

New tool can detect COVID-19 outbreaks in U.S. counties that host pro football events

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"This example highlights how officials may use this tool to make informed decisions on the safety of future in-person attendance by taking into account both past week trends as well as predicted trends," said Massachusetts General Hospital investigator Jagpreet Chhatwal, PhD. Credit: Massachusetts General Hospital

Recent outbreaks of COVID-19 have been detected following football events in the United States, and games have the potential to become "superspreader" events. Because the National Football League (NFL) and National Collegiate Athletic Association (NCAA) made the decision to play their games amidst the ongoing COVID-19 pandemic, researchers at Massachusetts General Hospital (MGH), Harvard Medical School, Georgia Tech and Boston Medical Center have extended their artificial intelligence-based COVID-19 Outbreak Detection Tool to incorporate NFL and NCAA football games. The model can help public officials and team owners in their decision-making regarding in-person

attendance.

The tool provides predicted trends such as the COVID-19 doubling time (the number of days it takes for COVID-19 cases to double) and how fast COVID-19 cases are increasing in counties with NFL/NCAA stadiums that have hosted games or might host games in the future. The investigators will add information on the attendance numbers for each game, which can indicate the potential risk of spread of COVID-19 in surrounding communities.

"Public health officials can work alongside team executives to continuously assess the situation of the county where the games are being played, along with neighboring counties, to guide their decision-making with respect to when and if to allow fans back in the stadiums, whether to allow fans from other counties and states to attend, and when to discontinue fan attendance," said Asmae Toumi, a data analyst at the MGH Institute for Technology Assessment. "Officials can also view the individual stadium capacity as well as the total stadium capacity of the county or state, which can inform decisions on how many fans can attend."

The researchers noted that 17 of the 33 NFL and NCAA games with fans in attendance that were played by late September were located in counties with rising COVID-19 cases at the time. One of those games was played by the Denver Broncos vs. the Tampa Bay Buccaneers at Empower Field stadium on September 27. "Our model indicated that the county where the game was played had a COVID-19 doubling time of two to three weeks and nearly 700 total new cases in the county during the week before the [game](#) was played," said Jagpreet Chhatwal, Ph.D., associate director at the MGH Institute for Technology Assessment and an assistant professor at Harvard Medical School. "This example highlights how officials may use this tool to make informed decisions on the safety of future in-person attendance by taking into account both past

week trends as well as predicted trends."

Provided by Massachusetts General Hospital

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