



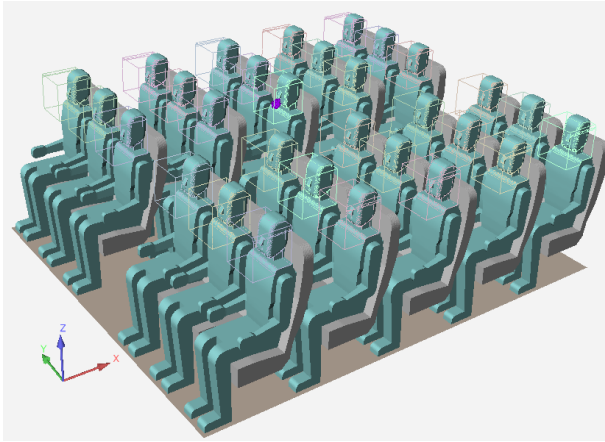
# Cabin Air Quality Research and Analysis

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Confident Travel Initiative  
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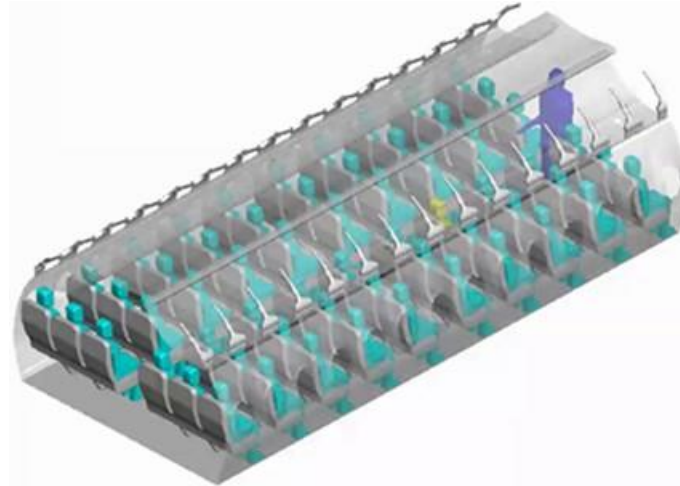
## Cabin Air Quality Research and Analysis

Boeing is studying particle movement inside the airplane cabin environment



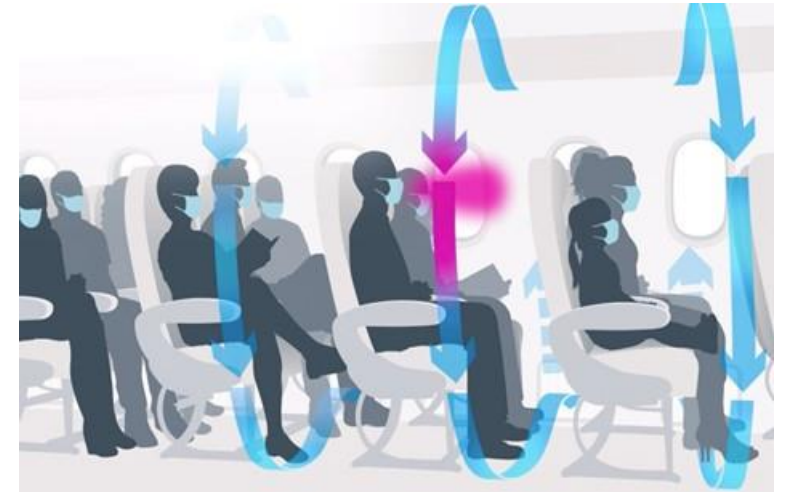
### Modeling & Analysis

- Computational Fluid Dynamics (CFD) modeling to track particle movement
- Single-aisle and twin-aisle airplane models



### Scenarios

- Breathing and coughing on full flight
- Masks on vs. masks off
- Coughing passenger in various seats
- Variations of gaspers on/off

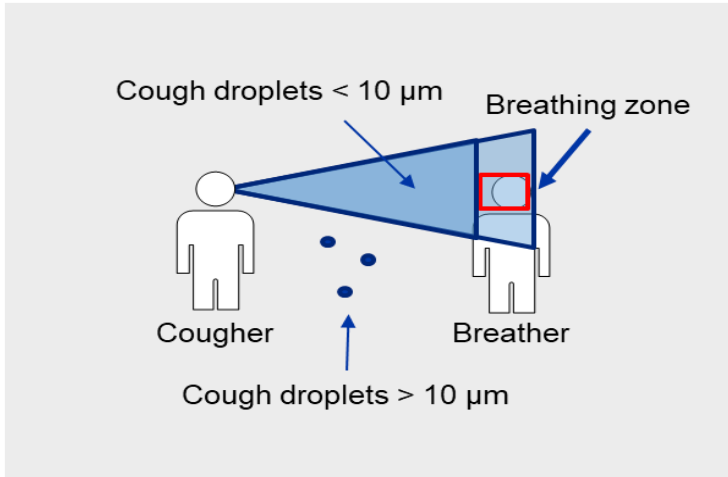


### Live Testing

- Captured advanced data on particle movement to validate CFD cough analysis models
- Testing on 737, 767 and 777 aircraft



## Here's how Boeing conducted the comparative analysis



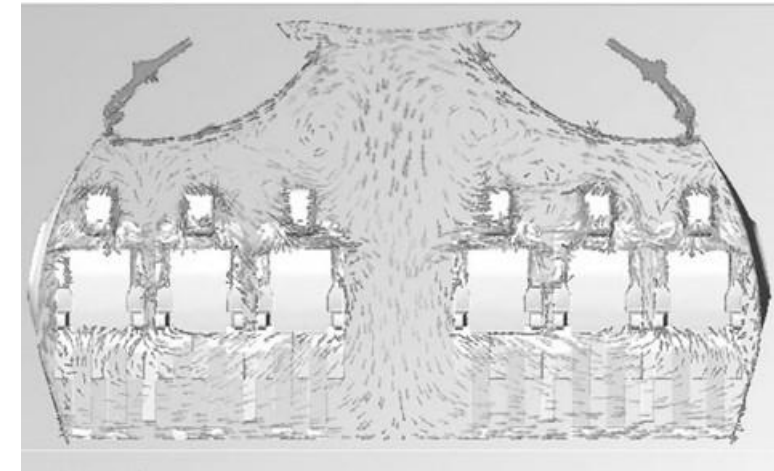
### Cough in Indoor Environment

Calculated particles from a cougher at different distances from a breather in a stagnant environment



### Cough in a Conference Room

Measured particles from a cougher to breathers at a variety of distances in a conference room environment with a standard building airflow



### Cough in the Airplane

Measured particles from a cougher to surrounding breathers using standard airflow settings in the single-aisle and twin-aisle airplane

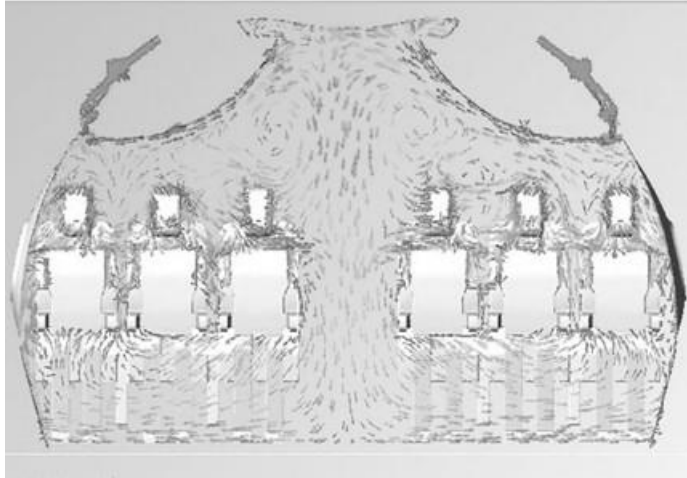
Computational Fluid Dynamics (CFD) modeling considers airflow, room/cabin geometry, distance and other factors

**We measured cough particles at different distances from the cougher**



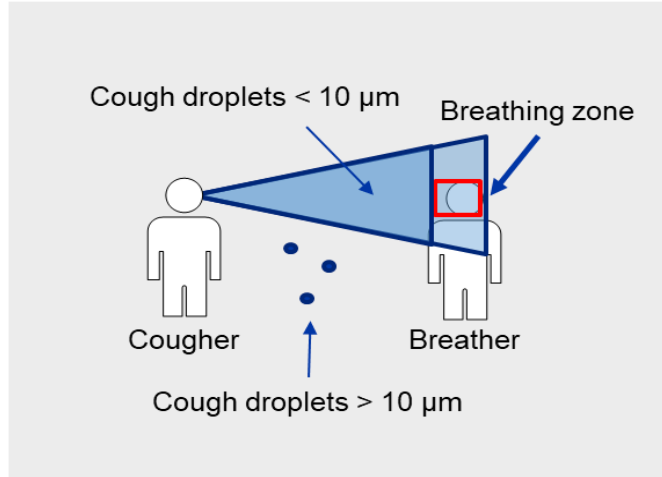
## The results of the analysis comparing environments

Based on calculating the number of particles in the breathing space



### Airplane CFD

The cougher and breather sitting next to each other on a full flight



### Indoor Environment

The cougher standing >7 feet away from the breather



### Indoor CFD

The cougher seated >7 feet away from the breather

**The design of the cabin and airflow system creates the equivalent of over 7 feet of physical distance between every passenger**

## Cabin Air Quality Analysis Findings

Equivalent distance based on the number of particles entering passenger breathing zones

