Whether or not to allow fan attendance at collegiate and professional sporting events during the COVID-19 pandemic has been hotly contested by fans, politicians, and public health officials. The decision may have substantial public health and economic consequences, but these consequences are difficult to estimate using traditional investigative epidemiology techniques. Surge capacity of contact tracing is overwhelmed by large crowds—often drawn from a wide geographic area—and the game day experience makes it difficult to determine when infection may have occurred: Was the infection acquired at the event? At a tailgate party beforehand? Traveling to or from the event?

Kurland and colleagues1 have tackled this question using an ecological approach to capturing the broad, population-level association of National Football League games with COVID-19 rates in the immediate and neighboring counties. This approach is in contrast to studies focusing on a smaller, more targeted population such as the players themselves2-5 or university populations.4 They find that hosting games with 20,000 or more fans in attendance was associated with COVID-19 infection rate spikes 14 and 21 days after the game. These spikes were over twice the spikes in areas hosting games without fans in the seats. Furthermore, games with fewer than 5000 fans were not associated with increased caseloads.

This study is similar in design to a previous report by Toumi and colleagues,5 but Kurland and colleagues1 use a broader base of National Football League games and consider a wider geographic area. As a result, this approach has the potential to capture the outcomes of not only the game itself, but ancillary activities surrounding fan participation. Using a relatively new anomaly detection-based statistical approach based on detecting departures from 7-, 14-, and 21-day moving averages, the authors searched for spikes or anomalous departures from these expected case rates. Within the clinically and epidemiologically credible windows of the time it takes for SARS-CoV-2 to incubate and produce signs and symptoms, the belief is that these spikes are the result of transmission events resulting from fan-attended games in the weeks prior.

One notable improvement of the design as compared with the study by Toumi et al5 is the use of the number of fans in attendance as a variable, rather than a dichotomous separation of games into either fan-attended or not. Throughout the epidemic, there has been a tendency to lump broadly related categories of interventions together—such as referring to any policy reducing gatherings as a “lockdown”—that have made understanding the impact of these policies particularly difficult. Examining how relatively small numbers of fans (ie, over 5000 people) may factor into COVID-19 spread as compared with events with more than 20,000 people allows policy makers, public health agencies, and league officials to approach the question of fan attendance as a dial that can be adjusted based on the dynamics of the pandemic, rather than a crude on/off switch. The addition of evidence around relatively small game day crowds is a valuable step in increasing the nuance and flexibility available to public health decision-makers as they balance public safety and ever-increasing pressures to return to normal.

Despite the strength of the study, several questions remained unresolved. The findings in the study by Kurland et al1 findings do not agree with those of Toumi et al,5 who found no association with fan attendance and increased COVID-19 cases. The reasons for this discordance—whether from methodological differences, the broader geographic sweep, or larger number of games including those in the postseason—is unknown. As with all ecological studies, the causal relationship between
fan attendance and the observed spikes in COVID-19 cases is only inferential. It is possible, for example, that the observed spike in COVID-19 cases and fan attendance were both driven by some third confounding factor—for example, a population with a low average perception of infection risk or the relaxing of local public health measures generally over the same period.

Finally, while the broad, population-based estimates used by Kurland et al allow for the estimation of the impact of fan attendance and related activities as a whole, decomposing this into specific interventions remains frustratingly out of reach. Public health decision-makers still lack concrete evidence for attributing a spike in any cases to one part of the overall football fan experience. For example, would a ban on tailgating or other modifications to the gameday experience meaningfully mitigate the spread of COVID-19 at football games attended by fans?

REFERENCES


