# Study investigates how 'vaccine shopping' impacts rollout during pandemic

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When COVID-19 vaccines became obtainable in the United States, the policy of the Centers for Disease Control and Prevention was that individuals should receive the first available vaccine.

New research from the University of Washington suggests that might not

have been the most effective strategy. The study, recently published online in the journal *Production and Operations Management*, considers whether individuals should be able to select their vaccine type.

Past studies show that as many as 30% of Americans have a strong opinion and would prefer to choose their vaccine type. This practice, called "vaccine shopping," can impact timely rollout in two major ways: Restricting choice could cause people to reject available vaccinations, while providing choice might result in wasted supply.

"In the beginning, the strategy of the CDC was to not differentiate between the available vaccines," said Leela Nageswaran, author of the study and assistant professor of operations management in the UW Foster School of Business. "When this information is not provided at the time of booking a vaccine, people must evaluate the chance of being assigned a specific one. If they're hesitant about one or they have a skewed preference, it's going to affect their decision."

"When we're thinking about vaccinating the most amount of people at that early stage of rollout, every little bit counts. A small intervention like letting individuals choose could go a long way."

People have debated the pros and cons of vaccine options. The Pfizer and Moderna vaccines require two doses and have about 90% efficacy against the original COVID-19 variant. Johnson & Johnson offers a single-dose option, but the convenience comes with lower efficacy. Policies also vary by nation. While the United Kingdom did not permit patients to choose a specific vaccine in the early rollout stages, other countries, like Serbia, provided complete choice to its population.

"What we found is that vaccine-poor countries should typically withhold vaccine information, just because the supply of vaccines is so low," Nageswaran said. "As supply increases, providing choice improves the

vaccination rate."

These findings suggest that vaccine-poor countries could begin vaccination rollout by restricting choice and then allow choice once supply increases. But vaccine-rich countries, like the U.S. and Canada, should provide choice to try and improve the rate of vaccinations.

A data-driven model for COVID-19 transmission combined with individuals' vaccination decisions revealed that providing choice resulted in fewer total infections in the U.S. Researchers also found the number of infections was lowest when a lower-efficacy, single-dose vaccine—like the one offered by Johnson & Johnson—made up between 5% and 8% of the total vaccine dose supply.

"We should maintain a small proportion of single-dose vaccines," Nageswaran said. "Even if it's lower efficacy, some people will get that vaccine and be done with that one dose. As a result, you can vaccinate more people with the same number of overall doses in the supply."

For the U.S., researchers propose a hybrid approach where people can choose either a preferred vaccine or opt for the earliest available type. This option administers vaccines most effectively because it considers the vaccine supply and ensures individuals with a strong preference get their favored vaccine.

"It's not a single answer," Nageswaran said. "It's not always true that you must reveal that information or withhold that information. It depends on the factors that affect disease spread in a country and the supply of vaccines. We were able to consider a key aspect that the next vaccine rollout should keep in mind and offer guidance on how to hopefully do this better."

**More information:** Leela Nageswaran, Implications of vaccine

shopping during pandemic, *Production and Operations Management* (2022). DOI: 10.1111/poms.13916