



Perspective

Incentives for Immunity — Strategies for Increasing Covid-19 Vaccine Uptake

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The once-promising pace of Covid-19 vaccination in the United States has slowed, from a peak of 3.38 million shots on April 13, 2021, to fewer than 2 million doses per day in May. Until

recently, Americans were competing for limited vaccination slots — a situation that raised equity concerns — but now supply exceeds demand in much of the country, and mass vaccination clinics are closing.

Yet the United States remains far from the herd-immunity target of roughly 80%: approximately 47% of Americans have received at least one dose of Covid-19 vaccine. What should we do to motivate millions more to participate?

Increasingly concerned that standard “information and education” approaches to encouraging vaccination are inadequate, some state governments and businesses are starting to pay people to get vaccinated. Incentives range from \$100 savings bonds or gift

cards in West Virginia, to free beer and other beverages in New Jersey and Connecticut, to daily Krispy Kreme donuts nationwide. The highest stakes are in New York, which is offering a lottery with a \$5 million grand prize, and Ohio, where five lotteries will each award \$1 million to a vaccinated adult and a full-ride college scholarship to a vaccinated child. Do such incentives represent a desirable path forward?

There is a certain logic to providing financial incentives, which may be used to offset the indirect costs of vaccination — including time spent planning appointments, traveling, or waiting; lost income for workers paid hourly; or expenses such as child care. These costs disproportionately de-

ter low-income people from getting vaccinated, and payments could ensure that vaccination is indeed “free” to all.

Moreover, economists typically acknowledge that there is a role for government intervention in the face of externalities — effects of individuals’ actions on other people. A classic negative externality is a factory polluting the air: absent government sanctions, many factories would “overproduce” pollution, since dirtier technology is cheaper. Vaccination confers a positive externality, protecting other people as well as the vaccinee. In a free market, people may undervalue the beneficial effect of their actions on others; goods with positive externalities may therefore end up being underproduced. Subsidies and incentives are a logical policy approach in the presence of positive externalities.¹

In addition, incentives are useful in situations where behavior

changes can reduce future health expenditures.² In the case of Covid-19 vaccination, the positive return on incentives may be considerable: in the United States alone, the cumulative financial costs of the pandemic are estimated at more than \$16 trillion.³

Finally, incentives can shift even intractable health behaviors, such as cigarette smoking and physical inactivity, though people may revert to those behaviors when the incentives end. Incentives are thus particularly effective in changing one-time behaviors — such as obtaining cancer screening and vaccinations.⁴

Given flagging vaccination rates and the societal imperative to end the pandemic, financial incentives hold appeal, especially if an incentive-based program were focused on groups with persistently low vaccination rates. Some people who are reluctant to be vaccinated might opt to get the vaccine “because of the incentive,” thereby overcoming inertia or resistance from their peer group.

Even if incentives can produce a short-term bump in vaccination, however, multiple strategies will be necessary to increase population immunity. Campaigns will have to identify sources of resistance, including safety concerns (e.g., for pregnant women), and communicate transparently to build public trust. Vaccination policies will also have to be coordinated with efforts to address the systemic racism that suppresses access and uptake in Black and Brown communities.

With more than 100 million Americans now fully vaccinated, rewarding “late adopters” with incentive payments may seem unfair — so an incentive program might have to compensate previ-

ously vaccinated people. Suppose 60% of adults have been vaccinated, and a program sets the goal of reaching 80% by using a \$100 incentive per vaccinee. If incentives were offered to everyone, the program would cost \$400 per incremental vaccinee. To manage costs, programs could be targeted to recalcitrant young people or people living in ZIP Codes with low rates of vaccine uptake or high rates of illness, but there are important trade-offs between the efficiency of such offerings and equity.

Furthermore, although many Americans clearly recognize the value of Covid-19 vaccination and have freely pursued it, vaccination incentives could be seen as signaling that the vaccine is somehow undesirable or unsafe, and could thereby generate a backlash.⁵ And given the political divide in vaccine uptake, government-sponsored incentives could breed further resistance.

It's important to consider that booster shots will probably be required down the line. Offering incentives now may set a costly and undesirable precedent, causing people to expect — and wait for — an incentive the next time around.

Ultimately, though a well-designed incentive program could boost vaccination rates in the short term, there are likely to be significant hiccups in implementation, and delivering timely rewards flawlessly would be key to program effectiveness and credibility. We believe that three alternative strategies should be considered wherever feasible, since they present more sustainable solutions than incentives for boosting vaccination.

First, organizations that take care of patients could mandate

Covid vaccination for their employees, just as many of them have long required influenza vaccination. No intervention strategy is more effective than requiring vaccination,⁴ and our institution, Penn Medicine, recently announced that all health system employees will be required to be vaccinated. U.S. health care workers are declining Covid-19 vaccination at alarming rates. In one nursing home, although 90% of the residents had been vaccinated, only half of the employees had followed suit; one of the unvaccinated employees infected multiple residents, and one vaccinated and two unvaccinated residents died (<https://nyti.ms/3w6bUvJ>). Such preventable lapses in safety should be unacceptable to anyone in the health care profession. Vaccination mandates in schools and workplaces — especially in high-contact settings such as meat-packing plants and prisons — could substantially reduce the future toll of Covid-19 in the United States.

Second, access to activities that involve close person-to-person contact could be granted only to vaccinated people. Thus far among Americans, this approach has opened doors to largely elite pursuits, such as live attendance at the National Football League draft, summer travel to the European Union, or residential college and university enrollment this coming fall. Some educational institutions have highlighted the fact that by making full in-person participation in higher education contingent on getting vaccinated, they will also be lowering risk in the surrounding community. Recently some restaurants, gyms, and sports stadiums have begun either limiting access to only those who have been vaccinated or creating special seating sections.

Such contingent access is a social incentive, rather than a financial one, and the desire to “return to normal” is likely to be a powerful motivator. The broader the range of organizations that adopt such policies, the bigger the proportion of the population that will opt for vaccination.

A third option is to raise health and life insurance premiums for people who forgo vaccination. This approach could redistribute the higher expected health care costs in a way that is fair to people who have already been vaccinated.

Incentives alone are unlikely to deliver the population immu-

nity that will end the pandemic. The series of million-dollar jackpots that is being deployed in Ohio is an intriguing alternative to test, but it is unclear whether this will be a widely embraced approach. We need to go further in adopting a combination of behaviorally informed policies that will protect our health and the health of the economy for years to come.

Disclosure forms provided by the authors are available at NEJM.org.

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1. Stiglitz JE, Rosengard JK. Economics of the public sector, 4th edition. New York: W.W. Norton & Company, 2015.
2. Pauly MV, Held PJ. Benign moral hazard and the cost-effectiveness analysis of insurance coverage. *J Health Econ* 1990;9:447-61.
3. Cutler DM, Summers LH. The COVID-19 pandemic and the \$16 trillion virus. *JAMA* 2020;324:1495-6.
4. Schumacher S, Salmanton-García J, Cornely OA, Mellinghoff SC. Increasing influenza vaccination coverage in healthcare workers: a review on campaign strategies and their effect. *Infection* 2020 December 7 (Epub ahead of print).
5. Loewenstein G, Cryder C. Why paying people to be vaccinated could backfire. *New York Times*. December 14, 2020 (<https://www.nytimes.com/2020/12/14/upshot/covid-vaccine-payment.html>).

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