

Stop the Superspreading to Stop the Pandemic

Superspreading events occur when a large number of people are infected at the same event.

- Superspreading drives the SARS-CoV-2 pandemic.
- Aerosol transmission drives superspreading.
- Distancing, proper ventilation and filtration prevent aerosol transmission.
- By stopping the superspreading we can reopen the economy and public life.

Superspreading Drives the Pandemic

- Most infected people don't infect anybody else.
- Those that do, usually only infect one or a few others.
- But a very small number of people infect a lot of others.
- This typically happens at so-called superspreading events.
- People infected at superspreading events may go on to infect more people.
- So if we stop these superspreading events, we prevent a large number of infections.
- Stopping superspreading stops the uncontrollable spread of the virus.

Where Superspreading Events Happen

- Nursing homes
- Hospitals
- Rehabilitation centers
- Prisons
- Worker dormitories
- Family gatherings
- Meat processing plants
- Ships
- Parties
- Weddings

Common Features of Superspreading Settings

- Lot of people
- Close together
- Indoors
- Prolonged period of time
- Poor Ventilation
- Poor Filtration

Additional Risk Factors

- Laughing, Talking, Singing, Shouting
- Refrigeration

Aerosols Drive Superspreading

SARS-CoV-2 can be transmitted through surfaces, large droplets and aerosols.

What Are Aerosols

- Aerosols are very small particles made of saliva or respiratory fluid.
- We emit aerosols when we breathe, talk, laugh, cough, sneeze, sing.
- Aerosols linger in the air for minutes or even hours, and travel across a space
- Aerosols of infected people contain infectious virus particles
- When you breathe in these infectious aerosols you may get infected
- Because aerosols linger and travel, one person can infect many others in a space, even at a distance
- Infected people start emitting infectious aerosols before they start showing symptoms

Aerosol Risk Factors

- **Dose:** The more infectious aerosols you breathe in the higher your risk of infection and severe disease
- **Proximity:** The closer you are to an infected person the higher the concentration of aerosols in the air you breathe
- **Duration:** The longer you are in a space with infectious aerosols the more aerosols you breathe in
- **Vocalizing:** When you talk, laugh, shout or sing you emit aerosols at a higher rate
- **Refrigeration:** Infectious aerosols survive longer in refrigerated air

Stop Superspreading

We can greatly reduce the risk of superspreading events by reducing the concentration of infectious aerosols in the air. There are 3 steps to this:

Prevention

Reduce the number of infectious aerosols that enter a space:

- **Stay Home:** People with symptoms or confirmed infections should stay home. People who were in recent close contact with infected people should stay at home and consider getting tested.
- **Masks:** Masks may help block aerosols so that fewer exhaled aerosols enter a space.

- **Fewer People:** Fewer people in a space means fewer exhaled aerosols. Fewer people also means it is possible to maintain greater distances between people.
- **Duration:** In spaces with high risk factors, don't stay long.

Ventilation

Bring in outside air to lower the concentration of infectious aerosols in the air:

- **Open Doors and Windows:** To let more outside air in.
- **Fans:** Putting fans in windows can help air flow as long as they don't blow air directly from one person to another.
- **HVAC:** In spaces with air conditioning increase an HVAC system's outdoor air supply
- **CO2 Meters:** Use CO2 detectors as a proxy to determine if a space needs more ventilation: If >600-800 PPM more ventilation is needed.

Filtration

Remove virus particles from the air:

- **HVAC Filters:** When possible, equip HVAC systems with MERV13 filters.
- **Air Purifiers:** Use portable air purifiers with HEPA filters (do NOT use purifiers that generate ozone).

Sources

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[Aerosol Transmission Estimator](#): Calculates COVID-19 infection risk for a number of basic situations: college classrooms, choirs, taking a bus, being outdoors, participating in demonstrations

[COVID-19 Indoor Safety Calculator App](#): Calculates indoor transmission risk for various settings

[Humidity Calculator](#): Uses temperature and relative humidity to calculate 'specific humidity' which is an indicator of how favorable conditions are for the virus to spread