

# Shhhh ... speaking more quietly in restaurants means everyone can be heard

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In a crowded restaurant, diners usually talk with their companions at their own table. But the sound of their conversations bounces off walls and reflects to other patrons, creating background noise. Each individual

speaker wants to be heard over that noise, so they end up talking a little bit louder, which again increases the overall din. Eventually—barring an interruption—the system gets loud enough to reach the limit of the human voice.

Braxton Boren of American University will discuss this cycle, called the Lombard effect, and how it can be disrupted in his presentation, "A game theory model of the Lombard effect in [public spaces](#)." The presentation will take place Dec. 5, as part of the 183rd Meeting of the Acoustical Society of America running Dec. 5-9 at the Grand Hyatt Nashville Hotel.

Game theory metaphors, such as the prisoner's dilemma or the unscrupulous diner's dilemma, can provide a good model for the Lombard effect. Boren used such mathematical models to construct the payoffs and incentives for the Lombard effect across different sound frequencies of the human voice.

"This effect is an example of the Tragedy of the Commons, which is a term often used in [environmental science](#) and economics for the way that individuals are incentivized to misuse public goods," he said. "In the case of the Lombard effect, the quiet background (which allows for conversations to be intelligibly understood) is the commons, and each speaker in the room is incentivized to take a little bit more of that quiet space for his/her own conversation."

Technology solutions, like smart earbuds, may eventually be able to individualize conversations by homing in on a single speaker. Understanding the acoustics and altering the absorption of walls in a space could also minimize the Lombard effect.

"Based on our understanding of this phenomenon, it is possible to design rooms that increase or decrease Lombard-related crowd noise in public

settings," said Boren. "But in a loud situation, I encourage people to try talking quietly while everyone else around them is shouting. Then, when that doesn't work, go home and rest your ears!"

**More information:** Conference: [acousticalsociety.org/asa-meetings/](https://acousticalsociety.org/asa-meetings/)

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