

What is herd immunity? A public health expert and a medical laboratory scientist explain

November 3 2021, by Rodney E. Rohde, Ryan McNamara



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The term herd immunity means that enough of a population has gained

immunity to stifle a pathogen's spread. You can think of herd immunity as being similar to fire starting in a field: If the field is dry and filled with weeds, the fire will catch and spread quickly. However, if the field is well-maintained with watering and trimming, the fire will fizzle out. Future embers that might land there will be far less likely to ignite.

The embers are much like SARS-CoV-2, the coronavirus that causes COVID-19.

Herd immunity can theoretically be achieved [either through infection and recovery or by vaccination](#). The danger of trying to achieve herd immunity through infection is that many people will die or be forced to live with post-recovery disabilities. Moreover, research has shown that the [immune response](#) resulting from infection does not always provide [strong enough long-term protection against COVID-19](#) and [its evolving strains](#). Thus, [public health experts](#) still recommend vaccination against the coronavirus to achieve the strongest and most reliable protection.

When the COVID-19 pandemic erupted, scientists quickly began to develop vaccines so that populations could develop immunity to [slow the firelike spread of the coronavirus](#). In the meantime, nearly all countries mandated or encouraged social distancing, masking and other [public health measures](#).

Unfortunately, the disjointed implementation of these efforts, coupled with large-scale surges and the emergence of the highly transmissible delta variant, has forced public health experts to recalculate what it would take to reach "herd immunity" for COVID-19.

Why herd immunity matters

Prior experience with respiratory pathogens that were comparable to the new coronavirus allowed public health experts to make educated

estimates of what would be needed to reach the lower threshold of herd immunity for COVID-19. Initially they believed that around 70% of the [population](#) would need to be vaccinated to [effectively slow or stop the spread of SARS-CoV-2](#).

But with the delta variant continuing to spread rapidly around the world, experts revised that estimate. Now, epidemiologists and other public health officials estimate that closer to 90% of the U.S. population would need to be vaccinated to [reach herd immunity](#) for COVID-19.

Viruses like [those that cause polio](#) and [measles required decades of education](#) and vaccination programs to achieve herd immunity and to ultimately eliminate them in the U.S. But given that new U.S. cases of COVID-19 [continue to number in the tens of thousands](#) daily, it's become clear that [COVID-19 is going to stick around](#).

There are several reasons it will take some time to achieve COVID-19 [herd](#) immunity. The COVID-19 vaccines are currently authorized for some age groups but not others. For perspective, roughly 90% of the U.S. population [receives the measles, mumps and rubella vaccine—or MMR](#)—as children, and 93% of the population is vaccinated against polio; both of these have been routine childhood immunizations for decades. Since children make up more than [20% of U.S. residents](#), the country likely cannot reach COVID-19 [herd immunity](#) without widespread childhood vaccination, even if all eligible adults were vaccinated.

As of Nov. 1, 2021, only 67.8% of the total U.S. population ages 12 and up that are [vaccine-eligible had been fully vaccinated](#). Experts have attributed this to multiple factors including [vaccine hesitancy](#) and the politicization of the pandemic.

Of course, no [vaccine](#) is perfect. Vaccinated people can have

[breakthrough infections](#), although the COVID-19 vaccines continue to effectively [reduce the most severe cases of COVID-19](#). In addition, research suggests that those who experience COVID-19 after vaccination [may transmit the virus at lower transmission rates](#) than those who are unvaccinated.

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