

# Worried About Breakthrough Infections? Here's How to Navigate This Phase of the Pandemic.

If you're vaccinated, you should think about a number of variables, including your overall health, where you live and the risks you take.



By Tara Parker-Pope

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Many people are seeking definitive answers about what they can and can't do after being vaccinated against Covid-19. Is it OK to travel? Should I go to a big wedding? Does the Delta variant make spending time with my vaccinated grandmother more risky?

But there's no one-size-fits-all answer to those questions because risk changes from one individual to the next, depending on a person's overall health, where they live and those they spend time with. The bottom line is that vaccines are highly protective against serious illness, and, with some precautions, will allow people to return to more normal lives, experts say. A recent study in Los Angeles County showed that while breakthrough infections can happen, the unvaccinated are 29 times as likely to end up hospitalized from Covid-19 as a vaccinated person.

Experts say anxiety about breakthrough infections remains pervasive, fueled in part by frightening headlines and unrealistic expectations about the role of vaccines.

"There's been a lot of miscommunication about what the risks really are to vaccinated people, and how vaccinated people should be thinking about their lives," said Dr. Ashish K. Jha, dean of the Brown University School of Public Health. "There are people who think we are back to square one, but we are in a much, much better place."

While the Delta variant is causing a surge in infections in various hot spots around the country, including Florida and Louisiana, there will eventually be an end to the pandemic. Getting there will require ongoing precautions in the coming months, but vaccinated people will have more freedom to enjoy life than they did during the early lockdowns. Here are answers to some common questions about the road ahead.

## What's my risk of getting Covid if I'm vaccinated?

To understand why there is no simple answer to this question, think about another common risk: driving in a snowstorm. While we know that tens of thousands of people are injured or killed each year on icy roads, your individual risk depends on local conditions, the speed at which you travel, whether you're wearing a seatbelt, the safety features on your car and whether you encounter a reckless driver on the road.

Your individual risk for Covid after vaccination also depends on local conditions, your overall health, the precautions you take and how often you are exposed to unvaccinated people who could be infected.

"People want to be told what to do — is it safe if I do this?" said Dr. Sharon Balter, director of the division of communicable disease control and prevention at the Los Angeles County Department of Public Health. "What we can say is, 'These are the things that are more risky, and these are the things that are less risky.'"

Dr. Balter's team has recently collected surveillance data that give us a clearer picture of the difference in risk to the vaccinated and unvaccinated as the Delta variant surged from May 1 through July 25. They studied infections in 10,895 fully vaccinated people and 30,801 unvaccinated people. The data showed that:

- The rate of infection in unvaccinated people is five times the rate of infection in vaccinated people. By the end of the study period, the age-adjusted incidence of Covid-19 among unvaccinated persons was 315.1 per 100,000 people over a seven-day period compared to 63.8 per 100,000 incidence rate among fully vaccinated people. (Age adjustment is a statistical method used so the data are representative of the general population.)
- The rate of hospitalization among the vaccinated was 1 per 100,000 people. The age-adjusted hospitalization rate in unvaccinated persons was 29.4 per 100,000.
- Older vaccinated people were most vulnerable to serious illness after a breakthrough infection. The median age of vaccinated people who were hospitalized for Covid was 64 years. Among unvaccinated people who were hospitalized, the median age was 49.
- The Delta variant appears to have increased the risk of breakthrough infections to vaccinated people. At the start of the study, before Delta was dominant, unvaccinated people became infected 10 times as often as vaccinated people did. By the end of study period, when Delta accounted for almost 90 percent of infections, unvaccinated people were five times as likely to get infected as vaccinated people.

## What's the chance of a vaccinated person spreading Covid-19?

While unvaccinated people are by far at highest risk for catching and spreading Covid-19, it's also possible for a vaccinated person to become infected and transmit the illness to others. A recent outbreak in Provincetown, Mass., where thousands of people gathered in bars and restaurants, showed that vaccinated people can sometimes spread the virus.

Even so, many experts believe the risk of getting infected from a vaccinated person is still relatively low. Dr. Jha noted that after an outbreak among vaccinated and unvaccinated workers at the Singapore airport, tracking studies suggested that most of the spread by vaccinated people happened when they

had symptoms.

“When we’ve seen outbreaks, like those among the Yankees earlier in the year and other cases, almost always people are symptomatic when they’re spreading,” Dr. Jha said. “The asymptomatic, pre-symptomatic spread could happen, but we haven’t seen it among vaccinated people with any frequency.”

Another study from Singapore looked at vaccinated and unvaccinated people infected with the Delta variant. The researchers found that while viral loads in vaccinated and unvaccinated workers are similar at the onset of illness, the amount of virus declines more rapidly in the vaccinated after the first week, suggesting vaccinated people are infectious for a shorter period of time.

### Is it still safe to gather unmasked with vaccinated people?

In many cases it will be safe, but the answer depends on a number of variables. The risk is lower with a few close family members and friends than a large group of people you don’t know. Outdoor gatherings are safer than indoor gatherings. What’s the community transmission rate? What’s the ventilation in the room? Do you have underlying health issues that would make you vulnerable to complications from Covid-19? Do any of the vaccinated people have a fever, sniffles or a cough?

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“The big question is can five people sit around a table unmasked if we know they’re all vaccinated,” Dr. Jha said. “I think the answer is yes. The chances of anybody spreading the virus in that context is exceedingly low. And if someone does spread the virus, the other people are not going to get super sick from it. I certainly think most of us should not fear breakthrough infections to the point where we won’t tolerate doing things we really value in life.”

For larger gatherings or even small gatherings with a highly vulnerable person, rapid antigen testing using home testing kits can lower risk. Asking people to use a test a few days before the event, and then the day of the event, adds another layer of protection. Opening windows and doors or adding a HEPA air cleaner can also help.

### How can unvaccinated children go to school safely?

Children under 12 probably will not be eligible for vaccination until the end of the year. As a result, the best way to protect them is to make sure all the adults and older kids around them are vaccinated. A recent report from the C.D.C. found that an unvaccinated elementary schoolteacher who didn’t wear a mask spread the virus to half of the students in a classroom.

Studies show that schools have not been a major cause of Covid-spreading events, particularly when a number of prevention measures are in place. A combination of precautions — masking indoors, keeping students at least three feet apart in classrooms, keeping students in separate cohorts or “pods,” encouraging hand washing and regular testing, and quarantining — have been effective. While many of those studies occurred before the Delta variant became dominant, they also happened when most teachers, staff and parents were unvaccinated, so public health experts are hopeful that the same precautions will work well this fall.

Dr. Balter noted that masking in schools, regular testing and improving ventilation will keep children safer, and that parents should be reassured by the data.

**Understand Vaccine and Mask Mandates in the U.S.**

- **Vaccine rules.** On Aug. 23, the Food and Drug Administration granted full approval to Pfizer-BioNTech’s coronavirus vaccine for people 16 and up, paving the way for an increase in mandates in both the public and private sectors. Private companies have been increasingly mandating vaccines for employees. Such mandates are legally allowed and have been upheld in court challenges.
- **Mask rules.** The Centers for Disease Control and Prevention in July recommended that all Americans, regardless of vaccination status, wear masks in indoor public places within areas experiencing outbreaks, a reversal of the guidance it offered in May. See where the C.D.C. guidance would apply, and where states have instituted their own mask policies. The battle over masks has become contentious in some states, with some local leaders defying state bans.

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“The level of illness in children is much less than adults,” she said. “You do weigh all these things, but there are also a lot of consequences to not sending children to school.”

### Can a vaccinated person visit with an elderly vaccinated person indoors without a mask?

In many cases it will be relatively safe for vaccinated people to spend time, unmasked, with an older relative. But the risk depends on local conditions and the precautions the visitor has taken in the days leading up to the visit. In areas where community vaccination rates are low and overall infection rates are high, meeting outdoors or wearing a mask may be advised.

If you're vaccinated but have been going to restaurants, large gatherings or spending time with unvaccinated people, it's a good idea to practice more social distancing in the days leading up to your visit with an older or vulnerable person. Home testing a few days before the visit and the day of the visit will add another layer of protection.

Gregg Gonsalves, an assistant professor of epidemiology at the Yale School of Public Health, said he recently visited his 87-year-old mother and did not wear a mask. But that is because both of them are vaccinated and he still works mostly from home, lives in a highly vaccinated area and has low risk for exposure. He is also investing in home testing kits for reassurance that he is not infectious.

"If I just came back from a big crowded gathering, and I had to go see my mom, I would put on a mask," he said.

### Is it safe to work in an office?

The answer depends on the precautions your workplace has taken. Does the company require proof of vaccination to come into the office? Are unvaccinated people tested regularly? What percentage of people in the office are unvaccinated? What steps did your company take to improve indoor air quality? (Upgrading the filters in ventilation systems and adding stand-alone HEPA air cleaners are two simple steps that can reduce viral particles in the air.)

Offices that mandate vaccination will be safer, but vaccination rates need to exceed 90 percent. Even an 85-percent vaccination rate is not enough, Dr. Jha said. "It's not going to work because one of those 15-percent unvaccinated is going to cause an outbreak for every single person in that room," he said. "You do not want a bunch of unvaccinated people running around your offices."

### Should I get a booster shot, and will it help protect me against Delta?

The people who have the most to gain from booster shots are older people, transplant patients, people with compromised immune systems or those with underlying conditions that put them at high risk for complications from Covid. People who received the single-dose Johnson & Johnson vaccine may also be good candidates for a second dose.

But many experts say healthy people with normal immune systems who received a two-dose mRNA vaccine from Pfizer or Moderna won't get much benefit right now from a third shot because their vaccine antibodies still offer strong protection against severe illness. That said, the Biden administration appears to be moving ahead with offering booster shots to the general public starting as soon as the week of Sept. 20.