

Room Capacity Calculations-COVID

For calculating room capacities that adhere to COVID protocols for social distancing use the formula below:

1. Calculate the size of the room in square feet. The equation for that calculation is the room length multiplied by the width.
2. Divide the total square footage of the room by 113sq. ft. 113 sq. ft. is the area of a 12' circle. This still gives people room to move around in their personal area while maintaining social distancing. This is the general calculation to use for spaces. It can be tweaked slightly to allow for a few more people in a space—this will have to be determined by the CCO, based on what is happening in the room.
3. This room capacity can be further increased by using a smaller circle for each person. The minimum size that could be used would be a 6' diameter circle. You would divide the total square footage of the room by 28sq. ft. This would be for something like shelter-in-place scenarios where a space is used for storm shelter, evacuation shelter, etc. and people in the room would not be able to move or walk around at this capacity, but would have to stand still or sit.

See information below on calculating room capacities compliant with CDC Guidelines.

Information from USFA (an entity of FEMA) website:

https://www.usfa.fema.gov/coronavirus/planning_response/occupancy_social_distancing.html#:~:text=One%20way%20of%20converting%20the,113%20square%20feet%20per%20person.

Understanding the impact of social distancing on occupancy

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This page provides considerations for authorities having jurisdiction (AHJs) and building managers when social distancing during the COVID-19 pandemic.

When buildings are designed, occupant loading is used to determine the minimum [number of exits, doors, stairs, etc., necessary to evacuate people during an emergency](#). To determine the number of people permitted in a room or building, occupant load factors are typically expressed as an amount of floor area occupied by each person in a building or occupancy type.

Key takeaways

- Consider the occupancy type and use to understand the impact of social distancing on operations.
- Certain types of occupancies and businesses will be more impacted than others.

- An assumed occupant load factor of less than 113 square feet per person indicates that the number of existing exits is adequate for the anticipated number of occupants while practicing social distancing but that fewer people should be present in the building than before the COVID-19 pandemic.
- An assumed occupant load factor of greater than 113 square feet per person indicates that the building could potentially practice social distancing without any impact on the number of people present in the building.

Types of occupancies

Business

An occupant load factor of 100 to 150 square feet per person is used for offices.

Assembly

An occupant load factor of 5, 7 or 15 square feet per person is used for bars and restaurants depending on the use of specific areas; like whether people are standing in line to order from a bar, sitting together at closely spaced tables and chairs, or seated in less concentrated arrangements.

Educational

Schools often assume occupant loads comprised of a mix of factors depending on whether a space is used as a classroom, cafeteria or queuing up before lunch and recess.

Large entertainment venues

Sports arenas and gaming establishments present unique considerations for calculating the number of occupants likely to be present in different areas, sometimes based on the number of seats installed.

Social distancing

During the COVID-19 pandemic, the Centers for Disease Control and Prevention recommends practicing social distancing by maintaining a distance of at least 6 feet between people outside your home, not gathering in groups and avoiding crowded places and mass gatherings. These recommendations might affect the decision for whether an occupancy could resume operations safely.

Methods for calculating social distancing occupant loads

One way of converting the CDC's 6-foot separation criteria to occupant load is to simply calculate the area of a circle with a radius of 6 feet, which is equal to approximately 113 square feet per person. **This represents a conservative approach that accounts for instances when people might be standing along a wall or might not be standing in the center of the circle.** To understand the implication of this occupant load factor, compare it to those used to design the means of egress for the various occupancy types discussed above.

For example, in order to operate while practicing social distancing, an office building might need to reduce the number of people inside by about 11% whereas a bar might need to reduce its number by as much as 95%.

Other factors to consider

- The number, placement and capacity of exits is based on more than just occupant load. The type of occupancy and use, travel distance and remoteness or separation of exits are examples of other factors typically considered when designing a building.
- Some temporary measures taken by businesses to control crowds, occupant flows or limit the number of people inside can impact how well the means of egress serves the occupants in an emergency.
- Continue to keep all exits well-marked and accessible for the anticipated number of occupants.