

## What Is Herd Immunity?

**Herd immunity occurs when a significant portion of a population becomes immune to an infectious disease, limiting further disease spread.**

Disease spread occurs when some proportion of a population is susceptible to the disease. **Herd immunity** occurs when a significant portion of a population becomes immune to an infectious disease and the risk of spread from person to person decreases; those who are not immune are indirectly protected because ongoing disease spread is very small.

The proportion of a population who must be immune to achieve herd immunity varies by disease. For example, a disease that is very contagious, such as measles, requires more than 95% of the population to be immune to stop sustained disease transmission and achieve herd immunity.

### How Is Herd Immunity Achieved?

Herd immunity may be achieved either through infection and recovery or by vaccination. Vaccination creates immunity without having to contract a disease. Herd immunity also protects those who are unable to be vaccinated, such as newborns and immunocompromised people, because the disease spread within the population is very limited. Communities with lower vaccine coverage may have outbreaks of vaccine-preventable diseases because the proportion of people who are vaccinated is below the necessary herd immunity threshold. In addition, the protection offered by vaccines may wane over time, requiring repeat vaccination.

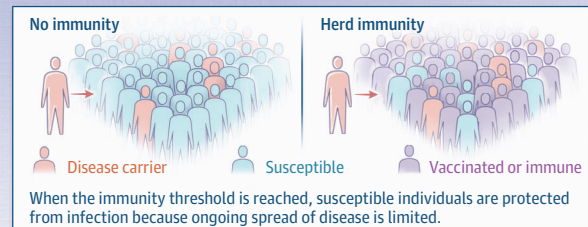
Achieving herd immunity through infection relies on enough people being infected with the disease and recovering from it, during which they develop antibodies against future infection. In some situations, even if a large proportion of adults have developed immunity after prior infection, the disease may still circulate among children. In addition, antibodies from a prior infection may only provide protection for a limited duration.

People who do not have immunity to a disease may still contract an infectious disease and have severe consequences of that disease even when herd immunity is very high. Herd immunity reduces the risk of getting a disease but does not prevent it for nonimmune people.

### Herd Immunity and COVID-19

There is no effective vaccine against coronavirus disease 2019 (COVID-19) yet, although several are currently in development. It is not yet known if having this disease confers immunity to future in-

**Herd immunity** works to control the spread of disease within a population when a specific amount of that population (threshold) becomes immune to the disease through vaccination or infection and recovery.



#### Vaccination results in immunity without having to contract disease

- When herd immunity is achieved by vaccination programs, it will help protect people who cannot be vaccinated because of their age or having certain medical conditions.
- Populations with less vaccine coverage may still have disease outbreaks.
- Protection given by vaccines may decrease over time.

#### Infection and recovery result in immunity through antibody production

- Many people must be infected and recover from the disease to develop herd immunity, and some infections could cause complications or death.
- The disease may still circulate among children even if many adults have been infected and recovered.
- Antibodies developed from infection may only provide protection for a limited time.

Vaccines for COVID-19 are being developed but are not yet ready to use. To prevent COVID-19 transmission, practice social distancing, wear a mask, and wash hands often.

fection, and if so, for how long. A large proportion of people would likely need to be infected and recover to achieve herd immunity; however, this situation could overwhelm the health care system and lead to many deaths and complications. To prevent disease transmission, keep distance between yourself and others, wash your hands often with soap and water or sanitizer that contains at least 60% alcohol, and wear a face covering in public spaces where it is difficult to avoid close contact with others.

#### FOR MORE INFORMATION

Mayo Clinic  
[www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/herd-immunity-and-coronavirus/art-20486808](http://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/herd-immunity-and-coronavirus/art-20486808)

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**Sources:** Plans-Rubió P. Evaluation of the establishment of herd immunity in the population by means of serological surveys and vaccination coverage. *Hum Vaccin Immunother.* 2012;8(2):184-188. doi:10.4161/hv.18444

Association for Professionals in Infection Control and Epidemiology. [https://apic.org/monthly\\_alerts/herd-immunity/](https://apic.org/monthly_alerts/herd-immunity/)  
 Johns Hopkins Bloomberg School of Public Health. <https://www.jhsph.edu/covid-19/articles/achieving-herd-immunity-with-covid19.html>

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