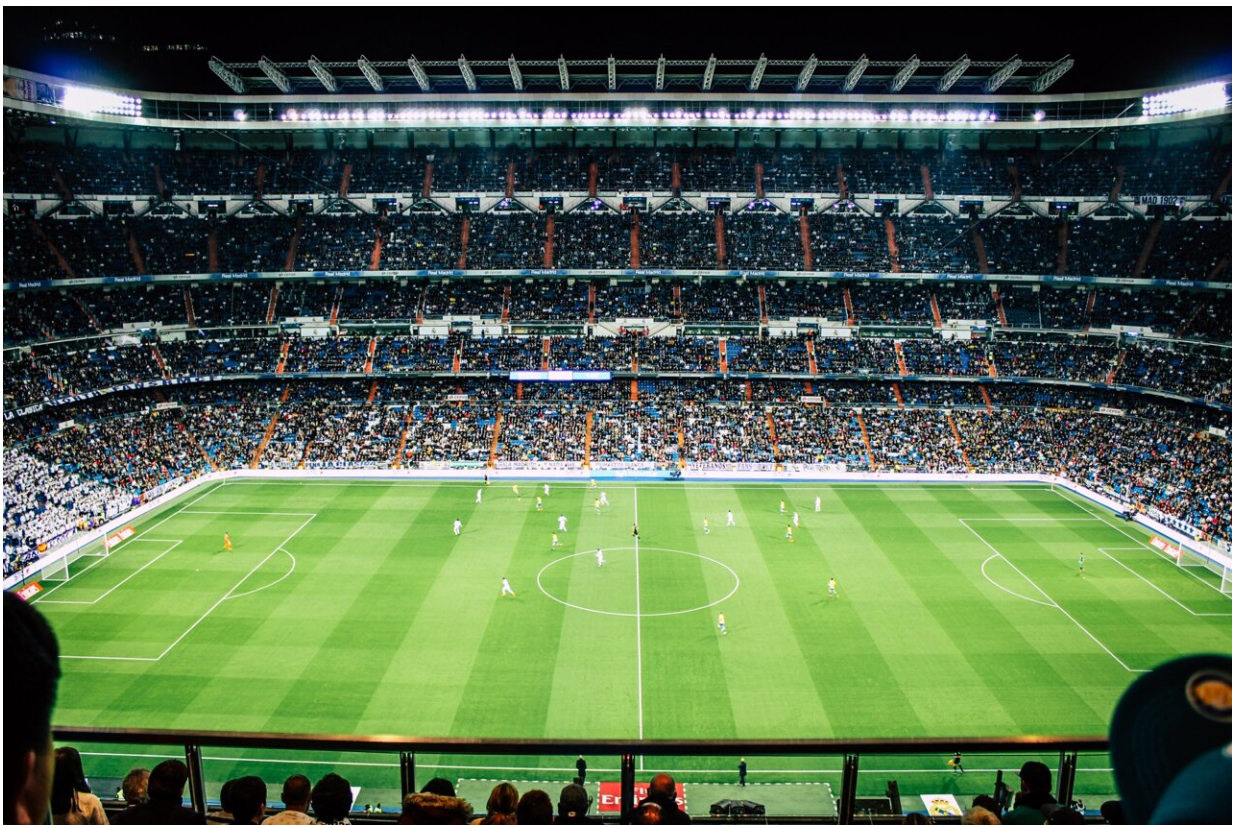


Absence of fans at European elite soccer 'ghost games' significantly decreases home advantage: study

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Credit: Unsplash/CC0 Public Domain

When some European elite football leagues returned to action last year amidst the pandemic, athletes played largely without crowds. These so-

called ghost games offered researchers a rare opportunity to get into the heads of referees. What they found was that football officials—no longer pressured by fans—penalized only the home team with more yellow cards after fouls, with the apparent knock-on effect of severely dampening home-field advantage. The research was published in *Frontiers in Sports and Active Living*.

Scientists at the University of Salzburg in Austria analyzed nearly 1300 matches between the 2018-19 season with fans and 2019-20 season without fans, looking at statistics such as the number of issued cards and [game](#) results. They discovered that referees officiating in ghost games issued significantly more yellow cards to hometown players for fouls, while those awarded to visiting players remained virtually unchanged between seasons.

"We were particularly surprised by the fact that the home teams in ghost games suddenly received so many more yellow cards for fouls," said lead author Dr. Michael Christian Leitner, a postdoctoral researcher in the Centre for Cognitive Neuroscience (CCNS) at the University of Salzburg.

In addition, the study noted that football teams in Europe's elite leagues lost significantly more of their [home games](#) and won significantly more of their away games, when fans did not attend matches.

The stats also showed that home teams were penalized more regardless of the current score, so the yellow cards did not appear to be the result of more aggressive play to compensate for losing the game. In fact, yellow cards for unfair sportsmanship decreased on both sides of the ball.

Pressure from the stands

Leitner and co-author Dr. Fabio Richlan, also at the CCNS, concluded

that while other factors such as emotional support from the stands play a significant role in home-field advantage, "unconscious favoritism" by the referees appears to be one of the biggest components for why the home team wins more often than not.

"We want to emphasize that our work is no general criticism of referees of any sport," Leitner said. "The pressure on match officials is unbelievably high nowadays and the task is enormously demanding. We are enthusiastic sportsmen ourselves and respect the work of referees above all."

Rather, he added, the research on [referee](#) psychology against the backdrop of ghost games is another way to better understand [human behavior](#) and its consequences. Numerous psychological studies and experiments have demonstrated how [human decisions](#) can be manipulated by [peer pressure](#).

"From an evolutionary point of view, we humans are pack animals and therefore our decisions depend strongly on our environment, the situation and other people present," Leitner explained. "By investigating these specific 'weak points' in the human psyche—resulting in conformity and biased decision making—we strive to develop effective psychological interventions and countermeasures."

The paper suggests that one possible training tool to help raise awareness among referees and teach them strategies to overcome those pressures is [virtual reality](#). VR is a technology where users are immersed in a digital environment through a headset. It is becoming an increasingly popular and effective way to provide training.

VR has been successfully used in sports and military scenarios, according to Richlan.

"So why not use virtual reality to prepare referees for games with several tens of thousands of fans?" he said. "With virtual reality we have a technology at hand that can help [sports officials] to prepare for these challenging situations and train realistically and systematically in advance."

More information: *Frontiers in Sports and Active Living*, [DOI: 10.3389/fspor.2021.720488](https://doi.org/10.3389/fspor.2021.720488) , [www.frontiersin.org/articles/1 ... 2021.720488/abstract](http://www.frontiersin.org/articles/1...2021.720488/abstract)

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