A moral theory cannot disadvantage people due to their circumstances and cannot be guided by bias

Rawls ‘71 John Rawls. Professor at Harvard: A Theory of Justice, 1971.

One should not be misled, then, by the somewhat unusual conditions which characterize the original position. The idea here is simply to make vivid to ourselves the restrictions that it seems reasonable to impose on arguments for principles of justice, and therefore on these principles themselves. Thus It seems reasonable and generally acceptable that **no one should be advantaged or disadvantaged by natural fortune or social circumstances in the choice of principles**. It also seems widely agreed that It should be impossible to tailor principles to the circumstances of one’s own case. We should insure Further that particular inclinations and aspirations, and persons’ conceptions of their good do not affect the principles adopted. The aim is to rule out those principles that it would be rational to propose for acceptance, however little the chance of success, only if one knew certain things that are irrelevant from the standpoint of justice. For example, If a man knew that he was wealthy, [they would not] might ﬁnd it rational to advance the principle that various taxes for welfare measures be counted unjust; if he knew that he was poor, [they] would most likely propose the contrary principle. To represent the desired restrictions one imagines a situation in which everyone is deprived of this sort of information. One excludes the knowledge of those contingencies that set men at odds and allow them to be guided by their prejudice.

The veil of ignorance is the only theory that can throw aside biases and determine the correctness of a moral theory from a purely objective perspective. The NC criterion collapses to the aff

Von Platz 17. Von Platz, Jeppe. "The Veil of Ignorance in Rawlsian Theory." In The SAGE Encyclopedia of Political Behavior, edited by Fathali M..Moghaddam, 889-92. Los Angeles, CA: Sage Reference., 2017. https://scholarship.richmond.edu/cgi/viewcontent.cgi?article=1137&context=philosophy-faculty-publications

The original position models our beliefs about justice for a democratic society by defining the knowledge and interests of the parties and by requiring that all candidate conceptions of justice satisfy the formal constraints of the concept of right. The veil of ignorance defines the knowledge of the parties; it shields them [parties] from knowledge of particular facts that they could use to favor particular members of society while at the same time allowing them knowledge of general facts that are helpful for thinking about justice in general. The veil of ignorance thus expresses a commitment to a sort of impartiality that is needed to ensure that the principles we select express our commitments to fairness and equal citizenship. To ensure this impartiality, the veil of ignorance shields the parties from knowledge about the people they represent: about their gender, race, religious beliefs, wealth, and similar facts. The parties are also ignorant of particular facts about the society those they represent live in, such as how religious beliefs are distributed, what natural resources their society has access to, and the distribution of wealth and opportunities. While the veil of ignorance shields the parties from knowledge that could lead them to propose unfair terms of social cooperation, it lets them know enough about the general conditions of democratic societies to rank candidate conceptions of justice. So the parties know that those they represent have a conception of the good (but not what it is); they know general facts about human needs and psychology; that they are in circumstances of justice (where social cooperation is both necessary and possible); they know theories of sociology and economics and that their society contains a plurality of philosophical, religious, political, and social doctrines. That the veil of ignorance leaves the parties without any knowledge about the interests of those they represent or even about the distribution of interests in society invites. the question of how they can rank conceptions of Justice-for what interests do they have that could lead them to have preferences between different candidate conceptions?

We believe in basic rights and liberties, and concern for the least well off; inequalities cannot be created unfairly and must benefit the least advantaged – this is the difference principle

SEP 96. Sep 22, 1996. Stanford Encyclopedia of Philosophy, Distributive Justice. https://plato.stanford.edu/entries/justice-distributive/#Difference

The wealth of an economy is not a fixed amount from one period to the next, but can be influenced by many factors relevant to economic growth. These include, for example, technological advancement or changes in policy that affect how much people are able to produce with their labour and resources. More wealth can be produced and indeed this has been the overwhelming feature of industrialized countries over the last couple of centuries. The dominant economic view is that wealth is most readily increased in systems where those who are more productive earn greater incomes. This economic view partly inspired the formulation of the Difference Principle. The most widely discussed theory of distributive justice in the past four decades has been that proposed by John Rawls in A Theory of Justice, (Rawls 1971), and Political Liberalism, (Rawls 1993). Rawls proposes the following two principles of justice: 1. Each person has an equal claim to a fully adequate scheme of equal basic rights and liberties, which scheme is compatible with the same scheme for all; and in this scheme the equal political liberties, and only those liberties, are to be guaranteed their fair value. 2. Social and economic inequalities are to satisfy two conditions: (a) They are to be attached to positions and offices open to all under conditions of fair equality of opportunity; and (b), they are to be to the greatest benefit of the least advantaged members of society. (Rawls 1993, pp. 5–6. The principles are numbered as they were in Rawls’ original A Theory of Justice.) Where the rules may conflict in practice, Rawls says that Principle (1) has lexical priority over Principle (2), and Principle (2a) has lexical priority over (2b). As a consequence of the priority rules, **Rawls’ principles do not permit sacrifices to basic liberties in order to generate greater equality of opportunity or a higher level of material goods, even for the worst off.** While it is possible to think of Principle (1) as governing the distribution of liberties, it is not commonly considered a principle of distributive justice given that it is not governing the distribution of economic goods per se. Equality of opportunity is discussed in the next section. In this section, the primary focus will be on (2b), known as the Difference Principle. **The main moral motivation for the Difference Principle is similar to that for strict equality: equal respect for persons.** Indeed, since the only material inequalities the Difference Principle permits are those that raise the level of the least advantaged in the society, it materially collapses to a form of strict equality under empirical conditions where differences in income have no effect on the work incentive of people (and hence, no tendency to increase growth). The overwhelming economic opinion though is that in the foreseeable future the possibility of earning greater income will bring forth greater productive effort. This will increas[ing] the total wealth of the economy and, under the Difference Principle, the wealth of the least advantaged. Opinion divides on the size of the inequalities which would, as a matter of empirical fact, be allowed by the Difference Principle, and on how much better off the least advantaged would be under the Difference Principle than under a strict equality principle. Rawls’ principle, however, gives fairly clear guidance on what type of arguments will count as justifications for inequality. Rawls is not opposed in principle to a system of strict equality per se; his concern is about the absolute position of the least advantaged group rather than their relative position. If a system of strict equality maximizes the absolute position of the least advantaged in society, then the Difference Principle advocates strict equality. If it is possible to raise the absolute position of the least advantaged further by having some inequalities of income and wealth, then the Difference Principle prescribes inequality up to that point where the absolute position of the least advantaged can no longer be raised.

The difference principle is the only one that satisfies the veil of ignorance; it is truly reciprocal (all societal gains benefit the least advantaged) and the “reciprocal” alternative – restricted utility – fails

(Freeman, Samuel, 2-27-1996, "Original Position (Stanford Encyclopedia of Philosophy)," No Publication, <https://plato.stanford.edu/entries/original-position/>)

What bearing does this have on choice in the original position? Even if the deeper reciprocity achieved by the difference principle seems morally appealing to us, the parties are not similarly motivated by moral intuitions of fairness. They must be moved to agree on the difference principle for rational considerations alone. So why should the parties in the original position care about the deeper reciprocity achieved by the difference principle? Why wouldn’t it be rational for them to agree to a more superficial reciprocity, as allowed by restricted utility, thereby taking a chance that they might be among the affluent in the capitalist welfare state? After all, if they end up among the least advantaged, they may only be moderately worse off than they would have been under the difference principle.

The reasons that speak in favor of the parties’ rational choice of the difference principle are their higher-order interest in developing their capacities for justice, their concern for their self-respect, their concern for stability, and the strains of commitment. Compare the difference principle with the principle of restricted utility: Once the social minimum is met, restricted utility does not guarantee that the worse off will benefit in any way from further gains to those better off. Quite the contrary, further gains to more advantaged may even disadvantage the less advantaged—for example, a falling minimal wage rate in the face of an increased supply of labor results in a greater share going to capital, which may benefit owners and middle class consumers but not the less advantaged workers. With restricted utility there is no consistent and continuing tendency toward reciprocity of benefits, for once the social minimum is satisfied the less advantaged are as likely to gain nothing as to benefit from further gains to those better off.

Rawls’s conjecture is that in the capitalist welfare state structured by restricted utility, the less advantaged are likely to become dispirited, resentful, and frustrated with their situation, for they know that their well-being is neglected and often intentionally sacrificed so that the majority of citizens may prosper. While stability is maintained among the less advantaged as a modus vivendi, still they are likely to withdraw from active participation in politics and public life; for they justifiably feel left behind by society and no longer see themselves as having a stake in increasing social prosperity or as enjoying a respected position in public life. This all-too-familiar phenomenon in the modern capitalist welfare-state is evident from the striking lack of political participation by the poorest members of our society. It may be that welfare-state capitalism is stable, but it is the stability of indifference or hopelessness among the less advantaged, not stability for the right reasons, which is grounded in equal citizens’ affirmation of social institutions out of their sense of justice (PL xlii, 391). Due to their lack of self-respect, and the excessive demands the capitalist welfare-state places on their moral sensibilities and capacities for justice, the least advantaged are unable to willingly affirm the organizing principles of society on grounds of their sense of justice. The principle of restricted utility then places excessive strains of commitment on the worse off, and undermines their sense of self-respect, causing them to be resentful of their situation. Moreover, restricted utility invites continuing disagreement over the size of the social minimum, since there is no criterion other than citizens’ differing views regarding what is needed to satisfy the basic needs of the least advantaged. So, as is characteristic of the capitalist welfare state, there will be continual disagreement on a decent minimum and continual efforts by the more advantaged to reduce the social minimum. The difference principle by contrast provides a definite standard for determining the social minimum. Finally, citizens’ higher-order interest in the full development and effective exercise of their capacities for a sense of justice are not well served by restricted utility, since it fails to achieve economic reciprocity and the social bases of self-respect to a significant degree for all citizens. Because of their interests in fully exercising their moral and rational capacities, their sense of self-respect, and their concern for stability, the parties in the original position cannot in good faith rationally affirm restricted utility and the capitalist welfare state when they have the alternative of choosing the difference principle (cf. JF, 128–129). This seems to be Rawls’s main argument for the difference principle from the original position.

Contention 1: Vaccine Inequality

IP protections cement global vaccine inequality – wealthy nations hoard vaccines while blocking access for the rest of the world

Meredith 4/21

Sam Meredith is an international politics correspondent for CNBC – London, April 22, 2021. “Rich countries are refusing to waive the rights on Covid vaccines as global cases hit record levels”, https://www.cnbc.com/2021/04/22/covid-rich-countries-are-refusing-to-waive-ip-rights-on-vaccines.html, accessed 9-10-21 // mk

The U.S., Canada and U.K. are among some of the high-income countries actively blocking a patent-waiver proposal designed to boost the global production of Covid-19 vaccines. It comes as coronavirus cases worldwide surge to their highest level so far and the World Health Organization has repeatedly admonished a “shocking imbalance” in the distribution of vaccines amid the pandemic. Members of the World Trade Organization will meet virtually in Geneva, Switzerland on Thursday to hold informal talks on whether to temporarily waive intellectual property and patent rights on Covid vaccines and treatments. The landmark proposal, which was jointly submitted by India and South Africa in October, has been backed by more than 100 mostly developing countries. It aims to facilitate the manufacture of treatments locally and boost the global vaccination campaign. Six months on, the proposal continues to be stonewalled by a small number of governments — including the U.S., EU, U.K., Switzerland, Japan, Norway, Canada, Australia and Brazil. “In this Covid-19 pandemic, we are once again faced with issues of scarcity, which can be addressed through diversification of manufacturing and supply capacity and ensuring the temporary waiver of relevant intellectual property,” Dr. Maria Guevara, international medical secretary at Medecins Sans Frontieres, said in a statement on Wednesday. “It is about saving lives at the end, not protecting systems.” The urgency and importance of waiving certain intellectual property rights amid the pandemic have been underscored by the WHO, health experts, civil society groups, trade unions, former world leaders, international medical charities, Nobel laureates and human rights organizations. Why does it matter? The waiver, if adopted at the General Council, the WTO’s highest-level decision-making body, could help countries around the world overcome legal barriers preventing them from producing their own Covid vaccines and treatments. Advocates of the proposal have conceded the waiver is not a “silver bullet,” but argue that removing barriers toward the development, production and approval of vaccines is vital in the fight to prevent, treat and contain the coronavirus. Conversely, pharmaceutical industry trade associations are against the waiver. In a statement published late last year, Thomas Cueni, director-general of the International Federation of Pharmaceutical Manufacturers & Associations, argued that diluting national and international intellectual property frameworks would be “dangerous and counterproductive.” Instead, he argued the focus should be on science and innovation rather than “undoing the very system that supports it.” To date, an average of one-in-four people in high-income nations has received a Covid vaccine, compared to one-in-over-500 for people in low-income countries. At the current rate, the bulk of the adult population in advanced economies is expected to have been vaccinated against the virus by the middle of next year, whereas the timeline for poorer economies is likely to stretch to 2024 — if it happens at all. ‘A scandal that affects us all’ The world leaders opposed to the policy are coming under intensifying pressure to change course. In one possible shift in tone, U.S. Trade Representative Katherine Tai said last week that “significant inequities we are seeing in access to vaccines between developed and developing countries are completely unacceptable.” Tai added that mistakes that had resulted in “unnecessary deaths and suffering” during the HIV/AIDS epidemic must not be repeated. However, the U.S. is yet to clarify whether it has changed its position on the waiver. The European Commission has previously said waiving patents will not solve production capacity problems, reportedly claiming instead that policymakers need to find measures “to preserve the incentives to innovate.” A spokesperson was not immediately available when contacted by CNBC on Thursday. Andrew Stroehlein, European media director of Human Rights Watch, said via Twitter on Thursday the fact that high-income countries were “throttling vaccine production globally by blocking the TRIPS waiver — a proposal at the WTO to temporarily waive some intellectual property rules for medical products — is a scandal that affects us all.” His comments come shortly after The People’s Vaccine Alliance found that two-thirds of epidemiologists surveyed at some of the world’s leading academic institutions warned Covid mutations could render current vaccines ineffective in a year or less. The survey, published on March 30, interviewed 77 epidemiologists from 28 countries. “It’s galling to hear pharma (companies) moan that a temporary waiver would ‘disincentivize’ them from making future vaccines. Apart from bordering on extortion, it’s ahistorical. What incentivized them last time was our taxes. Our governments poured billions into developing vaccines,” Stroehlein said. “They could be thus incentivized again in future, obviously.”

It’s here to stay – wealthy nations are now prioritizing boosters for their own population over global health

Paton 9/3

James Paton is a health, pharma and COVID-19 reporter for Bloomberg. September 3, 2021. “Rich Countries Hog Vaccines. Is There a Solution?”, https://www.bloomberg.com/news/articles/2021-09-03/rich-countries-hog-vaccines-is-there-a-solution-quicktake, accessed 9-10-21 // mk

Wealthy countries have hogged Covid-19 vaccines, providing a glaring illustration of how unfair the world can be. While 57% of people in high-income countries had received at least one dose of vaccine by Aug. 30, the figure in low-income countries was just 2%, according to the United Nations. Health advocates worry that the imbalance will be aggravated by plans in wealthy countries to provide booster shots to fully inoculated people to combat the super-contagious delta variant of the coronavirus. The uneven distribution -- which many scientists say will likely prolong the global health crisis -- has prompted proposals to expand production of Covid shots, reallocate rich countries’ excess doses, and ensure vaccines are deployed more equitably in future pandemics. 1. Why were some countries first in line? As inoculations were being developed, a number of affluent countries signed advance contracts with a variety of companies, securing the lion’s share of initial doses. The U.S., as part of its multibillion-dollar program hastening the development of Covid vaccines, also used wartime powers to require manufacturers to fill massive U.S. government orders first. The U.S., U.K. and European countries had the added advantage that companies with local manufacturing plants were the first to deliver vaccines with proven efficacy; China and Russia also rolled out vaccines early, before final trial results were in. 2. Where did this leave other nations? A number of middle-income countries, such as Turkey, Malaysia, Serbia and El Salvador, have now managed to procure enough supply to inoculate significant portions of their populations. But the poorest nations are still waiting for anything beyond a trickle of the life-saving doses. Because many lack the financial clout to secure contracts for Covid vaccines on their own, they depend for supplies largely on Covax, an initiative backed by groups including the World Health Organization that was designed to provide fair access to the shots for every country. And Covax has fallen short of its goals. 3. What happened with Covax? Covax uses funding provided by governments and donors such as the Bill & Melinda Gates Foundation to make its own contracts with vaccine manufacturers. But it has struggled to get hold of doses, especially after India -- home to the Serum Institute, the world’s biggest vaccine manufacturer -- pared back exports to supply the domestic market following a new wave of infections there in March. The original aim of Covax was to distribute at least 2 billion doses, two-thirds of them to lower-income nations, by the end of 2021. By Aug. 30, it had shipped just 11% of that. China and Russia were early to export vaccines as a tool of diplomacy, and in August China pledged to dramatically expand exports to 2 billion doses this year. In June, leaders of the Group of Seven nations upped their commitments so that in all they’ve promised to provide 2.3 billion shots to developing nations by next year. So far the actual contributions have been paltry. Health advocates say that billions more doses are needed and stressed that the speed of donations is as important as the quantity. They also worried that the flow of supply to the neediest countries would be interrupted by decisions in high-income nations to offer booster shots to people who’ve already been fully inoculated and to younger children. 4. Will countries with ample supplies share them? China and Russia were early to export vaccines as a tool of diplomacy, and in August China pledged to dramatically expand exports to 2 billion doses this year. In June, leaders of the Group of Seven nations upped their commitments so that in all they’ve promised to provide 2.3 billion shots to developing nations by next year. So far the actual contributions have been paltry. Health advocates say that billions more doses are needed and stressed that the speed of donations is as important as the quantity. They also worried that the flow of supply to the neediest countries would be interrupted by decisions in high-income nations to offer booster shots to people who’ve already been fully inoculated and to younger children. 5. What’s at stake? The coronavirus has flourished in some places where vaccines have been scarce. In addition to causing misery locally, that increases the risk of the emergence of additional, worrisome variants, which will inevitably make their way elsewhere and may not be neutralized by existing shots. Many countries short of vaccines are relying on continued lockdowns to suppress the virus, stifling economic activity, while wealthier countries have been opening up. It’s possible that sub-Saharan Africa, where doses are in shortest supply, will be spared the worst effects. Researchers noted in a paper published in July that Covid’s impact has been significantly lower in the region than elsewhere and argued that the main factors are the relative youth of the population and the low numbers of elderly living in long-term care facilities. Still, many African countries are struggling to combat Covid on top of a string of other health threats. And there’s no guarantee the next pandemic won’t target the young, making future vaccine rollouts a concern for African health specialists.

New COVID doomsday variants are coming now that will plunge the world back into crisis and cause millions of deaths – vaccines are the key internal link to preventing this

Freedman 8/4

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All told, the chances that a virus in the population will produce a much more dangerous variant in the course of a year would normally be extremely low. But when billions of people are infected with billions of copies of a virus, all bets are off. Thanks to Delta's infectiousness, and the huge number of people whose refusal or inability to get vaccinated leaves them primed to become living COVID-19 mutation labs, the conditions are ripe to produce yet more, potentially more dangerous, variants in the coming months. "It's going to be very difficult to stop it from happening with masks and social distancing at this point," says Preeti Malani, a physician and infectious disease researcher and chief health officer at the University of Michigan. "Vaccines are the key, and vaccine hesitancy is the obstacle." The growing number of people with natural immunity, from having recovered from COVID-19, won't save the day either, says Eric Vail, director of molecular pathology at Cedars-Sinai Medical Center. "At best it's now a third of the U.S. population with natural immunity, and that may be an overestimation," he says. "It won't be enough to guarantee that Delta will be the last big variant." Can It Beat the Vaccine? The most likely way a new variant will plague us is the same way the U.K. variant did earlier this year, and Delta is now: by being more transmissible. At first glance, that seems a tall order, given that Delta is already one of the most transmissible viruses ever encountered, falling short only of the measles. Then again, notes Osterholm, scientists thought the original COVID-19 virus was a shockingly adept spreader, only to be surprised by how much more easily the U.K. variant spread, just to be caught off guard yet again with the rise of Delta, which is about five times more transmissible than the original. There's no reason to assume Delta represents any sort of ceiling in infectiousness. "I wouldn't be incredibly surprised if something else came along that's even more transmissible," says Vail. Such a super-spreading virus might burn through the unvaccinated, non-previously infected population so fast that hospitals couldn't come close to coping. Making that possibility more likely is the fact that sheer transmissibility, more than any other characteristic a virus might acquire through mutation, confers the greatest advantage on a variant when it comes to outcompeting other versions. "If a mutation comes up anywhere that's more transmissible, it will be selected out to propagate," says Green. That means a single ultra-transmissible mutation popping up anywhere in the world in a single infected person could be enough to unleash a fresh round of heightened global misery. Might a new variant get around the vaccine? Delta appears to be able to infect the vaccinated more readily than previous variants, reducing the major vaccines' effectiveness at preventing infection from about 95 percent to around 90 percent. (A recent Israeli study claimed the Pfizer vaccine's effectiveness plunges to 39 percent, but experts caution that the finding is an outlier that may not hold up.) Most of the COVID-19 vaccines work by getting human antibodies to target the spike proteins on the virus. But because mutations can slightly change the shape of the spike protein, they can potentially disguise it from some of those antibodies, thus weakening the vaccine's effectiveness. The different variants have different combinations of mutations in the spike protein, and while so far none of those combinations seem to do a great job of disguising the spike protein enough to get around the vaccine, some seem able to chip away at its effectiveness. Delta has three mutations that together seem especially good at keeping the spikes under the antibodies' radar, leading to the breakthrough infections. Still, the vaccines remain highly effective in preventing Delta from causing severe illness leading to hospitalization or death, to judge by the fact that 99 percent of the patients struggling with COVID-19 in U.S. intensive-care units are unvaccinated. COVID-19 may well continue to evolve into new, widely spreading variants, but there's reason to think that none of them are likely to routinely blow past the immune defenses conferred by vaccine, and even the lesser natural-immunity defenses. One reason, notes Vail, is that the vast majority of COVID-19 virus in circulation is in unvaccinated people who weren't previously infected, and mutations that can avoid immunity have no real advantage in that environment. An immune-evading variant would be more likely to thrive in a population of vaccinated or recovered people, where such a mutation would allow it to outcompete non-mutated viruses—but there just isn't enough virus circulating in that population to allow for rapid mutation. That's how Delta emerged, notes Vail. "There were four variants that arose in India, and three of them had some ability to evade immunity," he says. "The fourth one was Delta, which didn't have as strong an evading mutation, and that's the one that spread." Green points out a second reason being immune-evasive will be a huge challenge to COVID-19: The human immune system, once it's activated by vaccination or infection, is more resilient and effective than even most studies indicate. That's because studies tend to focus on how the virus fares against antibodies specifically developed by the body to fight the virus, as observed in test tubes. In real life, the body rolls out other weapons, including innate antibodies that target a broader array of pathogens, and T-cells that only kick in when an infection starts to take hold—both of which most lab studies can't easily measure. More thorough studies are underway, says Green, and the results should aid in the development of booster shots that will help block Delta and possible future variants. The mechanics of mutation also work in our favor when it comes to dodging future variants that cause more severe illness. It's not that such mutations can't or won't spring up in the coming months. Rather, it's that causing the infected to be extremely ill takes them out of circulation, so they can't spread the more-sickening variant. That means the variant would be at a disadvantage to competing forms of the virus that leave most of the infected feeling well enough to walk around and transmit the infection. A particularly dangerous scenario would be a variant that left people feeling well for a long time, and then lowered the boom later with severe illness. But few viruses—HIV being one exception—master that trick, and so far that doesn't seem to be a threat from COVID-19, either. Eisen warns that such delayed-illness scenarios can't be ruled out, either. There are ways new variants could inflict worse damage without compromising their ability to spread. For example, a new variant might attack the brain, heart or other organs in more subtle, slower ways that leave victims walking around but that eventually take a large toll. "We've already seen that different variants have differing abilities to enter some types of cells, and that might have an effect on the nervous system or lung function," says Eisen. "It's very concerning." Malani notes that there's anecdotal evidence that more young people are getting severely ill with Delta than has been the case with previous variants. That uptick may just be due to higher numbers of young people getting infected, or it may indicate a troubling shift toward greater vulnerability among the younger. That wouldn't be a first: The 1918 flu pandemic preferentially killed younger adults. It's not yet clear whether or not Delta is hitting the younger harder. "It's a mystery right now," Malani says. "Infected young people might walk around for days or even weeks even though they're feeling very poorly, so it's hard to judge." But even if Delta isn't targeting the younger, a spin-off variant might. While increased infectiousness is the most likely path for a fierce post-Delta variant versus getting past vaccines or causing more severe illness, there's a catch: Such traits aren't mutually exclusive. Simply as a matter of chance, a mutation that confers increased transmissibility might also cause more damage to health or give the virus a better chance at slipping past the defenses conferred by a vaccine. Although these latter traits aren't likely to be selected on their own, they could ride the coattails of a transmissibility-boosting mutation. "There's nothing to stop them from happening at the same time," says Eisen. Fortunately, there's a built-in impediment to what might otherwise be a potentially endless march toward ever-more-dangerous variants: The virus will at some point run out of ways to become nastier, thanks to the relatively simple structure of the spike protein, which can only be mutated in a few hundred different ways, most of which won't make the virus more harmful. "There are only so many changes that can be made to the spike protein without making it non-functional," says Vail. "I'd be cautious about saying that it can keep mutating indefinitely." Another big break: Unlike the flu virus, SARS-CoV-2 doesn't have a structure that lends itself to mixing and matching genetic material between different variants. That "recombination" capability is what helps make the flu a moving target each year for vaccines. Like the flu, COVID-19 is probably going to be with us for the foreseeable future. But a big pickup in vaccination rates would at least put the age of the most dangerous variants behind us. At that point, says Green, we can focus on occasional new vaccines or booster shots that make the virus a relatively tame threat. "I don't think eradication is on the table," she says. "But I think we could come up with something that's better than what we have now for the flu." On the other hand, notes Green, the flu kills as many as 60,000 people a year. If COVID-19 keeps mutating away from vaccine effectiveness and natural immunity, and a large portion of the population continues to neglect vaccinations, then we'll indeed end up permanently haunted by the virus. In that case, we'd be lucky if COVID-19 "only" kills tens of thousands every year. Thanks to the ongoing threats of variants, we might be in for a lot worse.