incoming vehicles does not exceed the number of parking spaces. The earlier one arrives, the nearer to the building entrance one can park. We labeled this a quality-determining effect. Furthermore, when queue-based models are used to allocate limited resources, they may determine who is entitled to the resource and who is not.⁶⁸ First-in-time-first-in-right rules in property law constitute a special and unique case of such an effect because a single

63. Emanuel et al., *supra* note 9, at 2051.

64. *See id.* at 2053 (referring to transplantable kidneys).

65. *Id.*

66. Pacific Telegraph Act of 1860, ch. 137, § 3, 12 Stat. 41, 42.

67. *Id.*

68. Benjamin Avi-Itzhak & Hanoch Levy, *On Measuring Fairness in Queues*, 36 *ADVANCED APPLIED PROBABILITY* 919, 921 (2004) (discussing cases where service is not guaranteed, and those pushed back in the queue may not be served at all by the relevant allocator).

winner takes all. We called this an entitlement-determining effect. The three possible effects represent points on a continuum. In any case, the benefit a participant acquires correlates with the time of his or her entry into the system. In the first case, latecomers obtain an equal share, but later; in the second, they may obtain a lesser share; and in the third, they may not receive any share of the allocated resource.⁶⁹

Let us now return to the unfortunate ethical conundrums we face given the COVID-19 pandemic. Those advocating the allocation of life-saving resources through lotteries and the rejection of queues focus on the flaws of the entitlement-determining nature of ventilator allocations. If a queue-based model is used to allocate scarce ventilators, early entrants may live, whereas late entrants are destined to die. Such determination of life and death seems unfair. The queue seems unfair in deterministically sentencing latecomers to death. This argument may also apply to the allocation of vaccines, which cannot be subsequently reallocated (as we explain below). Unfortunate latecomers are subject to a much greater risk of infection and death.

B. Response to the First Argument

The first criticism of the queue, whereby queues give some people an unjustified benefit and can be “gamed,” so that the more affluent will obtain unfair advantages, seems mostly unconvincing. The main reason is that the time of entry into a queue for ventilators, and any other equipment available at a healthcare facility, is often as coincidental as winning such access through a lottery. Often, FCFS models are but natural and simple lotteries. Consider, for instance, primogeniture, namely the extensive rights of the firstborn child under many ancient legal systems.⁷⁰ One cannot game her position in the order of birth. Yet even in the current context, the factors affecting a patient’s time of entry are mostly independent of any informed choice or normatively irrelevant characteristic, such as personal wealth. For example, while a patient’s distance from a hospital may affect the time of arrival, it has a very limited and speculative effect on the time at which the medical need arises—which is the primary determinant of the time of entry into the queue. The time of medical need hinges on the accidental time of infection and the unique progress of the disease in the specific patient. Moreover, it is hard to believe many people select their place of residence with the possibility of needing emergency medical treatment, including access to ventilators, in mind. One might even speculate that housing prices near hospitals are lower due to noise and congestion, making the queue less favorable to the affluent. The impact of people’s access to different means of transportation on the time of hospital admittance is also highly speculative because, again, the

69. Perry & Zarsky, *supra* note 32, at 1601-02.

70. See THOMAS HOBBS, *LEVIATHAN* 108 (Richard Tuck ed., 1991).

time of entry mostly depends on happenstance. Unsurprisingly, the theoretical criticism of the queue is at odds with some empirical evidence. In a pilot study seeking the public's preferences, members of less wealthy neighborhoods expressed a preference for queues over lotteries as the method of hospital admittance.⁷¹ Of course, one should not confuse this argument concerning proximity to a hospital with the one concerning proximity to a *better* hospital.

A more sophisticated and nuanced, hence more compelling, critique would be that queues might generate non-egalitarian wealth-sensitive allocations because of their unfair treatment of rural and less informed populations. Queues might prove systematically unfair to residents of rural areas with no hospitals or insufficient ICU beds.⁷² We find this to be a valid concern which may require adjustment of allocation models, yet of limited relevance to the COVID-19 pandemic. The current pandemic is transmitted and spread through human contact and proximity, arguably rendering cities far more dangerous than rural areas. For that reason, patient traffic from rural areas to the metropolis for *initial* hospitalization is unlikely. Yet this aspect must be closely tracked to see whether unfairness might unfold in future cases and in *secondary* hospitalizations when a transfer from a rural hospital is needed.

In addition, queues might disproportionately harm those of lower socioeconomic means and minorities who may have limited information about the pandemic or avoid hospitals due to distrust in the system, but who may also be at greater risk of infection due to employment as caregivers, supermarket workers, first responders, and the like.⁷³ While there is no doubt that some vulnerable populations are impacted to a far greater degree, it is unclear whether the noted information imbalance persists and leads to their later arrival at the hospital. Given the notoriety of the illness and its symptoms, the argument that people with insufficient information are disadvantaged (for this specific reason) entails further research and does not currently seem to undermine the benefits of the queue in terms of fairness and efficiency.⁷⁴

71. Elizabeth L. Daugherty Biddison et al., *The Community Speaks: Understanding Ethical Values in Allocation of Scarce Lifesaving Resources During Disasters*, 11 ANNALS AM. THORACIC SOC'Y 777, 781 (2014).

72. N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 31-32.

73. *Id.* at 42.

74. Note further that initiating a lottery might disenfranchise minorities and other vulnerable population segments that arrived in a timely fashion to wait for their turn, without understanding that a lottery would be administered, thus subjecting themselves to greater risks.

C. Response to the Second Argument

We now turn to the second argument, whereby the entitlement-determining effect of the allocation of ventilators and other scarce life-saving medical resources calls for a stricter egalitarian regime and renders queues inadequate. This argument seems more compelling at first glance. Bioethics scholars correctly observe that the fairness of queues comes under pressure because the advantages of “being first” are far greater than those accruing in other allocations (for instance, when purchasing event tickets—the advantage of getting in earlier is usually limited to having a better view). They deduce that lotteries should be applied instead.⁷⁵ However, this argument has at least five weaknesses.

First, queues for ventilators, like queues in similar contexts that are considered legitimate, do not have a purely entitlement-determining effect. The simple reason is that these queues are dynamic in the sense that more ventilators become available over time. Patients recover or unfortunately die, freeing ventilators for the next in line. More ventilators are manufactured or imported, potentially increasing the total capacity at any given time. Thus, queues for ventilators mix simple-ordering, and quality and entitlement-determining effects, depending on the availability of free ventilators at any given time. It is, therefore, perplexing why the current COVID-19 situation should be different from the well-accepted human organ allocation schemes already subject to the FCFS principle in many countries. In the kidney transplant context, queue-based models combine simple-ordering, quality- and entitlement-determining effects as well: a person who is late to enter the queue may receive a kidney later, perhaps after his or her condition deteriorates, or never if he or she dies waiting. Analytically, therefore, these models and their consequences seem to be very similar.⁷⁶

Second, as explained in Part V, the possible reallocation of some life-saving resources may further reduce the likelihood of an entitlement-determining effect, softening this kind of objection to queues, at least in the context of reallocating ventilators and medical attention. In other words, the fact that ventilators might be made available after disconnecting other patients for lack of sufficient progress, both reduces the significance of receiving the treatment earlier and provides greater resources for subsequent allocation (via queue). Unfortunately, this argument fails when considering the allocation of medication and vaccines which cannot be reallocated after being administered.

75. Emanuel et al., *supra* note 9, at 2053.

76. Kidneys might seem different from ventilators as the latter can currently be manufactured. Yet at the specific time of need this difference is irrelevant. A possible relevant difference between organs and ventilators might be the immediacy of the need for treatment. Kidneys and ventilators also differ in the inability to reallocate the former to other patients, an issue that we discuss below in Section V.D.1.

Third, even if we concede that ventilator queues are in fact entitlement-determining, the fact that the order of entry greatly depends on chance makes any advantage that lotteries may have over queues from a fairness perspective almost negligible. Fourth, even if those infected earlier have a higher probability of gaining access to ventilators, this considerable advantage is canceled out, at least partly, by the fact that latecomers have a higher probability of enjoying new treatment methods, more effective medications, and even vaccines that are developed and introduced over time. Fifth, and most importantly, queues have additional advantages over lotteries, which cannot be ignored in the overall analysis, and which we will now explore.

III. EFFICIENCY

A. *Ex Ante Effects*

The ethical debate on the relative advantages of lotteries as an allocation method tends to include an abundance of implicit efficiency-oriented arguments. This Part examines the central arguments and brings them into a broader context. At times, efficiency-based arguments are not identified as such but are cloaked in fairness-based rhetoric. Consider the argument that FCFS rules are unfair to those who happen to need intensive care at a later point in the pandemic and are treated as “inferior” to those arriving earlier.⁷⁷ On its face, this argument pertains to fairness: equals—only rendered different by a trivial factor (time of illness)—are subject to very different treatment. But we do not find this fairness aspect convincing. The timing of illness is another form of a tragic lottery, and in this sense a queue-based allocation is no different from the lotteries that scholars promote. Again, the benefits provided to those falling ill sooner rather than later are canceled out by the disadvantages they face. Those getting ill at a later point might benefit from medications, vaccines, and treatment methods that have yet to be developed, and thus providing those who were unlucky enough to get sick early with some benefits does not seem unfair.

Still, this anti-FCFS (or anti-queue) argument has another, deeper layer which relates to efficiency. Commentators note that an FCFS policy might be unfair to those who fall ill later because they have prudently chosen to adhere to health advice.⁷⁸ This argument, phrased as a matter of fairness, carries an efficiency overtone. It implies that the selected resource allocation method might have an ex-ante effect, impacting individual conduct before falling ill. This point is often part of legal analyses. Efficiency analysis of any allocation method must take

77. Emanuel et al., *supra* note 9, at 2053.

78. *Id.*

into account not only the method's impact on recipients' welfare after the allocation (ex post) but also its impact on potential recipients' conduct ex ante—that is before anyone receives the resource or even enters the candidate pool.

An allocation method can provide incentives for welfare-generating strategic behavior, thereby enhancing its relative advantage. On the other hand, even if the resulting allocation is efficient, the allocation model might not be welfare-maximizing when it incentivizes welfare-reducing strategic behavior. This segment of the analysis operates under the non-trivial assumption that individuals change their behavior in view of the incentive structure set out by law.⁷⁹ It is fair to believe that this assumption will hold when the parties are more sophisticated and the resources allocated are of greater value. Furthermore, it might be strengthened at a time of crisis when anxiety might incentivize individuals (especially affluent ones) to track current events closely. Thus, policies considered during the COVID-19 crisis, given its massive coverage, must account for ex-ante considerations.

In assessing the economic desirability of various allocation models, policymakers must consider each method's impact on strategic conduct, and the benefits and costs of such conduct. In the current context, FCFS models might arguably lead to unwanted ex-ante behavior. To understand why, one must first grasp the ultimate social and economic goal. During the COVID-19 pandemic, most countries have taken measures to flatten the epidemic curve, namely the curve depicting the number of infected individuals (active cases) over time,⁸⁰ as shown in Figure 1. Flattening the curve is the graphic representation of slowing down the spread. The underlying purpose of this strategy is to protect the healthcare system from being overwhelmed when the number of infected people exceeds the system's treatment capacity, thereby saving patients' lives.⁸¹ Additionally, the healthcare system's capacity can be boosted ("raising the line"), and slowing down the spread gives it more time to adjust, reducing the risk of insufficient capacity even further. Finally, by flattening and "stretching" the curve, the system postpones infections to later stages in which scientific research and development already provide better treatment, including new medications and vaccines.⁸² We set the impact of new variants aside for future research given the complexity this adds to the discussion.

79. *But see* ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 144-45 (1991) (discussing how individuals frequently lack knowledge of the law).

80. Siobhan Roberts, *Flattening the Coronavirus Curve*, N.Y. TIMES (Mar. 27, 2020), <https://www.nytimes.com/article/flatten-curve-coronavirus.html> [<https://perma.cc/63AM-VQAY>].

81. *Id.*

82. *Id.*

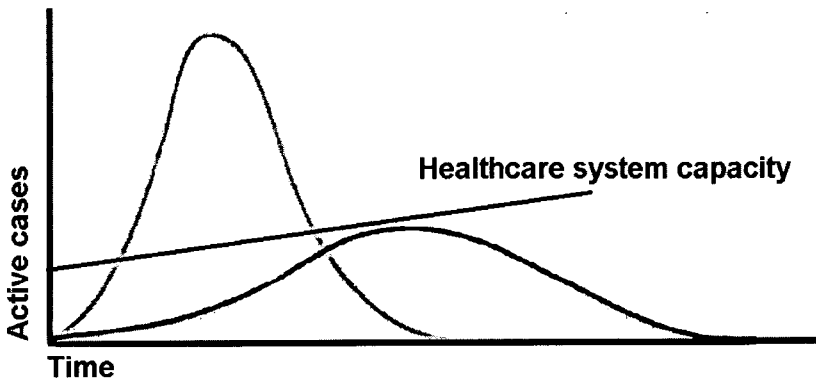


Figure 1. Flattening the Curve

The measures taken to flatten the curve before the development of effective vaccines and medications included hand washing and sanitizing, avoiding face-touching, using masks and other protective equipment, disinfecting surfaces and objects, self-isolation by people with certain symptoms, and of course lockdowns, closures of schools, houses of worship, and businesses, and overall social distancing.⁸³ All these measures heavily rely on public cooperation. People need to comply with these steps for them to succeed. Alas, according to epidemiologists, a large proportion of the population might have been infected before a vaccine was successfully rolled out. Therefore, each individual seemed to face the following choice. People could neglect the curve-flattening measures and get infected relatively soon. In the vast majority of SARS-CoV-2 cases, such a person would suffer mild symptoms, and in rare cases of severe symptoms, this person would receive excellent treatment by a system with excess capacity. Alternatively, he or she could comply with the guidelines intended to flatten the curve, whether framed as rules or advice, and get infected at a later stage, when active cases might exceed the system's capacity. This alternative entailed a higher risk of long-term effects and even death (in addition to infecting family members and others in one's close social circle). A queue-based model would induce individuals to secure early entry,⁸⁴ perhaps even by intentional self-infection (if not by acting recklessly).⁸⁵ If many individuals facing the same choice are induced to forgo the necessary measures, the curve will rise steeply, and more patients will receive suboptimal care and die. Queues thus arguably

83. See generally Noreen Qualls et al., *Community Mitigation Guidelines to Prevent Pandemic Influenza—United States, 2017*, 66 *MMWR RECOMMENDATIONS & REP.* 1 (2017) (discussing various measures for the prevention of influenza). After the fact, some such measures have proven more effective than others.

84. The same argument could be framed differently—we would like to reward individuals adhering to the health requirements with at least equal probability of receiving proper care when they might become ill at a later time.

85. See *infra* notes 89-94 and accompanying text.

generate an imminent clash between the socially desirable behavior (slowing down the spread by reducing the personal risk of infection) and the rational individual choice (get into the queue as early as possible). Lotteries do not have a similar adverse effect and are therefore superior to queues.

This efficiency-driven argument fails because it does not accurately perceive and describe the true individual choice (made by relatively rational agents). Queue-like allocations will *not* incentivize problematic ex-ante behavior. To begin with, compliance with the guidelines not only postpones inevitable infections but significantly reduces an individual's probability of being infected at any given time. The impact of compliance depends on the characteristics of the specific disease, but at this point in the COVID-19 pandemic, it seems as if the virus (or at least severe illness following infection) could most likely be avoided with proper care. Therefore, intentionally moving to the top of the queue seems irrational.

More importantly, by reducing the probability of an individual's infection, compliance buys a person time, in which many things can change for the better. Passage of time can reduce even further the probability of infection if the general spread slows down or stops due to natural causes, such as the virus's mutation, governmental curve-flattening initiatives, or the development of a vaccine. Passage of time can also increase a person's likelihood of full recovery once infected. Time enables scientists and professionals to learn more about the disease and develop effective treatment methods, including medications, and enables the healthcare system to increase capacity. Getting infected later rather than sooner thus reduces the expected suffering and the risk of death.⁸⁶

The alleged individual benefit from earlier infection is also questionable. First, at this time there is no clear evidence that recovery from COVID-19 yields long-term immunity, so getting infected early does not necessarily prevent a subsequent infection at a less "convenient" time.⁸⁷ Second, contracting the virus earlier does not necessarily mean "beating" others to life-saving resources. The need for a ventilator, an ICU bed, or medical attention may arise several weeks after the infection, when the healthcare system's capacity has already been reached. Third, as with other pandemics, severe cases of COVID-19

86. See The Editorial Board, *supra* note 7; Benjamin Mueller & Roni Caryn Rabin, *Common Drug Reduces Coronavirus Deaths, Scientists Report*, N.Y. TIMES (Sept. 2, 2020), <https://www.nytimes.com/2020/06/16/world/europe/dexamethasone-coronavirus-covid.html> [<https://perma.cc/MKJ3-RZJT>].

87. See Quan-Xin Long et al., *Clinical and Immunological Assessment of Asymptomatic SARS-CoV-2 Infections*, 26 NATURE MED. 1200, 1204 (2020).

might result in death even if the patient receives excellent care.⁸⁸ The limited effectiveness of life-saving resources and the obvious risk to one's own life increases the personal value of taking the necessary measures to avoid infection. Finally, if people do not comply, the government can use enforcement measures (such as public reprimand and fines).

Critics may contend that our counterarguments assume full rationality, whereas humanity has a long history of irrational behavior, especially in response to a looming pandemic. Intentional self-infection has been carried out for centuries: "pox parties,"⁸⁹ "flu parties,"⁹⁰ and "measles parties,"⁹¹ which were preceded by active attempts to contract "Yellow Fever,"⁹² are just a few examples of such activities which were cautioned against and even prohibited by health institutions and regulators. Many individuals might, therefore, find the simple idea that early infection ensures better treatment appealing and act accordingly. This line of criticism is formally self-defeating because the argument that individuals might opt for early infection under a queue-based allocation regime is, in itself, based on the assumption of rationality. Moreover, the possible criticism relies on unfounded fear. At this time, and given the specific attributes of SARS-CoV-2 (as well as the extent of the uncertainty involved), "COVID-19 parties" and instances of intentional self-infection are very limited.⁹³ This demonstrates that the current use of the FCFS principle does not encourage such irrational conduct.

Of course, there may be other reasons for noncompliance, such as inconvenience or ideological opposition to governmental restrictions on personal liberty. Indeed, in the United States, face masks have become

88. According to globally accumulated data, fifty to eighty percent of patients who need ventilators ultimately die. See Ariana Eunjung Cha, *In New York's Largest Hospital System, Many Coronavirus Patients on Ventilators Didn't Make It*, WASH. POST (Apr. 26, 2020, 10:25 PM), <https://www.washingtonpost.com/health/2020/04/22/coronavirus-ventilators-survival/> [<https://perma.cc/KL5S-DAQZ>].

89. See Emily Blatchford, *Chicken Pox 'Parties' Are Dangerous and Unnecessary, Experts Say*, HUFF. POST (July 14, 2016), https://www.huffingtonpost.com.au/2016/03/06/chicken-pox-parties_n_9395874.html [<https://perma.cc/5RGJ-VHHV>].

90. See *Invited to a Swine Flu Party? CDC Says Don't Go*, NAT'L PUB. RADIO (Oct. 25, 2009, 8:00 AM), <https://www.npr.org/templates/story/story.php?storyId=114144189> [<https://perma.cc/2ZQL-WG28>].

91. See Liz Neporent, *Stay Away From 'Measles Parties' Docs Warn Parents*, ABC NEWS (Feb. 9, 2015, 4:39 PM), <https://abcnews.go.com/Health/stay-measles-parties-docs-warn-parents/story?id=28842782> [<https://perma.cc/V68B-P9K2>].

92. See Kathryn Olivarius, *The Dangerous History of Immunoprivilege*, N.Y. TIMES (Apr. 12, 2020), <https://www.nytimes.com/2020/04/12/opinion/coronavirus-immunity-passports.html> [<https://perma.cc/E2PT-5VEA>] ("[M]any new immigrants actively sought sickness: huddling together in cramped dwellings, or jumping into a bed where friends had just died—the antebellum forerunners to 'chickenpox parties,' except much deadlier.")

93. See Mike Baker, *'Covid-19 Parties' Probably Didn't Involve Intentional Spread*, N.Y. TIMES (Nov. 23, 2020), <https://www.nytimes.com/2020/05/06/us/coronavirus-covid-parties.html> [<https://perma.cc/8FQ5-RXFV>] (reporting that initial suspicion of such parties in Washington state turned out to be wrong).

a source of political conflict between proponents of public safety and advocates of personal liberty, and to some extent between Democrats and Republicans, as many people refuse to wear masks “out of principle.”⁹⁴ Yet it appears that ideological noncompliance is mostly independent of the method used for allocating life-saving resources. Such noncompliance is unlikely to be significantly affected by changes in the allocation method and, therefore, irrelevant in analyzing the ex-ante effects of implementing a particular method.

B. *Ex Post Effects*

The speed of the decisionmaking process may enhance welfare following allocation in several ways, principally by limiting the idleness of the elements involved. In the current context, time is of the essence. By deciding faster, doctors and administrators will be free to engage in other essential activities. The resource itself—a ventilator, an ICU bed, medical attention—will be quickly utilized to generate welfare, albeit not necessarily in the hands of the most deserving recipient. All other things being equal, quick use of a life-saving resource is a more valuable use.

The allocation of ventilators (or medical staff attention) over the entire period of the pandemic will involve fluctuations in supply and demand.⁹⁵ On the demand side, new patients may join the pool while patients using ventilators may recover or die (hence leave the pool). On the supply side, ventilators may break down, new ventilators may be acquired, and others may be repaired. Similarly, healthcare workers may join after receiving training or being transferred, or leave due to quarantine requirements, illness, or a transfer. Therefore, additional decisions will be required on a daily basis, and given the nature of the resources, decisions will have to be made very quickly. For all these reasons, the importance of a speedy process is clear.

Lotteries and queues enable very quick decisionmaking because neither involves contemplation by the decisionmaker before the decision. In this respect, lotteries and queues are more efficient than allocations premised on merit, need, or skill. They are probably superior to market-based solutions as well because even the quickest auction takes time. Indeed, lotteries are often recommended in instances where there is no time for a “rational” decision.⁹⁶ But which of the two—the lottery or the queue—is preferable for the tragic choices ahead?

94. See Tara McKelvey, *Coronavirus: Why Are Americans So Angry About Masks?*, BBC (July 20, 2020), <https://www.bbc.co.uk/news/world-us-canada-53477121> [<https://perma.cc/M36C-JEXM>].

95. White & Lo, *supra* note 8, at 1773 (“[V]entilator shortages will likely surge and decline episodically during the pandemic.”).

96. DUXBURY, *supra* note 41, at 71.

In the context before us, queues seem to have the upper hand, as they probably provide quicker responses than lotteries (on average throughout the pandemic).⁹⁷ Queues save time if a very high frequency of decisions is necessary, as with respect to the right of way at traffic junctions. Queues allow quick resolution of allocation decisions by using temporal advantage—a factor which in some cases is apparent and does not require any centrally administrated selection, which evidently takes time. Queues also provide a simple response to instances that feature a continuous flow of potential recipients and allocated resources, such as ongoing trades in financial markets or filling parking spaces, and—in our case—an influx of COVID-19 patients on the one hand and medical equipment and personnel on the other.

In contrast, lotteries call first for establishing a pool of potential participants and only then for administrating the random selection.⁹⁸ This process involves unnecessary delay and some idleness for all parties involved.⁹⁹ Queues, however, allow for the allocation of rights on an ongoing basis and without the delay associated with the lottery process. In sum, lotteries are inferior to queues in some instances in terms of idleness and the resulting costs. In those instances, queues are often applied in practice, and it appears that the crisis discussed here gives rise to such instances.

C. *Administrative Costs: Public Distrust*

Another criticism leveled against the use of queues for the allocation of life-saving resources amid the COVID-19 crisis is that queues might “encourage crowding” and unrest at the distribution points.¹⁰⁰ This might undermine the allocation process and even jeopardize social distancing. This line of argument has two components: the fear of unrest and the risk of crowding. This Section focuses on the former, and the next Section discusses the latter. The first component assumes that the public will fiercely oppose the rule of the queue but will pleasantly endorse the harsh ruling of the lottery. We find this argument tenuous. Public opposition to a certain allocation model may have two forms: (1) general rejection of the underlying idea or (2) lack of trust in the concrete application. As we will now explain, there is no reason to believe that queues will be opposed while lotteries will be broadly accepted.

97. Perry & Zarsky, *supra* note 32, at 1630-34.

98. See N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 43.

99. MINN. DEP'T OF HEALTH, *supra* note 10, at 16-17. The report indicates the various measures required to overcome the noted challenges that applying a lottery presents for allocating scarce antibody treatment, for instance by setting a daily cap for portions based on previous usage patterns, while allowing individuals to apply the next day for the leftover doses which are rolled over on a daily basis.

100. Emanuel et al., *supra* note 9, at 2053.

To examine the possibility of general rejection by the public, we turn to the public perception of fairness (or “positive fairness”).¹⁰¹ The philosopher James Griffin observed: “There is no point in announcing moral restrictions unless they fit the human psyche.”¹⁰² If moral considerations aim to shape action, “they must be able to find a place inside human motivation and, what is more, a position of authority.”¹⁰³ The political scientist James Gibson similarly observed that “democratic institutions require certain value commitments on the part of citizens to be effective.”¹⁰⁴ Although Griffin and Gibson discussed moral restrictions and political institutions, the rationale is also applicable to the selection of allocation methods. Any allocation model must be compatible with basic human perceptions or else people might not endorse and cooperate with it.¹⁰⁵ This will surely be true at a point of tension, such as a pandemic, with highly visible allocation issues that literally involve life and death.¹⁰⁶ So which method will be more easily accepted by the public?

Before the pandemic, in preparation for a possible shortage in medical devices following disasters (a situation which unfortunately eventually unfolded), researchers at Johns Hopkins University sought answers to these questions of public acceptance. An initial pilot study indicated that lotteries were rejected while FCFS received a more mixed response.¹⁰⁷ A follow-up study¹⁰⁸ featured 324 individuals who participated in community engagement forums in Maryland, based on “deliberative democracy” practices (a method aiming to elicit informed opinions).¹⁰⁹ Participants, including members of the general public and health professionals, discussed strategies for allocating scarce resources during disasters after receiving various reading materials. The researchers conducted pre-deliberation and post-deliberation surveys. The allocation strategies that were discussed and compared included: prioritizing those most likely to survive the illness, those likely to live

101. See *supra* notes 48-49 and accompanying text.

102. JAMES GRIFFIN, WELL-BEING: ITS MEANING, MEASUREMENT, AND MORAL IMPORTANCE 163 (1986).

103. *Id.*

104. See James L. Gibson, *Group Identities and Theories of Justice: An Experimental Investigation into the Justice and Injustice of Land Squatting in South Africa*, 70 J. POL. 700, 701 n.2 (2008).

105. *Id.* at 701 (“[I]nstitutions that rely upon principles of justice not widely shared by the citizenry are likely to have a rocky existence.”); M.E. Yaari & M. Bar-Hillel, *On Dividing Justly*, 1 SOC. CHOICE & WELFARE 1, 3 (1984) (“[A] distribution mechanism [is] untenable if its prescriptions are significantly at variance with observed ethical judgments.”).

106. Biddison et al., *supra* note 71, at 778 (“The public’s values are central to choosing among multiple ethically permissible approaches to allocating scarce life-sustaining resources. . . . A successful allocation effort will require public trust and cooperation, both of which are more likely if the development process has been transparent and inclusive.”).

107. *Id.* at 781.

108. Biddison et al., *supra* note 29, at 187-95.

109. Note, however, that the method did not involve random sampling.

the longest after, those likely to recover, those who have lived fewer life stages, those who have particular instrumental value to others in a pandemic, as well as "first come, first served" (queues) and lotteries. Generally, queues and lotteries were ranked quite low in participants' preferences as methods to be used in allocation decisions. Yet between these two, it was the queue that received higher grades. Lotteries did especially poorly among laypersons and the elderly.¹¹⁰ The researchers acknowledged that the opinions of lay participants diverged from those of experts (as reflected in the discussions above), but we are more interested in the perceptions of the former, being more representative of the public at large.

Beyond bioethics and health, various scholars have also examined the public's attitudes to nonconventional allocation methods. These studies, though non-legal, shed light upon the questions under discussion. Although the findings are mixed (and in some contexts indicate a preference for lotteries),¹¹¹ there is no obvious indication of a public aversion towards queues, and very often they are deemed preferable to lotteries in allocating scarce essential resources. For example, Erez surveyed inmates' attitudes to various methods of allocating a limited number of slots in a prison education program.¹¹² A random sample of 348 inmates incarcerated in three federal institutions was selected to participate in the study.¹¹³ Respondents were asked to choose the fairest among four allocation methods presented to them: random selection, need-based, merit-based, and FCFS.¹¹⁴ Need-based allocations were deemed fairest by the largest number of inmates, followed by merit-based allocation, FCFS (queues), and lastly random assignment.¹¹⁵ The average assessments of the fairness of these methods were in the same order.¹¹⁶ One could argue that the opposition to lotteries here reflects the participants' level of education. Inmates who had at least some college education and exposure to the meaning and consequences of randomization selected this method as the fairest more frequently than they endorsed allocation on the basis of need;

110. Biddison et al., *supra* note 29, at 192. When asked which model should be used "rarely," laypersons indicated lotteries in 85.5% of the cases, as opposed to queues in 43.7%. When asked which method should be used "usually," merely 2.4% opted for lotteries as opposed to 23.7% for queues. *Id.*

111. Camille B. Wortman & Vita C. Rabinowitz, *Random Assignment: The Fairest of Them All*, 4 EVALUATION STUD. REV. ANN. 177, 183 (1979) (involving a study where different groups of students were told different stories about which criterion had been used to make the selection, and whether they individually had been successful, and all were asked which selection criterion was fairest); see also LYN CARSON & BRIAN MARTIN, RANDOM SELECTION IN POLITICS 36-37 (1999) (discussing Wortman & Rabinowitz).

112. See generally Edna Erez, *Random Assignment, the Least Fair of Them All: Prisoners' Attitudes Toward Various Criteria of Selection*, 23 CRIMINOLOGY 365 (1985).

113. *Id.* at 368.

114. *Id.*

115. *Id.* at 370-71, 375, 377.

116. *Id.* at 372, 375, 377.

they also ranked “need” significantly lower as a preferred form of allocation than did inmates who had no college education.¹¹⁷ Still, respondents from all demographics preferred the queue. And at any rate, when considering broadly applicable policies, policymakers must consider the perceptions and preferences of the highly heterogeneous public.

The Erez study, however, does not directly relate to the urgency that COVID-19 presents. More to the point is Frey and Pommerhene’s study. These scholars surveyed reactions to different methods for allocating a vital resource—water bottles—in a situation of excess demand.¹¹⁸ They found that random allocations were deemed fair by only 14% of respondents, compared to 27% for a price increase, 43% for administrative judgment, and 76% for FCFS (queues).¹¹⁹ Based on these findings the authors concluded: “The low evaluation of the random mechanisms may be due to the fact that it is not widely known, and not considered suitable for ‘serious matters’, such as the allocation of water.”¹²⁰ Yet even when they replaced water bottles with shovels (considerably less vital resources), a random allocation was deemed fair by a smaller proportion of respondents (27%) than FCFS (93%) and administrative judgments (48%).¹²¹

Furthermore, Oberholzer-Gee and others found that in making serious allocation decisions, lotteries might not be deemed fair.¹²² Their study discussed the location of nuclear waste repositories, but the focus on grave matters makes it relevant in the context of allocating life-saving resources during a pandemic. The study was based on a survey of more than 500 respondents, representing the general population of Switzerland. When asked to recommend an allocation method for selecting a nuclear waste site out of those that were geologically and technically feasible,¹²³ the respondents were asked to evaluate six possible allocation methods: (1) approval by the host community and the host canton following a safety inspection (i.e., the community and the canton have veto rights); (2) negotiations between the government and the candidates until voluntary acceptance is reached; (3) a decision by foreign experts; (4) a national referendum; (5) an equal-chance lottery; and (6) one of two price-based methods—willingness to accept (offering generous compensation to the community who agrees to bear the burden), and willingness to pay (the community less willing to pay bears

117. *Id.* at 375.

118. See generally Bruno S. Frey & Werner W. Pommerehne, *On the Fairness of Pricing—An Empirical Survey Among the General Population*, 20 J. ECON. BEHAV. & ORG. 295 (1993).

119. *Id.* at 301-02.

120. *Id.* at 302.

121. *Id.* (reporting that a price increase was deemed fair by twenty-three percent).

122. Felix Oberholzer-Gee et al., *Fairness and Competence in Democratic Decisions*, 91 PUB. CHOICE 89, 90-91 (1997).

123. *Id.* at 92-93.

the burden).¹²⁴ Unsurprisingly, approval and negotiations were deemed most “acceptable,” followed by a foreign (presumably unbiased) expert decision, referendum, lottery, willingness to accept, and willingness to pay.¹²⁵ The most decisive variables affecting “acceptability” were fairness and competence, so the ranking of the methods by “fairness” was identical to the above.¹²⁶ This study and its results should be cautiously interpreted. Consent-based and consensus-based allocation methods (1, 2, 4) are preferred on both fairness and efficiency grounds, but resources or burdens often need to be allocated in the absence of consent. Independent experts may be preferable when a decision on the merits is possible, but often, such as in high volume allocations, it is not (and therefore a lottery is used). The study thus only shows that in the absence of consent, a random allocation may be preferred to price-based methods. It does not examine lotteries versus queues, simply because queues were irrelevant for the specific allocation problem discussed.

More recently, Keren and Teigen conducted a series of experiments examining people’s attitudes toward random selection.¹²⁷ They showed that people were not keen to decide by a coin flip which of two individuals, with equally strong claims, should be saved from certain death, thus indicating an aversion to the use of lotteries in life-and-death situations.¹²⁸ However, this finding should be qualified on three levels. First, throughout the paper, random selection was not properly compared to alternative selection methods but to allocative outcomes. The paper does not explicitly discuss or propose alternative criteria, such as merit, need, willingness to pay, or temporal advantage. Indeed, when the authors asked subjects to consider whether better methods existed (without naming possible alternatives), their support for a coin flip increased.¹²⁹ Second, the authors found that any aversion to the use of a coin flip diminished dramatically when the stakes were lower;¹³⁰ when the inability to decide on the merits was emphasized;¹³¹ when subjects were asked to consider whether better decision methods existed;¹³² and when the decisionmaker was biased.¹³³ This implies that in allocating the most valuable resources (life in the extreme case),

124. *Id.*

125. *Id.* at 93-94.

126. *Id.* at 94-95; *see also id.* at 92 (discussing a study by Linnerooth-Bayer and others, in which sixty-two percent of all survey respondents rejected as “unfair” the selection of a “noxious facilities” site among equally appropriate sites by a lottery).

127. Gideon Keren & Karl H. Teigen, *Decisions by Coin Toss: Inappropriate but Fair*, 5 JUDGMENT & DECISION MAKING 83, 83 (2010).

128. *Id.* at 86-89.

129. *Id.* at 91-93.

130. *Id.* at 89-90.

131. *Id.* at 91-93.

132. *Id.*

133. *Id.* at 96-97.

lotteries may be regarded as inferior to other methods, such as queues. Third, the study showed that the aversion to lotteries did not apply to “random device[s]” or to the idea of giving each participant “an equal chance,”¹³⁴ but to coin flips, as a concretization of this idea.¹³⁵ Therefore, the relevance of this study in assessing the perceived fairness of other random allocations is limited.

To conclude, a variety of studies indicate that lotteries might not be as acceptable as their proponents believe, particularly in “high-stakes” situations like the one currently explored. Queues, however, show greater promise. In view of some initial findings regarding the public’s preference for queues over lotteries in the specific context of allocating scarce medical equipment, the assumption that the public will object to queues but be content with lotteries seems questionable.

Turning to trust in concrete applications, queues may once again be superior to lotteries. Being wholly centralized processes, lotteries require not only central planning, but also public belief that the specific system employed is not tainted, rigged, or predictable for some of the participants.¹³⁶ In highly stressful situations and when the stakes are very high, individuals will trust what they can clearly see and directly sense. They may be suspicious of an opaque lottery system, with unknown flaws, operated by unknown people under unknown conditions. Even reliable systems, such as the national lottery, can be hacked and tampered with,¹³⁷ and in the age of cyberattacks, this risk might further undermine public trust in random selection mechanisms.

Executing a publicly trusted lottery may not be an easy task, as the comparable draft lotteries demonstrated. The 1940 and 1969 military draft lotteries presented serious reliability issues: given the very high stakes involved, participants questioned the reliability of the processes and even contested them in court.¹³⁸ Admittedly, however, courts tended to uphold lotteries as long as they were epistemically (as opposed to objectively or statistically) random.¹³⁹ Where initial trust would be hard to achieve (i.e., it is difficult to convince the public that the lottery is carried out impeccably), a lottery might be inferior in terms of administrative costs to other methods such as auctions

134. *Id.* at 94-95.

135. *Id.* at 95-96.

136. N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 43.

137. See Jason Clayworth, *The Untold Story of How a Gaming Geek with a Checkered Past Pulled Off the Biggest Lottery Scam in U.S. History*, DES MOINES REG. (Mar. 19, 2018, 12:03 PM), <https://www.desmoinesregister.com/story/news/investigations/2018/03/15/how-gaming-geek-checkered-past-pulled-off-biggest-lottery-scam-u-s-history/397657002/> [https://perma.cc/MDW7-9BV9].

138. See, e.g., *United States v. Kotrlik*, 465 F.2d 976, 977 (9th Cir. 1972); Stephen E. Fienberg, *Randomization and Social Affairs: The 1970 Draft Lottery*, 171 SCIENCE 255, 261 (1971).

139. Perry & Zarsky, *supra* note 18, at 1037-38.

or queues, which are mostly transparent by nature. Indeed, queues entail simple rules and are at times self-generated and even self-monitored and enforced,¹⁴⁰ whereas lotteries are not.

*D. Administrative Costs:
Setup and Operation*

In the analysis of lotteries versus queues from an administrative perspective, one must also consider streamlining and logistics. Lotteries and queues, as opposed to conventional allocation methods, such as those based on need, merit, skill, or even willingness to pay, do not require examining and comparing the specific characteristics of all applicants and selecting among them. This has at least three implications. First, the allocation system is much simpler to design, construct, and operate because it does not have to integrate complex evaluations and comparisons. Second, its operation is almost mechanical and can be carried out by unskilled employees. Third, the discretionless nature of lotteries and queues reduces the psychological costs of making difficult decisions. Historically, many of the reported cases of a decision by lot involved life and death, as in military drafts and allocation of scarce medical treatment. Making such decisions on the merits is a taxing and daunting experience, which decisionmakers will be happy to avoid. Lotteries, but also queues, allow decisionmakers to do so, at greater speed, and with less anxiety about possible errors.¹⁴¹ But which of the two has lower setup and operation costs?

Let us break down what each of these processes entail. At the first stage, a lottery entails the design and construction of a reliable and trustworthy random-selection system (recall that public trust in the system's reliability is also a serious concern).¹⁴² Nowadays, computers can quite easily generate and present random numbers and facilitate matching,¹⁴³ but even a computerized system must be designed, constructed, and prepared for use. Queues, on the other hand, do not normally require the design and preparation of computerized processes, and even when such systems are used, they may require very simple interfaces and algorithms. Thus, the basic requirements and infrastructure needs for random-based allocations seem more substantial than those of queues.

Implementing a random selection mechanism also involves the creation of a database of uniquely identifiable candidates. The administrator needs to validate candidates' identities, take measures to

140. Perry & Zarsky, *supra* note 32, at 1630-31.

141. PETER STONE, *THE LUCK OF THE DRAW: THE ROLE OF LOTTERIES IN DECISION MAKING* 36 (2011) (calling this a "sanitizing effect"). However, according to Keren & Teigen, *supra* note 127, at 99, even random allocations may generate some anxiety for the allocator.

142. See *supra* Section III.C.

143. DUXBURY, *supra* note 41, at 104.

prevent double registration or other forms of manipulation or rigging, record “entries,” and assign each candidate a unique identifier in the system.¹⁴⁴ Queues do not normally entail such prior preparation, although determining each participant’s time of entry may sometimes utilize a preinstalled device. In the medical emergency context, the hospital staff knows exactly when each patient needs a particular treatment and almost always has records of admission, so there is no need for special investment in identifying “entry” into the queue.

Next, lotteries entail a smooth and transparent administration of the selection process once the system and database are in place. Generally, at the operational stage, lotteries have an advantage over queues because a queue calls for constant observation of candidates’ time of entry and enforcement of queue norms throughout the allocation process.¹⁴⁵ Sometimes the administration of queues can rely on self-monitoring and self-enforcement by participants, reducing operation costs, but this is not always the case. Still, in the specific context of allocating medical equipment and attention to patients in serious condition, this general advantage of lotteries wanes. Hospital staff monitor patients’ condition regularly, and there is no need for additional supervision to determine the time at which each patient’s need for an ICU bed, a ventilator, or special treatment arises. The medical need which determines the time of entry is controlled primarily by the forces of nature rather than by deliberate, not to say strategic, decisions, so manipulation is not a real issue. Seriously ill patients are also less likely to try jumping the queue.

In conclusion, the administrative costs of allocation by lottery may be substantially lower than those of need- and merit-based allocations,¹⁴⁶ but they are non-negligible. Whether they are greater than those of queues depends on the context and the specific technologies applied. For reasons explained above, in the case of allocating scarce life-saving resources during a pandemic, queues seem superior from an administrative cost perspective. Lotteries’ greatest administrative advantage is that their costs scale well. Once a computerized selection mechanism and the candidates’ database are ready, the difference between selecting a random number out of a hundred, a thousand, or millions is negligible. Yet in the context of ventilators, ICU beds, etc., where the pool of new candidates at any given time is limited, the administrative cost per participant of a simple queue may still be lower.

144. MINN. DEPT OF HEALTH, *supra* note 10, at 18 (explaining how the lottery would be applied for allocating antibodies, and within that addressing the challenge of assuring that potential recipients would not enter the lottery more than the times permitted).

145. Perry & Zarsky, *supra* note 18, at 1084.

146. DUXBURY, *supra* note 41, at 54 (noting that lotteries are “highly economical means of decision-making”).

E. Broad Social Effects

Beyond the abovementioned efficiency concerns, any discussion of the possible use of lotteries and queues must take into account some broader social effects. The advocates of lotteries may note the benefit of randomly classifying patients into two groups—those who receive the specific treatment and those who do not—for controlled clinical testing. In doing so, they will join existing calls in the legal community to facilitate useful experiments, when possible, via random allocations.¹⁴⁷ Although prior literature focused on social experiments, testing the possible effects of different legal and social policies, random allocation in the current setting may also enable medical experiments (assuming that Institutional Review Board (IRB) approvals can be granted).

The extent of knowledge that can be derived from allocation through randomization was discussed by Michael Abramowicz, Ian Ayres, and Yair Listokin.¹⁴⁸ They explained that randomization is the best way to structure control and treatment groups which are sufficiently similar,¹⁴⁹ and deduced that the use of random selection should be broadened.¹⁵⁰ In many cases, the two groups of lottery winners and losers are statistically similar at the time of the allocation. Thus, any significant differences observed after the allocation between the two groups can be attributed to the fact that members of one group received the resource or incurred the burden, whereas members of the other group did not. This benefit does not unfold when other allocation methods are applied, and the groups of winners and losers are clearly distinct according to the allocation criterion (merit, need, willingness to pay, or a temporal advantage). In this respect, lotteries have an advantage over queues.

However, this pro-lottery argument has its limits. In some instances, inferences cannot be drawn from the random sample receiving the resource to the broader public. This will happen when the sample is too small,¹⁵¹ when it is driven by self-selection, and when the randomization is not perfect given attrition, crossover among the groups, and spillovers (when laws and market conditions applied to those selected randomly impact those who were not selected as well).¹⁵² This

147. See Michael Abramowicz et al., *Randomizing Law*, 159 U. PA. L. REV. 929, 976 (2011) (noting that this method may help reveal a causal effect); Adam M. Samaha, *Randomization in Adjudication*, 51 WM. & MARY L. REV. 1, 40-41 (2009) (contending that the benefits of experimentation must be considered when establishing the propriety of randomization).

148. See generally Abramowicz et al., *supra* note 147; see also Samaha, *supra* note 147, at 23 (making a similar argument).

149. Abramowicz et al., *supra* note 147, at 935-36.

150. *Id.* at 933.

151. *Id.* at 951.

152. *Id.* at 957-60.

justification for random allocation has time limits too¹⁵³: random allocation can only be justified as long as the experimental data are sought. After the necessary knowledge has been obtained, randomization loses this justification.¹⁵⁴

Much of these qualifications pertain to the situation before us, namely the allocation of life-saving resources during a pandemic. For example, those denied ventilators are not left untreated. They will be receiving a broad range of different treatments. In addition, reallocation schemes might lead to group crossover where patients are removed from or put on the scarce treatment. Also, once the risks and benefits of a particular treatment have been studied, the advantage of random allocation of this treatment disappears.

IV. EXCEPTIONS: CONSENT, MERIT, AND SKILL

A. Overview

In this Part, we assume that after a general grouping of individuals based on the expected benefit of medical intervention, a non-conventional allocation method was set in place (be it a lottery or, preferably, a queue). Even where an allocation principle is generally defensible, exceptions should and would be recognized. In the case of egalitarian methods, such as queues or lotteries, exceptions will usually be justified when specific individuals or members of ascertainable groups have a strong case for different treatment. The primary reasons for deviating from general egalitarian allocation principles are consent, special need, special merit, and special skill. Special need is a matter of professional medical judgment and will be left aside. This Part discusses the other exceptions, in turn, understanding that more than one can apply to the same group in the allocation of life-saving resources amidst a global pandemic. Again, our analysis starts off with the recommendations of health ethicists and, thereafter, seeks out analogous situations that were discussed in the legal literature and can shed light on the COVID-19 allocation debate.

B. Consent

Consent seems to be the natural exception in most allocation models. For a very mundane and non-medical example, consider section 9-322(a)(1) of the Uniform Commercial Code, which provides a ranking for conflicting security interests of the same collateral rank, which are premised on priority in time of filing or perfection (a form of a queue). However, a prior secured creditor can subordinate his or her

153. We focus here on the utilitarian justification. Randomly subjecting people to different treatment for the sake of experimentation may raise moral concerns.

154. Abramowicz et al., *supra* note 147, at 973.

interest in the collateral to that of a subsequent creditor.¹⁵⁵ Consent, therefore, preempts a queue-based allocation method. As in other contexts, consent may also be implicit. In social settings, this might happen where *A* passes *B*, and *B* does not contest the violation of FCFS. Similarly, a person who leaves a physical queue is generally assumed to have waived his or her position, so if that person wishes to reenter, he or she must go to the back of the line.¹⁵⁶

Consent can also be found in the tragic context before us. According to British reports, people suffering from COVID-19, and even terminally ill patients who have not yet been tested for the disease, signed “do not resuscitate” (DNR) forms, practically giving up emergency treatment in the case of a serious COVID-19 condition.¹⁵⁷ Similarly, some ethical guidelines set forth in the United States discuss patients’ power to give up life-sustaining treatment, such as mechanical ventilation. One such guideline provides that if patients “freely and with full consent initiate a conversation with the healthcare team about their desire to limit or withdraw life-sustaining medical treatment so that it can be allocated elsewhere should have this wish considered and, where appropriate, honored.”¹⁵⁸

Consent generally trumps any complaint regarding unfair treatment.¹⁵⁹ It expresses the individual’s autonomous decision and cannot be deemed unfair to him or her. Also, if one person agrees to let another overtake his or her position,¹⁶⁰ the former presumably does so following the collection of sufficient information, and upon realizing that the latter should be given priority (perhaps after receiving some compensation). Such a transaction, therefore, seems efficient.

However, a closer analysis reveals a somewhat more complicated picture. To be normatively valid, in terms of both fairness and efficiency, consent must be free and informed. When there is a significant risk of pressure, mistake, or insufficient information, the law can

155. U.C.C. § 9-339 (AM. L. INST. & UNIF. L. COMM’N 2011); Thomas H. Jackson & Anthony T. Kronman, *Secured Financing and Priorities Among Creditors*, 88 YALE L.J. 1143, 1168 n.83 (1979).

156. Leon Mann, *Queue Culture: The Waiting Line as a Social System*, 75 AM. J. SOC. 340, 345-46, 352 (1969) (discussing short leaves of absence in marathon queues).

157. Mattha Busby, *Welsh Surgery Apologises Over ‘Do Not Resuscitate’ Instruction*, GUARDIAN (Mar. 31, 2020, 3:08 PM), <https://www.theguardian.com/society/2020/mar/31/welsh-surgery-says-sorry-after-telling-the-very-ill-not-to-call-999> [<https://perma.cc/KC5K-PENR>].

158. See Peter A. DePergola II, *Ethical Guidelines for the Treatment of Patients with Suspected or Confirmed Novel Coronavirus Disease (COVID-19)*, 16 ONLINE J. HEALTH ETHICS 1, 22-23 (2020).

159. See Horacio Spector, *A Contractarian Approach to Unconscionability*, 81 CHI.-KENT L. REV. 95, 99 (2006) (“[E]xcept under special conditions, informed and free consent cleanses transactional unfairness.”).

160. We will not discuss the notion of allowing individuals to cut ahead of someone in line, as it requires additional thought and possibly the consent of everyone in the queue. This notion is to a great extent irrelevant to the context we are discussing here.

preclude a consent-based exception. Alas, crucial decisions often result from pressure, mistake, or lack of information. People may feel compelled to give others priority and social pressure may exacerbate the likelihood of reluctant consent. After all, no one wants to be viewed as a “bad” or unchivalrous person. Moreover, people may consent without fully realizing to whom they are giving priority and why. At times, they may be given inaccurate information about their conditions and chances of recovery or about those of others. Even with full information, bounded rationality may affect people’s judgment, so that they do not truly understand what they are giving up and what others benefit.¹⁶¹

The COVID-19 experience demonstrates the likelihood of problematic consent. British media reported that people with background conditions were encouraged to sign DNR forms to enable targeting resources to “the young and fit who have a greater chance.”¹⁶² Indeed, discussions regarding the ethics of DNR forms and orders usually focus on patients’ capacity to understand their health conditions and relevant risks. The current context raises a different set of consent-related concerns. Rather than lacking information, individuals might be pressured to engage in self-sacrifice. Instead of giving up treatment to avoid pain and refrain from burdening their families, they may be encouraged to do so for other patients’ sake. Clear protocols must be formulated to assure that consent to lose one’s position in the queue was not only informed but also truly free.

C. Merit

1. The Two Types of Merit

Special personal merit, namely a commendable trait, ability, achievement, or conduct, may give rise to claims for preferential treatment.¹⁶³ Generally, we are opposed to the expansion of merit-based exceptions, advocated in several COVID-19-related reports.¹⁶⁴ A merit-based exception undermines the basic fairness of the allocation model. Rather than treating all lives (or years-of-life) equally, it assumes that some lives are worth more than others. Recognizing merit-based exceptions might also generate moral slippage.¹⁶⁵ Furthermore,

161. See Shmuel I. Becher, *Behavioral Science and Consumer Standard Form Contracts*, 68 LA. L. REV. 117, 120, 133, 167-68 (2007) (addressing bounded rationality and manipulations).

162. Busby, *supra* note 157.

163. D. Daiches Raphael, *Equality and Equity*, 21 PHILOSOPHY 118, 122-23 (1946).

164. N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 45.

165. For a controversial position on this issue (which was since changed), see ANNEX TO ESF 8 OF THE STATE OF ALABAMA EMERGENCY OPERATIONS PLAN: CRITERIA FOR MECHANICAL VENTILATOR TRIAGE FOLLOWING PROCLAMATION OF MASS-CASUALTY RESPIRATORY EMERGENCY 8 (2010), <https://www.alreporter.com/wp-content/uploads/2020/03/VENTTRIAGE.pdf> [<https://perma.cc/6L7U-MZC7>].

exceptions undercut the efficiency of the nonconventional allocation model because they require discussion of personal merit, which is not only a costly process but also a source of delays. Therefore, if merit-based exceptions are introduced, they must include clear-cut definitions of the categories of people entitled to priority (such as healthcare professionals). It is fair to assume that the difficulties arising in the process of formulating these categories will lead to their eventual demise.¹⁶⁶

In the context of COVID-19, one may conceive of at least two groups with strong claims of merit. The first consists of healthcare system employees, such as doctors, nurses, and lab personnel. These individuals arguably merit special treatment because they directly contribute to the development, efficient use, and increased medical value of life-saving equipment and protocols.¹⁶⁷ In addition, they risk their own health and even lives for the common good, and prioritizing them in the allocation is an acknowledgment of this personal sacrifice.¹⁶⁸ The second group includes people who volunteered for vaccination, medication, and other COVID-19 experimentation. All else being equal, they may demand (and merit) preferential treatment because of their contribution to the effective treatment and health of current and future patients worldwide.¹⁶⁹ These two groups make a similar case for priority. Their merit is associated with the specific allocation because they have invested in or risked themselves for facilitating the actual allocation, producing or enhancing the allocated resource, or increasing its value in some other way.

Yet one can imagine another type of merit which derives from deeds or achievements that are unrelated to the particular allocation. While such claims of merit may be legitimate, they are conceptually different, more complicated and expensive to administer, and intuitively weaker. Every person may have a commendable achievement unrelated to the specific allocation, so numerous, highly diverse claims of merit may arise. Recognizing such claims would create an unworkable challenge for allocators. Most allocators cannot practically engage in merit evaluation and comparison of such magnitude and complexity. The more important point, on which we elaborate below, is that acts or achievements that have nothing to do with the specific resource do not create

166. On the difficulties of line-drawing in this context, see N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 43.

167. White & Lo, *supra* note 8, at 1773-74; see also MINN. DEPT OF HEALTH, *supra* note 10, at 11. This allocation dynamic provides preference to the noted groups via a weighted lottery. However, it is possible that the noted exception is better framed in terms of "skill" or "need," which is conceptually discussed in Section IV.D.

168. White & Lo, *supra* note 8, at 1773-74.

169. Emanuel et al., *supra* note 9, at 2054.

an equally strong moral case for receiving the resource, receiving it earlier, or obtaining a greater share thereof. It is, therefore, no surprise that allocation schemes are less likely to include this sort of merit-based exception.

To further articulate the distinction between the two types of merit-based claims, consider the following examples. It was argued that the British government should have given some preference in discharge from the army following World War II to those who served overseas, reflecting a claim of merit related to the specific allocation of discharges.¹⁷⁰ Similarly, the Israeli Organ Implantation Law gives priority in organ allocation queues to those who donated organs while still alive or agreed to donate organs after their death.¹⁷¹ The allocation of military discharges follows the participants' conscription and contribution to the military effort. The queue for organ donations is impacted by contributing to the organ donor pool. In contrast, allowing early discharge from the army or giving priority in organ allocations to those who won sports medals or achieved very high SAT scores are examples of merit-based exceptions of the second kind, which are intuitively less compelling. Past achievements in sports or scholastic aptitude tests are completely unrelated to the allocation of military discharges or organs for transplantation.

We acknowledge that the law may recognize merit-based exceptions of the second kind when allocating scarce life-saving resources, although this is not as common in modern times. Interestingly, ancient legal systems prioritized individuals with such claims in the allocation of scarce resources. For example, in the context of ransom, Jewish law laid down specific rules about the amount of money that can be paid for the release of a captive, generally limiting it to a "market" rate.¹⁷² However, it allowed payment of higher amounts in exceptional cases, as where the captive is a sage.¹⁷³

2. *Fairness*

Narrow merit-based exceptions of the first kind seem intuitively appealing. Healthcare system workers and participants in medical experiments contribute to the advancement, enhancement, and proper allocation and use of the resource: life-saving and palliative treatment

170. Raphael, *supra* note 163, at 124-25.

171. § 9(b)(4), Organ Implantation Law, 5768-2008, SH 236 (Isr.).

172. 2 JOSEPH TELUSHKIN, A CODE OF JEWISH ETHICS: LOVE YOUR NEIGHBOR AS YOURSELF 255 (2009).

173. *Id.* ("Jewish law would sometimes justify paying above 'market rate' in unusual situations, such as in the case of children and sages . . ."). Historical precedents indicate that this rule was not always followed, as in the famous case of the Maharam of Rothenburg's kidnapping. See Eitam Henkin, *728 Years After His Death, We Reassess the Ransom of Rabbi Meir of Rothenburg*, TABLET (May 1, 2020), <https://www.tabletmag.com/sections/history/articles/eitam-henkin-meir-of-rothenburg> [<https://perma.cc/S9LR-3GKQ>].

for COVID-19 patients. From a fairness perspective, giving priority to such people rewards relevant and highly commendable actions. A person who helped the system deserves recognition through special treatment by the system.¹⁷⁴

However, recognizing narrow merit-based exceptions while refusing to reward broadly defined merit may not be easy to grasp and justify. To understand why, imagine a situation in which a brave nurse working for several weeks on the front lines of the battle against COVID-19 would receive priority in the allocation of life-saving resources while veterans who fought for their nation for many years on the battlefield would not. The distinction seems to rest on the relevance and contribution of the commendable act or achievement to the success of the allocation and its underlying goals. But does such a contribution make the proposed distinction fair?

Arguably, insights from property law theory may provide some backing for this distinction. In his work on property rights, Hanoch Dagan explains that in addition to rights, land ownership must also include social responsibility.¹⁷⁵ This involves “uncompensated disproportionate impact in the distribution of burdens entailed by public actions that enhance the community’s well-being.”¹⁷⁶ A member of the community should “bear certain obligations towards her community” as part of a broad notion of reciprocity.¹⁷⁷ In the context of takings, Dagan argues that the law should accept and facilitate uncompensated harm “where the public action benefits the injured landowner’s local community” and to a lesser extent “where it benefits larger social units.”¹⁷⁸ Dagan explains that the landowner’s harm is linked to being part of a community, as opposed to being merely a “regulated party.”¹⁷⁹ The owner should bear some of the harm as a matter of social responsibility and solidarity.¹⁸⁰ On the other hand, when the regulation which causes the harm has a broader focus, there is a weaker justification to inflict a “disproportionate impact” on a specific person.¹⁸¹

Dagan’s conception of community is mostly geographical,¹⁸² but is also extended to conceptual communities, including marriage.¹⁸³ The notion of social responsibility need not be limited to encumbering narrowly defined property rights for the benefit of the owner’s community.

174. See MINN. DEPT OF HEALTH, *supra* note 10, at 10 (making this argument regarding critical workers).

175. HANOCH DAGAN, PROPERTY: VALUES AND INSTITUTIONS 102 (2011).

176. *Id.* at 106.

177. *Id.* at 103.

178. *Id.* at 101.

179. *Id.* at 102.

180. *Id.* at 121.

181. *Id.* at 107.

182. *Id.* at 106.

183. *Id.* at 197-228.

It can also be used to justify the prioritization of healthcare providers in the allocation of life-saving resources. In this context, patients and healthcare providers form an ad hoc community striving to achieve an important objective—promoting public health in view of the surging pandemic. Patients may be required to pay a price, in terms of priority, for the benefit of this entire community. However, Dagan's notions of social responsibility and solidarity cannot justify the prioritization of other meritorious individuals (such as decorated veterans) in the allocation of scarce medical resources. In these cases, the harm to patients whose access to life-saving resources is denied, limited, or delayed due to such exceptions cannot be justified as personal sacrifices made for the benefit of this community.

Admittedly, the application of Dagan's theory of community obligations in the current context may be challenged. Very often, the allocations in hand (as opposed to those involving the sharing of property) feature one-shot events rather than continuous "give and take" relations whereby the benefits and burdens are balanced over time. Here, individuals are essentially called upon to contribute to the "community" by giving way to healthcare providers without acquiring or receiving any prior benefit. In addition, they might lack subsequent opportunities to receive a benefit given the high risk of death resulting from delayed or forgone treatment. In other words, the notion of reciprocity might fail to provide a distributive justification for life-threatening "takings" in communities with transient "membership." The distinction between the two types of merit is therefore hard to uphold in terms of fairness. Implementing a comprehensive merit-based system (encompassing the two types of claims) is impractical, so rejecting merit-based exceptions seems inevitable.

3. *Efficiency*

Prioritizing healthcare providers and experiment participants in the allocation of life-saving medical resources can also be supported in terms of efficiency. Rewarding socially desirable activities encourages people to engage in them.¹⁸⁴ Normally, individuals striving to place well in an allocation scheme are motivated to do or achieve what this scheme rewards. In the case of COVID-19, prioritizing healthcare providers (or participants in experiments) also mitigates the justified and discouraging fear of personal risk associated with their socially beneficial conduct. Narrowly defined merit-based exceptions are also easy to administer, as they do not entail hard decisions regarding relative merit (for example, who should be prioritized: former astronauts, generals, football stars, or law professors?).¹⁸⁵

184. Emanuel et al., *supra* note 9, at 2054.

185. In our somewhat biased opinion, it must be the latter.

The efficiency justifications for narrow merit-based exceptions might not always hold. They are convincing only if (1) there is a proven deficiency in workers or volunteers for COVID-19 care or research,¹⁸⁶ (2) the proposed reward truly incentivizes people to engage in the desired activities, and (3) there are no other—more efficient—ways to incentivize such activities. A “priority incentive” might not be required, effective, and optimal in all cases. For instance, while a soldier might consider an overseas tour to receive an earlier release, as in the above illustration, he might not risk his life in combat just to obtain a similar reward. Similarly, it is questionable whether priority in ventilator allocation in the case of a global pandemic truly incentivizes people to become healthcare providers or to provide care that puts them at risk. Healthcare providers usually have more general and powerful incentives. The same could be said for those volunteering to participate in vaccination experiments. Therefore, the efficiency case for merit-based exceptions has limited force. Given the aforementioned doubts about their fairness, policymakers must tread warily in recognizing them.

D. Skill

Another possible exception to the broader allocation scheme may be applied to those possessing relevant and unique skills that can be used to efficiently utilize the allocated resource.¹⁸⁷ Consider again the British government’s policy concerning discharge from the army following World War II. Britain released construction workers earlier, based on the public interest in postwar reconstruction.¹⁸⁸ Thus, essential workers could be discharged before those who had served for a longer period of time or had stronger claims of need or merit. Similarly, and returning to our context, healthcare employees may be given priority in the allocation of ventilation machines, ICU beds, personal protective equipment, health services, medications, and vaccines in order to keep

186. See MINN. DEP’T OF HEALTH, *supra* note 10, at 10-11 (stating that these exceptions, which would be implemented in the form of a weighted lottery, should only be applied if there is a need for these workers).

187. In some allocations, the prospect of living longer may be considered a special skill. For example, in organ transplant queues, young people may get priority because they can “enjoy” the resource for a longer period. See Kevin Sack, *Kidney Transplant Committee Proposes Changes Aimed at Better Use of Donated Organs*, N.Y. TIMES (Sept. 21, 2012), <http://www.nytimes.com/2012/09/22/us/proposals-aim-to-improve-kidney-transplant-system.html> [<https://perma.cc/4WFS-AD8G>].

188. Raphael, *supra* note 163, at 125.

them safe. This in turn enables them to continue their mission to protect the wellbeing and save the lives of many others. Put differently, prioritizing healthcare providers not only benefits the recipients directly but also the public at large.¹⁸⁹

This exception is justified only to the extent that members of the prioritized group have the skills to utilize the allocated resource (here, protection from illness and death) better than others in terms of ensuring welfare. While the importance of services provided by healthcare professionals cannot be disputed, it is hard to determine if they are more valuable than those provided by all other COVID-19 patients, including essential workers, which is the precondition for prioritizing the former under the unique skills theory.¹⁹⁰ Moreover, the argument that some people should be afforded greater protection than others because of their skills also weakens if there is no real shortage of people with that set of skills. If the availability of healthcare services is not at risk, the “unique skills” argument cannot justify preferential treatment to healthcare providers. Lastly, a skills-based exception may be justified only if prioritization of the most skillful actually results in utilization of their skills. In the case of COVID-19, the recovery process of patients in serious or critical condition, and their consequent absence from work, might be very long.¹⁹¹ Thus, the allocation of life-saving resources, such as ventilators or ICU beds, to healthcare providers at the expense of other patients, might not generate an additional and substantial benefit for society. At any rate, there seems to be some public opposition to the recognition of skill-based exceptions,¹⁹² which may reflect fears of favoritism.¹⁹³

V. REALLOCATION

A. Overview

A comprehensive discussion of the allocation of scarce life-saving resources, such as ventilators or medical attention, must take into account yet another grim conundrum: the possible transfer of the resource from one patient to another, either indefinitely, until the latter recovers or dies, or temporarily, in a “time-sharing” scheme. In other

189. Persad, *supra* note 34, at 37 (explaining the logic of this exception and that it does not violate disability laws); see also MINN. DEP'T OF HEALTH, *supra* note 10, at 10-11 (noting this justification).

190. For an attempt to justify a distinction between healthcare providers and other “deserving” patients, see *supra* notes 174-82 and accompanying text.

191. See N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 45 (for a discussion concerning this matter in the context of a previously developed protocol that the COVID-19 pandemic rendered relevant).

192. Indeed, in the previously noted pilot study, participants found using the factor of “value to others in the pandemic” to be problematic. Biddison et al., *supra* note 71, at 781-82.

193. N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 45.

words, one might argue that decisions regarding the allocation of continuously used resources, such as ventilators or ICU beds, as opposed to doses of vaccine or medicines which cannot be reused,¹⁹⁴ must be made and reconsidered on an ongoing basis.¹⁹⁵ Discussions of this idea gave rise to the proposition that a transfer of a ventilator from one patient to another may be justified, even if the former has been using the ventilator due to a medical condition which is unrelated to COVID-19, and even if such use began before the outbreak of SARS-CoV-2.¹⁹⁶

This bold recommendation might be objected to by patients and their relatives, and therefore very difficult to implement by healthcare providers.¹⁹⁷ In addition, decisions to remove patients from ventilators might counter moral, professional, and religious norms.¹⁹⁸ These difficulties might be mitigated to some extent if the possibility of disconnecting the patient from the ventilator is clearly articulated to the patient and the family in advance.¹⁹⁹

Ventilator reallocation might also violate existing legal norms, which clearly distinguish between initially withholding certain kinds of treatment and discontinuing treatment that has already started.²⁰⁰ These latter forms of action might constitute negligence or even battery in civil law and homicide in criminal law.²⁰¹ Existing legal

194. Non-reusable resources, including vaccines, medicines, or even oxygen, may also be allocated by offering less than the optimal amount of the resource to more people in need. For example, instead of following a two-dose vaccination protocol at times of scarcity, more people can be offered only a single dose (until scarcity problems are resolved). This less-than-ideal allocation, which the United Kingdom implemented at the early stage of its COVID-19 vaccination campaign, may save more lives than offering two doses to half the people within the same time frame, assuming that a single dose provides more than half of the individual protection afforded by two doses. For a discussion of the U.K.'s "single jab" policy, see Paul Nuki, *Debate Rages Over Wisdom of Britain's New 'Single Jab' COVID Vaccine Strategy*, TELEGRAPH (Jan. 1, 2021, 8:03 PM), <https://www.telegraph.co.uk/global-health/science-and-disease/debate-rages-wisdom-britains-new-single-jab-covid-vaccine-strategy/> [<https://perma.cc/8EY8-YGC8>].

195. See John L. Hick et al., *Duty to Plan: Health Care, Crisis Standards of Care, and Novel Coronavirus SARS-CoV-2*, NAT'L ACAD. MED. (Mar. 5, 2020), <https://nam.edu/duty-to-plan-health-care-crisis-standards-of-care-and-novel-coronavirus-sars-cov-2/> [<https://perma.cc/2EYB-HT22>] (discussing the need to reallocate).

196. Emanuel et al., *supra* note 9; see also Sheri Fink, *The Hardest Questions Doctors May Face: Who Will Be Saved? Who Won't?*, N.Y. TIMES (Mar. 31, 2020), <https://www.nytimes.com/2020/03/21/us/coronavirus-medical-rationing.html> [<https://perma.cc/G2XJ-WW7Q>].

197. White & Lo, *supra* note 8, at 1774.

198. See, e.g., Jason Weiner, *Emergency Triage Protocols Based on Jewish Values*, COLBY COLL. (Dec. 7, 2020), <https://web.colby.edu/coronaguidance/2020/12/07/weiner-triage-protocols> [<https://perma.cc/R6NX-PYLB>].

199. White & Lo, *supra* note 8, at 1774.

200. Note that ventilator removal might also violate general laws requiring treatment of patients at hospitals. See N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 217 (specifying relevant laws in New York).

201. See I. Glenn Cohen et al., *Potential Legal Liability for Withdrawing or Withholding Ventilators During COVID-19: Assessing the Risks and Identifying Needed Reforms*, 323 JAMA 1901, 1901 (2020) (arguing that even murder indictments are possible).

defenses such as necessity will probably be insufficient.²⁰² Even if the likelihood of criminal and civil liability is limited, expected sanctions will chill risk-averse hospitals and physicians from considering and executing such reallocations.²⁰³ Therefore, if reallocation is found to be normatively desirable (and we believe it is), legal changes must be implemented, shielding doctors and hospitals from criminal and civil liability insofar that proper protocols are met.²⁰⁴ This analytic move is a reflection of other legal changes that create temporal rights enabling reallocation of resources (or the lack of such rules when law finds reallocation to be misplaced).²⁰⁵

Furthermore, when opposing reallocation, some might invoke property rights or at least the illusionary concept of their existence. Here we refer to instances in which one patient was already connected to a machine as another enters the hospital. The former might argue he has a vested property right in the usage of the ventilator, which should be respected by protecting ongoing use. Again, such a claim would be substantially weakened if the possibility of reallocation is clearly articulated *ex ante*,²⁰⁶ even with respect to patients who were already using ventilators when the pandemic began. The existence of reallocation frameworks in a variety of contexts indicates the legal recognition of temporal property rights, and therefore a lack of an assumption that any form of property right would last indefinitely.²⁰⁷

A Johns Hopkins University (JHU) study, which examined public attitudes towards different strategies for allocating scarce resources during disasters, included the possibility of disconnecting one patient from a ventilator to make a place for another.²⁰⁸ The results were, unsurprisingly, mixed with many participants voicing various

202. *Id.* at 1901-02 (explaining why the necessity defense may not apply).

203. *Id.*

204. *Id.* at 1902 (proposing a temporary law shielding practitioners from such liability, and noting recent opinions from the Maryland Attorney General whereby indictments will likely not follow withdrawal); *see also* N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 226. For a discussion of the need for better civil and criminal protections for health care workers during public emergencies and a review of existing immunity laws related to crisis standards of care (and the way they might be amended to provide proper response to triage based dilemmas), *see* MAINE CTR. FOR DISEASE CONTROL & PREVENTION, DEP'T OF HEALTH & HUM. SERVS., ALL HAZARDS EMERGENCY OPERATIONS PLAN (2017), [http://themha.org/policy-advocacy/Issues/Novel-Coronavirus-\(2019-nCoV\)/Maine-Crisis-Standards-of-Care-Plan-0050317-v27-19.aspx](http://themha.org/policy-advocacy/Issues/Novel-Coronavirus-(2019-nCoV)/Maine-Crisis-Standards-of-Care-Plan-0050317-v27-19.aspx) [<https://perma.cc/N7FC-DQ68>].

205. *See* Perry & Zarsky, *supra* note 33, at 193.

206. N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 8 (recommending informing patients that they are receiving treatment for a "trial" period); ALLOCATION OF SCARCE RESOURCES, *supra* note 21, at 3 (indicating that "triage" commonly includes a reassessment stage).

207. *See* Perry & Zarsky, *supra* note 33, at 188-93.

208. Biddison et al., *supra* note 29.

concerns.²⁰⁹ Many were averse to the notion of disconnecting patients from ventilators; over forty percent of the lay-participants were opposed to or ambivalent about the idea in the post-discussion phase.²¹⁰ On the other hand, a strong majority agreed to such reallocation, with an overwhelming majority among health professionals.²¹¹ Similar mixed positions were found in the JHU pilot study discussed in Part III. Respondents acknowledged the need for reallocation, yet voiced concerns about their operation.²¹² In view of these findings, reallocation ideas should not be set aside categorically but approached with caution.

B. A Broader Perspective

As bioethicists struggle with the specifics of extubation and similar ideas during the COVID-19 crisis, it is important to place the proposed reallocation of health-related treatment and access in a broader legal, political, and social context. Though sometimes seemingly unfitting, a broad perspective can help identify questions arising with respect to reallocation models and illuminate possible responses. Inter alia, it can provide justifications for such allocations and highlight relevant structural features and possible limits. Reallocation is far from a rarity in legal and social contexts. It is applied in a variety of settings. At this point, we ask readers to set aside the unbearable fact that taking a life-saving resource away from the initial recipient in the COVID-19 context might constitute a death sentence. We will focus on more mundane settings in which the law requires, facilitates, or enables reallocation, and return to COVID-19 in the following Sections.

Private law features interesting examples of reallocation, mostly where physically indivisible “things” are allocated among people with equally strong claims. Early on, Edward Coke discussed the problem of several persons inheriting an indivisible resource, suggesting that it should be resolved through rotation.²¹³ A New York court

209. *Id.* at 191 (“Lay participants expressed significant concern about the moral acceptability of reallocating a ventilator, especially if a patient did not continue to deteriorate while receiving that support. Professionals tended to worry about the emotional, psychological, and moral distress of withdrawing a ventilator, as well as the legal ramifications of doing so.”).

210. *Id.* at 192.

211. *Id.* at 194.

212. Biddison et al., *supra* note 71, at 782.

213. EDUARDO COKE, *THE FIRST PART OF THE INSTITUTES OF THE LAWS OF ENGLAND* bk. 3, ch. 1, sec. 241, at 165a (18th ed. 1823) (“[O]ne coparcener [shall] have the estovers, pischary, or common, &c. for a time, and the other for the like time; as the one for one yeare, and the other for another, or more, or lesser time, whereby no prejudice can grow to the owner of the soile. Or in case of the pischary, the one may have one fish, and the other the second, &c. or the one may have the first draught, and the second the second draught, &c. And if it be of a park, one may have the first beast, and the second the second, &c. And if of a mill, one to have the mill for a time, and the other the like time; or the one one toll dish, and the other the second, &c. And this appeareth to be the ancient law . . .”).

implemented this idea in *In re Estate of McDowell*, ordering two siblings to share the use of a family rocking chair inherited by both.²¹⁴ William Blackstone similarly explained that if it is impossible to allocate a jointly owned resource to one of the coparceners and fairly compensate the others,²¹⁵ they should “have the profits of the thing by turns.”²¹⁶ This principle was explicitly endorsed by the legislatures of several states, such as Maine (with respect to jointly owned sawmills)²¹⁷ and Minnesota (with respect to mills and other indivisible tenements).²¹⁸ If these examples seem too mundane, consider the matter of child custody following parental separation in family law. Custody is granted based on the interest of the child,²¹⁹ but, often, if the child will equally benefit from staying with each parent, custodial time-sharing may be the solution.²²⁰

In public law, access to common goods in extremely high demand is sometimes rationed by rotation, which is an ongoing form of reallocation. One of the most prominent examples is rotational road-space rationing, whereby alternating sets of vehicles, usually defined by their license plate numbers, are denied entry to certain metropolitan areas during peak hours²²¹ or special events²²² to reduce congestion. There

214. *In re Estate of McDowell*, 345 N.Y.S.2d 828, 830 (N.Y. Sur. Ct. 1973) (stating that its decision “may sound strange”).

215. *E.g.*, *Zimmerman v. Marsh*, 618 S.E.2d 898, 901, 901 n.2 (S.C. 2005) (explaining that “one joint owner is allotted the entire property” and pays the others for their respective interests); Zachary D. Kuperman, Note, *Cutting the Baby in Half: An Economic Critique of Indivisible Resource Partition*, 77 BROOK. L. REV. 263, 290-91 (2011) (discussing partition by allotment).

216. 1 WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND *190 (J.B. Lippincott Co., 1893).

217. ME. REV. STAT. ANN. tit. 14, § 6506 (2021) (“Tenants in common of a sawmill may have a division of the time during which each may occupy according to his interest . . .”).

218. MINN. STAT. § 558.12 (2021) (“When the premises consist of a mill or other tenement which cannot be divided . . . the referees may assign the exclusive occupancy and enjoyment . . . to each of the parties alternately for specified times, in proportion to their respective interests.”).

219. JON ELSTER, LOCAL JUSTICE: HOW INSTITUTIONS ALLOCATE SCARCE GOODS AND NECESSARY BURDENS 50 (1992).

220. *Id.* at 73 (discussing the possibility of rotational child custody); see also H. PEYTON YOUNG, EQUITY: IN THEORY AND PRACTICE 14, 21 (1994); Francis J. Catania, Jr., *Learning from the Process of Decision: The Parenting Plan*, 2001 BYU L. REV. 857, 862 (2001); Kuperman, *supra* note 215, at 280.

221. This method is common in Mexico, Central America, and South America. See CAMBRIDGE SYSTEMATICS, INC., CONGESTION MITIGATION COMMISSION TECHNICAL ANALYSIS: LICENSE PLATE RATIONING EVALUATION *passim* (2007), <https://www.dot.ny.gov/programs/repository/Tech%20Memo%20on%20License%20Plate%20Rationing.pdf> [<https://perma.cc/FF3Q-QLV4>]. It was also considered as an alternative to congestion pricing in Manhattan. See William Neuman, *Traffic Panel Members Expect to Endorse Fees on Cars*, N.Y. TIMES (Jan. 25, 2008), <http://www.nytimes.com/2008/01/25/nyregion/25pricing.html> [<https://perma.cc/BV9V-QTKU>].

222. See, e.g., *Car Restrictions Begin in Beijing*, BBC NEWS (July 20, 2008, 5:22 GMT), <http://news.bbc.co.uk/go/pr/fr/-/1/hi/world/asia-pacific/7515907.stm> [<https://perma.cc/BKZ8-3NFX>] (discussing road space rationing during the Olympic Games).

are also many historical and contemporary examples of reallocation of political powers²²³ and positions among different people or parties within a particular state²²⁴ (most notably the position of Prime Minister of Israel),²²⁵ among the constituent states of a federation,²²⁶ or among member states in supranational and international organizations (such as the European Union).²²⁷

C. Design

The multiple examples of reallocation in the legal sphere demonstrate that it can take different forms. Prior studies identified three variables and several conceptual distinctions that must be addressed in designing models allowing reallocation.²²⁸ Decisions about these features are crucial and must be set forth transparently. The three variables are the overall duration of the allocation scheme, the number of participants, and the duration of each “time-share.”²²⁹ These variables are mathematically related, so any decision or constraint concerning each one impacts the other two. For example, increasing the number of participants or the length of individual time-shares might undermine the legitimacy of the entire system, as participants positioned at the end of the roster might have to wait for a very long time. In the

223. Lani Guinier set out a radical proposal, whereby in a polity divided into a permanent majority and a permanent minority, the majority and the minority should take turns in making collective decisions. LANI GUINIER, *THE TYRANNY OF THE MAJORITY: FUNDAMENTAL FAIRNESS IN REPRESENTATIVE DEMOCRACY* *passim* (1994).

224. Under the Qing dynasty in China, the task of serving as “headman” for tax collection was allocated by rotation. ELSTER, *supra* note 219, at 73.

225. See *11th Knesset—Overview and Selected Legislation*, KNESSET, <https://main.knesset.gov.il/EN/About/History/Pages/KnessetHistory.aspx?kns=11> [<https://perma.cc/Y7E7-33RS>] (follow link then select “Overview and Selected Legislation”) (last visited Aug. 11, 2022); Gil Hoffman, *Will the Bennett-Lapid Prime Minister Rotation Happen*, JERUSALEM POST (July 29, 2022, 9:12 PM), <https://www.jpost.com/israel-news/politics-and-diplomacy/will-the-bennett-lapid-prime-minister-rotation-happen-675326> [<https://perma.cc/K8ED-2L7D>].

226. The presidency of the German Bundesrat rotates among representatives of the different member states on an annual basis. See *The President and Presidium*, BUNDES RAT, <http://www.bundesrat.de/EN/organisation-en/praesident-en/praesident-en-node.html> [<https://perma.cc/XD46-MXAG>] (last visited Aug. 11, 2022). The chair of the presidency of Yugoslavia was alternately held by leaders of the constituent republics. Kelye L. Fabian, Note, *Proof and Consequences: An Analysis of the Tadic & Akayesu Trials*, 49 DEPAUL L. REV. 981, 986 n.49 (2000). Croatia declared its independence because the Serbian leader temporarily succeeded in preventing the Croatian leader from taking his turn. *Id.* at 987.

227. Under the Maastricht Treaty, the Presidency of the Council of the European Union rotates every six months among representatives of EU member states. See Consolidated Version of the Treaty on European Union art. 16(9), Oct. 26, 2012, 2012 O.J. (C 326) 24. Until 2009, the head of the European Council (not to be confused with the Council of the European Union) was an unofficial position held by the representative of the state also holding the Presidency of the Council of the European Union. See *History*, EUR. COUNS. & COUNS. EU, <https://www.consilium.europa.eu/en/history/> [<https://perma.cc/65T8-6VTP>] (last visited Aug. 11, 2022).

228. See Perry & Zarsky, *supra* note 33, at 191-93.

229. *Id.*

case of life-saving equipment, a long wait might result in deterioration and death. A short wait would also require shorter periods of ventilation per patient and, presumably, very short periods of treatment would be less effective. The balance must be based on clinical findings and take into account considerations of fairness and efficiency.²³⁰

One of the previously discussed conceptual distinctions is between *time-based* reallocation, in which the resource passes on to the next participant after the passage of a certain amount of time, and *quota (or criterion)-based* reallocation, in which the resource is transferred after reaching a certain level of activity or obtaining a certain benefit.²³¹ Consider the following examples mentioned in the sociological literature. A fisherman may be required to pass the fishing spot on to another after several months of use or upon catching a certain amount of fish.²³² Similarly, the flow of water in an irrigation system can be diverted to the next farmer at the end of each season or once the current user has consumed a given quantity of water, etc.²³³

In the case of life-saving equipment, the trigger for transferring the resource cannot be the mere passage of a certain amount of time. Disconnecting one patient from a ventilator when he or she is almost cured or transferring the ventilator to another patient with no chance of survival is unacceptable. However, a quota or another stipulation regarding the patient's medical condition, apart from the obvious case of death which automatically results in a transfer, cannot be easily applied given the uncertainties and fluctuations in medical prognosis.²³⁴ Therefore, a reallocation scheme requires a hybrid model, triggered by the passage of time but executed based on health-related criteria such as improvement, deterioration, and prospect of recovery. This complex model might allocate a very different resource to different recipients, based on their health conditions, but should also aim to avoid systematic biases against disadvantaged groups. According to

230. See Rosenbaum, *supra* note 5, at 1875 ("If we decided not to intubate patients with Covid-19 for longer than 10 days, for example, but then learned that these patients need 15 days to recover, we would need to change our algorithms.")

231. See ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 71, 76, 78 (1990) (distinguishing various forms of irrigation systems in rural Spain, including rotational systems—some based on fixed time and others on the extent of water consumption).

232. See JEAN-MARIE BALAND & JEAN-PHILIPPE PLATTEAU, HALTING DEGRADATION OF NATURAL RESOURCES: IS THERE A ROLE FOR RURAL COMMUNITIES? 204 (1996) (discussing the example of salmon fishing in Ireland in the 1970s).

233. See OSTROM, *supra* note 231, at 71, 76, 78. This conduct constitutes what Ayres and Talley refer to as "activity-level divisions." Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 YALE L.J. 1027, 1078 (1995).

234. Fink, *supra* note 196 ("Also, the plans might not achieve their goals of maximizing survival. For example, most called for reassigning a ventilator after several days if a patient was not improving, allowing it to be allocated to a different patient. But rapidly cycling ventilators might not give anyone enough chance to improve. When the coronavirus causes severe pneumonia, doctors are finding that patients require treatment for weeks.")

existing policy recommendations, the hybrid solution would include a minimal interval for treatment (which some experts set as 120 hours), followed by an assessment of the effectiveness of the treatment, another decision, and so on.²³⁵

A ventilator reallocation scheme will involve multiple parties and resources. This means that even if a patient is disconnected from one ventilator, he or she may be connected to another when circumstances change. Such a model generates an erratic stream of both life-saving resources and patients, constantly changing the supply of and demand for these resources. A coordinated reallocation scheme, in which some patients are removed to meet the needs of others, may be extremely difficult to manage and implement. This may be another justification for the use of a simple queuing method that can constantly and seamlessly match patients with available resources. As explained above, lotteries do not handle such fluctuations as efficiently.

D. Normative Analysis

1. Fairness

In terms of fairness, a model with a reallocation component seems superior to pure lotteries and queues (which do not feature a secondary allocation). We will explain why shortly. In the end, however, the scope of participation in the allocation is constrained by the availability of life-saving resources, the inflow of patients, and various medical considerations. Therefore, fairness may call for a mixed model, in which reallocation is implemented to some extent, but its participants are selected through queues or lotteries.

The main normative advantage of time-sharing over pure lotteries is that time-sharing mitigates the tension between *ex ante* and *ex post* fairness, that is, between an equal opportunity to obtain the resource (procedural justice) and an equal share (distributive justice).²³⁶ Lotteries are only committed to the former.²³⁷ Indeed, the equal chances that lotteries provide seem to satisfy the requirement of equality. But lotteries may be challenged on the grounds that the main (though not the only) determinant of an allocation method's fairness is the outcome, and that a person who acquires a non-materialized chance (namely, participates in the lottery but does not win) ultimately acquires nothing. Regarding lotteries, David Wasserman observed that "the value conferred by the probabilistic shares in a lottery is shared only briefly

235. N.Y. VENTILATOR ALLOCATION GUIDELINES, *supra* note 6, at 14.

236. YOUNG, *supra* note 220, at 21.

237. CRAIG L. CARR, ON FAIRNESS 100-01 (2000).

before passing to a single claimant.”²³⁸ He aptly named his article *Let them Eat Chances*, indicating that those drawing a shorter straw are in fact left with nothing (to eat). To the extent that one endorses this view, time-sharing—which secures both procedural and distributive justice—is preferable in terms of fairness to lotteries, which afford only equal opportunities and not equal shares.²³⁹

In many situations, time-sharing may be superior to queues for similar reasons. To the extent that time of entry into a queue is coincidental or based on normatively irrelevant characteristics, time-sharing is fairer than queues which, like lotteries, only guarantee procedural, and not distributive, justice. Indeed, even if the time of entry reflected normatively relevant differences (such as investment of time and effort), the very small differences in time of entry could hardly justify tremendous differences in outcome (access to a ventilator versus no access). But the time of entry into a queue for intensive care is not based on normatively relevant characteristics. As explained above, it is mostly coincidental. In this respect, queues operate very much like lotteries and suffer from the same relative weakness when compared to time-sharing.

However, time-sharing cannot fully replace queues or lotteries. Time-sharing hinges on temporal divisibility (the ability to share the resource’s use over time), so if this form of division is impossible or unwarranted, time-sharing becomes impossible or unwarranted as well. In such cases, another egalitarian method (such as lotteries or queues) must be used to select those who receive the resource or bear the burden.²⁴⁰ For example, in “allocating” organs to patients, and children to adoptive parents, reallocation is possible in theory but highly problematic. Insofar as the candidates for transplantation or adoption are equal in all relevant respects, a lottery or a queue is needed. Ventilators and ICU beds are different from organs or children. They can sometimes be reasonably transferred from one patient to another. Yet the frequency of transfers is subject to technical, medical, and ethical constraints.

In the extreme cases envisaged by theorists, the use of time-sharing will not accommodate all eligible pursuers, namely patients in critical

238. David Wasserman, *Let Them Eat Chances: Probability and Distributive Justice*, 12 *ECON. & PHIL.* 29, 44 (1996). Wasserman explains that “hungry claimants [cannot] actually eat chances.” *Id.* at 47.

239. James Konow, *Which Is the Fairest One of All? A Positive Analysis of Justice Theories*, 41 *J. ECON. LITERATURE* 1188, 1230 (2003) (“[Lotteries] can be seen as a second best solution . . .”).

240. See BARBARA GOODWIN, *JUSTICE BY LOTTERY* 149 (2d ed. 2005) (explaining that many goods and evils cannot be rotated, and that rotation “lacks the scope of the lottery, which can in principle fairly distribute any kind of good”).

condition.²⁴¹ These models can provide a comprehensive “fair” response only when the group of pursuers is small²⁴² or when the resource can be divided into a sufficiently large number of “slots.” Even then, some method must be used to set the order of use. Where the number of eligible pursuers exceeds the number of slots, some pursuers will be left out, and another mechanism will have to be devised to decide whom to exclude. In such cases, a queue or a lottery may be used for the preliminary selection of participants.²⁴³ These mechanisms would also be needed for setting the order of those receiving treatment (even if time-shared). The questions of design discussed above, especially the extent of each slot (in the case of ventilators—the event triggering extubation), will define the relation between time-sharing and other allocation mechanisms and ultimately determine the number of patients receiving care. For example, the longer the use of a ventilator by a single patient the fewer the users, and the more exclusive the threshold selection process must be.

2. Efficiency

The main benefit of time-sharing in the COVID-19 context is that it promotes maximization of the utility of life-saving resources through transfers. But time-sharing always comes at a cost, and its unique costs must be taken into account in assessing its desirability. We hereby detail the general categories of costs that must be considered. The first noteworthy cost of simple reallocation is that of transfers. In assessing these costs, policymakers must consider different designs and the number of transfers each would entail. For example, the costs of transferring a ventilator include the time and effort required to extubate one patient and intubate another, and to prepare both for the procedure; the risks to the patients from extubation and intubation and from possible transmission of pathogens between them; the risk of infection of medical staff performing the procedure; and the idleness of the resource during the transition. While shorter sessions might render the process fairer (as more participants will be able to participate), they will be more costly due to the larger number of transfers.

The time-sharing administrator will also incur unique costs. Deciding whether and when to transfer a resource will require time and effort. Making crucial decisions might also cause personal anguish (or

241. *Id.* at 165 (arguing that rotation may replace the lottery “where there is enough of one good for everyone to sample it at least once during her lifetime, and where there is an unavoidable evil or burden which can be divided and distributed equally over time”).

242. *Id.* at 158 (explaining that in small groups, rotation is preferable and is, in fact, “the most just way of distributing” the resource).

243. *See id.* at 157, 159, 165; *see also id.* at 166 (“Many goods are too scarce [for rotation] . . . Hence . . . there are distributive functions which only a lottery can perform.”).

“moral injury”) to the decisionmaker.²⁴⁴ Also, given the gravity of these decisions, decisionmakers will probably have to meet due process requirements. For instance, some scholars propose an appeals process, in which many decisions will be reexamined at an additional cost.²⁴⁵ If the allocation is based on the prospect of quality or meaningful life (a standard we rejected at the outset), the costs of decisionmaking might be prohibitive. Even if the allocation is based on the number of years left, the process may be taxing, particularly if appeals are allowed.

E. Reallocation as a Corrective Mechanism

The possibility of reallocation will have a direct impact on the fairness and efficiency of the initial allocation process. Reallocation can resolve some of the tensions created by queues and lotteries. First, in terms of efficiency, both queues and lotteries suffer from a substantial shortcoming: their very limited ability to assure that the recipients of the resource are those most suited to receive it. Reallocations mitigate this shortcoming. Once reallocations are incorporated into the model, the allocation process allows for essential self-correction. Patients who do not sufficiently benefit from the resources, as determined by the periodic reassessment of each patient’s condition, can be removed from the recipient pool. Second, the possibility of a transfer reduces the stress and mental costs encumbering healthcare providers when exercising their professional discretion at the preliminary screening stages. The fact that crucial decisions are not final alleviates the mental burden and renders decisionmakers’ tasks more manageable. Hopefully, the somewhat provisional nature of preliminary decisions will not make healthcare providers treat the situation in a less rigorous manner.²⁴⁶ Finally, as already explained, reallocation adds an element of distributive justice, that queues and lotteries might lack, making the allocation model fairer overall.

244. A recent report indicated that moral injury in medicine “occurs when clinicians are . . . expected, in the course of providing care, to make choices that transgress their longstanding, deeply held commitment to healing.” It undermines wellbeing, and uncertainty increases its likelihood and intensity. While this notion was discussed prior to COVID, it was enhanced by the pandemic’s dynamics, including the need to ration scarce healthcare resources (e.g., ventilators) and engage in difficult triage decisions based on patients’ likelihood to benefit from or survive certain interventions. The report also mentions ways to reduce the risk of such injury by conversation, education and support, as well as by having relevant decisionmaking processes in place. See AM. PSYCHIATRIC ASS’N, MORAL INJURY DURING THE COVID-19 PANDEMIC 2-4 (2020), <https://www.psychiatry.org/file%20library/psychiatrists/apa-guidance-covid-19-moral-injury.pdf> [<https://perma.cc/5G34-PHPR>].

245. ALLOCATION OF SCARCE RESOURCES, *supra* note 21, at 4.

246. See Shmuel I. Becher & Tal Z. Zarsky, *Open Doors, Trap Doors, and the Law*, 74 L. & CONTEMP. PROBS. 63, 84-85 (2011).

CONCLUSION

Humanity will survive COVID-19 but will never be the same. The remarkable shifts that this pandemic has brought about will impact the trajectory of social conduct in a variety of areas, including education, employment, finance, globalization, and above all, healthcare. However, whether during the current crisis or the next, society will face difficult choices, and the allocation of scarce resources will surely be one of them. This Article had a modest goal: to enrich the debate with questions and ideas without advocating a one-size-fits-all solution to allocation problems in the context of COVID-19. It incorporated the vast knowledge found in legal and non-legal scholarship, including theoretical analyses and empirical studies, into the bioethics discussion, all in an attempt to produce a comprehensive framework for the public discourse. The Article provides a theoretical mapping of the key issues and arguments to consider, and a blueprint for the allocation of scarce life-saving resources at times of crisis, that can supplement or improve protocols currently formulated by public health experts.